

TITLE Title Page

4680 Store System and
4683/4684 Point of Sale Terminal:

Problem Determination Guide

Document Number SY27-0330-00

COVER Book Cover

4680 Store System and
4683/4684 Point of Sale Terminal:

Problem Determination Guide

Document Number SY27-0330-00

Part Number 74F5309

File Number 4680-37/4684-37

EDITION Edition Notice

First Edition (March 1992)

This is the first edition of the *IBM 4680 Store System and 4683/4684 Point of Sale Terminal: Problem Determination Guide*. It replaces the *IBM 4680 Store System: Problem Determination Guide, SY27-0316-03* and the *IBM 4683/4684 Point of Sale Terminal: Problem Determination Guide, SY27-0314-01*.

This edition applies to the IBM* 4680 Operating System Version 4 program number 5696-039, Version 3 program number 5621-074, Version 2 program number 5601-192, and Version 1 program number 5669-033.

Order IBM publications through your IBM representative or the IBM branch office serving your locality. Publications are not stocked at the following address.

A form for readers' comments is provided at the back of this publication. If the form has been removed, comments may be addressed to IBM Corporation, Information Development, Department E35, PO Box 12195, Research Triangle Park, North Carolina, U.S.A. 27709. When you send information to IBM, you grant IBM a nonexclusive right to use or distribute whatever information you supply in any way it believes appropriate without incurring any obligation to you.

| Copyright International Business Machines Corporation 1992. All rights reserved.

Note to U.S. Government Users -- Documentation related to restricted rights -- Use, duplication or disclosure is subject to restrictions set forth in GSA ADP Schedule Contract with IBM Corp.

FRONT_1 Notices

Changes are made periodically to the information herein. Before using this publication in connection with the operation of IBM systems, consult the latest *IBM System/370 Bibliography of Industry Systems and Application Programs*, GC20-0370 for the editions that are applicable and current.

References in this publication to IBM products, programs, or services do not imply that IBM intends to make these available in all countries in which IBM operates. Any reference to an IBM product, program, or service in this publication is not intended to state or imply that only IBM's product, program, or service may be used. Any functionally equivalent product, program, or service may be used. Evaluation and verification of operation in conjunction with other products, programs, or services, except those expressly designate by IBM, are the user's responsibility.

IBM may have patents or pending patent applications covering subject matter in this document. The furnishing of this document does not give you any license to these patents. You can send license inquiries, in writing, to the IBM Director of Commercial Relations, IBM Corporation, Purchase, NY 10577.

Subtopics

- FRONT_1.1 Trademarks and Service Marks
- FRONT_1.2 Electronic Emissions Notices
- FRONT_1.3 Safety Brochures

FRONT_1.1 Trademarks and Service Marks

The following items, denoted by an asterisk (*) at the first occurrence in this publication, are trademarks or service marks of the IBM Corporation in the United States or other countries:

Auto-Inking
IBM
PC Network
Personal Computer AT
Personal System/2
Proprinter
PS/2

FRONT_1.2 Electronic Emissions Notices

Federal Communications Commission (FCC) Statement

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

Properly shielded and grounded cables and connectors must be used in order to meet FCC emission limits. IBM is not responsible for any radio or television interference caused by using other than recommended cables and connectors or by unauthorized changes or modifications to this equipment. Unauthorized changes or modifications could void the user's authority to operate the equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION:

This product is equipped with a 3-wire power cord and plug for the user's safety. Use this power cord in conjunction with a properly grounded electrical outlet to avoid electrical shock.

Note: The entire IBM 4680 Store System is designed to operate in a commercial environment. When detached from a store loop, the supported models of the IBM 5170 Personal Computer AT* have been type tested and found to comply with the limits for a class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against radio frequency interference in a residential environment.

Subtopics

FRONT_1.2.1 Laser Product Identification

FRONT_1.2.2 Canadian Department of Communications Compliance Statement

FRONT_1.2.3 Avis de conformité aux normes du ministère des Communications du Canada

FRONT_1.2.1 Laser Product Identification

The Point of Sale Scanner and the IBM 1520 Hand-Held Scanner are laser products. Where required, the scanner has a label that identifies its classification. For example, this is the information on the label in the U.S.A. **Class IIa Laser Product - Avoid Long-Term Viewing of Direct Light**

FRONT_1.2.2 Canadian Department of Communications Compliance Statement

This equipment does not exceed Class A limits per radio noise emissions for digital apparatus, set out in the Radio Interference Regulation of the Canadian Department of Communications. Operation in a residential area may cause unacceptable interference to radio and TV reception requiring the owner or operator to take whatever steps are necessary to correct the interference.

FRONT_1.2.3 Avis de conformité aux normes du ministère des Communications du Canada

Cet équipement ne dépasse pas les limites de Classe A d'émission de bruits radioélectriques pour les appareils numériques, telles que prescrites par le Règlement sur le brouillage radioélectrique établi par le ministère des Communications du Canada. L'exploitation faite en milieu résidentiel peut entraîner le brouillage des réceptions radio et télé, ce qui obligerait le propriétaire ou l'opérateur à prendre les dispositions nécessaires pour en éliminer les causes.

FRONT_1.3 Safety Brochures

The following table provides a listing of translated safety brochures for non-English languages.

Belgium	De Veiligheidsinstructies voor België kunt u vinden in het boekje met het referentienummer: GB11-7869. Vous trouverez les Instructions de Sécurité pour la Belgique dans la petite brochure numéro de référence: GB11-6669.
Canada	Vous trouverez la traduction des consignes de sécurité dans la brochure portant la référence GA09-0521-02.
Denmark	Sikkerhedsforskrifter for Danmark findes i bogen 4683/4684 POST, nr. G511-2111-00.
Finland	Suomenkieliset turvaohjeet ovat kirjasessa, GB11-7352.
France	Les notices de sécurité traduites se trouvent dans la brochure GA11-0734-02 (pour la France).
Germany	Die Sicherheitshinweise befinden sich im "Handelssystem IBM 4680/IBM 4684 Sicherheitshinweise", Teilenummer 25F6466.
Italy	Gli avvisi di sicurezza tradotti si trovano nel manuale di sicurezza, codice GA13-1531.
Norway	Du finner oversatte sikkerhetsmeldinger i håndboken 4683/4684 Kassaterminal, Sikkerhetsinformasjon, GA15-4011-2.
Portugal	Poderá encontrar as indicações de segurança traduzidas no manual de indicações de segurança do seu país, GS88-0012-2.
Spain	Puede encontrar las notas de seguridad traducidas en el manual de notas de seguridad de su país, GA10-8943.
Sweden	Svenska översättningar av varningstexterna finns i handboken <i>Säkerhetsföreskrifter</i> , GA14-2676.

PREFACE Preface

This book is the starting place for **HARDWARE** problem determination in the IBM 4680 Store System, the IBM 4683 Point of Sale Terminal, or the IBM 4684 Point of Sale Terminal. It describes how to test a terminal to find the cause of a problem. When the cause of the problem has been isolated, it contains instructions about how to exchange the failing device or it directs you to service the failing device.

Problems are indicated by system messages, and audible or visible symptoms. These indications can be displayed at the store controller or at the point-of-sale terminal. Problem determination procedures for each system error message or symptom are in this book.

This book is designed to be used by service personnel and store problem coordinators. After a failing device has been exchanged or repaired, always test it to ensure proper operation.

Service Personnel - Use the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual* to repair the following:

- 50-Key Keyboard
- Alphanumeric Keyboard
- ANPOS Keyboard
- Combined Keyboard/Display
- Cash Drawer
- Point of Sale Printer Model 1 or Model 2
- Point of Sale Printer Model 3
- 4683 Base Unit
- 4684 System Unit

Note: The 50-Key Modifiable Keyboard/Operator Display is referred to in this manual as the Combined Keyboard/Display.

When using this book, you should go to Start Here on page 1.0 and select the item that best describes the action you want to do.

Subtopics

PREFACE.1 IBM Store System Library

PREFACE.2 Related Publications -- Software

PREFACE.3 Related Publications -- Hardware

PREFACE.1 IBM Store System Library

The following chart relates each publication in the library to the task or tasks for which it provides data. Choose the task that you want to complete, and find the appropriate publication in the corresponding column.

Table 0-1. Store System Library - Publication Grouping by Task				
Planning	Installing	Operating	Programming	Maintaining
IBM 4680 Store System: Selecting Hardware and Software Components GA27-3691	IBM 4683 Point of Sale Terminal: Installation Guide SA27-3783	IBM 4683/4684 Point of Sale Terminal: Operations Guide SA27-3704	IBM 4680 BASIC: Language Reference SC30-3356	IBM 4680 Store System and 4683/4684 Point of Sale Terminal: Problem Determination Guide SY27-0330
IBM 4680 Store System: Planning and Configuration Guide GC30-3532		IBM 4680 Store System: User's Guide SC30-3518	IBM 4680 Store System: Programming Guide SC30-3517	IBM 4680 Store System: Terminal Test Procedures Reference Summary GX27-3779
IBM 4680 Store System: Preparing Your Site GA27-3692	IBM 4684 Point of Sale Terminal: Installation Guide SA27-3837	IBM 4680 Store System: Display Manager User's Guide SC30-3404		IBM 4684 Point of Sale Terminal: Maintenance Summary Card SX27-3885
IBM 4684 Point of Sale Terminal: Introduction and Planning Guide SA27-3835	IBM Personal System/2 Store Loop Adapter/A Installation and Setup Instructions SK2T-0318			IBM 4683/4684 Point of Sale Terminal: Maintenance Manual SY27-0295
	IBM 4684 Store Loop Adapter/A: Installation, Testing, Problem Determination and Technical Reference SD21-0045			IBM 4683/4684 Point of Sale Terminal: Parts Catalog S131-0097
	IBM 4680 Store System: Messages Guide SC30-3521			
See the "Related Publications" topic for the application manuals that support these tasks.				

PREFACE.2 Related Publications -- Software

IBM Retail Industry Programming Support Services

IBM Retail Industry Programming Support Services: Planning and Installation Guide - SC33-0575
IBM Retail Industry Programming Support Services: Base Package Programmer's Guide - SC33-0576
IBM Retail Industry Programming Support Services: Device Drivers Programmer's Guide - SC33-0680
IBM Retail Industry Programming Support Services: Host Communication Package Programmer's Guide - SC33-0650

IBM 4680 General Sales Application

IBM 4680 General Sales Application: Planning and Installation Guide - GC30-3368
IBM 4680 General Sales Application: Guide to Operations - SC30-3369
IBM 4680 General Sales Application: Programming Guide - SC30-3370
IBM 4680 General Sales Application - Price Management Feature: User's Guide - SC30-3461
IBM 4680 General Sales Application - Terminal Offline Feature: User's Guide - SC30-3499

IBM 4680 Supermarket Application

IBM 4680 Supermarket Application: Planning and Installation Guide - GC30-3371
IBM 4680 Supermarket Application: Guide to Operations - SC30-3372
IBM 4680 Supermarket Application: Programming Guide - SC30-3373
IBM 4680 Supermarket Application - Terminal Offline Feature: User's Guide - SC30-3512
IBM 4680 Supermarket Application - Electronic Funds Transfer Feature: User's Guide - SC30-3513

IBM 4680 Chain Drug Sales Application

IBM 4680 Chain Drug Sales Application: Planning and Installation Guide - GC30-3412
IBM 4680 Chain Drug Sales Application: Guide to Operations - SC30-3413
IBM 4680 Chain Drug Sales Application: Programming Guide - SC30-3414

IBM 4680 Store Management Application

IBM 4680 Store Management Application: Planning and Installation Guide - GC30-3483
IBM 4680 Store Management Application: Guide to Operations - SC30-3484
IBM 4680 Store Management Application: Programming Guide - SC30-3487
IBM 4680 Store Management Application - Inventory Control Feature: User's Guide - SC30-3485
IBM 4680 Store Management Application - Price Management Feature: User's Guide - SC30-3486

IBM 4684 Store Sales Application

IBM 4684 Store Sales Application: Planning and Installation Guide - SB11-8470
IBM 4684 Store Sales Application: Programmer's Reference Manual - SB11-8472
IBM 4684 Store Sales Application: Operator's Guide - SB11-8471
IBM 4684 Store Run-time Support System: Installation and User's Guide - SB11-8552
IBM 4684 Store Application Tool Kit: Programmer's Guide - SB11-8478

In-Store Processing

In-Store Processing: Application Development Guide - SC30-3534
In-Store Processing: IBM AIX - Application Development Guide - SC30-3537
In-Store Processing: IBM OS/2 Extended Edition - Application Development Guide - SC30-3538
In-Store Processing: IBM OS/400 - Application Development Guide - SC30-3535
In-Store Processing: IBM 4680 OS - Application Development Guide - SC30-3536

Networks

IBM Local Area Network Support Program - IBM P/N 83X7873
IBM PC Network Baseband Planning Guide - S68X-2269
IBM PC Network Broadband Guide - S68X-2269
IBM Token-Ring Network Introduction and Planning Guide - GA27-3677-2

PREFACE.3 Related Publications -- Hardware

Scanners

IBM 1520 Hand-Held Scanner User's Guide - GA27-3685
IBM 4686 Retail Point of Sale Scanner: Physical Planning, Installation,
and Operation Guide - SA27-3854
IBM 4686 Retail Point of Sale Scanner: Maintenance Manual - SY27-0319
IBM 4687 Point of Sale Scanner Model 1: Physical Planning, Installation,
and Operation Guide - SA27-3855
IBM 4687 Point of Sale Scanner Model 1: Maintenance Manual - SY27-0317
IBM 4687 Point of Sale Scanner Model 2: Physical Planning Guide -
SA27-3882
IBM 4687 Point of Sale Scanner Model 2: Operator's Guide - SA27-3884
IBM 4687 Point of Sale Scanner Model 2: Maintenance Manual - SY27-0324

IBM Personal Computer and IBM Personal System/2*

IBM Guide to Operations - Personal Computer/AT - IBM P/N 6280066
IBM Guide to Operations - Personal Computer/AT - Store Loop Adapter -
SA27-3694
IBM Hardware Maintenance and Service - Personal Computer/AT - Store Loop
Adapter - SX27-0296
IBM Personal System/2 - Model 50 Quick Reference and Reference Diskette -
S68X-2247
IBM Personal System/2 - Model 60 Quick Reference and Reference Diskette -
S68X-2213
IBM Personal System/2 - Model 70 Quick Reference and Reference Diskette -
S68X-2308
IBM Personal System/2 - Model 80 Quick Reference and Reference Diskette -
S68X-2284
IBM Personal System/2 - Store Loop Adapter/A: Supplements for the
Hardware Maintenance Library - SK2T-0319

Cabling

A Building Planning Guide for Communication Wiring - G320-8059
IBM Cabling System Planning and Installation Guide - GA27-3361
IBM Cabling System Catalog - G570-2040
Using the IBM Cabling System with Communication Products - GA27-3620
IBM PC Network Broadband Guide - S68X-2269
IBM Token-Ring Network Introduction and Planning Guide - GA27-3677

Setup and Verification

IBM 4680 Store System: Setup and Verification - SA27-3703

Subtopics

PREFACE.3.1 General Publications

PREFACE.3.1 General Publications

Advanced Data Communications for Stores - General Information - GH20-2188

Distributed Systems Executive - General Information - GH19-6394

IBM Disk Operating System 4.0 - IBM P/N 6280256

IBM Proprinters - SC31-3793

IBM 3270 Emulation Feature for the IBM 4680 Store System - (Online with the product)

IBM 4680 Support for COBOL Version 2 - (Online with the product)

IBM 4680 Store System Regression Tester - (Online with the product)

NetView Distribution Manager: General Information - GH19-6587

Systems Network Architecture: General Overview - GC30-3073

CONTENTS Table of Contents

TITLE	Title Page
COVER	Book Cover
EDITION	Edition Notice
FRONT_1	Notices
FRONT_1.3	Safety Brochures
PREFACE	Preface
PREFACE.1	IBM Store System Library
PREFACE.2	Related Publications -- Software
PREFACE.3	Related Publications -- Hardware
CONTENTS	Table of Contents
1.0	Chapter 1. Start Here
1.1	Start Problem Determination
2.0	Chapter 2. Messages
2.1	Example Messages
2.2	Power-On Self Test Message Index
2.3	Power-On Self Test Messages (Personal Computer AT, PS/2, or 4684)
2.4	Application Program Status xxx*
2.5	Annn through Lnnc and Nnnn through Snnn Messages
2.6	Mnnnn Messages
2.7	Tnnnn Messages
2.8	Unnn Messages
2.9	Wnnn Messages
2.10	Xnnn Messages
2.11	Ynnn Messages
2.12	Znnn Messages
2.13	Backup Mode Error Messages on a 4683 Model A02
3.0	Chapter 3. Symptoms
3.1	Store Controller Symptoms
3.2	Store Loop Symptoms and Messages
3.3	Point of Sale Terminal Symptoms
4.0	Chapter 4. IBM 4680 Operating System Test Procedures
4.1	TEST 4010: Alphanumeric, Operator, or Combined Keyboard/Display (4683/4684)
4.2	TEST 4020: Cash Drawer (4683/4684)
4.3	TEST 4030: Coin Dispenser (4683 Only)
4.4	TEST 4040: Dump Switch (4683-xx1 Only)
4.5	TEST 4050: Hand-Held Bar Code Reader (4683/4684)
4.6	TEST 4060: Magnetic Stripe Reader (4683/4684 MSR)
4.7	TEST 4070: Magnetic Wand (4683 Only)
4.8	TEST 4080: Optical Character Reader (4683 Only)
4.9	TEST 4090: Point of Sale Keyboard (4683/4684)
4.10	TEST 4100: Point of Sale Printer (4683/4684)
4.11	TEST 4110: Point of Sale Scanner (4683/4684)
4.12	TEST 4120: Power-On Self Test (4683 Only)
4.13	TEST 4130: Remote Alarm (4683/4684)
4.14	TEST 4140: Scale (4683 Only)
4.15	TEST 4150: Shopper Display (4683/4684)
4.16	TEST 4160: Socket 23 or 25 Device (4683 RS-232 or Current Loop)
4.17	TEST 4170: Store Loop (4683/4684)
4.18	TEST 4180: Storage Retention (4683-xx1 Only)
4.19	TEST 4190: Totals Retention (4683/4684)
4.20	TEST 4200: Video Display (4683 Only)
4.21	TEST 4210: 1520 Hand-Held Scanner Model A01 (4683 Only)
4.22	TEST 4220: 1520 Hand-Held Scanner Model A02 (4683/4684)
4.23	TEST 4230: Point of Sale Terminal Verification (4683/4684)
4.24	Point of Sale Terminal Test Procedure Summary
5.0	Chapter 5. IBM 4684 Reference Diskette Test Procedures
5.1	Test Introduction
5.2	Preparing to Run Tests
5.3	Running Verification Tests
5.4	Running POS (Point of Sale) Device Tests
5.5	Running System Unit Tests
5.6	Running Baseband Network Tests
5.7	Running Token-Ring Adapter Tests
5.8	Running X.25 Interface Co-Processor/2 Adapter (ARTICx/2) Tests
6.0	Chapter 6. Problem Determination Procedures
6.1	PDP 6010: Blank Display (Except Video)
6.2	PDP 6020: Blank Video Display
6.3	PDP 6030: Store Controller Communications Problem
6.4	PDP 6040: Store Controller Power-On Self Test Problem
6.5	PDP 6050: Store Loop Problem
6.6	PDP 6060: Messages 6310 Through 637F on a 4684
6.7	PDP 6070: Messages 6390 Through 63EF on a 4684
6.8	PDP 6080: U001 Message
6.9	PDP 6090: U002 Message
6.10	PDP 6100: U003 Message
6.11	PDP 6110: U004 Message
6.12	PDP 6120: U005 Message
6.13	PDP 6130: U006 Message
6.14	PDP 6140: U007 Message
6.15	PDP 6150: U008 Message
6.16	PDP 6160: W001 Message
6.17	PDP 6170: W003 Message
6.18	PDP 6180: W004 Message

6.19	PDP 6190: W005 Message
6.20	PDP 6200: W762 Message
6.21	PDP 6210: W764 Message
6.22	PDP 6220: W772 Message
6.23	PDP 6230: 4683 Application Problem
6.24	PDP 6240: 4683 Hang Condition
6.25	PDP 6250: 4683 Multiple Symptoms
6.26	PDP 6260: 4683 Unexpected IPL
7.0	Chapter 7. Removal and Replacement Procedures
7.1	Alphanumeric Display Removal and Replacement
7.2	Cash Drawer Removal and Replacement
7.3	Checkout Scanner Removal and Replacement
7.4	Coin Dispenser Removal and Replacement (4683 Only)
7.5	Hand-Held Bar Code Reader Removal and Replacement
7.6	Keyboard Removal and Replacement
7.7	Keylock Insert Removal and Replacement
7.8	Keylock Blank Insert Removal and Replacement
7.9	Magnetic Stripe Reader (Single-Track) Removal and Replacement
7.10	Magnetic Stripe Reader (Dual-Track) Removal and Replacement
7.11	Magnetic Stripe Reader (Low-Profile Dual-Track) Removal and Replacement
7.12	Magnetic Wand Removal and Replacement (4683 Only)
7.13	Operator Display Removal and Replacement
7.14	Optical Character Reader Removal and Replacement (4683 Only)
7.15	Point of Sale Printer Model 1 or 2 Removal and Replacement
7.16	Point of Sale Printer Model 3 Removal and Replacement
7.17	Proprinter (TM) Removal and Replacement
7.18	Remote Alarm Removal and Replacement
7.19	Scale Removal and Replacement (4683 Only)
7.20	Shopper Display Removal and Replacement
7.21	Socket 23 or 25 Device (RS-232 or Current Loop) Removal and Replacement (4683 Only)
7.22	Security Base Removal and Replacement
7.23	Video Display (Except 5-Inch) Removal and Replacement
7.24	5-Inch Monochrome Display Removal and Replacement (4683 Only)
7.25	1520 Hand-Held Scanner Model A01 Removal and Replacement (4683 Only)
7.26	1520 Hand-Held Scanner Model A02 Removal and Replacement
7.27	3687 Model 2 Scanner Adapter Removal and Replacement
7.28	IBM 4683 Base Unit Removal and Replacement
7.29	IBM 4684 System Unit Removal and Replacement
7.30	IBM 4683 Base Unit Cable Sockets and Devices
7.31	IBM 4684 System Unit Cable Sockets and Devices
A.0	Appendix A. Reference Information
A.1	General Description of the IBM 4683 Point of Sale Terminal
A.2	General Description of the IBM 4684 Point of Sale Terminal
A.3	IBM 4680 Store System Example
A.4	Local Area Network (LAN)
A.5	Store Controller
A.6	Store Loop
A.7	Point of Sale Terminal
B.0	Appendix B. Collecting Information About a Problem
B.1	Requesting a Store Controller Storage Dump
B.2	Requesting a 4683 Storage Dump
B.3	Requesting a Storage Dump Report
B.4	Requesting a System Log Report
B.5	Creating a 4680 Problem Analysis Diskette
B.6	Requesting Store Controller Status
B.7	Problem Data Collection Form
C.0	Appendix C. Locations
C.1	Front View of the 4683
C.2	Rear View of the 4683
C.3	Front View of the 4684
C.4	Rear View of the 4684
C.5	Point of Sale Terminal Displays
C.6	Point of Sale Terminal Keyboards
C.7	Cable Sockets and Devices
D.0	Appendix D. Part Numbers
D.1	Part Numbers of Supply Items
D.2	Part Numbers of Some Store Controller Components
D.3	Part Numbers of Point of Sale Terminal Device Cables and Power Cords
D.4	Replacement Lock Serial Numbers and Part Numbers
E.0	Appendix E. IBM 4683 Model A02 Stand-Alone Test Procedure
E.1	Preparing to Run Tests
F.0	Appendix F. IBM Vital Product Data Procedures
F.1	Collecting Vital Product Data
F.2	VPD 8010: Entering Vital Product Data
F.3	VPD 8020: Printing Vital Product Data (VPD)
G.0	Appendix G. IBM 4684 Configuration and Utility Procedures
G.1	Introduction to Configuration
G.2	Preparing to Run Configuration
G.3	Introduction to Utilities
G.4	Preparing to Run Utilities
GLOSSARY	Glossary
INDEX	Index

1.0 Chapter 1. Start Here

CAUTION:

For your safety, you must connect the power cord of any equipment to a correctly wired and grounded receptacle. An incorrectly wired receptacle can place a hazardous voltage on accessible metal parts of the equipment. If you are unsure of the receptacle wiring, have a qualified electrician check the receptacle prior to connecting any equipment to it or working on any equipment connected to it.

DANGER

| During periods of lightning activity, do not connect or disconnect any |
cables, or perform installation, maintenance, or reconfiguration.

Task	Topic
Look up a message	2.0
Look up a symptom	3.0
Remove or replace a device on a point-of-sale terminal	7.0
Run tests on a point-of-sale terminal using the 4680 Operating System	4.0
Run tests on a point-of-sale terminal using the 4684 Reference Diskette	5.0
Start Problem Determination	1.1

Task Using the 4680 Operating System	Topic
Create a problem analysis diskette	B.5
Display a message at the store controller	A.5.4
Display a message at a point-of-sale terminal	A.7.3
Display point-of-sale terminal configuration	A.7.2
Recover from a PLD using the Supplemental Diskette	A.5.3
Request a Storage Dump Report	B.3
Request store controller status	B.6
Request a store controller storage dump	B.1
Request a System Log Report	B.4
Request a point-of-sale terminal storage dump	B.2
Reset the point-of-sale terminal number	A.7.7

Subtopics

1.1 Start Problem Determination

1.1 Start Problem Determination

Table 1-1. Start Problem Determination	
Condition	Action
<p>You have one of these messages in the store controller System Log or displayed at a point-of-sale terminal.</p> <ul style="list-style-type: none"> <input type="checkbox"/> Application Program Status xxx* <input type="checkbox"/> Annn through Snnn <input type="checkbox"/> Tnnnn <input type="checkbox"/> Unnn <input type="checkbox"/> Wnnn <input type="checkbox"/> Xnnn <input type="checkbox"/> Ynnn <input type="checkbox"/> Znnn 	<p>Follow the <i>User Response</i> for the message in Chapter 2, "Messages" or the <i>IBM 4680 Store System: Messages Guide</i> or the documentation for the application.</p> <p>Note: In the xxx* (Application Program Status) message, the xxx can be any characters. The asterisk (*) appears at the end of all these messages.</p>
<p>You have a message at the store controller.</p>	<p>Follow the <i>User Response</i> for the message in Chapter 2, "Messages" or in the <i>IBM 4680 Store System: Messages Guide</i>.</p>
<p>You have a problem symptom at the store controller.</p>	<p>Follow the <i>Action</i> for the symptom under "Store Controller Symptoms" in topic 3.1.</p>
<p>You have SYSTEM MESSAGE AVAILABLE displayed at the bottom of the store controller display screen.</p>	<p>Press System Request, then type M at the store controller keyboard.</p> <p>This will display the 10 most recent messages that were logged. See "Displaying a Store Controller Message" in topic A.5.4 for more information.</p>
<p>You have an IPL message (U001 through U009) displayed at a point-of-sale terminal.</p>	<p>Follow the <i>User Response</i> for the message under "Unnn Messages" in topic 2.8.</p>
<p>You have a blank display (except video) at a point-of-sale terminal.</p>	<p>Follow "PDP 6010: Blank Display (Except Video)" in topic 6.1.</p>
<p>You have a blank video display (no characters) at a point-of-sale terminal.</p>	<p>Follow "PDP 6020: Blank Video Display" in topic 6.2.</p>
<p>You have a hang condition at a 4683-xx1.</p>	<p>Follow "PDP 6240: 4683 Hang Condition" in topic 6.24.</p>
<p>You have the keyboard MESSAGE PENDING light ON at a point-of-sale terminal.</p> <p>Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, Esc = S1 and Enter = S2.</p>	<p>Press S1, type 3, and press S2 to display the pending message.</p> <ul style="list-style-type: none"> <input type="checkbox"/> If the MESSAGE PENDING light does go off, follow the <i>User Response</i> for the message in Chapter 2, "Messages" or the <i>IBM 4680 Store System: Messages Guide</i>. <input type="checkbox"/> If the MESSAGE PENDING light does not go off, run "TEST 4090: Point of Sale Keyboard (4683/4684)" in topic 4.9.
<p>You have the keyboard OFFLINE light ON at a point-of-sale terminal.</p> <p>Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, Esc = S1 and Enter = S2.</p>	<p>Press S1, type 2, and press S2 to display the OFFLINE message.</p> <ul style="list-style-type: none"> <input type="checkbox"/> If an OFFLINE message is displayed, follow the <i>User Response</i> for the message in Chapter 2, "Messages" or the <i>IBM 4680 Store System: Messages Guide</i>. <input type="checkbox"/> If an OFFLINE message is not displayed, continue in this table.
<p>You have a problem symptom at</p>	<p>Follow the <i>Action</i> for the symptom in</p>

a point-of-sale terminal.	Chapter 3, "Symptoms."
You have multiple problem symptoms at a 4683-xx1 or more than one point-of-sale device appears to be failing.	Follow "PDP 6250: 4683 Multiple Symptoms" in topic 6.25.
You have a 4683 in an unknown state and you do not know where to begin problem determination.	Go to "PDP 6230: 4683 Application Problem" in topic 6.23.

2.0 Chapter 2. Messages

CAUTION:

For your safety, you must connect the power cord of any equipment to a correctly wired and grounded receptacle. An incorrectly wired receptacle can place a hazardous voltage on accessible metal parts of the equipment. If you are unsure of the receptacle wiring, have a qualified electrician check the receptacle prior to connecting any equipment to it or working on any equipment connected to it.

DANGER

```
+-----+
| During periods of lightning activity, do not connect or disconnect any |
| cables, or perform installation, maintenance, or reconfiguration.    |
+-----+
```

Subtopics

- 2.1 Example Messages
- 2.2 Power-On Self Test Message Index
- 2.3 Power-On Self Test Messages (Personal Computer AT, PS/2, or 4684)
- 2.4 Application Program Status xxx*
- 2.5 Annn through Lnnn and Nnnn through Snnn Messages
- 2.6 Mnxxx Messages
- 2.7 Tnnnn Messages
- 2.8 Unnn Messages
- 2.9 Wnnn Messages
- 2.10 Xnnn Messages
- 2.11 Ynnn Messages
- 2.12 Znnn Messages
- 2.13 Backup Mode Error Messages on a 4683 Model A02

2.1 Example Messages

Following are examples of message formats that can appear on your display. The message number you will find in the message list is underscored (**n** = any number and **x** = any character).

Three-Character Messages

```
xx201  
15:05:07 Slot=0 1024Kb Memory 201 'text'  
xxxxx xxxx 201  
xxxxx 201  
201.
```

Four-Character Messages

```
1110  
Unnn.
```

Five-Character Messages

```
14527  
Tnnnn 'text'  
Mnnnn 'text'.
```

Eight-Character Messages

These messages are generated by Version 3.00 of the IBM 4684 Point of Sale Terminal Reference Diskette.

Example: Error Code 0001010n

```
0 = First Digit  
001 = Device Number  
01 = Error Number  
0 = Slot Number  
n = Modifier
```

The following topic contains an index of all power-ON self test messages generated by the Personal Computer AT, PS/2, and 4684.

2.2 Power-On Self Test Message Index

Error	Topic
Bad/Missing Com Interpret	2.3
Disk Boot Failure	2.3
C0000 to C3FFF	2.3
C4000 to DFFFF	2.3
ET - nn:nn:nn	2.3
Parity Check	2.3
RC=E1	2.3
RC=E2	2.3
RC=E3	2.3
RC=E4	2.3
RC=En	2.3
ROM Error	2.3
100	2.3
101 to 109	2.3
110 to 114	2.3
115 to 159	2.3
161	2.3
162	2.3
163	2.3
164	2.3
165	2.3
166	2.3
167	2.3
1nn	2.3
201 to 203	2.3
2nn	2.3

301	2.3
302 to 304	2.3
305	2.3
30n	2.3
401	2.3
4nn	2.3
5nn	2.3
601 to 602	2.3
652	2.3
6nn	2.3
7nn	2.3
9nn	2.3
10nn	2.3
1101 to 1109	2.3
1110 to 1125	2.3
11nn	2.3
120n	2.3
12nn	2.3
13nn	2.3
14nn	2.3
15nn	2.3
17nn	2.3
20nn	2.3
21nn	2.3
24nn	2.3
28nn	2.3
29nn	2.3
3015	2.3

30nn	2.3
31nn	2.3
4620	2.3
46nn	2.3
48nn	2.3
49nn	2.3
5610	2.3
62nn	2.3
6300	2.3
6301 to 6307	2.3
6308	2.3
6309 to 630F	2.3
6310 to 6377	2.3
6390 to 63F7	2.3
63nn	2.3
6401 to 6449	2.3
6451 to 6499	2.3
65nn	2.3
8601 to 8602	2.3
8603 to 8604	2.3
86nn	2.3
1000n	2.3
100nn	2.3
104nn	2.3
121nn	2.3
14527	2.3
145nn	2.3
14620	2.3

146nn	2.3
16500	2.3
16520	2.3
16530	2.3
16540	2.3
16550	2.3
165nn	2.3
166nn	2.3
167nn	2.3
194nn	2.3
251nn	2.3
nn301	2.3
0001010n to 0001090n	2.3
0001100n to 0001140n	2.3
000161nn	2.3
000162nn	2.3
000163nn	2.3
000164nn	2.3
000165nn	2.3
000166nn	2.3
0001nnnn	2.3
0002010n to 0002030n	2.3
0003010n	2.3
0003020n to 0003040n	2.3
0003050n	2.3
0004010n	2.3
0006010n to 0006020n	2.3
0006520n	2.3

0006nnnn	2.3
0007nnnn	2.3
0011010n to 0011090n	2.3
0011100n to 0011250n	2.3
00120nnn	2.3
0012nnnn	2.3
0014nnnn	2.3
0017nnnn	2.3
0024nnnn	2.3
0028nnnn	2.3
003015nn	2.3
0030nnnn	2.3
004620nn	2.3
0046nnnn	2.3
005610nn	2.3
0062nnnn	2.3
0086010n to 0086020n	2.3
0086030n to 0086040n	2.3
01000nnn	2.3
0100nnnn	2.3
0104nnnn	2.3
0121nnnn	2.3
014527nn	2.3
0145nnnn	2.3
014620nn	2.3
Error	Topi
0146nnnn	2.3
016520nn	2.3

016530nn	2.3
016540nn	2.3
016550nn	2.3
0165nnnn	2.3
0166nnnn	2.3
0167nnnn	2.3
0194nnnn	2.3
0251nnnn	2.3

2.3 Power-On Self Test Messages (Personal Computer AT, PS/2, or 4684)

When the Personal Computer AT, PS/2*, or 4684 system unit is powered ON, power-ON self tests are performed automatically on the system unit and most of the adapters. These messages are generated while the tests are running to indicate status or errors detected by the tests.

If an alphanumeric or operator display is attached, up to five error messages can be displayed. If a video display is attached, it will display all error messages.

On the 4684 only:

- After the tests have been successfully completed, device drivers are loaded and initialized. If a video display is attached, it is used to indicate the successful or unsuccessful loading of the drivers.
- A one-line message is displayed showing that the device drivers are being loaded. The status field for the base device driver is displayed. As the other device drivers are loaded, no information is displayed unless an error is detected.
 - If an error is detected and a video display is attached, the name of the driver is displayed followed by a return code (RC=xxxxxxx).
 - If an error is detected and a video display is **not** attached, a beep will sound to indicate the error.

| If you have an error code that is not in this list, check "Example
| Messages" in topic 2.1 to see if your error code can be translated to
| an error code that **is** in this list. If your error code does not
| translate into a listed error code, contact the store programmer.
|
| **Note:** On the ANPOS Keyboard (during some procedures) and on the
| Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.
|
| Warning: Switching **POWER OFF** at a 4684 affects operations at all
| point-of-sale terminals attached to it.
|

Bad or Missing Command Interpreter

Explanation: A 4684 diskette error occurred during IPL from a diskette.

User Response: Try to IPL the 4684 using a different diskette.

- If the IPL is successful, the diskette you were using is failing.
- If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

Disk Boot Failure

Explanation: A 4684 diskette error occurred during IPL from a diskette.

User Response: Try to IPL the 4684 using a different diskette.

- If the IPL is successful, the diskette you were using is failing.
- If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

C0000 to C3FFF

Explanation:

Model 1xx or 200 - A system board error occurred.
Model 300 - An adapter error occurred.

User Response: Switch **POWER OFF**.

Model 1xx or 200 - Service the 4684 system unit to exchange the system board.

Model 300 - Service the 4684 system unit.

For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

C4000 to DFFFF

Explanation: An adapter error occurred.

User Response: Switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

ET - nn:nn:nn or nn:nn:nn

Explanation: This indicates that there is a Token-Ring Adapter or Baseband Network Adapter installed and when the 4684 was powered-ON, there was no diskette in the diskette drive and the fixed disk had no disk boot record.

ET - nn:nn:nn Appears in the top left of the screen (**n** = any character).

nn:nn:nn Appears in the top right of the screen (**n** = any character).

User Response: Try to IPL using the Backup Reference Diskette.

- If the IPL is successful, contact the store programmer to ensure that the fixed disk has a disk boot record.
- If the IPL is **not** successful, service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

Installing The IBM 4683/4684 Diagnostic Drivers [A1I2] (C) Copyright IBM Corp. 1989

Explanation: The Diagnostic Drivers are being loaded.

User Response: If the IPL stops with this message displayed, switch **POWER OFF** and service the 4684 system unit to exchange the system board. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

Installing The IBM 4683/4684 RIPSS Drivers [A1I2] (C) Copyright IBM Corp. 1989

Explanation: The Retail Industry Programming Support Services Drivers are being loaded.

User Response: If the IPL stops with this message displayed, contact the store programmer.

Parity Check

Explanation: A parity check error occurred.

User Response:

Personal Computer AT or PS/2 - Continue problem determination using the maintenance documentation for the Personal Computer AT or PS/2 system unit.

4684 - Switch **POWER OFF** and service the 4684 system

unit to exchange the system board. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

RC=E1

Explanation: Base driver functions not available. A 145nn message was probably displayed prior to this message.

User Response:

- If 145nn was displayed, follow the *User Response* for 145nn to correct this problem.
- If 145nn was **not** displayed, see Appendix G, "IBM 4684 Configuration and Utility Procedures" to create a new Backup Reference Diskette.

RC=E2

Explanation: A device driver is already installed for this device.

User Response: Switch POWER ON at the 4683 (if attached) and follow the "Terminal Configuration Procedure" in the *IBM 4684 Point of Sale Terminal: Installation Guide* to configure the terminal.

Note: If this occurs using the Application Diskette, contact the store programmer.

RC=E3

Explanation: A device identified by the driver name is not attached or is failing.

User Response:

1. Ensure that the device is attached to the 4684 or 4683.
2. Ensure that the 4683 is powered ON and connected to the 4684 with cable 11.
3. There is usually a 63nn message or another symptom associated with this message. Continue problem determination using the *User Response* for the 63nn message or the *Repair Action* for the symptom.

RC=E4

Explanation: The DSP480 or AKY-BIOS.SYS device driver is required but has not been installed.

User Response:

- If you are using the Reference Diskette and the problem persists, see Appendix G, "IBM 4684 Configuration and Utility Procedures" in topic G.0 to create a new Backup Reference Diskette.
- If you are **not** using the Reference Diskette and the problem persists, ensure that the DSP480 and AKY-BIOS.SYS device drivers are available. Also ensure that the DSP480 entry in the CONFIG.SYS file is correct.

RC=En

Explanation: The base driver has detected an error. A 145nn message was probably displayed prior to this message.

Note: In this message, **n** = any letter from a to u.

User Response:

- If 145nn was displayed, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
- If 145nn was **not** displayed, see Appendix G, "IBM 4684 Configuration and Utility Procedures" to create a new Backup Reference Diskette.

ROM Error

Explanation: A 4684 ROM error occurred.

User Response:

Personal Computer AT or PS/2 - Continue problem determination using the maintenance documentation for the Personal Computer AT or PS/2 system unit.

4684 - Switch **POWER OFF** and service the 4684 system unit to exchange the system board. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

100

Explanation: A system unit error occurred.

User Response: Use the maintenance documentation for the Personal Computer AT or PS/2 system unit.

1. Switch **POWER OFF**.
2. Remove the Store Loop Adapter(s) from the system unit.
3. Switch power ON.
4. When message 165 displays, reconfigure the system unit.

Note: If message 165 does not display, continue problem determination using the maintenance documentation for the system unit.

5. After reconfiguration, switch **POWER OFF**.
6. Wait 10 seconds and switch power ON.

- If the error **does not** recur, one of the Store Loop Adapters you removed is failing. Replace them one-at-a-time to determine which one is failing.
- If the error recurs, continue problem determination using the maintenance documentation for the system unit.

101 to 109

Explanation: A system unit error occurred.

0001010n to 0001090n are covered by this Explanation and User Response.

User Response:

Personal Computer AT or PS/2 - Use the maintenance documentation for the Personal Computer AT or PS/2 system unit.

1. Switch **POWER OFF**.
2. Remove the Store Loop Adapter(s) from the system unit.
3. Switch power ON.
4. When message 165 displays, reconfigure the system unit.

Note: If message 165 does not display, continue problem determination using the maintenance documentation for the system unit.

5. After reconfiguration, switch **POWER OFF**.
6. Wait 10 seconds and switch power ON.

- If the error **does not** recur, one of the Store Loop Adapters you removed is failing. Replace them one-at-a-time to determine which

one is failing.

- If the error recurs, continue problem determination using the maintenance documentation for the system unit.

4684 - Switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

110 to 114

Explanation: A system unit or option adapter error occurred.

0001100n to 0001140n are covered by this Explanation and User Response.

User Response:

Personal Computer AT or PS/2 - Use the maintenance documentation for the Personal Computer AT or PS/2 system unit.

1. Switch **POWER OFF**.
2. Remove the Store Loop Adapter(s) from the system unit.
3. Switch power ON.
4. When message 165 displays, reconfigure the system unit.

Note: If message 165 does not display, continue problem determination using the maintenance documentation for the system unit.

5. After reconfiguration, switch **POWER OFF**.
6. Wait 10 seconds and switch power ON.
 - If the error **does not** recur, one of the Store Loop Adapters you removed is failing. Replace them one-at-a-time to determine which one is failing.
 - If the error recurs, continue problem determination using the maintenance documentation for the system unit.

4684 - Switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

115 to 159

Explanation: A system unit error occurred.

User Response: Use the maintenance documentation for the Personal Computer AT or PS/2 system unit.

1. Switch **POWER OFF**.
2. Remove the Store Loop Adapter(s) from the system unit.
3. Switch power ON.
4. When message 165 displays, reconfigure the system unit.

Note: If message 165 does not display, continue problem determination using the maintenance documentation for the system unit.

5. After reconfiguration, switch **POWER OFF**.
6. Wait 10 seconds and switch power ON.
 - If the error **does not** recur, one of the Store Loop Adapters you removed is failing. Replace them one-at-a-time to determine which one is failing.
 - If the error recurs, continue problem determination using the maintenance documentation for the system unit.

161

Explanation: A nonvolatile storage error occurred or the storage retention battery is failing.

000161nn is covered by this Explanation and User

Response.

User Response:

Personal Computer AT or PS/2 - Continue problem determination using the maintenance documentation for the Personal Computer AT or PS/2 system unit.

4684 - Switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

162

Explanation: A 4684 configuration or hardware error occurred. One of the options in the 4684 system unit can cause this problem.

000162nn is covered by this Explanation and User Response.

User Response: See Appendix G, "IBM 4684 Configuration and Utility Procedures."

- If an option has been added or removed recently:
 1. IPL using the Backup Reference Diskette.
 2. Press **S1 (Esc)** to continue when the error message displays.
 3. Select **START CONFIGURATION** from MENU-M1.
 4. Select **CREATE/CHANGE CONFIGURATION** from MENU-C1.
 5. Select **ACTIVATE NEW CONFIGURATION** from MENU-C2.
 6. Follow the instructions on the display.
 7. If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

- If an option has **not** been added or removed recently, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

163

Explanation: A 4684 date and time error occurred.

000163nn is covered by this Explanation and User Response.

User Response: Run the SET DATE AND TIME utility if it has not been run. See "Setting System Date And Time" in topic G.4.3.

If the problem persists, switch **POWER OFF** and service the 4684 system unit to exchange the system board. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

164

Explanation: A 4684 memory configuration error occurred.

000164nn is covered by this Explanation and User Response.

User Response: See Appendix G, "IBM 4684 Configuration and Utility Procedures."

- If additional memory has been added or removed recently:
 1. IPL using the Backup Reference Diskette.
 2. Press **S1 (Esc)** to continue when the error message displays.
 3. Select **START CONFIGURATION** from MENU-M1.
 4. Select **CREATE/CHANGE CONFIGURATION** from MENU-C1.
 5. Select **ACTIVATE NEW CONFIGURATION** from MENU-C2.
 6. Follow the instructions on the display.

7. If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

- If additional memory has **not** been added or removed recently, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

165

Explanation: A configuration error occurred.

000165nn is covered by this Explanation and User Response.

User Response: See Appendix G, "IBM 4684 Configuration and Utility Procedures."

- If an option adapter has been added or removed recently:
 1. IPL using the Backup Reference Diskette.
 2. Press **S1 (Esc)** to continue when the error message displays.
 - If message M0101 is displayed, answer NO.
 3. Select START CONFIGURATION from MENU-M1.
 4. Select CREATE/CHANGE CONFIGURATION from MENU-C1.
 5. Select ACTIVATE NEW CONFIGURATION from MENU-C2.
 6. Follow the instructions on the display.
 7. If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
- If an option adapter has **not** been added or removed recently, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

166

Explanation:

000166nn is covered by this Explanation and User Response.

PS/2 - A Primary Token-Ring Adapter error occurred.
4684 - A configuration error occurred.

User Response:

PS/2 - Continue problem determination using the maintenance documentation for the Token-Ring Adapter.

4684 - See Appendix G, "IBM 4684 Configuration and Utility Procedures."

- If an option adapter has been added or removed recently:
 1. IPL using the Backup Reference Diskette.
 2. Press **S1 (Esc)** to continue when the error message displays.
 - If message M0101 is displayed, answer NO.
 3. Select START CONFIGURATION from MENU-M1.
 4. Select CREATE/CHANGE CONFIGURATION from MENU-C1.
 5. Select ACTIVATE NEW CONFIGURATION from MENU-C2.
 6. Follow the instructions on the display.
 7. If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
- If an option adapter has **not** been added or removed recently, switch **POWER OFF** and service the 4684 system unit. For service information,

see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

167

Explanation: An Alternate Token-Ring Adapter error occurred.

User Response: Continue problem determination using the maintenance documentation for the Token-Ring Adapter.

1nn

Explanation: A system unit or option adapter error occurred.

0001nnnn is covered by this Explanation and User Response.

Note: In this message, *n* = any number.

User Response:

Personal Computer AT or PS/2 - Continue problem determination using the maintenance documentation for the Personal Computer AT or PS/2 system unit.

4684 - Switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

201 to 203

Explanation: A 4684 memory error occurred.

0002010n to 0002030n are covered by this Explanation and User Response.

User Response: Switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

2nn

Explanation: A memory or system board error occurred.

Note: In this message, *n* = any number.

User Response: Continue problem determination using the maintenance documentation for the PS/2 system unit.

301

Explanation: A 4684 system-unit-keyboard error occurred. If no system-unit-keyboard is present, this error will appear momentarily and then be removed.

0003010n and nn301 are covered by this Explanation and User Response.

User Response: If this message appears momentarily and is then removed, ignore it.

If this message remains on the display, switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Ensure the keyboard is attached to system-unit-keyboard socket [1] on the 4684.
2. Ensure that no keys are pressed during the Initial Program Load (IPL).
3. Exchange or service the system-unit-keyboard. For service information, the documentation for the keyboard or the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
4. Exchange the system-unit-keyboard cable.
5. Service the 4684 system unit. For service

information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

302 to 304

Explanation: A 4684 system-unit-keyboard error occurred.

0003020n to 0003040n are covered by this Explanation and User Response.

User Response: Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange or service the system-unit-keyboard. For service information, the documentation for the keyboard or the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
2. Exchange the system-unit-keyboard cable.
3. Service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

305

Explanation: A 4684 system-unit-keyboard error occurred.

0003050n is covered by this Explanation and User Response.

User Response: Ensure that you are using the correct keyboard cable. For example, do not use an Enhanced Alphanumeric Keyboard cable to attach an ANPOS Keyboard.

If the correct keyboard is attached, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

30n

Explanation: A keyboard or system board error occurred.

Note: In this message, **n** = any number.

User Response: Continue problem determination using the maintenance documentation for the Personal Computer AT or PS/2 system unit.

401

Explanation: A 4684 printer port error occurred.

0004010n is covered by this Explanation and User Response.

User Response: Switch **POWER OFF** and service the 4684 system unit to exchange the system board. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

4nn

Explanation: A monochrome display adapter or system board error occurred.

Note: In this message, **n** = any number.

User Response: Continue problem determination using the maintenance documentation for the Personal Computer AT or PS/2 system unit.

5nn

Explanation: A color display adapter or system board error occurred.

Note: In this message, **n** = any number.

User Response: Continue problem determination using the maintenance documentation for the Personal Computer AT or PS/2 system unit.

601 to 602

Explanation: A 4684 diskette error occurred while trying to load programs from the diskette.

0006010n to 0006020n are covered by this Explanation and User Response.

User Response: Try to IPL the 4684 system unit using a different diskette.

- If the IPL is successful, the diskette you were using is failing.
- If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

652

Explanation: A 4684 diskette error occurred while using a scratch diskette.

0006520n is covered by this Explanation and User Response.

User Response: Try using a different scratch diskette.

- If the diskette works correctly, the diskette you were using is failing.
- If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

6nn

Explanation: A diskette drive or system board error occurred.

0006nnnn is covered by this Explanation and User Response.

Note: In this message, **n** = any number.

User Response:

Personal Computer AT or PS/2 - Continue problem determination using the maintenance documentation for the Personal Computer AT or PS/2 system unit.

4684 - Switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

7nn

Explanation: A math co-processor or system board error occurred.

Note: In this message, **n** = any number.

User Response:

Personal Computer AT or PS/2 - Continue problem determination using the maintenance documentation for the Personal Computer AT or PS/2 system unit.

4684 - Switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

9nn

Explanation: A serial/parallel adapter - parallel port error occurred.

0007nnnn is covered by this Explanation and User Response.

Note: In this message, *n* = any number.

User Response: Continue problem determination using the maintenance documentation for the Personal Computer AT or PS/2 system unit.

10nn

Explanation: An alternate serial/parallel adapter - parallel port error occurred.

Note: In this message, *n* = any number.

User Response: Continue problem determination using the maintenance documentation for the Personal Computer AT or PS/2 system unit.

1101 to 1109

Explanation: A 4684 system board asynchronous port error occurred.

0011010n to 0011090n are covered by this Explanation and User Response.

User Response:

1. Switch **POWER OFF**.
 2. Disconnect the cable attached to the system-unit-communications socket.
 3. Switch **POWER ON**.
- If the problem is corrected, switch **POWER OFF** and exchange the device and device cable that was attached to the system-unit-communications socket.
- If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

1110 to 1125

Explanation: A 4684 system board asynchronous port error occurred.

0011100n to 0011250n are covered by this Explanation and User Response.

User Response: Switch **POWER OFF** and service the 4684 system unit to exchange the system board. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

11nn

Explanation: A serial/parallel adapter - serial port error occurred.

Note: In this message, *n* = any number.

User Response: Continue problem determination using the maintenance documentation for the Personal Computer AT or PS/2 system unit.

120n

Explanation: A dual asynchronous adapter error occurred.

00120nnn is covered by this Explanation and User Response.

Note: In this message, *n* = any number.

User Response:

1. Switch **POWER OFF**.
 2. Disconnect the cable attached to the dual asynchronous adapter.
 3. Switch **POWER ON**.
- If the problem is corrected, switch **POWER OFF** and exchange the device and device cable that was attached to the dual asynchronous adapter.
 - If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

12nn

Explanation: An alternate serial/parallel adapter - serial port error occurred in the Personal Computer AT or PS/2 system unit or a 4684 dual asynchronous adapter error occurred.

0012nnnn is covered by this Explanation and User Response.

Note: In this message, *n* = any number.

User Response:

Personal Computer AT or PS/2 - Continue problem determination using the maintenance documentation for the Personal Computer AT or PS/2 system unit.

4684 - Switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

13nn

Explanation: A game control adapter error occurred.

Note: In this message, *n* = any number.

User Response: Continue problem determination using the maintenance documentation for the Personal Computer AT or PS/2 system unit.

14nn

Explanation:

0014nnnn is covered by this Explanation and User Response.

Personal Computer AT or PS/2 - A graphics printer error occurred.

4684 - A Proprinter error occurred.

Note: In this message, *n* = any number.

User Response:

Personal Computer AT or PS/2 - Continue problem determination using the maintenance documentation for the Personal Computer AT or PS/2 system unit.

4684 - After ensuring that the printer is correctly connected and powered ON, run the printer self-test.

- If the test **does not** run correctly, the printer is failing. Service the printer using the maintenance documentation supplied with it.
- If test runs correctly, install a wrap plug on

- the parallel port and run the printer port test.
See "Running System Unit Tests" in topic 5.5.
- If the test detects a failure, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
 - If the test **does not** detect a failure, exchange the printer cable.

15nn

Explanation: An SDLC adapter error occurred.

Note: In this message, **n** = any number.

User Response: Continue problem determination using the maintenance documentation for the Personal Computer AT or PS/2 system unit.

17nn

Explanation: A 4684 fixed disk or system board error occurred.

0017nnnn is covered by this Explanation and User Response.

Note: In this message, **n** = any number.

User Response:

Personal Computer AT or PS/2 - Continue problem determination using the maintenance documentation for the Personal Computer AT or PS/2 system unit.

4684 -

- If the fixed disk was exchanged, run configuration. See "Preparing to Run Configuration" in topic G.2.
- If the fixed disk was **not** exchanged or if the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

20nn

Explanation: A BSC adapter error occurred.

Note: In this message, **n** = any number.

User Response: Continue problem determination using the maintenance documentation for the Personal Computer AT or PS/2 system unit.

21nn

Explanation: An alternate BSC adapter error occurred.

Note: In this message, **n** = any number.

User Response: Continue problem determination using the maintenance documentation for the Personal Computer AT or PS/2 system unit.

24nn

Explanation: A system board video error occurred.

0024nnnn is covered by this Explanation and User Response.

Note: In this message, **n** = any number.

User Response:

Personal Computer AT or PS/2 - Continue problem determination using the maintenance documentation for the Personal Computer AT or PS/2 system unit.

4684 - Switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

28nn

Explanation: An IBM 3270 Connection Adapter error occurred.

0028nnnn is covered by this Explanation and User Response.

Note: In this message, **n** = any number.

User Response: Service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

29nn

Explanation: A color printer error occurred.

Note: In this message, **n** = any number.

User Response: Continue problem determination using the maintenance documentation for the Personal Computer AT or PS/2 system unit.

3015

Explanation: A Baseband Network Adapter or PC Network* Baseband Adapter/A is disconnected from the network or failing.

003015nn is covered by this Explanation and User Response.

User Response: Ensure that the network cables, or the wrap and terminator plugs are connected correctly.

If no problems are found, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

30nn

Explanation: A Baseband Network Adapter or PC Network Baseband Adapter/A error occurred.

0030nnnn is covered by this Explanation and User Response.

Note: In this message, **n** = any number.

User Response:

Personal Computer AT or PS/2 - Continue problem determination using the maintenance documentation for the PC Network feature and the Personal Computer AT or PS/2 system unit.

4684 - Switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

31nn

Explanation: An Alternate PC Network Adapter error occurred.

Note: In this message, **n** = any number.

User Response: Continue problem determination using the

maintenance documentation for the Personal Computer AT or PS/2 system unit, and the PC Network feature.

4620

Explanation: A Realtime Interface Co-Processor Multiport/2 (ARTICm/2) or X.25/2 (ARTICx/2) adapter error occurred.

004620nn is covered by this Explanation and User Response.

User Response: Ensure that the 37 pin wrap plug was connected to the adapter when the test was run.

If the wrap plug was connected, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

46nn

Explanation: A Realtime Interface Co-Processor Multiport/2 (ARTICm/2) or X.25/2 (ARTICx/2) adapter error occurred.

0046nnnn is covered by this Explanation and User Response.

Note: In this message, **n** = any number.

User Response: Switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

48nn

Explanation: An error occurred in the **first** IBM PC 1200 bps Modem.

Note: In this message, **n** = any number.

User Response: Continue problem determination using the maintenance documentation for the Personal Computer AT or PS/2 system unit, and the IBM PC 1200 bps Modem.

49nn

Explanation: An error occurred in the **second** IBM PC 1200 bps Modem.

Note: In this message, **n** = any number.

User Response: Continue problem determination using the maintenance documentation for the Personal Computer AT or PS/2 system unit, and the IBM PC 1200 bps Modem.

5610

Explanation: The DSP480 device driver related font file has not been installed.

005610nn is covered by this Explanation and User Response.

User Response:

1. Ensure that the related font file names in the DSP480 entry of the CONFIG.SYS file are correct.
2. Ensure that the related font files referenced in the DSP480 entry of the CONFIG.SYS file are available.

62nn

Explanation:

0062nnnn is covered by this Explanation and User

Response.

Personal Computer AT - An error occurred in the **First Store Loop Adapter**.

PS/2 or 4684 - A Store Loop Adapter error occurred.

Note: In this message, **n** = any number.

User Response:

Personal Computer AT or PS/2 - Continue problem determination using the maintenance documentation for the Store Loop Adapter.

4684 - Service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

6300

Explanation: The 4684 point-of-sale I/O configuration record has been destroyed. This message can be caused by system software or by a failing 4684 system board.

User Response:

1. IPL using the Backup Reference Diskette.
 2. Press **S1 (Esc)** to continue when the error message displays.
 3. Select START CONFIGURATION from MENU-M1.
 4. Select CREATE/CHANGE CONFIGURATION from MENU-C1.
 5. Select ACTIVATE NEW CONFIGURATION from MENU-C2.
 6. Follow the instructions on the display.
- If the problem persists while using the Reference Diskette, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
 - If the problem is not present while using the Reference Diskette, contact the store programmer.

6301 to 6307

Explanation: The 4684 device indicated by this message number is attached but not configured.

User Response: See Appendix G, "IBM 4684 Configuration and Utility Procedures."

1. IPL using the Backup Reference Diskette.
2. Press **S1 (Esc)** to continue when the 63nn message displays.
3. Select START CONFIGURATION from MENU-M1.
4. Select CREATE/CHANGE CONFIGURATION from MENU-C1.
5. Select ACTIVATE NEW CONFIGURATION from MENU-C2.
6. Follow the instructions on the display.
7. If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

This list shows the message number and the device it indicates.

6301 4684 Keyboard
6302 4684 Display
6303 4684 Printer
6304 4684 Magnetic Stripe Reader, Point of Sale Scanner,
or Hand-Held Bar Code Reader
6305 4684 Totals Retention or Cash Drawer
6306 4684 External Device
6307 4684 External Device

6308

Explanation: The 4683 point-of-sale I/O configuration record has been destroyed. This message can be caused by system software or by a failing 4684 system board.

User Response:

1. Switch **POWER OFF**.
 2. Insert the Backup Reference Diskette.
 3. Switch power ON at the 4683 (if present).
 4. Switch power ON at the 4684 and the IPL will start.
 5. Press **S1 (Esc)** to continue when the error message displays.
 6. Select START CONFIGURATION from MENU-M1.
 7. Select CREATE/CHANGE CONFIGURATION from MENU-C1.
 8. Select ACTIVATE NEW CONFIGURATION from MENU-C2.
 9. Follow the instructions on the display.
- If the problem persists while using the Reference Diskette, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
- If the problem is not present while using the Reference Diskette, contact the store programmer.

6309 to 630F

Explanation: The 4683 device indicated by this message number is attached but not configured.

User Response: See Appendix G, "IBM 4684 Configuration and Utility Procedures."

1. Switch **POWER OFF**.
2. Insert the Backup Reference Diskette.
3. Switch power ON at the 4683 (if present).
4. Switch power ON at the 4684 and the IPL will start.
5. Press **S1 (Esc)** to continue when the error message displays.
6. Select START CONFIGURATION from MENU-M1.
7. Select CREATE/CHANGE CONFIGURATION from MENU-C1.
8. Select ACTIVATE NEW CONFIGURATION from MENU-C2.
9. Follow the instructions on the display.
10. If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

This list shows the message number and the device it indicates.

6309 4683 Keyboard
630A 4683 Display
630B 4683 Printer
630C 4683 Magnetic Stripe Reader, Point of Sale Scanner, or Hand-Held Bar Code Reader
630D 4683 Totals Retention or Cash Drawer
630E 4683 External Device or Feature Expansion Card 2A or 2B
630F 4683 External Device or RS232 Feature Expansion Card

6310 to 6377

Explanation: The 4684 point-of-sale device(s) indicated by this message number is configured but not responding.

User Response:

- If multiple 63nn messages are displayed, one of the devices on the device channel is failing and causing others to fail also. See "PDP 6060: Messages 6310 Through 637F on a 4684" in topic 6.6 to help isolate the failing device.
- If only one or two 63nn messages display:
1. Ensure the device is attached to the 4684.
 2. Service or exchange the device.
 3. Exchange the device cable.
 4. Service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

This list shows the message number and the device it

indicates.

6310 4684 50-Key Keyboard or the keyboard
on the Combined Keyboard/Display (5A)
6311 4684 50-Key Keyboard or the keyboard
on the Combined Keyboard/Display (5B)
6312 4684 Alphanumeric Keyboard (5A)
6313 4684 Alphanumeric Keyboard (5B)
6316 4684 Matrix Keyboard (5A)
6317 4684 Matrix Keyboard (5B)
631A 4684 ANPOS Keyboard (5A)
631B 4684 ANPOS Keyboard (5B)
6320 4684 Alphanumeric Display (4A)
6321 4684 Alphanumeric Display (4B, 9A, or 9B)
6322 4684 Operator Display (4A) or the display
on the Combined Keyboard/Display (5A)
6323 4684 Operator Display (4B, 9A, or 9B) or the
display
on the Combined Keyboard/Display (5B)
6326 4684 Shopper Display (4A)
6327 4684 Shopper Display (4B, 9A, or 9B)
6330 4684 Point of Sale Printer Model 1 or 2 (7)
6334 4684 Point of Sale Printer Model 3 (7)
6336 4684 Fiscal Point of Sale Printer Model 2A (7)
6338 4684 Fiscal Point of Sale Printer Model 3A (7)
6340 4684 Keyboard or Single-Track MSR (5A)
6341 4684 Keyboard or Single-Track MSR (5B)
6346 4684 Dual-Track MSR or Low-Profile Dual-Track
MSR (5A)
6347 4684 Dual-Track MSR or Low-Profile Dual-Track
MSR (5B)
634A 4684 Point of Sale Scanner (17)
634B 4684 IBM Bar Code Reader
6350 4684 Totals Retention (System Board)
6354 4684 Cash Drawer (3A or 3B)
6360 to 6377 4684 External Device

Note: If any other 63nn message is displayed in the range between 6310 and 6377, see "Restrictions When Connecting Displays" in topic G.2.5.

6390 to 63F7

Explanation: The 4683 point-of-sale device(s) indicated by this message number is configured but not responding.

User Response: Ensure that the 4683 is powered ON and connected to the 4684 with cable 11.

- If multiple 63nn messages are displayed, one of the devices on the device channel is failing and causing others to fail also. See "PDP 6070: Messages 6390 Through 63EF on a 4684" in topic 6.7 to help isolate the failing device.
- If only one or two 63nn messages display:
 1. Switch **POWER OFF**.
 2. Ensure the device is attached to the 4683.
 3. Service or exchange the device.
 4. Exchange the device cable.
 5. Service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
 6. Service the 4683 base unit to exchange the power supply.

This list shows the message number and the device it indicates.

6390 4683 50-Key Keyboard or the keyboard
on the Combined Keyboard/Display (5A)
6391 4683 50-Key Keyboard or the keyboard
on the Combined Keyboard/Display (5B)
6392 4683 Alphanumeric Keyboard (5A)
6393 4683 Alphanumeric Keyboard (5B)
6396 4683 Matrix Keyboard (5A)
6397 4683 Matrix Keyboard (5B)
639A 4684 ANPOS Keyboard (5A)
639B 4684 ANPOS Keyboard (5B)
63A0 4683 Alphanumeric Display (4A)
63A1 4683 Alphanumeric Display (4B, 9A, or 9B)
63A2 4683 Operator Display (4A) or the display
on the Combined Keyboard/Display (5A)

63A3 4683 Operator Display (4B, 9A or 9B) or the display on the Combined Keyboard/Display (5B)
63A6 4683 Shopper Display (4A)
63A7 4683 Shopper Display (4B, 9A, or 9B)
63A8 4683 Video Display (Location 2A)
63A9 4683 Video Display (Location 2B)
63B0 4683 Point of Sale Printer Model 1 or 2 (7)
63B4 4683 Point of Sale Printer Model 3 (7)
63B6 4683 Fiscal Point of Sale Printer Model 2A (7)
63B8 4683 Fiscal Point of Sale Printer Model 3A (7)
63C0 4683 Keyboard or Single-Track MSR (5A)
63C1 4683 Keyboard or Single-Track MSR (5B)
63C6 4683 Dual-Track MSR or Low-Profile Dual-Track MSR (5A)
63C7 4683 Dual-Track MSR or Low-Profile Dual-Track MSR (5B)
63CA 4683 Point of Sale Scanner (17)
63CB 4683 IBM Bar Code Reader
63D0 4683 Totals Retention (Base Card)
63D4 4683 Cash Drawer (3A or 3B)
63E4 4683 Feature Expansion Card, Location 2A, Socket 25
63E5 4683 Feature Expansion Card, Location 2B, Socket 25
63E8 4683 Feature Expansion Card, Location 2A, Socket 23
63E9 4683 Feature Expansion Card, Location 2B, Socket 23

Note: If any other 63nn message is displayed in the range between 6390 and 63F7, see "Restrictions When Connecting Displays" in topic G.2.5.

63nn

Explanation: An error occurred in the **Second** Store Loop Adapter.

Note: In this message, **n** = any number.

User Response: Continue problem determination using the maintenance documentation for the Store Loop Adapter.

6401 to 6449

Explanation: An error occurred in the **First** multiprotocol communications adapter.

User Response: Continue problem determination using the maintenance documentation for the multiprotocol communications adapter.

6451 to 6499

Explanation: An error occurred in the 4800 bps modem.

User Response: Continue problem determination using the maintenance documentation for the 4800 bps modem.

65nn

Explanation: An error occurred in the **second** multiprotocol communications adapter.

Note: In this message, **n** = any number.

User Response: Continue problem determination using the maintenance documentation for the multiprotocol communications adapter.

8601 to 8602

Explanation: A 4684 pointing device (mouse) error occurred.

0086010n to 0086020n are covered by this Explanation and User Response.

User Response: Exchange the pointing device (mouse).

8603 to 8604

Explanation: A 4684 pointing device (mouse) error occurred.

0086030n to 0086040n are covered by this Explanation and User Response.

User Response: Switch **POWER OFF** and service the 4684 system unit to exchange the system board. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

86nn

Explanation: A 4684 pointing device (mouse) or system board error occurred.

Note: In this message, **n** = any number.

User Response: Continue problem determination using the maintenance documentation for the Personal Computer AT or PS/2 Store Controller.

1000n

Explanation: A multiprotocol communications adapter error occurred.

01000nnn is covered by this Explanation and User Response.

Note: In this message, **n** = any number.

User Response:

1. Switch **POWER OFF**.
 2. Disconnect the cable attached to the multiprotocol communications adapter.
 3. Switch power ON.
- If the problem is no longer present, exchange the device and the device cable that was attached to the multiprotocol communications adapter.
- If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

100nn

Explanation: A multiprotocol communications adapter or system board error occurred.

0100nnnn is covered by this Explanation and User Response.

Note: In this message, **n** = any number.

User Response:

Personal Computer AT or PS/2 - Continue problem determination using the maintenance documentation for the PS/2 system unit.

4684 - Switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

104nn

Explanation: An ESDI Fixed Disk or system board error occurred.

0104nnnn is covered by this Explanation and User Response.

Note: In this message, **n** = any number.

User Response:

Personal Computer AT or PS/2 - Continue problem determination using the maintenance documentation for the PS/2 system unit.

4684 - Switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

121nn

Explanation: A 300/1200/2400 bps internal modem error occurred.

0121nnnn is covered by this Explanation and User Response.

Note: In this message, **n** = any number.

User Response: Switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

14527

Explanation: A device channel error occurred. Any device attached to the channel can cause this message. One or more 63nn errors may also display.

014527nn is covered by this Explanation and User Response.

User Response: Note any 63nn errors that display.

□ If one or more 63nn errors display, continue problem determination by following the *User Response* for those messages.

□ If U001 is displayed, follow the *User Response* for the U001 message to continue problem determination.

□ If no 63nn or U001 message is displayed:

1. Switch **POWER OFF**.
2. Disconnect the power cord.
3. With the exception of the system unit video display, disconnect all other devices from the system unit. See "Cable Sockets and Devices" in topic C.7.
4. Reconnect the power cord.
5. Switch power ON.

- If error message 14527 is again displayed, the message is caused by a failure in the system unit. Switch **POWER OFF** and service the system unit.

- If error message 14527 is **not** displayed, a failure in one of the devices or cables you disconnected is causing the message.

Switch **POWER OFF**, reconnect one of the disconnected devices to its original socket, and switch power ON.

-- If error message 14527 is again displayed, a failure in the device that was just reconnected is causing the message. Switch **POWER OFF** and exchange or service the failing device.

-- If error message 14527 is **not** displayed, repeat the preceding steps until the failing device has been identified.

145nn

Explanation: A device channel error occurred.

0145nnnn is covered by this Explanation and User Response.

Note: In this message, *n* = any number.

User Response: Switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

14620

Explanation: An ISDN Interface Co-Processor/2 Adapter error occurred.

014620nn is covered by this Explanation and User Response.

User Response: Ensure that the wrap plug was installed as instructed.

If the wrap plug was installed correctly, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

146nn

Explanation: An ISDN Interface Co-Processor/2 Adapter error occurred.

0146nnnn is covered by this Explanation and User Response.

Note: In this message, *n* = any number.

User Response: Switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

16500

Explanation: A 6157 Tape Attachment Adapter error occurred.

User Response: Switch **POWER OFF** and service the 4684 system unit to exchange the 6157 Tape Attachment Adapter. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

16520

Explanation: A 6157 Streaming Tape Drive error occurred.

016520nn is covered by this Explanation and User Response.

User Response: Switch **POWER OFF** and exchange the 6157 Streaming Tape Drive. For service information, see the documentation for the 6157 Streaming Tape Drive.

16530

Explanation: A 6157-002 Streaming Tape Drive error occurred.

016530nn is covered by this Explanation and User Response.

User Response: Switch **POWER OFF** and exchange the 6157-002 Streaming Tape Drive. For service information, see the documentation for the 6157-002 Streaming Tape Drive.

16540

Explanation: A 6157 Streaming Tape Drive error occurred.

016540nn is covered by this Explanation and User Response.

User Response: Switch **POWER OFF**.

1. Exchange the 6157 Streaming Tape Drive.
2. Service the 4684 system unit to exchange the 6157 Tape Attachment Adapter.

For service information, see the documentation for the 6157 Streaming Tape Drive or the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

16550

Explanation: A 6157-002 Streaming Tape Drive error occurred.

016550nn is covered by this Explanation and User Response.

User Response: Switch **POWER OFF**.

1. Exchange the 6157-002 Streaming Tape Drive.
2. Service the 4684 system unit to exchange the 6157-002 Tape Attachment Adapter.

For service information, see the documentation for the 6157-002 Streaming Tape Drive or the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

165nn

Explanation: A 6157 Tape Attachment Adapter or 6157 Streaming Tape Drive error occurred.

0165nnnn is covered by this Explanation and User Response.

Note: In this message, **n** = any number.

User Response:

Personal Computer AT or PS/2 - Continue problem determination using the maintenance documentation for the adapter or tape drive.

4684 - Switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

166nn

Explanation: An IBM Token-Ring Network Adapter error occurred.

0166nnnn is covered by this Explanation and User Response.

Note: In this message, **n** = any number.

User Response: Switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

167nn

Explanation: An Alternate IBM Token-Ring Network Adapter error occurred.

0167nnnn is covered by this Explanation and User Response.

Note: In this message, *n* = any number.

User Response: Switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

194nn

Explanation: A 4684 Feature Card and Memory Expansion Adapter error occurred.

0194nnnn is covered by this Explanation and User Response.

User Response: Switch **POWER OFF** and service the 4684 system unit.

Note: In this message, *n* = any number. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

251nn

Explanation: An IBM V.32 Modem/A or system board error occurred.

0251nnnn is covered by this Explanation and User Response.

Note: In this message, *n* = any number.

User Response: Continue problem determination using the maintenance documentation for the IBM V.32 Modem/A.

nn301

Explanation: See 301 in topic 2.3.

Note: In this message, *n* = any number.

0001010n to 0001090n

Explanation: See 101 to 109 in topic 2.3.

Note: In this message, *n* = any number.

0001100n to 0001140n

Explanation: See 110 10 114 in topic 2.3.

Note: In this message, *n* = any number.

000161nn

Explanation: See 161 in topic 2.3.

Note: In this message, *n* = any number.

000162nn

Explanation: See 162 in topic 2.3.

Note: In this message, *n* = any number.

000163nn

Explanation: See 163 in topic 2.3.

Note: In this message, *n* = any number.

000164nn

Explanation: See 164 in topic 2.3.

Note: In this message, **n** = any number.

000165nn

Explanation: See 165 in topic 2.3.

Note: In this message, **n** = any number.

000166nn

Explanation: See 166 in topic 2.3.

Note: In this message, **n** = any number.

0001nnnn

Explanation: See 1nn in topic 2.3.

Note: In this message, **n** = any number.

0002010n to 0002030n

Explanation: See 201 to 203 in topic 2.3.

Note: In this message, **n** = any number.

0003010n

Explanation: See 301 in topic 2.3.

Note: In this message, **n** = any number.

0003020n to 0003040n

Explanation: See 302 to 304 in topic 2.3.

Note: In this message, **n** = any number.

0003050n

Explanation: See 305 in topic 2.3.

Note: In this message, **n** = any number.

0004010n

Explanation: See 401 in topic 2.3.

Note: In this message, **n** = any number.

0006010n to 0006020n

Explanation: See 601 to 602 in topic 2.3.

Note: In this message, **n** = any number.

0006520n

Explanation: See 652 in topic 2.3.

Note: In this message, **n** = any number.

0006nnnn

Explanation: See 6nn in topic 2.3.

Note: In this message, **n** = any number.

0007nnnn

Explanation: See 7nn in topic 2.3.

Note: In this message, **n** = any number.

0011010n to 0011090n

Explanation: See 1101 to 1109 in topic 2.3.

Note: In this message, **n** = any number.

0011100n to 0011250n

Explanation: See 1110 to 1125 in topic 2.3.

Note: In this message, **n** = any number.

00120nnn

Explanation: See 120n in topic 2.3.

Note: In this message, **n** = any number.

0012nnnn

Explanation: See 12nn in topic 2.3.

Note: In this message, **n** = any number.

0014nnnn

Explanation: See 14nn in topic 2.3.

Note: In this message, **n** = any number.

0017nnnn

Explanation: See 17nn in topic 2.3.

Note: In this message, **n** = any number.

0024nnnn

Explanation: See 24nn in topic 2.3.

Note: In this message, **n** = any number.

0028nnnn

Explanation: See 28nn in topic 2.3.

Note: In this message, **n** = any number.

003015nn

Explanation: See 3015 in topic 2.3.

Note: In this message, **n** = any number.

0030nnnn

Explanation: See 30nn in topic 2.3.

Note: In this message, **n** = any number.

004620nn

Explanation: See 4620 in topic 2.3.

Note: In this message, **n** = any number.

0046nnnn

Explanation: See 46nn in topic 2.3.

Note: In this message, **n** = any number.

005610nn

Explanation: See 5610 in topic 2.3.

Note: In this message, **n** = any number.

0062nnnn

Explanation: See 62nn in topic 2.3.

Note: In this message, **n** = any number.

0086010n to 0086020n

Explanation: See 8601 in topic 2.3.

Note: In this message, **n** = any number.

0086030n to 0086040n

Explanation: See 8603 in topic 2.3.

Note: In this message, **n** = any number.

01000nnn

Explanation: See 1000n in topic 2.3.

Note: In this message, **n** = any number.

0100nnnn

Explanation: See 100nn in topic 2.3.

Note: In this message, **n** = any number.

0104nnnn

Explanation: See 104nn in topic 2.3.

Note: In this message, **n** = any number.

0121nnnn

Explanation: See 121nn in topic 2.3.

Note: In this message, **n** = any number.

014527nn

Explanation: See 14527 in topic 2.3.

Note: In this message, **n** = any number.

0145nnnn

Explanation: See 145nn in topic 2.3.

Note: In this message, **n** = any number.

014620nn

Explanation: See 14620 in topic 2.3.

Note: In this message, **n** = any number.

0146nnnn

Explanation: See 146nn in topic 2.3.

Note: In this message, **n** = any number.

016520nn

Explanation: See 16520 in topic 2.3.

Note: In this message, **n** = any number.

016530nn

Explanation: See 16530 in topic 2.3.

Note: In this message, **n** = any number.

016540nn

Explanation: See 16540 in topic 2.3.

Note: In this message, **n** = any number.

016550nn

Explanation: See 16550 in topic 2.3.

Note: In this message, **n** = any number.

0165nnnn

Explanation: See 165nn in topic 2.3.

Note: In this message, **n** = any number.

0166nnnn

Explanation: See 166nn in topic 2.3.

Note: In this message, **n** = any number.

0167nnnn

Explanation: See 167nn in topic 2.3.

Note: In this message, **n** = any number.

0194nnnn

Explanation: See 194nn in topic 2.3.

Note: In this message, **n** = any number.

0251nnnn

Explanation: See 251nn in topic 2.3.

Note: In this message, **n** = any number.

2.4 Application Program Status xxx*

These messages are generated by the application program.

In the message:

- The xxx can be any characters.
- The asterisk (*) appears at the end of all these messages.

When an xxx* message is displayed:

1. Look for an OFFLINE or MESSAGE PENDING light on the point-of-sale terminal keyboard.
 - If both lights are OFF, continue to step 2.
 - If one of these lights is ON, do the following:
 - Press **S1**, type **2**, and press **S2** to display an OFFLINE message.
 - Press **S1**, type **3**, and press **S2** to display a PENDING message.
 - Follow the *User Response* for the message in this chapter **or** in the *IBM 4680 Store System: Messages Guide*.
2. To correct the problem, refer to the documentation for the application program.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.

2.5 Annn through Lnnn and Nnnn through Snnn Messages

These messages are generated by the application program.

- Annn - IBM 4680 General Sales Application
- Bnnn - IBM 4680 Supermarket Application
- Cnnn - IBM 4680 Chain Drug Sales Application
- Hnnn - IBM 4680 Store Management Application.

When one of these messages is displayed:

1. Look for an OFFLINE or MESSAGE PENDING light on the point-of-sale terminal keyboard.
 - If both lights are OFF, continue to step 2.
 - If one of these lights is ON, do the following:
 - Press **S1**, type **2**, and press **S2** to display an OFFLINE message.
 - Press **S1**, type **3**, and press **S2** to display a PENDING message.
 - Follow the *User Response* for the message in this chapter **or** in the *IBM 4680 Store System: Messages Guide*.
2. To correct the problem, see the *Guide to Operations* for the application.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.

2.6 Mnnnn Messages

+-----+
These messages are generated by the IBM 4684 Point of Sale Terminal when running tests, utilities, or configuration using the Reference Diskette.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

M0001 M0001 PRESS THE 1 ON THE NUMERIC KEYPAD.

Explanation: This message appears following the copyright message. When the 1 key is pressed, the program can determine the keypad layout for the *primary* keyboard.

User Response: Press the 1 key on the *primary* keyboard. If the display does not proceed to MENU-M1, switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Ensure that the 1 key was pressed on the *primary* keyboard. Try another keyboard if more than one is attached.
2. Ensure that the keyboard is connected to the 4684 system unit.
3. Exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 or for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
4. Exchange the keyboard cable.
5. Service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M0002 M0002 THE 4684 SYSTEM UNIT IS FAILING.

Explanation: An error was detected while reading or writing nonvolatile memory.

User Response: Start configuration again to retry the operation.

If the problem persists, switch **POWER OFF** and service the 4684 system unit to exchange the system board. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M0010 M0010 ERROR SECURING FIXED DISK.

Explanation: An error was detected when securing the fixed disk before moving the 4684.

User Response: Retry the operation.

If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M0011 M0011 NO FIXED DISK FOUND.

Explanation: The program detected no fixed disk when one was expected.

User Response: Switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M0012 M0012 TIME IS INCORRECT.

Explanation: The time (HHMMSS) that was entered is not a valid time.

User Response: Enter the time again being careful to enter a valid time.

M0013

M0013 DATE IS INCORRECT.

Explanation: The date (MMDDYYYY) that was entered is not a valid date.

User Response: Enter the date again being careful to enter a valid date.

M0100

M0100 ERROR READING 4684 REFERENCE DISKETTE. ENSURE THAT THE REFERENCE DISKETTE IS CORRECTLY INSERTED.

Explanation: An error was detected while reading the Reference Diskette.

User Response: Press **S1 (Esc)**. If the problem persists, try using a different Backup Reference Diskette.

If you do not have a different diskette, use the original Reference Diskette to create a new Backup Reference Diskette. See Appendix G, "IBM 4684 Configuration and Utility Procedures."

If a different diskette does not solve the problem, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M0101

M0101 A CONFIGURATION ERROR HAS OCCURRED. DO YOU WANT TO RUN CONFIGURATION?

Explanation: A configuration error or mismatch was detected during the IPL.

User Response:

- If you have added or removed a device or option adapter, you should answer YES (you want to run configuration) and then:
 1. Depending upon the devices installed, you may have to respond to some additional questions.
 2. Select **ACTIVATE NEW CONFIGURATION** from Menu-C2.
 3. Follow the instructions on the display.
- If you have **not** added or removed a device or option adapter, you should answer No (you **do not** want to run configuration) and switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M0110

M0110 ERROR READING 4684 REFERENCE DISKETTE.

Explanation: An error was detected while reading the Reference Diskette.

User Response: Try using a different Backup Reference Diskette.

If you do not have a different diskette, use the original Reference Diskette to create a new Backup Reference Diskette. See Appendix G, "IBM 4684 Configuration and Utility Procedures."

If a different diskette does not solve the problem, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M0198

M0198 TESTS COMPLETE. ENSURE THAT THE REFERENCE DISKETTE IS CORRECTLY INSERTED.

Explanation: Tests have been completed and the Reference Diskette must be inserted.

User Response: Insert the Reference Diskette and press S2 (Enter).

M0199

M0199 SYSTEM RESTART WILL FOLLOW. PREPARE SYSTEM FOR RESTART.

Explanation: A system restart must be done before any other programs can run.

User Response: Select one of the following:

- Restart using the fixed disk. Remove any diskette from the diskette drive and press S2 (Enter).
- Restart using a different IPL diskette. Put the desired diskette in the diskette drive and press S2.
- Restart using the Backup Reference Diskette. Put the diskette in the drive and press S2.

M0300

M0300 PRIMARY KEYBOARD IS FAILING.

Explanation: The keyboard that was configured as the *primary* keyboard for the terminal being tested is not connected or is failing.

The *primary* keyboard is the keyboard you use for input to the 4684 when the Reference Diskette is being used.

This message will display if power has been switched OFF at the 4683 while it is in test mode. This is not an error condition.

User Response: If M0300 remains in the display, ensure that the keyboard cable is connected to the keyboard and the 4684 system unit.

If the cable, sockets, and connections are OK, switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 or for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
2. Exchange the keyboard cable.
3. Service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M0310

M0310 DISPLAY FAILED. PRIMARY DISPLAY ERR.

Explanation: The display that was configured as the *primary* display for the terminal being tested is not connected or is failing. The *primary* display is the display that displays messages when the Reference Diskette is being used.

This message will also display if power has been switched OFF at the 4683 while it is in test mode. This is not an error condition.

User Response: If M0310 remains in the display, ensure that the display cable is connected to the display and the 4684 system unit.

If the cable, sockets, and connections are OK, switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange the display.
2. Exchange the display cable.
3. Service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M0320

M0320 PRIMARY KEYBOARD IS FAILING.

Explanation: The keyboard that was configured as the *primary* keyboard for the terminal being tested is not connected or is failing. The *primary* keyboard is the keyboard you use for input to the 4684 when the Reference Diskette is being used.

This message will also display if power has been switched OFF at the 4683 while it is in test mode. This is not an error condition.

User Response: If M0320 remains in the display, ensure that the keyboard cable is connected to the keyboard and to the 4683 or 4684.

If the cable, sockets, and connections are OK, switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 **or** for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
2. Exchange the keyboard cable.
3. Service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M0330

M0330 DISPLAY FAILED. PRIMARY DISPLAY ERR.

Explanation: The display that was configured as the *primary* display for the terminal being tested is not connected or is failing. The *primary* display is the display that displays messages when the Reference Diskette is being used.

This message will also display if power has been switched OFF at the 4683 while it is in test mode. This is not an error condition.

User Response: If M0330 remains in the display, ensure that the display cable is connected to the display and to the 4683 or 4684.

If the cable, sockets, and connections are OK, switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange the display.
2. Exchange the display cable.
3. Service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M1000

M1000 ERROR IN DISPLAY CONFIGURATION.

Explanation: The combination of configured displays is not valid. In sockets 4B, 9A and 9B, you are restricted to only one (1) of any display type.

User Response:

1. Select VIEW NEW CONFIGURATION from MENU-C2 to determine the display configuration.
2. Select CHANGE DEFAULT CONFIGURATION from MENU-C2.
3. Select DELETE or ADD from MENU-C3/C4 to correct the display configuration problem. See the filled in "Configuration Worksheet" from the *IBM 4684 Point of Sale Terminal: Introduction and Planning Guide*.
4. Be sure to select ACTIVATE NEW CONFIGURATION when you are finished.

M1001

M1001 ERROR IN CONFIGURATION.

Explanation: A configuration error was detected when ACTIVATE NEW CONFIGURATION was selected.

User Response:

1. Select VIEW NEW CONFIGURATION to determine the configuration.
2. Select CHANGE DEFAULT CONFIGURATION from MENU-C2.
3. Select DELETE or ADD from MENU-C3/C4 to correct the configuration problem. See the filled in "Configuration Worksheet" from the *IBM 4684 Point of Sale Terminal: Introduction and Planning Guide*.
4. Be sure to select ACTIVATE NEW CONFIGURATION when you are finished.

M1010

M1010 NO 4683 DISPLAY FOR ALPHANUMERIC MESSAGES IS CONFIGURED.

Explanation: Configuration was performed, but there is no configured 4683 display capable of displaying both numbers and alphabetical characters.

User Response:

1. Select VIEW NEW CONFIGURATION to determine the display configuration.
2. Select CHANGE DEFAULT CONFIGURATION from MENU-C2.
3. Select DELETE or ADD from MENU-C3 to correct the display configuration problem. See the filled in "Configuration Worksheet" from the *IBM 4684 Point of Sale Terminal: Introduction and Planning Guide*.
4. Be sure to select ACTIVATE NEW CONFIGURATION when you are finished.

M1011

M1011 NO PRIMARY DISPLAY SELECTED.

Explanation: During the CHANGE THE PRIMARY DISPLAY function of configuration, no *primary* display was selected. The *primary* display is the display that displays messages when the Reference Diskette is being used.

User Response:

1. Select a *primary* display when prompted. See the filled in "Configuration Worksheet" from the *IBM 4684 Point of Sale Terminal: Introduction and Planning Guide*.
2. Be sure to select ACTIVATE NEW CONFIGURATION when you are finished.

M1012

M1012 NO 4684 DISPLAY FOR ALPHANUMERIC MESSAGES IS CONFIGURED.

Explanation: Configuration was performed, but there is no configured 4684 display capable of displaying both numbers and alphabetical characters.

User Response:

1. Select VIEW NEW CONFIGURATION to determine the display configuration.
2. Select CHANGE DEFAULT CONFIGURATION from MENU-C2.
3. Select DELETE or ADD from MENU-C4 to correct the display configuration problem. See the filled in "Configuration Worksheet" from the *IBM 4684 Point of Sale Terminal: Introduction and Planning Guide*.
4. Be sure to select ACTIVATE NEW CONFIGURATION when you are finished.

M1020

M1020 ERROR IN KEYBOARD CONFIGURATION.

Explanation: The combination of configured keyboards is not valid. Socket 5A can have only one (1) keyboard configured. Socket 5B can have only one (1) keyboard configured.

User Response:

1. Select VIEW NEW CONFIGURATION to determine the keyboard configuration.
2. Select CHANGE DEFAULT CONFIGURATION from MENU-C2.
3. Select DELETE or ADD from MENU-C3/C4 to correct the keyboard configuration problem. See the filled in "Configuration Worksheet" from the *IBM 4684 Point of Sale Terminal: Introduction and Planning Guide*.
4. Be sure to select ACTIVATE NEW CONFIGURATION when you are finished.

M1021

M1021 NO PRIMARY KEYBOARD SELECTED.

Explanation: During the CHANGE THE PRIMARY KEYBOARD function of configuration, no *primary* keyboard was selected. The *primary* keyboard is the keyboard you use for input to the 4684 when the Reference Diskette is being used.

User Response:

1. Select a *primary* keyboard when prompted. See the filled in "Configuration Worksheet" from the *IBM 4684 Point of Sale Terminal: Introduction and Planning Guide*.
2. Be sure to select ACTIVATE NEW CONFIGURATION when you are finished.

M1022

M1022 MSR/KEYBOARD CONFIGURATION ERROR.

Explanation: The combination of configured Single-Track MSR and keyboard is not valid. The Single-Track MSR can only be configured when a 50-Key keyboard or alphanumeric keyboard is also configured.

User Response:

1. Select VIEW NEW CONFIGURATION to determine the keyboard configuration.
2. Select CHANGE DEFAULT CONFIGURATION from MENU-C2.
3. Select DELETE or ADD from MENU-C3/C4 to correct the configuration. See the filled in "Configuration Worksheet" from the *IBM 4684 Point of Sale Terminal: Introduction and Planning Guide*.
4. Be sure to select ACTIVATE NEW CONFIGURATION when you are finished.

M1023

M1023 A KEYBOARD IS CONFIGURED FOR THIS SOCKET.

Explanation: An attempt was made to configure a device for a socket that is already configured for a keyboard.

User Response:

1. Select VIEW NEW CONFIGURATION to determine the keyboard configuration.
2. Select CHANGE DEFAULT CONFIGURATION from MENU-C2.
3. Select DELETE or ADD from MENU-C3/C4 to correct the configuration. See the filled in "Configuration Worksheet" from the *IBM 4684 Point of Sale Terminal: Introduction and Planning Guide*.
4. Be sure to select ACTIVATE NEW CONFIGURATION when you are finished.

M1024

M1024 NO 4684 KEYBOARD CONFIGURED.

Explanation: Configuration was performed, but no keyboard for the 4684 was selected. At least one keyboard must be selected.

User Response:

1. Select CHANGE DEFAULT CONFIGURATION from MENU-C2.
2. Select ADD from MENU-C4 to correct the keyboard configuration. See the filled in "Configuration Worksheet" from the *IBM 4684 Point of Sale Terminal: Introduction and Planning Guide*.

3. Select a keyboard when prompted.
4. Be sure to select ACTIVATE NEW CONFIGURATION when you are finished.

M1025

M1025 A DISPLAY IS CONFIGURED FOR THIS SOCKET.

Explanation: An attempt was made to configure a device for a socket that is already configured for a display.

User Response:

1. Select VIEW NEW CONFIGURATION to determine the display configuration.
2. Select CHANGE DEFAULT CONFIGURATION from MENU-C2.
3. Select DELETE or ADD from MENU-C3/C4 to correct the configuration. See the filled in "Configuration Worksheet" from the *IBM 4684 Point of Sale Terminal: Introduction and Planning Guide*.
4. Be sure to select ACTIVATE NEW CONFIGURATION when you are finished.

M1026

M1026 NO 4683 KEYBOARD CONFIGURED.

Explanation: Configuration was performed, but no keyboard for the 4683 was selected. At least one keyboard must be selected.

User Response:

1. Select CHANGE DEFAULT CONFIGURATION from MENU-C2.
2. Select ADD from MENU-C3 to correct the keyboard configuration. See the filled in "Configuration Worksheet" from the *IBM 4684 Point of Sale Terminal: Introduction and Planning Guide*.
3. Select a keyboard when prompted.
4. Be sure to select ACTIVATE NEW CONFIGURATION when you are finished.

M1030

M1030 WRITE ERROR.

Explanation: A diskette write error was detected when making a backup copy of the Reference Diskette.

User Response: Retry the operation using a different target diskette.

If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M1031

M1031 READ ERROR.

Explanation: A diskette read error was detected when making a backup copy of the Reference Diskette.

User Response: Retry the operation using a different source Reference Diskette.

If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M1032

M1032 NOT ENOUGH MEMORY FOR COPY.

Explanation: The copy program detected that the 4684 does not have enough memory to perform the copy.

User Response: Switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M1033

M1033 DISKETTE ADAPTER FAILED TO RESPOND...

Explanation: A diskette adapter error was detected when making a backup copy of the Reference Diskette.

User Response: Retry the operation.

If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M1034

M1034 SEEK FAILURE.

Explanation: A diskette drive seek error was detected when making a backup copy of the Reference Diskette.

User Response: Retry the operation.

If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M1035

M1035 DISKETTE DRIVE FAILURE.

Explanation: A diskette drive error was detected when making a backup copy of the Reference Diskette.

User Response: Retry the operation.

If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M1036

M1036 BAD CRC.

Explanation: An error was detected when making a backup copy of the Reference Diskette.

User Response: Retry the operation using a different source Reference Diskette and a different target diskette.

If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M1037

M1037 DMA OVERRUN.

Explanation: A diskette adapter error was detected when making a backup copy of the Reference Diskette.

User Response: Switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M1038

M1038 RECORD NOT FOUND.

Explanation: An error was detected when making a backup copy of the Reference Diskette.

User Response: Retry the operation using a different source Reference Diskette and a different target diskette.

If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M1039

M1039 ADDRESS MARK NOT FOUND.

Explanation: An error was detected when making a backup copy of the Reference Diskette.

User Response: Retry the operation using a different source Reference Diskette and a different target diskette.

If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M1040

M1040 INVALID COMMAND.

Explanation: An error was detected when making a backup copy of the Reference Diskette.

User Response: Switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M1041

M1041 UNKNOWN FAILURE.

Explanation: An error was detected when making a backup copy of the Reference Diskette.

User Response: Switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M1042

M1042 FAILURE DURING DISKETTE OPERATION.

Explanation: An error was detected when making a backup copy of the Reference Diskette.

User Response: Switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M1043

M1043 SOURCE DISKETTE PROBLEM. TRY ANOTHER DISKETTE.

Explanation: An error was detected when making a backup copy of the Reference Diskette.

User Response: Retry the operation using a different **source** Reference Diskette.

If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M1044

M1044 TARGET DISKETTE PROBLEM. TRY ANOTHER DISKETTE.

Explanation: An error was detected when making a backup copy of the Reference Diskette.

User Response: Retry the operation using a different *target diskette*.

If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M1045

M1045 INVALID CONFIGURATION FILE.

Explanation: The configuration file (4684CONF) created by backup configuration has invalid data.

User Response: Try using a different Backup Reference Diskette. If you do not have a another Backup Reference Diskette, use the original Reference Diskette to create a one. See Appendix G, "IBM 4684 Configuration and Utility Procedures."

If a different diskette does not solve the problem, reconfigure the terminal. See Appendix G, "IBM 4684 Configuration and Utility Procedures."

M1050

M1050 NO OPTION FILES WERE FOUND.

Explanation: No option files were found when copying an Option Diskette to the Backup Reference Diskette.

User Response: Ensure that you are using the correct Option Diskette and then retry the operation.

If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M1051 **M1051 NO DISKETTE IN DRIVE. INSERT NEW OPTION DISKETTE.**

Explanation: No Option Diskette was in the diskette drive when copying an Option Diskette to the Backup Reference Diskette.

User Response: Insert the new Option Diskette and retry the operation.

If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M1052 **M1052 NO DISKETTE IN DRIVE. INSERT BACKUP REFERENCE DISKETTE.**

Explanation: No Backup Reference Diskette was in the diskette drive when copying an Option Diskette to the Backup Reference Diskette.

User Response: Insert the Backup Reference Diskette and retry the operation.

If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M1053 **M1053 BACKUP REFERENCE DISKETTE IS WRITE PROTECTED. REMOVE THE WRITE PROTECT TAB.**

Explanation: The Backup Reference Diskette was write protected when copying an Option Diskette to the Backup Reference Diskette.

User Response: Slide the write protect tab to the unprotected position and retry the operation. See Figure 2-1.

If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

PICTURE 1

Figure 2-1. Moving the Write Protect Tab on a 3-1/2 Inch Diskette.

M1054 **M1054 NO SPACE ON REFERENCE DISKETTE TO COPY OPTION FILES.**

Explanation: The Backup Reference Diskette does not have room for the option files.

User Response:

1. Create a new Backup Reference Diskette from the original Reference Diskette.
2. Copy the necessary option files to the new Backup Reference Diskette.
3. Run configuration to *activate* the configuration.
4. Write the configuration files to the new Backup Reference Diskette.

M1055 **M1055 ERROR COPYING OPTION FILES. TRY AGAIN OR MAKE A NEW BACKUP REFERENCE DISKETTE.**

Explanation: An error occurred when copying an Option Diskette to the Backup Reference Diskette.

User Response: Create a new Backup Reference Diskette from the original Reference Diskette, and then copy the option files to the new Backup Reference Diskette.

If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M1056 **M1056 NO SPACE ON REFERENCE DISKETTE. MAKE A NEW BACKUP REFERENCE DISKETTE.**

Explanation: The Backup Reference Diskette does not have room for the option files.

User Response:

1. Create a new Backup Reference Diskette from the original Reference Diskette.
2. Copy the necessary option files to the new Backup Reference Diskette.
3. Run configuration to activate the configuration.
4. Write the configuration files to the new Backup Reference Diskette.

M1060 **M1060 NO DISKETTE IN DRIVE. INSERT REFERENCE DISKETTE IN DRIVE.**

Explanation: During BACKUP or RESTORE CONFIGURATION, no diskette was in the diskette drive.

User Response: Put the Backup Reference Diskette in the diskette drive and retry the operation.

If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M1061 **M1061 DISKETTE IS WRITE PROTECTED. REMOVE THE WRITE PROTECT TAB.**

Explanation: The Backup Reference Diskette was write protected.

User Response: Slide the write protect tab to the unprotected position and retry the operation. See Figure 2-1.

If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M1062 **M1062 FAILURE ACCESSING DISKETTE.**

Explanation: A failure was detected when trying to access the diskette.

User Response: Retry the operation.

If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M1063 **M1063 ERROR WHILE READING DESCRIPTION FILE (ADF).**

Explanation: A failure was detected when trying to read a description file (ADF) from the Reference Diskette.

Note: When this message appears during configuration, the configuration process is incomplete and the results are unpredictable.

User Response: Try configuration again. If the same failure occurs, create a new Backup Reference Diskette from the original Reference Diskette and then copy the option files to the new Backup Reference Diskette.

If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M1064 **M1064 ADAPTER CONFLICT FOUND.**

Explanation: Automatic configuration has detected that there is a conflict between installed option adapters in

the 4684. This conflict is because of a ROM address space, RAM address space, or interrupt level conflict.

User Response:

- If you have a video display and an Enhanced A/N Keyboard connected to the 4684, use the OPTIONAL SYSTEM UNIT CONFIGURATION on MENU-C1 to select a non-conflicting value.
- If you have **no** video display connected to the 4684, the store programmer must alter the description file (ADF) to select a non-conflicting value.

M1065

M1065 NO DESCRIPTION FILE (ADF) FOUND FOR AN ADAPTER OR PLANAR.

Explanation: Automatic configuration has detected that there is no description file (ADF) on the Backup Reference Diskette for an installed adapter or the planar. The 4684 Model 300 requires Reference Diskette 3.00 or higher.

Note: When this message appears during configuration, the configuration process is incomplete and the results are unpredictable.

User Response:

- If you have added a device or adapter, use the COPY OPTION DISKETTE utility to copy the option file for the new adapter to the Backup Reference Diskette.
- If you have **not** added a device or adapter, ensure that the Backup Reference Diskette has the option files required for all installed adapters.

If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M1066

M1066 THE FIXED DISK TYPE COULD NOT BE READ FROM THE FIXED DISK.

Explanation: The information on the fixed disk that defines what type it is cannot be read. It is either missing or invalid. This error will occur each time configuration is run until the type number is written to the fixed disk by the FORMAT FIXED DISK procedure.

Note: Formatting the fixed disk will destroy the data stored on the fixed disk. Be sure that the fixed disk is first backed up to save the data.

User Response:

1. Select START CONFIGURATION from MENU-M1.
2. Select CREATE/CHANGE CONFIGURATION from MENU-C1.
3. Select CHANGE 4684 DEFAULT CONFIGURATION from MENU-C2.
4. Select ENTER THE FIXED DISK TYPE from MENU-C4.
 - If the fixed disk type is printed on a label attached to the fixed disk drive, type that number at the keyboard.
 - If no fixed disk type is printed on the label and you have a 30-Megabyte fixed disk, type **33** for the fixed disk type.
5. Return to MENU-C2.
6. Select ACTIVATE NEW CONFIGURATION from MENU-C2 and follow the instructions on the screen.

The 4684 will restart.

When possible, perform the following steps to write the fixed disk type on the fixed disk:
7. Select START TESTS from MENU-M1.
8. Select RUN SYSTEM UNIT TESTS from MENU-T1.
9. Select FORMAT FIXED DISK from MENU-T2.
10. Select PREPARE DRIVE C FOR DOS from MENU-F1.

M1067

M1067 THE FIXED DISK TYPE COULD NOT BE READ FROM THE FIXED DISK OR IT DOES NOT COMPARE WITH THE CONFIGURED TYPE.

Explanation: The fixed disk type on the fixed disk cannot be read from the fixed disk or it does not compare with the fixed disk type configured. This error will occur each time format is attempted until the type numbers agree.

Note: Formatting the fixed disk will destroy the data stored on the fixed disk. Be sure that the fixed disk is first backed up to save the data.

User Response:

1. Select START CONFIGURATION from MENU-M1.
2. Select CREATE/CHANGE CONFIGURATION from MENU-C1.
3. Select CHANGE 4684 DEFAULT CONFIGURATION from MENU-C2.
4. Select ENTER THE FIXED DISK TYPE from MENU-C4.
 - If the fixed disk type is printed on a label attached to the fixed disk drive, type that number at the keyboard.
 - If no fixed disk type is printed on the label and you have a 30-Megabyte fixed disk, type **33** for the fixed disk type.
5. Return to MENU-C2.
6. Select ACTIVATE NEW CONFIGURATION from MENU-C2 and follow the instructions on the screen.

The 4684 will restart.

When possible, perform the following steps to write the fixed disk type on the fixed disk:
7. Select START TESTS from MENU-M1.
8. Select RUN SYSTEM UNIT TESTS from MENU-T1.
9. Select FORMAT FIXED DISK from MENU-T2.
10. Select PREPARE DRIVE C FOR DOS from MENU-F1.

M1068

M1068 THE DISK IS UNREADABLE IN A NECESSARY SYSTEM AREA. IT MAY NOT BE FORMATTED FOR THIS SYSTEM OR IT HAS BECOME UNREADABLE. A FACTORY PREPARATION MAY BE NECESSARY.

Explanation: The format program has detected that the fixed disk is unreadable in a necessary system area. It may not be formatted for this system or it has become unreadable. A factory preparation may be necessary to correct this error. A factory preparation will erase all previously found errors. The fixed disk type written to the disk will then be the same as the fixed disk type that is configured.

User Response: Press **S1 (Esc)** to continue when the error message displays.

- If a factory preparation is desired, answer YES.
- If a factory preparation is **not** desired, answer NO.

M1069

M1069 FIXED DISK CONFIGURATION CHANGED.

Explanation: Automatic configuration has detected that there was a change in the fixed disk configuration.

User Response: No action is required. This message is only to inform the user of a change.

M1070

M1070 UNABLE TO RESTORE. BACKUP WAS NOT PERFORMED FIRST.

Explanation: You attempted to perform RESTORE CONFIGURATION but you did not perform BACKUP CONFIGURATION first. Backup configuration will write the configuration file to a diskette. This file can be retrieved by using the RESTORE CONFIGURATION function.

User Response: Perform BACKUP CONFIGURATION, and then RESTORE CONFIGURATION.

M1080

M1080 REQUIRED VIDEO DISPLAY AND ENHANCED A/N OR ANPOS KEYBOARD ARE NOT PRESENT. USE CREATE/CHANGE CONFIGURATION.

Explanation: The requested procedure requires a video

display and an Enhanced A/N or ANPOS Keyboard. If these are not present, it cannot be performed.

User Response: If you connect a video display and an Enhanced A/N or ANPOS Keyboard to the 4684, use the CREATE/CHANGE CONFIGURATION selection on MENU-C1 to configure them.

M3001

Explanation: The Baseband Network Transmit/Receive Verification test has detected that no Baseband Network Adapter is present.

User Response: Ensure that this 4684 is a Model 111, 131, 161, or 200. Other models do not support the Baseband Network Adapter.

If this 4684 is a Model 111, 131, 161, or 200, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M3002

Explanation: The Baseband Network Transmit/Receive Verification test has detected a failure.

User Response: Ensure that the network is not open between the transmitting and receiving terminals.

If the problem persists, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M3004

Explanation: The Baseband Network Transmit/Receive Verification test has detected that the terminals being tested are not in the correct transmit or receive mode.

User Response: Restart the Transmit/Receive test and ensure that one of the terminals being tested is placed in receive mode and that the other is placed in transmit mode.

M3015

Explanation: The Baseband Network is disconnected or failing.

User Response: Ensure that the wrap and terminator plugs, or the network cables are connected correctly.

If no problem is found, switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M30nn-nn

Explanation: An error was detected during the Baseband Network Adapter test.

Note: In this message, **n** = any number.

User Response: Switch **POWER OFF** and service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

M5610

M5610 DSP480 FONT MISSING PRESS ANY KEY TO CONTINUE.

Explanation: The DSP480 device driver related font file has not been installed.

User Response: If the problem persists, create a new Backup Reference Diskette. See Appendix G, "IBM 4684 Configuration and Utility Procedures" in topic G.0.

2.7 Tnnnn Messages

```
-----+-----  
| These messages are generated when point-of-sale terminal tests are  
| running.  
|  
| Note: On the ANPOS Keyboard (during some procedures) and on the  
| Enhanced Alphanumeric Keyboard, Esc = S1 and Enter = S2.  
|  
| Warning: Switching POWER OFF at a 4684 affects operations at all  
| point-of-sale terminals attached to it.  
|-----+-----
```

```
-----  
T0005            T0005 * TEST MODE * PRESS THE 1 KEY  
  
    Explanation: Test Mode is active (IBM 4683 Model A02  
    Stand-Alone Test Mode).  
  
    User Response: Press the 1 key on the keyboard numeric  
    key pad to print a menu of device tests.  
-----
```

```
-----  
T0006            T0006 TERMINAL IN TEST MODE  
  
    Explanation: The following menu is printed when the 1  
    key is pressed in response to message T0005 (IBM 4683  
    Model A02 Stand-Alone Test Mode).  
  
                  *****  
                  T0006 TERMINAL IN TEST MODE  
  
                  TESTS AVAILABLE FOR ATTACHED DEVICES  
  
                  1 PRINTER TEST  
                  2 DISPLAY TEST  
                  3 SCANNER TEST  
                  4 CASH DRAWER TEST  
                  5 KEYBOARD TEST  
                  6 MAGNETIC STRIP READER  
  
                  SELECT A TEST BY NUMBER  
                  *****  
  
    User Response: Press a number key (1 through 6) to run  
    the test you want.  
-----
```

```
-----  
T0007            T0007 ENTER A TEST NUMBER - 1 THROUGH 6  
  
    Explanation: Test Mode is ready to test one of the  
    devices  
    (IBM 4683 Model A02 Stand-Alone Test Mode).  
  
    User Response: Press a number key (1 through 6) to run  
    the test you want.  
  
    Each device test, with the exception of the keyboard  
    test, returns to this screen after one pass through the  
    test. The keyboard test is stopped by pressing the 0  
    key.  
-----
```

```
-----  
T0010            T0010 ENTER TEST REQUEST  
  
    Explanation: The point-of-sale terminal is in test mode  
    and it is ready for a test request to be entered at the  
    keyboard.  
  
    User Response: Key a valid test request number and press  
    S2 (Enter).  
  
    To end test mode, type 99 and press S2.  
-----
```

```
-----  
T0012            T0012 LOADING TEST..  
  
    Explanation: The requested test is being loaded. It can  
    take up to two minutes for the next message to display.  
-----
```

T0013

T0013 ENTER TEST REQUEST AGAIN

Explanation: The test request number that was entered is not valid.

User Response: Key a valid test request number and press S2 (Enter).

T0014

T0014 LEAVING TEST MODE PROGRAM LOADING

Explanation: 99 S2 was entered to stop test mode.

The following messages display:

1. Message W008
2. The first message displayed by the default application program. It can take up to two minutes for this message to display.

T0015

T0015 S2 = RUN TESTS 0, S2 = BYPASS TESTS

Explanation: The point-of-sale terminal is ready to start Customer Setup (CSU) testing. The tests can be skipped if they have previously been run. For a description of the tests, see "TEST 4230: Point of Sale Terminal Verification (4683/4684)" in topic 4.23.

User Response: To start testing, press S2 (Enter).

To bypass testing, type 0 and press S2.

T0016

T0016 CSU STARTED TO CONTINUE, KEY S2

Explanation: Customer Setup (CSU) mode has started. For a description of the tests, see "TEST 4230: Point of Sale Terminal Verification (4683/4684)" in topic 4.23.

User Response: Press S2 (Enter) to continue.

T0019

T0019 4683 POWERED OFF OR NOT CONNECTED

Explanation: The IBM 4684 cannot communicate with the IBM 4683.

User Response:

1. Ensure that the 4683 is powered ON.
2. If the 4683 is powered ON, switch **POWER OFF**.
3. Examine for damage or a loose connection:
 - Socket 11 on the 4684
 - Socket 11 on the 4683
 - Both ends of cable 11.
4. If the cable, sockets, and connections are OK:
5. Switch power ON again.
6. Observe the 4683 primary display.
 - If the display is blank, follow the *Repair Action* for "Blank Display Symptom" in Chapter 3, "Symptoms."
 - If message U001 is displayed, follow the *User Response* for message U001 in "Unnn Messages" in topic 2.8.
 - If message U002 is displayed, switch **POWER OFF** and service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
 - If you have a different symptom or message, follow the *Repair Action* for the symptom in Chapter 3, "Symptoms" **or** follow the *User Response* for the message in this chapter **OR** in the *IBM 4680 Store System: Messages Guide*.

T0020

T0020 REQUEST NOT VALID, RETRY

Explanation: A test has received a request from the keyboard that is not valid.

User Response: Go to the test procedure for the device you are testing and select a valid request. For a description of the tests, see Chapter 4, "IBM 4680 Operating System Test Procedures" or Chapter 5, "IBM 4684 Reference Diskette Test Procedures."

T0021 T0021 TEST NOT VALID CHECK CONFIGURATION

Explanation: A valid test request was made but the device to be tested is not configured.

User Response: Use the *IBM 4680 Store System: Planning Guide* and the *IBM 4680 Store System: User's Guide* to configure the store system. Rerun the test after configuration is complete.

T0030 T0030 VITAL PRODUCT DATA PROBLEM

Explanation: A problem was detected while attempting to read vital product data.

User Response: Re-enter the vital product data. See "VPD 8010: Entering Vital Product Data" in topic F.2.

If the problem persists, switch **POWER OFF** and service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T0040 T0040 TESTS COMPLETE

Explanation: Customer Setup (CSU) testing is complete on this point-of-sale terminal.

User Response: Proceed to the next point-of-sale terminal you want to test.

T0041 T0041 TESTS COMPLETE PROGRAM LOADING...

Explanation: Customer Setup (CSU) testing is complete on this point-of-sale terminal. The default application program is now loading. It can take up to two minutes for the application program to load.

T0050 T0050 RC=xxxxxxx FROM MAIN PROGRAM

Explanation: A problem has been detected within the operating system.

User Response: Type 0 and press S2 (Enter) to stop the test and then try running the test again.

If the problem persists:

1. Fill in a copy of the "Problem Data Collection Form" in topic B.7. Use keyword MSGT0050.
2. Create a storage dump. See "Requesting a 4683 Storage Dump" in topic B.2.
3. Report this problem to the store programmer and supply the preceding information.

T0098 T0098 FILE OPEN PROBLEM

Explanation: The test program cannot open the message file ADX_SPGM:ADXTSDFM.DAT.

Possible causes for this message:

- The terminal number was zero when test mode was requested.
The terminal number can be zero if:
 - Totals retention is failing.
 - The terminal number has been reset to zero and a new terminal number has not been entered.
- The file has been deleted.

- A disk hardware problem.

User Response: Verify that the terminal number is correct.

If the terminal number is correct:

1. Fill in a copy of the "Problem Data Collection Form" in topic B.7. Use keyword MSGT0098.
2. Report this problem to the store programmer and supply the preceding information.

Programmer Response: Copy the file ADX_SPGM:ADXTSDMF.DAT from the appropriate installation diskette to the ADX_SPGM subdirectory using the COPY utility.

If the problem persists, follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

T0099

T0099 FILE READ PROBLEM

Explanation: The test program cannot read data from the message file ADX_SPGM:ADXTSDMF.DAT.

Possible causes for this message:

- Bad file data
- Disk hardware problem.

User Response:

1. Fill in a copy of the "Problem Data Collection Form" in topic B.7. Use keyword MSGT0099.
2. Report this problem to the store programmer and supply the preceding information.

Programmer Response: Copy the file ADX_SPGM:ADXTSDMF.DAT from the appropriate installation diskette to the ADX_SPGM subdirectory using the COPY utility.

If the problem persists, follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

T0100

T0100 TESTING TOTALS RETENTION...

Explanation: The totals retention test is running.

T0151

T0151 ERROR, BASE UNIT IS FAILING

- or -

T0151 SYSTEM UNIT IS FAILING

Explanation: The totals retention test detected that totals retention is not communicating.

User Response: Switch **POWER OFF** and service the 4683 base unit to exchange the base card or service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T0152

T0152 ERROR, BASE UNIT IS FAILING

Explanation: The test detected a totals retention problem.

User Response: Switch **POWER OFF** and service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T0200

T0200 TESTING STORAGE RETENTION

Explanation: The storage retention test is running.

T0201

T0201 REMOVE POWER, THEN RESTORE POWER

Explanation: Ready to test the capability of the

4683-xx1 to retain the storage contents when ac power is removed.

User Response: Unplug the 4683-xx1 power cord from the receptacle. Wait 10 seconds and plug the cord back in. Press **S2 (Enter)** to continue the test.

T0202 **T0202 STOR RETENTION IS DISABLED**

Explanation: The test has disabled the battery pack. The 4683-xx1 will complete a normal IPL if power is switched OFF and then ON.

User Response: Press **S2 (Enter)** to restore storage retention to normal operation.

T0203 **T0203 PLEASE WAIT...**

Explanation: The storage retention test is running.

User Response: Wait for the next message to display.

T0251 **T0251 ERROR, BASE UNIT IS FAILING**

Explanation: The test could not enable or could not disable the storage retention function.

User Response: Switch **POWER OFF** and service the 4683-xx1 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T1700 **T1700 TESTING CHECKOUT SCANNER**

Explanation: Testing the point-of-sale scanner. If the scanner is a 3687 Checkout Scanner Model 2, the scanner adapter is also being tested.

T1701 **T1701 READ A LABEL WITH SCANNER**

Explanation: The test is ready to read a scanner label. The data that is read from the label is formatted and printed at the customer receipt station.

User Response: Read a label with the scanner and observe the printing at the customer receipt station to verify that the label was read correctly.

T1702 **T1702 READ A LABEL, PRINT UNFORMATTED**

Explanation: The test is ready to read a scanner label. The data that is read from the label is printed at the customer receipt station as it is received from the scanner (unformatted).

User Response: Read a label with the scanner and observe the printing at the customer receipt station to verify that the label was read correctly.

T1751 **T1751 ERROR, REPLACE SCANNER ADAPTER OR
REPLACE CABLE 17 OR SCANNER IS FAILING**

- or -

T1751 SCANNER OR CABLE 17 IS FAILING

Explanation: The Point of Sale Scanner test detected that the scanner is not responding. If the scanner is a 3687 Checkout Scanner Model 2, the scanner adapter is not responding.

User Response:

1. Switch **POWER OFF**.
2. Unplug the scanner power cord.
3. Examine for damage or loose connection:
 - Socket 17
 - Both ends of the scanner cable

- The cable socket in the scanner adapter (3687 Checkout Scanner Model 2 only). See "Cable Sockets and Devices" in topic C.7.
4. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Exchange the scanner adapter and cable (3687 Checkout Scanner Model 2 only). See "3687 Model 2 Scanner Adapter Removal and Replacement" in topic 7.27.
 - b. Service the scanner. See the maintenance documentation for the scanner.
 - c. Exchange the scanner cable (other than 3687 Checkout Scanner Model 2).
 - d. Service the 4683 base unit to exchange the base card or service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T1752

T1752 ERROR, REPLACE SCANNER ADAPTER OR SCANNER IS FAILING

- or -

T1752 SCANNER IS FAILING

Explanation: The Point of Sale Scanner test detected a problem in the scanner. If the scanner is a 3687 Checkout Scanner Model 2, a problem was detected in the scanner or the scanner adapter.

User Response: Switch **POWER OFF**, unplug the scanner power cord, and follow this list to isolate and correct the cause of the problem.

1. Exchange the scanner adapter and cable (3687 Checkout Scanner Model 2 only). See "3687 Model 2 Scanner Adapter Removal and Replacement" in topic 7.27.
2. Service the scanner. See the maintenance documentation for the scanner.
3. Exchange the scanner cable (other than 3687 Checkout Scanner Model 2).
4. Service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T1753

T1753 ERROR, REPLACE SCANNER ADAPTER OR SCANNER IS FAILING

Explanation: The test detected a problem in the point-of-sale scanner. If the scanner is a 3687 Checkout Scanner Model 2, a problem was detected in the Scanner or the scanner adapter.

User Response: Switch **POWER OFF**, unplug the scanner power cord, and follow this list to isolate and correct the cause of the problem.

1. Exchange the scanner adapter and cable (3687 Checkout Scanner Model 2 only). See "3687 Model 2 Scanner Adapter Removal and Replacement" in topic 7.27.
2. Service the scanner. See the maintenance documentation for the scanner.
3. Exchange the scanner cable (other than 3687 Checkout Scanner Model 2).
4. Service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T1754

T1754 ERROR, REPLACE SCANNER ADAPTER OR SCANNER IS FAILING

Explanation: The test detected that the point-of-sale scanner status was incorrect.

User Response: Switch **POWER OFF**, unplug the scanner power cord, and follow this list to isolate and correct the cause of the problem.

1. Exchange the scanner adapter and cable (3687 Checkout Scanner Model 2 only). See "3687 Model 2 Scanner Adapter Removal and Replacement" in topic 7.27.
2. Service the scanner. See the maintenance documentation for the scanner.
3. Exchange the scanner cable (other than 3687 Checkout Scanner Model 2).
4. Service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T1755

T1755 ERROR, REPLACE SCANNER ADAPTER OR SCANNER IS FAILING

- or -

T1755 CHECK LABEL, OR SCANNER IS FAILING

Explanation: The Point of Sale Scanner test did not recognize the data from the scanner when a label was read.

User Response: Switch **POWER OFF**, unplug the scanner power cord, and follow this list to isolate and correct the cause of the problem.

1. Ensure that the label being scanned is valid.
2. Exchange the scanner adapter and cable (3687 Checkout Scanner Model 2 only). See "3687 Model 2 Scanner Adapter Removal and Replacement" in topic 7.27.
3. Service the scanner. See the maintenance documentation for the scanner.
4. Exchange the scanner cable (other than 3687 Checkout Scanner Model 2).
5. Service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T2100

T2100 TESTING SOCKET 21 ADAPTER

- or -

T2100 TESTING SCALE

Explanation:

The Feature Expansion card socket 21 test has started.

- or -

The scale test has started.

T2101

T2101 READ A LABEL WITH IBM 1520-A01

Explanation: The test is ready to read a label with the 1520 Hand-Held Scanner Model A01. The data that is read from the label is formatted and printed at the customer receipt station.

User Response: Read a label with the 1520 Model A01 and observe the printing at the customer receipt station to verify that the label was read correctly.

T2102

T2102 READ A LABEL, PRINT UNFORMATTED

Explanation: The test is ready to read a label with the device attached to socket 21 on the Feature Expansion card(s). The data that is read from the label is printed at the customer receipt station as it is received from the device (unformatted).

User Response: Use the device to read a label and observe the printing at the customer receipt station.

T2103

T2103 SCALE READS ZERO

Explanation: The test is ready to display weight from the scale.

User Response: Place test weights on the scale as required by the scale test procedure.

T2105

T2105 SCALE MOVING

Explanation: This message is displayed while the scale is settling. It is replaced by a display of the weight. If this message remains for more than 30 seconds, the scale is failing.

T2151

T2151 ERROR, REPLACE FEATURE CARD 2A OR BASE UNIT IS FAILING

Explanation: The test detected that the Feature Expansion card in location 2A is not communicating.

User Response: Switch **POWER OFF**, unplug the device power cord if present, and follow this list to isolate and correct the cause of the problem.

1. Exchange the Feature Expansion card in location 2A. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
2. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T2152

T2152 ERROR, REPLACE FEATURE CARD 2A OR CABLE 21

Explanation: The test detected a problem in the Feature Expansion card in location 2A.

User Response: Switch **POWER OFF**, unplug the device power cord if present, and follow this list to isolate and correct the cause of the problem.

1. Exchange the Feature Expansion card in location 2A. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
2. Exchange the cable attached to socket 21 on the Feature Expansion card.
3. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T2154

T2154 ERROR, VERIFY THAT LABEL IS GOOD KEY IN 1, S2 TO READ LABEL AGAIN

Explanation: The test detected an error when the OCR label was read.

User Response: Type 1 and press **S2 (Enter)** and try to read the labels several more times. If the problem persists:

1. Type **0** and press **S2** to end the test.
2. Verify that the labels are valid for the optical character reader (OCR).
3. Verify that the labels are in good condition.
 - If the labels are good, switch **POWER OFF**, unplug the OCR power cord (if present), and follow this list to isolate and correct the cause of the problem.
 - a. Exchange the OCR. See "Optical Character Reader Removal and Replacement (4683 Only)" in topic 7.14.
 - b. Exchange the OCR cable attached to socket 21 on the Feature Expansion card.
 - c. Exchange the Feature Expansion card for the OCR. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
 - If the labels are **not** good, replace them with correct, good labels for the OCR.

T2155

T2155 ERROR, VERIFY THAT LABEL IS GOOD
KEY IN 1, S2 TO READ LABEL AGAIN

Explanation: The test detected an error when the scanner label was read.

User Response: Type 1 and press S2 (Enter) and try to read the labels several more times. If the problem persists:

1. Type 0 and press S2 to end the test.
2. Verify that the labels are valid for the 1520 Model A01.
3. Verify that the labels are in good condition.
 - If the labels are good, switch **POWER OFF**, unplug the 1520 Model A01 console power cord, and follow this list to isolate and correct the cause of the problem.
 - a. Exchange the 1520 Model A01. See "1520 Hand-Held Scanner Model A01 Removal and Replacement (4683 Only)" in topic 7.25.
 - b. Exchange the 1520 Model A01 output cable attached to socket 21 on the Feature Expansion card.
 - c. Exchange the Feature Expansion card for the 1520 Model A01. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
 - If the labels are **not** good, replace them with correct, good labels for the 1520 Model A01.

T2156

T2156 ERROR, REPLACE 1520 OR CABLE 21 OR
THE FEATURE CARD ATTACHED TO CABLE 21

Explanation: The A01 test detected that the 1520 Hand-Held Scanner Model A01 is not responding.

User Response: Switch **POWER OFF**, unplug the 1520 Model A01 console power cord, and follow this list to isolate and correct the cause of the problem.

1. Exchange the 1520 Model A01. See "1520 Hand-Held Scanner Model A01 Removal and Replacement (4683 Only)" in topic 7.25.
2. Exchange the 1520 Model A01 output cable attached to socket 21 on the Feature Expansion card.
3. Exchange the Feature Expansion card for the 1520 Model A01. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.

T2157

T2157 ERROR, REPLACE SCALE OR SCALE CABLE

Explanation: The data received from the scale is not numeric (0-9) or the adapter was unable to verify the weight with a subsequent read and compare.

User Response: Switch **POWER OFF**, unplug the scale power cord, and follow this list to isolate and correct the cause of the problem.

1. Exchange the scale. See "Scale Removal and Replacement (4683 Only)" in topic 7.19.
2. Exchange the scale cable.

T2158

T2158 PERFORM THE SCALE ZERO PROCEDURE FOR THE ATTACHED
SCALE

Explanation: The scale must read zero before the test will continue. This prevents erroneous weights from a scale that is not zeroed.

User Response: Perform the scale zero procedure.

T2159

T2159 SCALE POWERED OFF OR NOT CONNECTED

Explanation: This message displays when the scale cable

is disconnected from the scale. Some scales produce this message when they are powered-OFF.

User Response: Connect the cable to the scale or switch power ON at the scale.

T2161 **T2161 ERROR, REPLACE FEATURE CARD 2B OR BASE UNIT IS FAILING**

Explanation: The test detected that the Feature Expansion card in location 2B is not communicating.

User Response: Switch **POWER OFF**, unplug the device power cord, and follow this list to isolate and correct the cause of the problem.

1. Exchange the Feature Expansion card in location 2B. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
2. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T2162 **T2162 ERROR, REPLACE FEATURE CARD 2B OR CABLE 21**

Explanation: The test detected a problem in the Feature Expansion card in location 2B.

User Response:

- If the device is **not** powered-ON, switch power ON to correct the cause of the problem.
- If the device is powered-ON, switch **POWER OFF**, unplug the device power cord, and follow this list to isolate and correct the cause of the problem.
 1. Exchange the Feature Expansion card in location 2B. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
 2. Exchange the cable attached to socket 21 on the Feature Expansion card.
 3. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T2171 **T2171 ERROR, SCANNER IS FAILING**

Explanation: The scanner is not responding for the scale.

User Response: Service the scanner. See the maintenance documentation for the scanner.

T2172 **T2172 ERROR, SCALE IS FAILING**

Explanation: The test detected a scale error.

User Response: Service the scanner/scale. See the maintenance documentation for the scanner/scale.

T2300 **T2300 FEATURE CARD SOCKETS 23 - 25 TEST**

Explanation: The Feature Expansion card socket 23 and 25 test has started.

T2301 **T2301 FEATURE CARD 2A TESTING, WAIT**

Explanation: Testing the Feature Expansion card in location 2A.

T2302 **T2302 DISCONNECT 2A CABLE 23 FROM DEVICE
PUT TEST PLUG "RS" ON CABLE 23, KEY S2**

Explanation: The test is waiting for the RS test plug to be put on the end of cable 23 attached to the Feature Expansion card in location 2A.

User Response: Disconnect the device attached to cable 23 on the Feature Expansion card in location 2A. Attach the RS test plug (IBM P/N 6165746) to the end of the cable and then press **S2 (Enter)**.

T2304 T2304 2A-CABLE 23 TESTING, WAIT

Explanation: Testing cable 23 attached to the Feature Expansion card in location 2A.

T2305 T2305 REMOVE TEST PLUG FROM CABLE AND RECONNECT DEVICE TO CABLE, KEY S2

Explanation: The test is waiting for the test plug to be removed from the cable.

User Response: Remove the test plug from the cable, reconnect the cable to the device, and then press **S2 (Enter)**.

T2307 T2307 DISCONNECT 2B CABLE 23 FROM DEVICE PUT TEST PLUG "RS" ON CABLE 23, KEY S2

Explanation: The test is waiting for the RS test plug to be put on the end of cable 23 attached to the Feature Expansion card in location 2B.

User Response: Disconnect the device attached to cable 23 on the Feature Expansion card in location 2B. Attach the RS test plug (IBM P/N 6165746) to the end of the cable and then press **S2 (Enter)**.

T2309 T2309 2B-CABLE 23 TESTING, WAIT

Explanation: Testing cable 23 attached to the Feature Expansion card in location 2B.

T2310 T2310 FEATURE CARD 2B TESTING, WAIT

Explanation: Testing the Feature Expansion card in location 2B.

T2311 T2311 ERROR, IS TEST PLUG "RS" ON CABLE 23? YES=S2 NO=3, S2

Explanation: The test detected an error while testing the Feature Expansion card and cable.

User Response: Verify that the test plug **RS** is connected to cable 23.

- If it is, press **S2 (Enter)**.
- If it is **not**, type **3** and press **S2**.

T2313 T2313 TEST 2A CABLE 23? YES=S2 NO=3, S2

Explanation: Ready to test the Feature Expansion card in location 2A and cable 23.

User Response:

- If you want to test the Feature Expansion card in location 2A and cable 23, press **S2 (Enter)**.
- If you *do not* want to test the Feature Expansion card in location 2A and cable 23, type **3** and press **S2**.

T2314 T2314 TEST CARD 2A? YES=S2 NO=3, S2

Explanation: Ready to test the Feature Expansion card in location 2A.

User Response:

- If you want to test the Feature Expansion card in location 2A, press **S2 (Enter)**.
- If you do not want to test the Feature Expansion card in location 2A, type **3** and press **S2**.

T2315 **T2315 TEST CARD 2B? YES=S2 NO=3, S2**

Explanation: Ready to test the Feature Expansion card in location 2B.

User Response:

- If you want to test the Feature Expansion card in location 2B, press **S2 (Enter)**.
- If you do not want to test the Feature Expansion card in location 2B, type **3** and press **S2**.

T2318 **T2318 FEATURE CARD TEST COMPLETE**

Explanation: The Feature Expansion card socket 23 and 25 test is complete.

T2319 **T2319 TEST 2B CABLE 23? YES=S2 NO=3, S2**

Explanation: Ready to test the Feature Expansion card in location 2B and cable 23.

User Response:

- If you want to test the Feature Expansion card in location 2B and cable 23, press **S2 (Enter)**.
- If you do not want to test the Feature Expansion card in location 2B and cable 23, type **3** and press **S2**.

T2320 **T2320 DISCONNECT 2A CABLE 23 FROM DEVICE
PUT TEST PLUG "RS" ON CABLE 23, KEY S2**

Explanation: The test is waiting for the RS test plug to be put on the end of cable 23 attached to the Feature Expansion card in location 2A.

User Response: Disconnect the device attached to cable 23 on the Feature Expansion card in location 2A. Attach the RS test plug (IBM P/N 6165746) to the end of the cable and then press **S2 (Enter)**.

T2322 **T2322 DISCONNECT 2B CABLE 23 FROM DEVICE
PUT TEST PLUG "RS" ON CABLE 23, KEY S2**

Explanation: The test is waiting for the RS test plug to be put on the end of cable 23 attached to the Feature Expansion card in location 2B.

User Response: Disconnect the device attached to cable 23 on the Feature Expansion card in location 2B. Attach the RS test plug (IBM P/N 6165746) to the end of the cable and then press **S2 (Enter)**.

T2351 **T2351 ERROR, REPLACE FEATURE CARD 2A OR BASE UNIT IS FAILING**

Explanation: The test for 4683 Feature Expansion Card 2A has detected an error or the Feature Expansion Card is not communicating.

User Response: Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange the Feature Expansion card in location 2A. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
2. Service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T2353

T2353 ERROR, REPLACE FEATURE CARD 2A OR BASE UNIT IS FAILING

Explanation: The test detected a problem in the Feature Expansion card in location 2A.

User Response: Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange the Feature Expansion card in location 2A. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
2. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T2355

T2355 ERROR, REPLACE CABLE 23 OR FEATURE CARD 2A

- or -

T2355 ERROR, REPLACE CABLE OR FEATURE CARD

Explanation:

4680 Operating System - The 4683 Feature Expansion Card test detected a problem when testing the cable attached to socket 23 on the Feature Expansion card in location 2A.

4684 Reference Diskette - The 4683 Feature Expansion Card test detected a problem when testing the cable attached to socket 23 on the Feature Expansion card.

User Response:

1. Switch **POWER OFF**.
2. Unplug the power cord of the device attached to socket 23.
3. Verify that you are using the correct test plug for this test.
4. If you are using the correct test plug, examine for damage or loose connection:
 - Both ends of cable 23 attached to the Feature Expansion card
 - Socket 23 on the Feature Expansion card. See "Cable Sockets and Devices" in topic C.7.
5. If the cable, socket, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Exchange the cable connected to socket 23.
 - b. Exchange the Feature Expansion card. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.

T2361

T2361 ERROR, REPLACE FEATURE CARD 2B OR BASE UNIT IS FAILING

Explanation: The test for 4683 Feature Expansion Card 2B has detected an error or the Feature Expansion Card is not communicating.

User Response: Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange the Feature Expansion card in location 2B. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
2. Service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T2363

T2363 ERROR, REPLACE FEATURE CARD 2B OR BASE UNIT IS FAILING

Explanation: The test detected a problem in the Feature Expansion card in location 2B.

User Response: Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange the Feature Expansion card in location 2B. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
2. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T2365

T2365 ERROR, REPLACE CABLE 23 OR FEATURE CARD 2B

Explanation: The test detected a problem when testing the cable attached to socket 23 on the Feature Expansion card in location 2B.

User Response:

1. Switch **POWER OFF**.
2. Unplug the power cord of the device attached to socket 23.
3. Verify that you are using the correct test plug for this test.
4. If you are using the correct test plug, examine for damage or loose connection:
 - Both ends of cable 23 attached to the Feature Expansion card in location 2B
 - Socket 23 on the Feature Expansion card in location 2B. See "Cable Sockets and Devices" in topic C.7.
5. If the cable, socket, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Exchange the cable connected to socket 23.
 - b. Exchange the Feature Expansion card in location 2B. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.

T2366

T2366 ERROR, REPLACE CABLE 23 OR FEATURE CARD 2B

Explanation: The test detected a problem when testing the cable attached to socket 23 on the Feature Expansion card in location 2B.

User Response:

1. Switch **POWER OFF**.
2. Unplug the power cord of the device attached to socket 23.
3. Verify that you are using the correct test plug for this test.
4. If you are using the correct test plug, examine for damage or loose connection:
 - Both ends of cable 23 attached to the Feature Expansion card in location 2B
 - Socket 23 on the Feature Expansion card in location 2B. See "Cable Sockets and Devices" in topic C.7.
5. If the cable, socket, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Exchange the cable connected to socket 23.
 - b. Exchange the Feature Expansion card in location 2B. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.

T2502

**T2502 DISCONNECT 2A CABLE 25 FROM DEVICE
PUT TEST PLUG "RS" ON CABLE 25, KEY S2**

Explanation: The test is waiting for the RS test plug to be put on the end of cable 25 attached to the Feature Expansion card in location 2A.

User Response: Disconnect the device attached to cable 25 on the Feature Expansion card in location 2A. Attach the RS test plug (IBM P/N 6165746) to the end of the cable and then press **S2 (Enter)**.

T2503

T2503 DISCONNECT 2A CABLE 25 FROM DEVICE
PUT TEST PLUG "CL" ON CABLE 25, KEY S2

Explanation: The test is waiting for the CL test plug to be put on the end of cable 25 attached to the Feature Expansion card in location 2A.

User Response: Disconnect the device attached to cable 25 on the Feature Expansion card in location 2A. Attach the CL test plug (IBM P/N 6165745) to the end of the cable and then press **S2 (Enter)**.

T2504

T2504 2A-CABLE 25 TESTING, WAIT

Explanation: Testing cable 25 attached to the Feature Expansion card in location 2A.

T2505

T2505 REMOVE TEST PLUG FROM CABLE AND
RECONNECT DEVICE TO CABLE, KEY S2

User Response: Remove the test plug from the cable, reconnect the cable to the device, and then press **S2 (Enter)**.

T2507

T2507 DISCONNECT 2B CABLE 25 FROM DEVICE
PUT TEST PLUG "RS" ON CABLE 25, KEY S2

Explanation: The test is waiting for the RS test plug to be put on the end of cable 25 attached to the Feature Expansion card in location 2B.

User Response: Disconnect the device attached to cable 25 on the Feature Expansion card in location 2B. Attach the RS test plug (IBM P/N 6165746) to the end of the cable and then press **S2 (Enter)**.

T2508

T2508 DISCONNECT 2B CABLE 25 FROM DEVICE
PUT TEST PLUG "CL" ON CABLE 25, KEY S2

Explanation: The test is waiting for the CL test plug to be put on the end of cable 25 attached to the Feature Expansion card in location 2B.

User Response: Disconnect the device attached to cable 25 on the Feature Expansion card in location 2B. Attach the CL test plug (IBM P/N 6165745) to the end of the cable and then press **S2 (Enter)**.

T2509

T2509 2B-CABLE 25 TESTING, WAIT

Explanation: Testing cable 25 attached to the Feature Expansion card in location 2B.

T2510

T2510 ERROR, IS TEST PLUG "RS"
ON CABLE 25? YES=S2 NO=3, S2

Explanation: The test detected an error while testing the Feature Expansion card and cable.

User Response: Verify that the test plug **RS** is connected to cable 25.

- If it is, press **S2 (Enter)**.
- If it is **not**, type 3 and press **S2**.

T2512

T2512 TEST 2A CABLE 25? YES=S2 NO=3, S2

Explanation: Ready to test the Feature Expansion card in location 2A and cable 25.

User Response:

- If you want to test the Feature Expansion card in location 2A and cable 25, press **S2 (Enter)**.

- If you do not want to test the Feature Expansion card in location 2A and cable 25, type 3 and press S2.

T2513

T2513 TEST 2B CABLE 25? YES=S2 NO=3, S2

Explanation: Ready to test the Feature Expansion card in location 2B and cable 25.

User Response:

- If you want to test the Feature Expansion card in location 2B and cable 25, press S2 (Enter).
- If you do not want to test the Feature Expansion card in location 2B and cable 25, type 3 and press S2.

T2514

T2514 DISCONNECT 2A CABLE 25 FROM DEVICE
PUT TEST PLUG "RS" ON CABLE 25, KEY S2

Explanation: The test is waiting for the RS test plug to be put on the end of cable 25 attached to the Feature Expansion card in location 2A.

User Response: Disconnect the device attached to cable 25 on the Feature Expansion card in location 2A. Attach the RS test plug (IBM P/N 6165746) to the end of the cable and then press S2 (Enter).

T2516

T2516 DISCONNECT 2A CABLE 25 FROM DEVICE
PUT TEST PLUG "CL" ON CABLE 25, KEY S2

Explanation: The test is waiting for the CL test plug to be put on the end of cable 25 attached to the Feature Expansion card in location 2A.

User Response: Disconnect the device attached to cable 25 on the Feature Expansion card in location 2A. Attach the CL test plug (IBM P/N 6165745) to the end of the cable and then press S2 (Enter).

T2518

T2518 DISCONNECT 2B CABLE 25 FROM DEVICE
PUT TEST PLUG "RS" ON CABLE 25, KEY S2

Explanation: The test is waiting for the RS test plug to be put on the end of cable 25 attached to the Feature Expansion card in location 2B.

User Response: Disconnect the device attached to cable 25 on the Feature Expansion card in location 2B. Attach the RS test plug (IBM P/N 6165746) to the end of the cable and then press S2 (Enter).

T2519

T2519 DISCONNECT 2B CABLE 25 FROM DEVICE
PUT TEST PLUG "CL" ON CABLE 25, KEY S2

Explanation: The test is waiting for the CL test plug to be put on the end of cable 25 attached to the Feature Expansion card in location 2B.

User Response: Disconnect the device attached to cable 25 on the Feature Expansion card in location 2B. Attach the CL test plug (IBM P/N 6165745) to the end of the cable and then press S2 (Enter).

T2555

T2555 ERROR, REPLACE CABLE 25 OR FEATURE CARD 2A

Explanation: The test detected a problem when testing the cable attached to socket 25 on the Feature Expansion card in location 2A.

User Response:

1. Switch POWER OFF.
2. Unplug the power cord of the device attached to socket 25.
3. Verify that you are using the correct test plug for this test.

4. If you are using the correct test plug, examine for damage or loose connection:
 - Both ends of cable 25 attached to the Feature Expansion card in location 2A
 - Socket 25 on the Feature Expansion card in location 2A. See "Cable Sockets and Devices" in topic C.7.
5. If the cable, socket, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Exchange the cable connected to socket 25.
 - b. Exchange the Feature Expansion card in location 2A. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.

T2565

T2565 ERROR, REPLACE CABLE 25 OR FEATURE CARD 2B

Explanation: The test detected a problem when testing the cable attached to socket 25 on the Feature Expansion card in location 2B.

User Response:

1. Switch **POWER OFF**.
2. Unplug the power cord of the device attached to socket 25.
3. Verify that you are using the correct test plug for this test.
4. If you are using the correct test plug, examine for damage or loose connection:
 - Both ends of cable 25 attached to the Feature Expansion card in location 2B
 - Socket 25 on the Feature Expansion card in location 2B. See "Cable Sockets and Devices" in topic C.7.
5. If the cable, socket, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Exchange the cable connected to socket 25.
 - b. Exchange the Feature Expansion card in location 2B. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.

T2600

T2600 TESTING WAND FEATURE

Explanation: The magnetic wand test has started.

T2601

T2601 READ A LABEL WITH MAGNETIC WAND

Explanation: The test is ready to read a label with the magnetic wand. Each time a label is read correctly, message T2603 displays and the keyboard beeps. The label data can be printed in unformatted form by typing 5 and pressing S2).

User Response: Observe the display or listen for the beep to verify that the label reads OK.

T2602

T2602 READ A LABEL, PRINT UNFORMATTED

Explanation: The test is ready to read a label with the magnetic wand. Each time a label is read correctly, message T2603 displays. The label data is printed at the printer customer receipt station.

User Response: Read a label with the magnetic wand.

T2603

T2603 READ OK, READY TO READ AGAIN

Explanation: The label was read correctly by the magnetic wand. The keyboard beeps when this message is displayed.

User Response: Read another label with the magnetic wand.

To end the test, type 0 and press S2 (Enter).

T2651

T2651 ERROR, REPLACE FEATURE CARD 2A OR BASE UNIT IS FAILING

Explanation: The test detected that the Feature Expansion card in location 2A is not communicating. The device being tested is connected to socket 26.

User Response: Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange the Feature Expansion card in location 2A. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
2. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T2652

T2652 ERROR, REPLACE FEATURE CARD 2A

Explanation: The test detected a command response problem from the Feature Expansion card in location 2A.

User Response: Switch **POWER OFF** and exchange the Feature Expansion card in location 2A. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.

T2655

T2655 KEY 1, S2 AND READ AGAIN OR REPLACE LABEL OR MAGNETIC WAND

Explanation: The magnetic wand read the label but detected an error in the label data.

User Response: Type 1 and press **S2 (Enter)** to restart the test. Ensure that a good label is being used. Read the label again with the magnetic wand.

If the problem persists, switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange the wand and cable assembly. See "Magnetic Wand Removal and Replacement (4683 Only)" in topic 7.12.
2. Exchange the Feature Expansion card for the magnetic wand. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.

T2661

T2661 ERROR, REPLACE FEATURE CARD 2B OR BASE UNIT IS FAILING

Explanation: The test detected that the Feature Expansion card in location 2B is not communicating. The device being tested is connected to socket 26.

User Response: Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange the Feature Expansion card in location 2B. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
2. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T2662

T2662 ERROR, REPLACE FEATURE CARD 2B

Explanation: The test detected a command response problem from the Feature Expansion card in location 2B.

User Response: Switch **POWER OFF** and exchange the Feature Expansion card in location 2B. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.

T2900

T2900 START COIN EXERCISER

Explanation: The coin dispenser test has started.

T2901 **T2901 ENTER AMOUNT TO DISPENSE 01-9999**

Explanation: The test is waiting for the amount to be dispensed.

User Response: Key an amount that is valid for the coin dispenser. The test accepts any number between 01 and 9999.

T2903 **T2903 AMOUNT ENTERED NOT VALID**

Explanation: The test accepts numbers from 01 through 9999.

User Response: Key a valid amount.

T2951 **T2951 ERROR, REPLACE FEATURE CARD 2A OR BASE UNIT IS FAILING**

Explanation: The test detected that the Feature Expansion card in location 2A is not communicating. The device being tested is connected to socket 29.

User Response: Switch **POWER OFF**, unplug the coin dispenser power cord, and follow this list to isolate and correct the cause of the problem.

1. Exchange the Feature Expansion card in location 2A. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
2. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T2952 **T2952 ERROR, REPLACE FEATURE CARD 2A**

Explanation: The test detected a command response problem from the Feature Expansion card in location 2A.

User Response: Switch **POWER OFF**, unplug the coin dispenser power cord, and exchange the Feature Expansion card in location 2A. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.

T2953 **T2953 DATA PROBLEM FOUND**

Explanation: The test detected an error in the coin dispenser data.

User Response: Switch **POWER OFF**, unplug the coin dispenser power cord, and exchange the Feature Expansion card in location 2A. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.

T2961 **T2961 ERROR, REPLACE FEATURE CARD 2B OR BASE UNIT IS FAILING**

Explanation: The test detected that the Feature Expansion card in location 2B is not communicating. The device being tested is connected to socket 29.

User Response: Switch **POWER OFF**, unplug the coin dispenser power cord, and follow this list to isolate and correct the cause of the problem.

1. Exchange the Feature Expansion card in location 2B. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
2. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T2962

T2962 ERROR, REPLACE FEATURE CARD 2B

Explanation: The test detected a command response problem from the Feature Expansion card in location 2B.

User Response: Switch **POWER OFF**, unplug the coin dispenser power cord, and exchange the Feature Expansion card in location 2B. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.

T2963

T2963 DATA PROBLEM FOUND

Explanation: The test detected an error in the coin dispenser data.

User Response: Switch **POWER OFF**, unplug the coin dispenser power cord, and exchange the Feature Expansion card in location 2B. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.

T3100

T3100 CD-A IS CLOSED CD-B IS CLOSED

Explanation: The test detected that cash drawer A and cash drawer B are closed. To protect the contents of the cash drawer, one of the following conditions must be met before the test will automatically open cash drawer A.

- The manager keylock must be in the on position.
- Cash drawer A must be manually opened with the cash drawer key.

T3101

T3101 CD-A IS CLOSED CD-B IS OPEN

Explanation: The test detected that cash drawer A is closed and cash drawer B is open.

T3102

T3102 CD-A IS CLOSED CD-B NOT FOUND

Explanation: The test detected that cash drawer A is closed and the test did not find cash drawer B.

T3110

T3110 CD-A IS OPEN CD-B CLOSED

Explanation: The test detected that cash drawer A is open and cash drawer B is closed.

T3111

T3111 CD-A IS OPEN CD-B OPEN

Explanation: The test detected that cash drawer A and cash drawer B are open.

T3112

T3112 CD-A IS OPEN CD-B NOT FOUND

Explanation: The test detected that cash drawer A is open and the test did not find cash drawer B.

T3120

T3120 CD-A NOT FOUND CD-B CLOSED

Explanation: The test did not find cash drawer A and the test detected that cash drawer B is closed.

T3121

T3121 CD-A NOT FOUND CD-B OPEN

Explanation: The test did not find cash drawer A and the test detected that cash drawer B is open.

T3122

T3122 CD-A NOT FOUND CD-B NOT FOUND

Explanation: The test did not find cash drawer A or cash drawer B.

T3130

T3130 KEY 11 OR 22 THEN S2

Explanation: The test is awaiting a response from the user.

User Response: Type **11** (cash drawer A) or **22** (cash drawer B) and then press **S2 (Enter)**.

T3131 **T3131 TURN MGR KEY THEN 11, S2**

Explanation: The test is awaiting a response from the user.

User Response: Type **11** and press **S2 (Enter)**.

T3132 **T3132 TURN MGR KEY THEN 22, S2**

Explanation: The test is awaiting a response from the user.

User Response: Type **22** and press **S2 (Enter)**.

T3140 **T3140 CASH DRWR TEST TURN MANAGER KEY ON**

Explanation: The manager keylock must be turned ON (counterclockwise) before the cash drawer test will start (IBM 4683 Model A02 Stand-Alone Test Mode).

User Response: Turn the manager keylock on the keyboard all the way counterclockwise. The cash drawer test will continue.

T3141 **T3141 CD 1 IS CLOSED PRESS 1 TO OPEN**

Explanation: The cash drawer test has detected that drawer 1 is CLOSED (IBM 4683 Model A02 Stand-Alone Test Mode).

User Response:

1. Check the status of cash drawer 1.
 - If the drawer is CLOSED, press the 1 key to open it. If it does not open, continue at step 2.
 - If the drawer is **not** CLOSED, continue at step 2.
2. Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.
 - a. Exchange or service the cash drawer. See "Cash Drawer Removal and Replacement" in topic 7.2 **or** for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
 - b. Exchange the cash drawer cable.
 - c. Service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T3142 **T3142 CD 2 IS CLOSED PRESS 2 TO OPEN**

Explanation: The cash drawer test has detected that drawer 2 is CLOSED (IBM 4683 Model A02 Stand-Alone Test Mode).

User Response:

1. Check the status of cash drawer 2.
 - If the drawer is CLOSED, press the 2 key to open it. If it does not open, continue at step 2.
 - If the drawer is **not** CLOSED, continue at step 2.
2. Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.
 - a. Exchange or service the cash drawer. See "Cash Drawer Removal and Replacement" in topic 7.2 **or** for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
 - b. Exchange the cash drawer cable.
 - c. Service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T3143

T3143 CD 1 IS OPEN CLOSE CD 1

Explanation: The cash drawer test has detected that drawer 1 is OPEN (IBM 4683 Model A02 Stand-Alone Test Mode).

User Response:

1. Check the status of cash drawer 1.
 - If the drawer is OPEN, close it. If it does not stay closed, continue at step 2.
 - If the drawer is **not** OPEN, continue at step 2.
2. Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.
 - a. Exchange or service the cash drawer. See "Cash Drawer Removal and Replacement" in topic 7.2 **or** for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
 - b. Exchange the cash drawer cable.
 - c. Service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T3144

T3144 CD 2 IS OPEN CLOSE CD 2

Explanation: The cash drawer test has detected that drawer 2 is OPEN (IBM 4683 Model A02 Stand-Alone Test Mode).

User Response:

1. Check the status of cash drawer 2.
 - If the drawer is OPEN, close it. If it does not stay closed, continue at step 2.
 - If the drawer is **not** OPEN, continue at step 2.
2. Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.
 - a. Exchange or service the cash drawer. See "Cash Drawer Removal and Replacement" in topic 7.2 **or** for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
 - b. Exchange the cash drawer cable.
 - c. Service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T3151

T3151 ERROR, BASE UNIT IS FAILING

- or -

T3151 CASH DRAWER, OR SYSTEM UNIT IS FAILING

Explanation:

4680 Operating System - The cash drawer test detected that the cash drawer **A** adapter is not communicating.

4684 Reference Diskette - The cash drawer test detected that the cash drawer adapter is not communicating.

User Response:

4680 Operating System - Service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

4684 Reference Diskette -

1. Switch **POWER OFF** at the failing point-of-sale terminal.
2. Examine for damage or loose connection:
 - Sockets 3A and 3B

- Both ends of the cash drawer cable(s)
 - The cable socket in the cash drawer(s).
3. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
- a. Service the 4683 base unit to exchange the base card or service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
 - b. Exchange or service the failing cash drawer. See "Cash Drawer Removal and Replacement" in topic 7.2 **or** for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
 - c. Exchange the failing cash drawer cable.

T3152

T3152 ERROR, BASE UNIT IS FAILING

- or -

T3152 SYSTEM UNIT IS FAILING

Explanation:

4680 Operating System - The cash drawer test detected a cash drawer **A** command response problem.

4684 Reference Diskette - The cash drawer test detected a failure.

User Response: Switch **POWER OFF** and service the 4683 base unit to exchange the base card or service the 4684 system unit to exchange the system board. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T3153

T3153 CASH DRAWER 3A IS NOT CONNECTED

- or -

T3153 CASH DRAWER(S) NOT OPENED OR MANAGER KEYLOCK NOT ACTIVATED

Explanation:

4680 Operating System - The test detected that cash drawer **A** is not connected to the point-of-sale terminal.

4684 Reference Diskette - The cash drawer test requires that the cash drawer(s) to be tested are opened with a key or that the manager keylock be activated before continuing the test.

User Response:

4680 Operating System -

- 1. Switch **POWER OFF**.
- 2. Examine for damage or loose connection:
 - Socket 3A
 - Both ends of the cash drawer cable
 - The cable socket in cash drawer A. See "Cable Sockets and Devices" in topic C.7.
- 3. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Service cash drawer A. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
 - b. Exchange the cash drawer cable.
 - c. Service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

4684 Reference Diskette - Press **S1 (Esc)** to restart the test and follow the instructions that are displayed.

If the problem persists, follow this list to isolate and correct the cause of the problem.

1. Service the failing cash drawer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
2. Service the 4683 base unit to exchange the base card or service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
3. Exchange the cable on the failing cash drawer.

T3161 **T3161 ERROR, BASE UNIT IS FAILING**

Explanation: The test detected that the cash drawer B adapter is not communicating.

User Response: Switch **POWER OFF** and service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T3162 **T3162 ERROR, BASE UNIT IS FAILING**

Explanation: The test detected a cash drawer B command response problem.

User Response: Switch **POWER OFF** and service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T3163 **T3163 CASH DRAWER 3B IS NOT CONNECTED**

Explanation: The test detected that cash drawer B is not connected to the point-of-sale terminal.

User Response:

1. Switch **POWER OFF**.
2. Examine for damage or loose connection:
 - Socket 3B
 - Both ends of the cash drawer cable
 - The cable socket in cash drawer B. See "Cable Sockets and Devices" in topic C.7.
3. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Service cash drawer B. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
 - b. Exchange the cash drawer cable.
 - c. Service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T3164 **T3164 CASH DRAWER 3B IS NOT CONFIGURED**

Explanation: The test detected that cash drawer B is not configured.

User Response: Use the *IBM 4680 Store System: Planning Guide* and the *IBM 4680 Store System: User's Guide* to configure the store system for cash drawer B.

T3170 **T3170 NO CASH DRAWER PRESS THE 0 KEY**

Explanation: The cash drawer test was selected, but no cash drawers responded when Test Mode was entered (IBM 4683 Model A02 Stand-Alone Test Mode).

User Response:

1. Switch **POWER OFF**.
2. Ensure that the cash drawer(s) is attached to the 4683 base unit.

3. Examine for damage or loose connection:
 - Sockets 3A and 3B
 - Both ends of the cash drawer cable(s)
 - The cable socket(s) on the cash drawer(s).
4. If no problem was found and corrected, follow this list to isolate and correct the cause of the problem.
 - a. Service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
 - b. Service the failing cash drawer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*. See "Cash Drawer Removal and Replacement" in topic 7.2.
 - c. Exchange the cable on the failing cash drawer.

T3400

T3400 TESTING REMOTE ALARM

Explanation: The remote alarm test has started.

T3401

T3401 REMOTE ALARM IS ON

Explanation: The test has activated the remote alarm for one-half second.

T3402

T3402 REMOTE ALARM IS OFF, KEY S2

Explanation: The test has deactivated the remote alarm.

User Response: Press S2 (Enter).

T3451

T3451 ERROR, BASE UNIT IS FAILING

Explanation: The test detected that the remote alarm adapter is not communicating.

User Response: Switch **POWER OFF** and service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T3452

T3452 ERROR, BASE UNIT IS FAILING

Explanation: The test detected a command response problem from the remote alarm.

User Response: Switch **POWER OFF** and service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T3453

T3453 ERROR, REPLACE REMOTE ALARM OR CABLE 3B OR BASE UNIT IS FAILING

Explanation: The test detected that the remote alarm is not connected.

User Response:

1. Switch **POWER OFF**.
2. Examine for damage or loose connection:
 - Socket 3B
 - Both ends of the cable attached to socket 3B. See "Cable Sockets and Devices" in topic C.7.
3. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Exchange the remote alarm. See "Remote Alarm Removal and Replacement" in topic 7.18.
 - b. Exchange the remote alarm cable.
 - c. Service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T3454

T3454 REMOTE ALARM 3B IS NOT CONFIGURED

Explanation: The test detected that the operating system is not configured to support the remote alarm.

User Response: Use the *IBM 4680 Store System: Planning Guide* and the *IBM 4680 Store System: User's Guide* to configure the store system.

T4100

T4100 TESTING DISPLAY

Explanation: The display test has started.

T4151

T4151 ERROR, REPLACE DISPLAY 4A OR
DISPLAY CABLE 4A OR BASE UNIT IS FAILING

- or -

T4151 DISPLAY 4A, DISPLAY CABLE OR SYSTEM UNIT IS FAILING

Explanation: The display test detected that the display attached to socket 4A is not communicating.

User Response:

1. Switch **POWER OFF**.
2. Examine for damage or loose connection:
 - Socket 4A
 - Both ends of the display cable
 - The cable socket in the display. See "Cable Sockets and Devices" in topic C.7.
3. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Exchange the display. See Chapter 7, "Removal and Replacement Procedures."
 - b. Exchange the display cable.
 - c. Service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T4152

T4152 ERROR, REPLACE DISPLAY 4A

- or -

T4152 DISPLAY 4A IS FAILING

Explanation: The display test detected that the display attached to socket 4A is failing.

User Response: Switch **POWER OFF** and exchange the display. See Chapter 7, "Removal and Replacement Procedures."

T4153

T4153 ERROR, REPLACE DISPLAY 4A OR
DISPLAY CABLE 4A OR BASE UNIT IS FAILING

Explanation: The test detected that the display connected to socket 4A is not communicating.

User Response:

1. Switch **POWER OFF**.
2. Examine for damage or loose connection:
 - Socket 4A
 - Both ends of the display cable
 - The cable socket in the display. See "Cable Sockets and Devices" in topic C.7.
3. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Exchange the display. See Chapter 7, "Removal and Replacement Procedures."
 - b. Exchange the display cable.
 - c. Service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T4154

T4154 ERROR, REPLACE DISPLAY 4A

Explanation: The test detected that the display connected to socket 4A is failing.

User Response: Switch **POWER OFF** and exchange the display. See Chapter 7, "Removal and Replacement Procedures."

T4157

T4157 COMBINED KEYBOARD/DISPLAY
DISPLAY, CABLE, OR SYSTEM UNIT FAILING

- or -

T4157 THE DISPLAY ON THE COMBINED KEYBOARD/DISPLAY 5A,
CABLE, OR SYSTEM UNIT IS FAILING

Explanation:

4680 Operating System - The display test detected that the combined keyboard/display is not communicating.

4684 Reference Diskette - The display test detected that the combined keyboard/display attached to socket 5A is not communicating.

User Response:

1. Switch **POWER OFF**.
2. Examine for damage or loose connection:
 - Socket 5A or 5B
 - Both ends of the combined keyboard/display cable
 - The socket in the combined keyboard/display. See "Cable Sockets and Devices" in topic C.7.
3. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Service the failing combined keyboard/display. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
 - b. Exchange the cable on the failing combined keyboard/display.
 - c. Service the 4683 base unit to exchange the base card or service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T4158

T4158 THE DISPLAY ON THE COMBINED KEYBOARD/DISPLAY IS
FAILING

- or -

T4158 THE DISPLAY ON THE COMBINED KEYBOARD/DISPLAY 5A IS
FAILING

Explanation:

4680 Operating System - The display test detected that the combined keyboard/display is failing.

4684 Reference Diskette - The display test detected that the combined keyboard/display attached to socket 5A is failing.

User Response: Switch **POWER OFF** and service the combined keyboard/display. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T4161

T4161 DISPLAY 4B,9A,9B OR CABLE OR SYSTEM UNIT IS FAILING

Explanation: The display test detected that the display attached to socket 4B, 9A, or 9B is not communicating.

User Response:

1. Switch **POWER OFF**.
2. Examine for damage or loose connection:
 - li.Socket 4B, 9A or 9B
 - Both ends of the cable

- The cable socket in the display.
- 3. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Exchange the display. See Chapter 7, "Removal and Replacement Procedures."
 - b. Exchange the display cable.
 - c. Service the 4683 base unit to exchange the base card or service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T4162

T4162 DISPLAY 4B,9A,9B IS FAILING

Explanation: The display test detected that the display attached to socket 4B, 9A, or 9B is failing.

User Response: Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange the display. See Chapter 7, "Removal and Replacement Procedures."
2. Service the 4683 base unit to exchange the base card or service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T4163

T4163 ERROR, REPLACE DISPLAY 4B OR DISPLAY CABLE 4B OR BASE UNIT IS FAILING

Explanation: The test detected that the display connected to socket 4B is not communicating.

User Response:

1. Switch **POWER OFF**.
2. Examine for damage or loose connection:
 - Socket 4B
 - Both ends of the display cable
 - The cable socket in the display. See "Cable Sockets and Devices" in topic C.7.
3. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Exchange the display. See Chapter 7, "Removal and Replacement Procedures."
 - b. Exchange the display cable.
 - c. Service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T4164

T4164 ERROR, REPLACE DISPLAY 4B

Explanation: The test detected that the display connected to socket 4B is failing.

User Response: Switch **POWER OFF** and exchange the display. See Chapter 7, "Removal and Replacement Procedures."

T4167

T4167 THE DISPLAY ON THE COMBINED KEYBOARD/DISPLAY 5B, CABLE, OR SYSTEM UNIT IS FAILING

Explanation: The display test detected that the combined keyboard/display attached to socket 5B is not communicating.

User Response:

1. Switch **POWER OFF**.
2. Examine for damage or loose connection:
 - Socket 5B
 - Both ends of the combined keyboard/display cable
 - The socket in the combined keyboard/display.
3. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the

problem.

- a. Service the combined keyboard/display. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
- b. Exchange the cable on the combined keyboard/display.
- c. Service the 4683 base unit to exchange the base card or service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T4168 **T4168 THE DISPLAY ON THE COMBINED KEYBOARD/DISPLAY 5B IS FAILING**

Explanation: The display test detected that the Combined Keyboard/Display attached to socket 5B is failing.

User Response: Switch **POWER OFF** and service the combined keyboard/display. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T4300 **T4300 TESTING DISPLAY**

Explanation: The shopper display test has started.

T4351 **T4351 DISPLAY 4A OR CABLE,OR SYSTEM UNIT IS FAILING**

Explanation: The display test detected that the shopper display attached to socket 4A is not communicating.

User Response:

1. Switch **POWER OFF**.
2. Examine for damage or loose connection:
 - Socket 4A
 - Both ends of the display cable
 - The socket in the shopper display.
3. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Exchange the display. See "Shopper Display Removal and Replacement" in topic 7.20.
 - b. Exchange the display cable.
 - c. Service the 4683 base unit to exchange the base card or service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T4352 **T4352 DISPLAY 4A IS FAILING**

Explanation: The display test detected that the shopper display attached to socket 4A is failing.

User Response: Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange the display. See "Shopper Display Removal and Replacement" in topic 7.20.
2. Service the 4683 base unit to exchange the base card or service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T4353 **T4353 ERROR, REPLACE DISPLAY 4A OR DISPLAY CABLE 4A OR BASE UNIT IS FAILING**

Explanation: The test detected that the shopper display connected to socket 4A is not communicating.

User Response:

1. Switch **POWER OFF**.
2. Examine for damage or loose connection:
 - Socket 4A
 - Both ends of the display cable
 - The socket in the shopper display. See "Cable

- Sockets and Devices" in topic C.7.
3. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Exchange the display. See "Shopper Display Removal and Replacement" in topic 7.20.
 - b. Exchange the display cable.
 - c. Service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T4354

T4354 ERROR, REPLACE DISPLAY 4A

Explanation: The test detected that the shopper display connected to socket 4A is failing.

User Response: Switch **POWER OFF** and exchange the shopper display. See "Shopper Display Removal and Replacement" in topic 7.20.

T4361

T4361 DISPLAY 4B,9A,9B OR CABLE OR SYSTEM UNIT IS FAILING

Explanation: The display test detected that the shopper display attached to socket 4B, 9A or 9B is not communicating.

User Response:

1. Switch **POWER OFF**.
2. Examine for damage or loose connection:
 - Socket 4B, 9A or 9B
 - Both ends of the display cable
 - The socket in the shopper display.
3. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Exchange the display. See "Shopper Display Removal and Replacement" in topic 7.20.
 - b. Exchange the display cable.
 - c. Service the 4683 base unit to exchange the base card or service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T4362

T4362 DISPLAY 4B,9A,9B IS FAILING

Explanation: The display test detected that the shopper display attached to socket 4B, 9A or 9B is failing.

User Response: Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange the display. See "Shopper Display Removal and Replacement" in topic 7.20.
2. Service the 4683 base unit to exchange the base card or service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T4363

T4363 ERROR, REPLACE DISPLAY 4B OR DISPLAY CABLE 4B OR BASE UNIT IS FAILING

Explanation: The test detected that the shopper display connected to socket 4B is not communicating.

User Response:

1. Switch **POWER OFF**.
2. Examine for damage or loose connection:
 - Socket 4B
 - Both ends of the display cable
 - The socket in the shopper display. See "Cable Sockets and Devices" in topic C.7.
3. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Exchange the display. See "Shopper Display

- Removal and Replacement" in topic 7.20.
- b. Exchange the display cable.
- c. Service the 4683 base unit or 4684 system unit.
For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T4364

T4364 ERROR, REPLACE DISPLAY 4B

Explanation: The test detected that the shopper display connected to socket 4B is failing.

User Response: Switch **POWER OFF** and exchange the shopper display. See "Shopper Display Removal and Replacement" in topic 7.20.

T5100

T5100 TESTING KEYBOARD

Explanation: The keyboard test has started.

T5101

T5101 LOW VOLUME LOW PITCH TONE

Explanation: The point-of-sale keyboard test is sounding the audible signal at low volume with a frequency of 875 Hz.

User Response: If the tone is not correct, see "Point of Sale Keyboard Symptoms (4683/4684)" in topic 3.3.16.

T5102

T5102 LOW VOLUME MEDIUM PITCH TONE

Explanation: The point-of-sale keyboard test is sounding the audible signal at low volume with a frequency of 1300 Hz.

User Response: If the tone is not correct, see "Point of Sale Keyboard Symptoms (4683/4684)" in topic 3.3.16.

T5103

T5103 LOW VOLUME HIGH PITCH TONE

Explanation: The point-of-sale keyboard test is sounding the audible signal at low volume with a frequency of 2000 Hz.

User Response: If the tone is not correct, see "Point of Sale Keyboard Symptoms (4683/4684)" in topic 3.3.16.

T5104

T5104 HIGH VOLUME LOW PITCH TONE

Explanation: The point-of-sale keyboard test is sounding the audible signal at high volume with a frequency of 875 Hz.

User Response: If the tone is not correct, see "Point of Sale Keyboard Symptoms (4683/4684)" in topic 3.3.16.

T5105

T5105 HIGH VOLUME MEDIUM PITCH TONE

Explanation: The point-of-sale keyboard test is sounding the audible signal at high volume with a frequency of 1300 Hz.

User Response: If the tone is not correct, see "Point of Sale Keyboard Symptoms (4683/4684)" in topic 3.3.16.

T5106

T5106 HIGH VOLUME HIGH PITCH TONE

Explanation: The point-of-sale keyboard test is sounding the audible signal at high volume with a frequency of 2000 Hz.

User Response: If the tone is not correct, see "Point of Sale Keyboard Symptoms (4683/4684)" in topic 3.3.16.

T5107

T5107 KEY S2 TO START LIGHTS TEST

Explanation: The keyboard tone test is complete.

User Response: Press **S2 (Enter)** to start the keyboard light test. If **S2** is not pressed within 5 seconds, the tone test repeats.

T5108 T5108 TESTING KEYBOARD LIGHTS

Explanation: The point-of-sale keyboard test is testing the keyboard lights. The LEDs switch ON and OFF one at a time.

User Response: If the sequence is not correct, see "Point of Sale Keyboard Symptoms (4683/4684)" in topic 3.3.16.

T5109 T5109 KEY S2 TO START KEYBOARD TEST

Explanation: The keyboard lights test is complete.

User Response: Press **S2 (Enter)** to start the keyboard keypad test. If **S2** is not pressed within 5 seconds, the lights test repeats.

T5115 T5115 KEYBOARD TONE

Explanation: The point-of-sale keyboard test is sounding the audible signal.

User Response: If the tone does not sound properly see "Point of Sale Keyboard Symptoms (4683/4684)" in topic 3.3.16.

T5140 T5140 KEYBOARD TEST PRESS A KEY, 0=EXIT

Explanation: The point-of-sale keyboard test has been selected (IBM 4683 Model A02 Stand-Alone Test Mode).

If your point-of-sale keyboard has a BRIDGE or PLATE covering more than one key, it must be removed during this test. Pressing single keys rapidly or pressing more than one key simultaneously can result in erroneous scan code displays.

User Response: Press any key (except the 0 key).

You can stop the point-of-sale keyboard test by pressing the 0 key.

T5141 T5141 KEY SCAN CODE: XX

Explanation: The point-of-sale keyboard test is active. The scan code for the key you just pressed is shown on the bottom line of this screen (IBM 4683 Model A02 Stand-Alone Test Mode).

The alphanumeric keyboard has five Make/Break keys: CTL, Left Shift, Right Shift, ALT and Caps Lock. When pressed and held, each of these keys display their scan code, when released, F0 is displayed.

User Response: Press the keys you want to test *one at a time* and compare the displayed scan code with the chart of scan codes for your point-of-sale keyboard.

If the displayed scan code is not correct, exchange the point-of-sale keyboard. See "Keyboard Removal and Replacement" in topic 7.6.

T5151 T5151 KEYBOARD,CABLE OR BASE UNIT FAILING

- or -

T5151 KEYBOARD 5A, CABLE, OR SYSTEM UNIT IS FAILING

Explanation:

4680 Operating System - The point-of-sale keyboard test detected that the keyboard is not communicating.

4684 Reference Diskette - The point-of-sale keyboard test detected that the keyboard attached to socket 5A is not communicating.

User Response:

1. Switch **POWER OFF**.
2. Examine for damage or loose connection:
 - Socket 5A or 5B
 - Both ends of the keyboard cable
 - The socket in the keyboard. See "Cable Sockets and Devices" in topic C.7.
3. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 or for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
 - b. Exchange the keyboard cable.
 - c. Service the 4683 base unit to exchange the base card or service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T5152

T5152 ERROR, REPLACE KEYBOARD

- or -

T5152 KEYBOARD 5A IS FAILING

Explanation:

4680 Operating System - The point-of-sale keyboard test detected a problem.

4684 Reference Diskette - The point-of-sale keyboard test detected a problem in the keyboard attached to socket 5A.

User Response: Switch **POWER OFF** and exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 or for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T5153

T5153 KYBD-5 TONE DOES NOT RESPOND

Explanation: The test detected that the audible signal in the keyboard is not communicating.

User Response: Switch **POWER OFF** and exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 or for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T5154

T5154 KYBD-5 TONE PROBLEM FOUND

Explanation: The test detected a keyboard audible signal problem.

User Response: Switch **POWER OFF** and exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 or for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T5155

T5155 KYBD-5 LIGHTS PROBLEM FOUND

Explanation: The test detected a keyboard light problem.

User Response: Switch **POWER OFF** and exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 or for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T5161

T5161 KEYBOARD 5B, CABLE, OR SYSTEM UNIT IS FAILING

Explanation: The point-of-sale keyboard test detected that the keyboard attached to socket 5B is not communicating.

User Response:

1. Switch **POWER OFF**.
2. Examine for damage or loose connection:
 - Socket 5B
 - Both ends of the keyboard cable
 - The socket in the keyboard. See "Cable Sockets and Devices" in topic C.7.
3. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 **or** for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
 - b. Exchange the keyboard cable.
 - c. Service the 4683 base unit to exchange the base card or service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T5162

T5162 KEYBOARD IS FAILING

Explanation: The point-of-sale keyboard test detected a problem in the keyboard attached to socket 5B.

User Response: Switch **POWER OFF** and exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 **or** for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T5170

T5170 KEYBOARD DOES NOT RESPOND, RESTART

Explanation: The point-of-sale keyboard has stopped communicating (IBM 4683 Model A02 Stand-Alone Test Mode).

User Response:

1. Switch **POWER OFF**.
2. Examine for damage or loose connection:
 - Socket 5A or 5B (which ever the keyboard is attached to)
 - Both ends of the keyboard cable
 - The socket in the keyboard.
3. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 **or** for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
 - b. Exchange the keyboard cable.
 - c. Service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T5400

T5400 TESTING IBM 1520-A02

Explanation: Testing the 1520 Hand-Held Scanner Model A02 Adapter.

T5401

T5401 READ A LABEL WITH IBM 1520-A02

Explanation: The test is ready to read a UPC/EAN label with the IBM 1520 Hand-Held Scanner Model A02. The data that is read from the label is formatted and printed at the customer receipt station.

User Response: Use the 1520 Model A02 to read a label. Observe the printing at the customer receipt station to verify that the label was read correctly.

T5402

T5402 READ A LABEL, PRINT UNFORMATTED

Explanation: The test is ready to read a label with the IBM 1520 Hand-Held Scanner Model A02. The data that is read from the label is printed at the customer receipt station as it is received from the 1520 Model A02 (unformatted).

User Response: Use the 1520 Model A02 to read a label. Observe the printing at the customer receipt station to verify that the label was read correctly.

T5451

T5451 ERROR, CHECK 1520-A02 POWER IF ON, REPLACE 1520-A02

Explanation: The test detected that the 1520 Hand-Held Scanner Model A02 is not communicating.

User Response: Verify that power was switched ON at the 1520 Model A02 console when the test was run.

If power was ON:

1. Switch **POWER OFF** at the 1520 Model A02 console and unplug the console power cord.
2. Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.
 - a. Exchange the 1520 Model A02. See "1520 Hand-Held Scanner Model A02 Removal and Replacement" in topic 7.26.
 - b. Exchange the 1520 Model A02 cable.
 - c. If the **Y** cable is present, exchange it. This cable allows both the dual-track MSR and the 1520 Model A02 to be attached to base unit socket 5B at the same time.
 - d. Service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T5452

T5452 ERROR, REPLACE 1520-A02

Explanation: The test detected a read problem in the IBM 1520 Hand-Held Scanner Model A02.

User Response:

1. Switch **POWER OFF** at the 1520 Model A02 console and unplug the console power cord.
2. Switch **POWER OFF** at the point-of-sale terminal and exchange the 1520 Model A02. See "1520 Hand-Held Scanner Model A02 Removal and Replacement" in topic 7.26.

T5455

T5455 ERROR, VERIFY THAT LABEL IS GOOD

Explanation: The test detected an error when reading a label with the IBM 1520 Hand-Held Scanner Model A02.

User Response: Try several times to read the labels. If the problem persists:

1. Type **0** and press **S2 (Enter)** to end the test.
2. Verify that the labels being used are valid for the 1520 Model A02.
3. Verify that the labels are in good condition.
 - If the labels are good:
 - a. Switch **POWER OFF** at the 1520 Model A02 console and unplug the console power cord.
 - b. Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.
 - 1) Exchange the 1520 Model A02. See "1520 Hand-Held Scanner Model A02 Removal and Replacement" in topic 7.26.
 - 2) Exchange the 1520 Model A02 cable.
 - 3) If the **Y** cable is present, exchange it. This cable allows both the dual-track MSR and the 1520 Model A02 to be attached to

- base unit socket 5B at the same time.
- If the labels are **not** good, locate correct, good labels for the 1520 Model A02 and use them.

T5470

T5470 NO SCANNER PRESS THE 0 KEY

Explanation: No scanners responded to polling when Test Mode was entered (IBM 4683 Model A02 Stand-Alone Test Mode).

User Response:

For a point-of-sale scanner:

1. Verify that power was switched ON at the point-of-sale scanner when the test was run.
2. If power was ON, switch **POWER OFF**.
3. Unplug the point-of-sale scanner power cord.
4. Switch **POWER OFF**.
5. Examine for damage or loose connection:
 - Socket 17 on the 4683
 - Both ends of the scanner cable.
6. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Service the scanner. See the maintenance documentation for the scanner.
 - b. Service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

For an IBM Hand-Held Bar Code Reader:

1. Switch **POWER OFF**.
2. Examine for damage or loose connection:
 - Socket 9B on the 4683
 - Both ends of the bar code reader cable
 - The cable socket in the bar code reader.
3. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Exchange the IBM Hand-Held Bar Code Reader See "Hand-Held Bar Code Reader Removal and Replacement" in topic 7.5.
 - b. Service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T5471

T5471 SCANNER TIMED OUT, PRESS THE 0 KEY

Explanation: The active scanner did not respond with label data within ten seconds (IBM 4683 Model A02 Stand-Alone Test Mode).

User Response:

For a point-of-sale scanner:

1. Verify that power was switched ON at the point-of-sale scanner when the test was run.
2. If power was ON, switch **POWER OFF**.
3. Unplug the point-of-sale scanner power cord.
4. Switch **POWER OFF**.
5. Examine for damage or loose connection:
 - Socket 17 on the 4683
 - Both ends of the scanner cable.
6. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Service the scanner. See the maintenance documentation for the scanner.
 - b. Service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

For an IBM Hand-Held Bar Code Reader:

1. Switch **POWER OFF**.
2. Examine for damage or loose connection:
 - Socket 9B on the 4683
 - Both ends of the bar code reader cable
 - The cable socket in the bar code reader.
3. If the cable, sockets, and connections are OK,

follow this list to isolate and correct the cause of the problem.

- a. Exchange the IBM Hand-Held Bar Code Reader. See "Hand-Held Bar Code Reader Removal and Replacement" in topic 7.5.
- b. Service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T6100

T6100 TESTING MSR

Explanation: The magnetic stripe reader (MSR) test has started.

T6101

T6101 READ TEST CARD WITH MSR

Explanation: The magnetic stripe reader (MSR) test is ready to read the test card.

User Response: Pass the test card through the slot in the MSR.

- For a Single-Track MSR, use test card (P/N 4055210) or (P/N 90X9640).
- For a Dual-Track MSR, use test card (P/N 90X9640).

If no other message displays to indicate a successful read or an error, the test card was not read.

1. Exchange the MSR. See Chapter 7, "Removal and Replacement Procedures" in topic 7.0.
2. Exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 **or** for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T6102

T6102 READ OK, READY TO READ AGAIN

Explanation: The test has analyzed the data read by the MSR and found the data to be correct. The test is ready to read the test card again.

User Response: Pass the test card through the slot in the MSR.

T6111

T6111 READ MSR TEST CARD (IBM P/N 90X9640)

Explanation: The test is ready to read MSR the test card.

User Response: Pass test card (IBM P/N 90X9640) through the slot in the MSR.

T6140

T6140 MSR TEST READ MSR TEST CARD

Explanation: The magnetic stripe reader test is ready to accept data from the single-track magnetic stripe reader (IBM 4683 Model A02 Stand-Alone Test Mode).

The MSR test compares the stored test data with the data read from the test card. No printing will occur.

User Response: Pass the test card (IBM P/N 4055210 or IBM P/N 90X9640) through the slot in the MSR.

T6141

T6141 TEST CARD READ CORRECTLY

Explanation: The single-track magnetic stripe reader has read the test data correctly. (IBM 4683 Model A02 Stand-Alone Test Mode).

This message will be replaced with message T0007 after about 2 seconds

T6151

T6151 ERROR, REPLACE MSR OR KEYBOARD OR
KEYBOARD CABLE OR BASE UNIT IS FAILING

- or -

T6151 MSR, KEYBOARD, CABLE, OR SYSTEM UNIT IS FAILING

Explanation:

4680 Operating System - The magnetic stripe reader (MSR) test detected that the keyboard is not communicating.

4684 Reference Diskette - The magnetic stripe reader (MSR) test detected that the keyboard attached to socket 5A is not communicating.

User Response:

1. Switch **POWER OFF**.
2. Examine for damage or loose connection:
 - Socket 5A or 5B
 - Both ends of the keyboard cable
 - The socket(s) in the keyboard. See "Cable Sockets and Devices" in topic C.7.
3. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Exchange the MSR. See Chapter 7, "Removal and Replacement Procedures" in topic 7.0.
 - b. Exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 **or** for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
 - c. Exchange the keyboard cable.
 - d. Service the 4683 base unit to exchange the base card or service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T6152

T6152 ERROR, REPLACE KEYBOARD

- or -

T6152 KEYBOARD IS FAILING

Explanation:

4680 Operating System - The magnetic stripe reader (MSR) test detected a keyboard problem.

4684 Reference Diskette - The magnetic stripe reader (MSR) test detected a problem in the keyboard attached to socket 5A.

User Response: Switch **POWER OFF** and exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 **or** for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T6153

T6153 KEY 1, S2 READ TEST CARD AGAIN OR
REPLACE KEYBOARD OR BASE UNIT IS FAILING

Explanation: The test detected that the MSR test card was not read correctly.

User Response:

1. Verify that test card IBM P/N 4055210 or IBM P/N 90X9640 is being used.
2. Clean the MSR read head using MSR cleaning card IBM P/N 6019483.
3. Type **1** and press **S2 (Enter)** to restart the test.
4. Pass the test card through the MSR slot several more times.
5. If the problem persists, switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.
 - a. Exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 **or** for service information, see the *IBM 4683/4684 Point*

- of Sale Terminal: Maintenance Manual.*
- b. Service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual.*

T6154 T6154 ERROR, READ AGAIN OR REPLACE MSR OR KEYBOARD

Explanation: The test did not read any data from the MSR.

User Response:

1. Verify that test card IBM P/N 4055210 or IBM P/N 90X9640 is being used.
2. Clean the MSR read head using MSR cleaning card IBM P/N 6019483.
3. Type **1** and press **S2 (Enter)** to restart the test.
4. Pass the test card through the MSR slot several more times.
5. If the problem persists, switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.
 - a. Exchange the MSR. See "Magnetic Stripe Reader (Single-Track) Removal and Replacement" in topic 7.9.
 - b. Exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 **or** for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual.*

T6155 T6155 KEY 1, S2 AND READ AGAIN, OR REPLACE TEST CARD OR MSR OR KEYBOARD

- or -

T6155 READ CARD AGAIN. CARD, MSR, OR KEYBOARD IS FAILING.

Explanation: The magnetic stripe reader (MSR) test detected an operational problem.

User Response:

1. Verify that test card IBM P/N 4055210 or IBM P/N 90X9640 is being used.
2. Clean the MSR read head using MSR cleaning card IBM P/N 6019483.
3. Type **1** and press **S2 (Enter)** to restart the test.
4. Pass the test card through the MSR slot several more times.
5. If the problem persists, switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.
 - a. Exchange the MSR. See "Magnetic Stripe Reader (Single-Track) Removal and Replacement" in topic 7.9.
 - b. Exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 **or** for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual.*
 - c. Service the 4683 base unit to exchange the base card or service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual.*

T6156 T6156 ERROR, REPLACE MSR OR KEYBOARD OR BASE UNIT IS FAILING

Explanation: The test detected that the MSR is not attached to the keyboard.

User Response:

1. Switch **POWER OFF**.
2. Examine for damage or loose connection:
 - Socket 5A or 5B
 - Both ends of the keyboard cable
 - Socket 5 on the keyboard

- The MSR cable connector
 - Socket 6 on the keyboard. See "Cable Sockets and Devices" in topic C.7.
3. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
- a. Exchange the MSR. See "Magnetic Stripe Reader (Single-Track) Removal and Replacement" in topic 7.9.
 - b. Exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 **or** for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
 - c. Service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T6161

T6161 MSR, KEYBOARD, CABLE, OR SYSTEM UNIT IS FAILING

Explanation: The magnetic stripe reader (MSR) test detected that the keyboard attached to socket 5B is not communicating.

User Response:

- 1. Switch **POWER OFF**.
- 2. Examine for damage or loose connection:
 - Socket 5B
 - Both ends of the keyboard cable
 - The socket(s) in the keyboard. See "Cable Sockets and Devices" in topic C.7.
- 3. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Exchange the MSR. See Chapter 7, "Removal and Replacement Procedures" in topic 7.0.
 - b. Exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 **or** for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
 - c. Exchange the keyboard cable.
 - d. Service the 4683 base unit to exchange the base card or service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T6162

T6162 KEYBOARD IS FAILING

Explanation: The magnetic stripe reader (MSR) test detected a problem in the keyboard attached to socket 5B.

User Response: Switch **POWER OFF** and exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 **or** for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T6170

T6170 MSR NOT FOUND PRESS THE 0 KEY

Explanation: The magnetic stripe reader is not communicating with the 4683 base unit (IBM 4683 Model A02 Stand-Alone Test Mode).

User Response:

- 1. Switch **POWER OFF**.
- 2. Examine for damage or loose connection:
 - Socket 5A or 5B on the 4683
 - Both ends of the keyboard cable
 - The socket(s) in the keyboard. See "Cable Sockets and Devices" in topic C.7.
- 3. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Exchange the MSR. See Chapter 7, "Removal and Replacement Procedures" in topic 7.0.
 - b. Exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 **or** for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

- c. Service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T6171

T6171 MSR TIMED OUT PRESS THE 0 KEY

Explanation: The magnetic stripe reader test did not receive valid test data from the MSR within 10 seconds after being started (IBM 4683 Model A02 Stand-Alone Test Mode).

User Response:

1. Press the 0 key and select the MSR test (6) again.
2. Pass the test card (IBM P/N 4055210 or IBM P/N 90X9640) through the slot in the MSR several times.
3. If the problem persists, switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.
 - a. Exchange the MSR. See Chapter 7, "Removal and Replacement Procedures" in topic 7.0.
 - b. Exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 **or** for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
 - c. Service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T6172

T6172 MSR READ ERROR PRESS THE 0 KEY

Explanation: The data read from the magnetic stripe reader test card does not match the expected data (IBM 4683 Model A02 Stand-Alone Test Mode).

User Response:

1. Ensure that MSR test card IBM P/N 4055210 or IBM P/N 90X9640 is being used.
2. Press the 0 key and select the MSR test (6) again.
3. Pass the test card through the MSR slot several times.
4. If the problem persists, switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.
 - a. Exchange the MSR. See Chapter 7, "Removal and Replacement Procedures" in topic 7.0.
 - b. Exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 **or** for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
 - c. Service the 4683 base unit to exchange the base card or service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T6181

T6181 ERROR, REPLACE MSR OR MSR CABLE

- or -

T6181 MSR OR MSR CABLE IS FAILING

Explanation:

4680 Operating System - The magnetic stripe reader (MSR) test detected that the dual-track MSR is not communicating.

4684 Reference Diskette - The magnetic stripe reader (MSR) test detected that the dual-track MSR connected to socket 5A is not communicating.

User Response:

1. Switch **POWER OFF**.
2. Examine for damage or loose connection:

- Socket 5A or 5B
 - The cable socket in the dual-track MSR
 - Both ends of the MSR cable
 - If the **Y** cable is present, examine it. This cable allows both the dual-track MSR and the 1520 Model A02 to be attached to base unit socket 5B at the same time. See "Cable Sockets and Devices" in topic C.7.
3. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
- a. Exchange the MSR. See "Magnetic Stripe Reader (Dual-Track) Removal and Replacement" in topic 7.10.
 - b. Exchange the MSR cable.
 - c. If present, exchange the **Y** cable.
 - d. Service the 4683 base unit to exchange the base card or service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T6182

T6182 KEY 1, S2 READ TEST CARD AGAIN OR REPLACE TEST CARD OR MSR

Explanation: The test detected that the MSR test card was not read correctly.

User Response:

1. Verify that test card IBM P/N 90X9640 is being used.
2. Clean the MSR read head using MSR cleaning card IBM P/N 6019483.
3. Type **1** and press **S2 (Enter)** to restart the test.
4. Pass the test card through the MSR several more times.
5. If the problem persists, switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.
 - a. Exchange the test card.
 - b. Exchange the MSR. See "Magnetic Stripe Reader (Dual-Track) Removal and Replacement" in topic 7.10 OR "Magnetic Stripe Reader (Low-Profile Dual-Track) Removal and Replacement" in topic 7.11.

T6183

T6183 WRONG MSR CHECK CONFIGURATION. OR REPLACE MSR

Explanation: The test detected a mismatch in the configuration file for the MSR. For example: The MSR is configured to read tracks 1 and 2, and the MSR that is attached reads tracks 2 and 3.

User Response: Verify that the configuration for the MSR is correct. See the *IBM 4680 Store System: Planning Guide* and the *IBM 4680 Store System: User's Guide* .

If the problem persists, exchange the MSR. See "Magnetic Stripe Reader (Dual-Track) Removal and Replacement" in topic 7.10 OR "Magnetic Stripe Reader (Low-Profile Dual-Track) Removal and Replacement" in topic 7.11.

T6184

T6184 READ CARD AGAIN. CARD, MSR, OR KEYBOARD IS FAILING.

Explanation: The magnetic stripe reader (MSR) test detected that the low-profile dual-track MSR test card was not read correctly.

User Response:

1. Ensure that test card IBM P/N 90X9640 is being used.
2. Clean the MSR read head using MSR cleaning card IBM P/N 6019483.
3. Press **S2 (Enter)** to restart the test.
4. Pass the test card through the MSR several more times.
5. If the problem persists, switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

- a. Exchange the test card.
- b. Exchange the dual-track MSR. See "Magnetic Stripe Reader (Low-Profile Dual-Track) Removal and Replacement" in topic 7.11.
- c. Service the keyboard. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T6185

T6185 KEY S2, READ TEST CARD AGAIN. CARD OR MSR IS FAILING.

- or -

T6185 READ TEST CARD AGAIN. CARD OR MSR IS FAILING.

Explanation: The magnetic stripe reader (MSR) test detected that the dual-track MSR test card was not read correctly.

User Response:

1. Verify that test card IBM P/N 90X9640 is being used.
2. Clean the MSR read head using MSR cleaning card IBM P/N 6019483.
3. Press **S2 (Enter)** to restart the test.
4. Pass the test card through the MSR several more times.
5. If the problem persists, switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.
 - a. Exchange the test card
 - b. Exchange the MSR. See "Magnetic Stripe Reader (Dual-Track) Removal and Replacement" in topic 7.10 OR "Magnetic Stripe Reader (Low-Profile Dual-Track) Removal and Replacement" in topic 7.11.
 - c. If the MSR is attached to an ANPOS or Combined keyboard/display, exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 **or** for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
 - d. Service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T6186

T6186 COMBINED KEYBOARD/DISPLAY MSR 5A,
OR CABLE OR SYSTEM UNIT IS FAILING

Explanation: The magnetic stripe reader (MSR) test detected that the dual-track MSR is not communicating. The MSR is attached to a combined keyboard/display connected to socket 5A.

User Response:

1. Switch **POWER OFF**.
2. Examine for damage or loose connection:
 - Socket 5A
 - The dual-track MSR in the keyboard.
3. If no problem was found and corrected, follow this list to isolate and correct the cause of the problem.
 - a. Exchange the MSR. See "Magnetic Stripe Reader (Low-Profile Dual-Track) Removal and Replacement" in topic 7.11.
 - b. Exchange the keyboard cable.
 - c. Exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 **or** for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
 - d. Service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T6187

T6187 COMBINED KEYBOARD/DISPLAY MSR OR THE KEYBOARD IS FAILING

- or -

T6187 COMBINED KEYBOARD/DISPLAY MSR 5A IS FAILING

Explanation:

4680 Operating System - The magnetic stripe reader (MSR) test detected that the dual-track MSR attached to the combined keyboard/display is failing.

4684 Reference Diskette - The magnetic stripe reader (MSR) test detected that the dual-track msr attached to the combined keyboard/display connected to socket 5A, is failing.

User Response:

1. Switch **POWER OFF**.
2. Examine the MSR for damage or loose connection.
3. If the MSR connection is OK, follow this list to isolate and correct the cause of the problem.
 - a. Exchange the MSR. See "Magnetic Stripe Reader (Low-Profile Dual-Track) Removal and Replacement" in topic 7.11.
 - b. Service the keyboard. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T6188

T6188 MSR, KEYBOARD, CABLE OR SYSTEM UNIT IS FAILING

Explanation:

4680 Operating System - The magnetic stripe reader (MSR) test detected that the MSR is not communicating.

4684 Reference Diskette - The magnetic stripe reader (MSR) test detected that the MSR on the ANPOS Keyboard connected to socket 5A is not communicating.

User Response:

1. Switch **POWER OFF**.
2. Ensure the MSR is correctly attached to the keyboard.
3. Service the keyboard. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
4. Exchange the MSR. See "Magnetic Stripe Reader (Low-Profile Dual-Track) Removal and Replacement" in topic 7.11.
5. Service the 4683 base unit to exchange the base card or service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T6189

T6189 MSR ATTACHED TO KEYBOARD 5A IS FAILING

Explanation: The magnetic stripe reader (MSR) test detected that the MSR on the ANPOS keyboard connected to socket 5A is failing.

User Response:

1. Switch **POWER OFF**.
2. Examine the MSR and keyboard connector for damage or loose connection.
3. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Exchange the MSR. See "Magnetic Stripe Reader (Low-Profile Dual-Track) Removal and Replacement" in topic 7.11.
 - b. Service the keyboard. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T6191

T6191 MSR OR MSR CABLE IS FAILING

Explanation: The magnetic stripe reader (MSR) test detected that the dual-track MSR connected to socket 5B is not communicating.

User Response:

1. Switch **POWER OFF**.
2. Examine for damage or loose connection:
 - Socket 5B
 - The cable socket in the dual-track MSR
 - Both ends of the MSR cable.
3. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Exchange the MSR. See "Magnetic Stripe Reader (Dual-Track) Removal and Replacement" in topic 7.10.
 - b. Exchange the MSR cable.
 - c. Service the 4683 base unit to exchange the base card or service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T6194

T6194 MSR, KEYBOARD, CABLE OR SYSTEM UNIT IS FAILING

Explanation: The magnetic stripe reader (MSR) test detected that the MSR on the ANPOS Keyboard connected to 4684 keyboard socket 1 is not communicating.

User Response:

1. Switch **POWER OFF**.
2. Ensure that the MSR is correctly attached to the ANPOS Keyboard.
3. Service the keyboard. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
4. Exchange the MSR. See "Magnetic Stripe Reader (Low-Profile Dual-Track) Removal and Replacement" in topic 7.11.
5. Service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T6195

T6195 MSR ATTACHED TO SYSTEM UNIT KEYBOARD IS FAILING

Explanation: The magnetic stripe reader (MSR) test detected that the MSR on the ANPOS Keyboard connected to 4684 keyboard socket 1 is failing.

User Response:

1. Switch **POWER OFF**.
2. Ensure that the MSR is correctly attached to the ANPOS Keyboard.
3. Examine the keyboard cable for a damaged or loose connection.
4. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Exchange the MSR. See "Magnetic Stripe Reader (Low-Profile Dual-Track) Removal and Replacement" in topic 7.11.
 - b. Service the keyboard. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T6198

T6198 MSR, KEYBOARD, CABLE, OR SYSTEM UNIT IS FAILING

Explanation: The magnetic stripe reader (MSR) test detected that the MSR on the ANPOS Keyboard connected to socket 5B is not communicating.

User Response:

1. Switch **POWER OFF**.
2. Ensure the MSR is correctly attached to the keyboard.
3. Service the keyboard. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
4. Exchange the MSR. See "Magnetic Stripe Reader (Low-Profile Dual-Track) Removal and Replacement" in topic 7.11.
5. Service the 4683 base unit to exchange the base card or service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T6199 T6199 MSR ATTACHED TO KEYBOARD 5B IS FAILING

Explanation: The magnetic stripe reader (MSR) test detected that the MSR on the ANPOS keyboard connected to socket 5B is failing.

User Response:

1. Switch **POWER OFF**.
2. Examine the MSR and keyboard connector for damage or loose connection.
3. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Exchange the MSR. See "Magnetic Stripe Reader (Low-Profile Dual-Track) Removal and Replacement" in topic 7.11.
 - b. Service the keyboard. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T7100 T7100 TESTING ALL PRINT STATIONS

Explanation: The printer test has started.

T7101 T7101 PRINTER WAITING, KEY S2

Explanation: The test was stopped by pressing **S2** while the **IH...** pattern was printing at the customer receipt station.

User Response: Press **S2 (Enter)** to continue the test.

T7110 T7110 PRINTING IH... AT RECEIPT STATION

Explanation: The test is printing the **IH...** test pattern at the customer receipt station.

T7120 T7120 PRINTING IH... AT JOURNAL STATION

Explanation: The test is printing the **IH...** test pattern at the journal station.

T7130 T7130 PRINTING IH... AT DOC INSERT

Explanation: The test is printing the **IH...** test pattern at the document insert station.

T7131 T7131 INSERT PAPER IN DI STATION

Explanation: The test is ready to print the **IH...** test pattern at the document insert station.

User Response:

1. Insert paper into the document insert station and close the station by pressing the **I** keybutton on the printer keypad.
2. Press the **II** keybutton on the printer keypad to advance the paper in the document insert station until it comes out of the top of the printer.
3. Press **S2 (Enter)** to start printing.

T7132

T7132 REMOVE PAPER FROM DI STATION

Explanation: The test has completed printing the IH... test pattern at the document insert station.

User Response:

1. Press the I keybutton on the printer keypad to release the paper at the document insert station.
2. Remove the paper from the document insert station.

T7140

T7140 PRINTER TEST IN PROGRESS

Explanation: The point-of-sale printer is now printing test data at both print stations (IBM 4683 Model A02 Stand-Alone Test Mode).

User Response: Observe the printer for correct operation at both print stations.

If the printing at either station (journal or receipt) does not print correctly, service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T7151

T7151 ERROR, PRINTER IS FAILING OR
REPLACE CABLE 7 OR BASE UNIT IS FAILING

- or -

T7151 PRINTER CARD, OR CABLE 7, OR SYSTEM UNIT IS FAILING

Explanation: The point-of-sale printer test detected that the printer is not communicating with the terminal.

- To bypass this error and end the test, type 0 and press S2 (Enter).
- To continue the test after taking corrective action, type 1 and press S2.

User Response:

1. Switch **POWER OFF**.
2. Examine for damage or loose connection:
 - Socket 7
 - Both ends of the printer cable
 - The socket in the printer. See "Cable Sockets and Devices" in topic C.7.
3. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
 - b. Exchange the printer cable.
 - c. Service the 4683 base unit to exchange the base card or service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T7152

T7152 ERROR, CHECK PRINthead OR PRINTER IS FAILING

Explanation: The point-of-sale printer test detected a print head home error.

- To bypass this error and end the test, type 0 and press S2 (Enter).
- To continue the test after taking corrective action, type 1 and press S2.

User Response:

Point of Sale Printer Model 1 or 2 - Ensure that the print head preload spring is in place and that it is holding the print head against the platen.

If the preload spring is holding the print head in place, switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

Point of Sale Printer Model 3 - Ensure there is nothing blocking the path of the print head.

If there is nothing blocking the print head path, switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T7153

T7153 CLOSE PRINTER COVER IF OPEN, OR PRINTER IS FAILING

Explanation: The point-of-sale printer test detected that the printer cover is open.

- To bypass this error and end the test, type **0** and press **S2 (Enter)**.
- To continue the test after taking corrective action, type **1** and press **S2**.

User Response: Check the printer cover.

- If the cover is open, close it, type **1**, and press **S2 (Enter)** to restart the test.
- If the cover is closed, switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T7154

T7154 ERROR, CHECK JOURNAL PAPER OR PRINTER IS FAILING

Explanation:

Model 1 or 2 Printer - The point-of-sale printer test detected that the printer journal station is out of paper.

Model 3 Printer - The point-of-sale printer test detected that the printer journal station paper is not moving.

- To bypass this error and end the test, type **0** and press **S2 (Enter)**.
- To continue the test after taking corrective action, type **1** and press **S2**.

User Response:

Model 1 or 2 Printer - Ensure that the journal station has paper and that it is loaded correctly.

If the journal station has paper loaded correctly, switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

Model 3 Printer - Switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T7155

T7155 PRESS PRINTER "I" BUTTON OR PRINTER IS FAILING

- or -

T7155 IF THE 'I/READY' BUTTON HAS BEEN PRESSED THE PRINTER IS FAILING

Explanation:

Model 1 or 2 Printer - The point-of-sale printer test detected that a document has been inserted at the document insert station but the station has not been closed.

Model 3 Printer - The ready light does not come ON when a document is inserted.

- To bypass this error and end the test, type 0 and press **S2 (Enter)**.
- To continue the test after taking corrective action, type 1 and press **S2**.

User Response:

Model 1 or 2 Printer - Ensure that a document is in the document insert station and then press the **I** keybutton on the printer.

If the problem persists, switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

Model 3 Printer - Switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T7156

T7156 INSERT PAPER IN DOCUMENT INSERT STATION
OR PRINTER IS FAILING

- or -

T7156 IF PAPER IS IN DOCUMENT INSERT PRINTER IS FAILING

Explanation: The point-of-sale printer test detected that the document required for a print test at the document insert station has not been inserted.

- To bypass this error and end the test, type 0 and press **S2 (Enter)**.
- To continue the test after taking corrective action, type 1 and press **S2**.

User Response:

Model 1 or 2 Printer - Ensure that a document is in the document insert station and then press the **I** keybutton on the printer.

If the problem persists, switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

Model 3 Printer - Ensure that a document is inserted and the ready light is ON.

If the problem persists, switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T7157

T7157 REMOVE PAPER IN DOCUMENT INSERT STATION
OR PRINTER IS FAILING

Explanation:

Model 1 or 2 Printer - The point-of-sale printer test is trying to print at the cash receipt station and the test detected that a document is inserted at the document insert station.

Model 3 Printer - The point-of-sale printer test detected that a document is inserted when no document should be inserted.

- To bypass this error and end the test, type 0 and press **S2 (Enter)**.
- To continue the test after taking corrective action, type 1 and press **S2**.

User Response: Ensure that no document is inserted.

If no document is inserted, switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T7158

T7158 ERROR, CHECK THAT PRINTER KEYPAD
IS NOT PRESSED OR PRINTER IS FAILING

Explanation: The point-of-sale printer test detected that a keybutton on the printer keypad has been pressed for longer than one minute.

- To bypass this error and end the test, type 0 and press S2 (Enter).
- To continue the test after taking corrective action, type 1 and press S2.

User Response: Ensure that no keybutton is pressed.

If no keybutton is pressed, switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T7159

T7159 PRINTER CARD IS FAILING

Explanation: The point-of-sale printer test detected that a function on the printer card failed.

User Response: Switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T7167

T7167 REMOVE PAPER FROM THE DI OR THE FRONT SENSOR IS FAILING.

Explanation: The point-of-sale printer test detected that the front document-insert sensor is covered. Possible reasons for this indication are:

- A document is inserted in the printer.
- Something is blocking the sensor.
- The sensor is failing.

User Response: Remove the document from the printer or run an inserted document through the printer to clear the sensor.

If the problem persists, switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T7168

T7168 REMOVE PAPER FROM THE DI OR THE TOP SENSOR IS FAILING.

Explanation: The point-of-sale printer test detected that the top document-insert sensor is covered. Possible reasons for this indication are:

- A document is inserted in the printer.
- Something is blocking the sensor.
- The sensor is failing.

User Response: Remove the document from the printer or run an inserted document through the printer to clear the sensor.

If the problem persists, switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T7170

T7170 NO PRINTER PRESS THE 0 KEY

Explanation: The point-of-sale printer did not respond to polling when Test Mode was entered. The other tests, except Scanner (3), can be run without the printer (IBM 4683 Model A02 Stand-Alone Test Mode).

User Response:

1. Switch **POWER OFF**.
2. Examine for damage or loose connection:
 - Socket 7 on the 4683
 - Both ends of the printer cable
 - The socket in the printer.
3. If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.
 - a. Service the printer. For service information,

see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

- b. Exchange the printer cable.
- c. Service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T7171

T7171 PRINTER ERROR PRESS THE 0 KEY

Explanation: The point-of-sale printer test has detected a printer failure (IBM 4683 Model A02 Stand-Alone Test Mode).

User Response: Press the 0 key and select the printer test (1) again.

If the problem persists, ensure that the print head preload spring is in place and that it is holding the print head against the platen.

If the preload spring is holding the print head in place, switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T7172

T7172 JOURNAL ERROR PRESS THE 0 KEY

Explanation: The point-of-sale printer test has detected an error at the printer journal station (IBM 4683 Model A02 Stand-Alone Test Mode).

User Response: Ensure that the journal station has paper and that it is loaded correctly.

If the journal station has paper loaded correctly, switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T7173

T7173 DOC INS ERROR PRESS THE 0 KEY

Explanation: The point-of-sale printer tests has detected an error at the document insert station (IBM 4683 Model A02 Stand-Alone Test Mode).

User Response:

1. Ensure that a document is inserted in the document insert station.
2. Press the **I** button on the printer to close the document insert station.
3. Press the 0 key and select the printer test (1) again.

If the problem persists, switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T7174

T7174 PRT COVER OPEN PRESS THE 0 KEY

Explanation: The point-of-sale printer test has detected that the printer cover is open (IBM 4683 Model A02 Stand-Alone Test Mode).

User Response: Ensure that the printer cover is closed.

If the cover is closed, switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T8000

T8000 TESTING VIDEO

Explanation: The video display test has started.

User Response: If this message does not change, follow "TEST 4200: Video Display (4683 Only)" in topic 4.20.

T8001	T8001 TESTING VIDEO CARD Explanation: Testing the video display Feature Expansion card in location 2A.
T8002	T8002 TESTING VIDEO CARD Explanation: Testing the video display Feature Expansion card in location 2B.
T8051	T8051 VIDEO CARD DOES NOT RESPOND - or - T8051 FEATURE CARD 2A OR SYSTEM UNIT IS FAILING Explanation: The 4683 video display test received no communication from the 4683 Feature Expansion Card for the video display. User Response: Switch POWER OFF , unplug the video display power cord, and follow this list to isolate and correct the cause of the problem. <ol style="list-style-type: none">1. Exchange the Feature Expansion card for the video display. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.2. Service the 4683 base unit to exchange the base card. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
T8052	T8052 VIDEO CARD PROBLEM FOUND - or - T8052 FEATURE CARD 2A IS FAILING Explanation: The 4683 video display test detected a problem in the 4683 Feature Expansion Card for the video display. User Response: Switch POWER OFF , unplug the video display power cord, and exchange the Feature Expansion card for the video display. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
T8053	T8053 ERROR, REPLACE FEATURE CARD 2A OR BASE UNIT IS FAILING Explanation: The test received no communication from the Feature Expansion card in location 2A. User Response: Switch POWER OFF , unplug the video display power cord, and follow this list to isolate and correct the cause of the problem. <ol style="list-style-type: none">1. Exchange the Feature Expansion card in location 2A. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.2. Service the 4683 base unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
T8054	T8054 ERROR, REPLACE FEATURE CARD 2A Explanation: The test detected a problem in the Feature Expansion card in location 2A. User Response: Switch POWER OFF , unplug the video display power cord, and exchange the Feature Expansion card in location 2A. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
T8061	T8061 VIDEO CARD DOES NOT RESPOND

- or -

T8061 FEATURE CARD 2B OR SYSTEM UNIT IS FAILING

Explanation: The 4683 video display test received no communication from the 4683 Feature Expansion Card in location 2B.

User Response: Switch **POWER OFF**, unplug the video display power cord, and follow this list to isolate and correct the cause of the problem.

1. Exchange the Feature Expansion card in location 2B. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
2. Service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T8062

T8062 VIDEO CARD PROBLEM FOUND

- or -

T8062 FEATURE CARD 2B IS FAILING

Explanation: The 4683 video display test detected a problem in the 4683 Feature Expansion Card in location 2B.

User Response: Switch **POWER OFF**, unplug the video display power cord, and exchange the Feature Expansion card in location 2B. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.

T8063

T8063 ERROR, REPLACE FEATURE CARD 2B OR BASE UNIT IS FAILING

Explanation: The test received no communication from the Feature Expansion card in location 2B.

User Response: Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange the Feature Expansion card in location 2B. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
2. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T8064

T8064 ERROR, REPLACE FEATURE CARD 2B

Explanation: The test detected a problem in the Feature Expansion card in location 2B.

User Response: Switch **POWER OFF** and exchange the Feature Expansion card in location 2B. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.

T9400

T9400 TESTING IBM BAR CODE READER

Explanation: The IBM Hand-Held Bar Code Reader test has started.

T9401

T9401 READ A LABEL WITH BAR CODE READER

Explanation: The test is ready to read a UPC/EAN label with the IBM Hand-Held Bar Code Reader. The data that is read from the label is formatted and printed at the customer receipt station.

User Response: Use the bar code reader to read a label. Observe the printing at the customer receipt station to verify that the label was read correctly.

T9402

T9402 READ A LABEL, PRINT UNFORMATTED

Explanation: The test is ready to read a label with the IBM Hand-Held Bar Code Reader. The data that is read from the label is printed at the customer receipt station as it is received from the bar code reader (unformatted).

User Response: Use the bar code reader to read a label. Observe the printing at the customer receipt station to verify that the label was read correctly.

T9451

T9451 ERROR REPLACE IBM BAR CODE READER OR BASE UNIT IS FAILING

- or -

T9451 IBM BAR CODE READER OR SYSTEM UNIT IS FAILING

Explanation: The IBM Hand-Held Bar Code Reader test detected that the bar code reader is not communicating.

User Response: Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange the IBM Hand-Held Bar Code Reader. See "Hand-Held Bar Code Reader Removal and Replacement" in topic 7.5.
2. Service the 4683 base unit to exchange the base card or service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

T9452

T9452 ERROR, REPLACE IBM BAR CODE READER

- or -

T9452 IBM BAR CODE READER IS FAILING

Explanation: The IBM Hand-Held Bar Code Reader test detected a read problem.

User Response: Switch **POWER OFF** and exchange the IBM Hand-Held Bar Code Reader. See "Hand-Held Bar Code Reader Removal and Replacement" in topic 7.5.

T9455

T9455 ERROR, VERIFY THAT LABEL IS GOOD

Explanation: The test detected an error when reading a label with the IBM Hand-Held Bar Code Reader.

User Response: Try several times to read the labels.

If the problem persists:

1. Do the following to end the test.
 - 4680 Operating System - Type 0 and press S2 (Enter).
 - 4684 Reference Diskette - Press S1 (Esc).
2. Verify that the labels being used are valid for the bar code reader.
3. Verify that the labels are in good condition.
 - If the labels are good, switch **POWER OFF** and exchange the IBM Hand-Held Bar Code Reader. See "Hand-Held Bar Code Reader Removal and Replacement" in topic 7.5.
 - If the labels are **not** good, locate correct, good labels for the bar code reader and use them.

T9700

T9700 START VPD ENTRY

Explanation: The vital product entry procedure has started. See "VPD 8010: Entering Vital Product Data" in topic F.2.

T9701

T9701 ENTER TERMINAL ADDRESS FOR VPD

Explanation: A terminal number must be keyed for the

vital product data entry procedure.

User Response: Key a 3-digit terminal number for vital product data.

T9702 T9702 ENTRY TOO LONG OR TOO SHORT

Explanation: The terminal number that was keyed for the vital product data entry procedure was the wrong length.

User Response: Key a 3-digit terminal number for vital product data.

T9703 T9703 VPD DATA NOT FOUND

Explanation: No record was found for the terminal number that was keyed for the vital product data entry procedure.

User Response: Key a valid terminal number for vital product data.

T9801 T9801 ENTER SERIAL NUMBER MM-SSSS

Explanation: The 4683 serial number must be keyed in for the vital product data entry procedure.

User Response: Key the serial number (S/N) of the point-of-sale terminal. It is embossed on the top of the base unit cover at the back-right corner.

T9802 T9802 ENTER CARD EC XXXXXXX

Explanation: The engineering change (EC) number of the 4683-xx1 base card must be keyed in for the vital product data entry procedure.

User Response: Key the EC number of the 4683-xx1 base card.

T9803 T9803 ENTER CARD EC XXXXXXX

- or -

T9803 ENTER SYSTEM BOARD EC XXXXXXX

Explanation: The engineering change (EC) number of the 4683-xx2 base card must be keyed in for the vital product data entry procedure.

User Response: Key the EC number of the 4683-xx2 base card.

T9804 T9804 ENTER POWER SUPPLY EC XXXXXXX

Explanation: The engineering change (EC) number of the 4683 power supply must be keyed in for the vital product data entry procedure.

User Response: Key the EC number of the power supply.

T9805 T9805 ENTRY COMPLETE UPDATING VPD

Explanation: The vital product data entry procedure is complete.

2.8 Unnn Messages

These messages are generated by the point-of-sale terminal and the IBM 4680 Store System during terminal power-ON and IPL. The store system is an IBM 4680 Store System when the IBM 4680 Operating System is running in the store controller.

U001

U001

Explanation: The point-of-sale display with this message has completed its power-ON self tests and it is waiting to receive communications from the 4683 base unit or 4684 system unit.

User Response: Wait a maximum of 30 seconds for the next message to display. If U001 remains on the display, follow "PDP 6080: U001 Message" in topic 6.8.

U002

U002

Explanation: The 4683-xx2 has completed the power-ON self tests and it is waiting to receive communications from its partner 4683-xx1 or 4684.

User Response: After power is switched ON at the partner 4683-xx1 or 4684, wait a maximum of one minute for the next message to display. If U002 remains on the display, follow "PDP 6090: U002 Message" in topic 6.9.

U003

U003

Explanation:

4683 - The 4683-xx1 has completed its power-ON self tests and it is waiting to receive communications from the store loop. A partner 4683-xx2 also displays U003.

4684 - The 4684 has completed its power-ON self tests and communications have been established on the device channel. A partner 4683-xx2 also displays U003.

User Response:

4683 - If the 4683-xx1 is attached to an active store loop, wait a maximum of one minute for the next message to display. If U003 remains on the display, follow "PDP 6100: U003 Message" in topic 6.10.

4684 - Wait a maximum of one minute for the next message to display.

- If U003 remains on the display and you have another message or symptom:
 - Follow the *User Response* for the message in this chapter **or** in the *IBM 4680 Store System: Messages Guide*.
 - Follow the *Repair Action* for the symptom. See Chapter 3, "Symptoms."
- If U003 remains on the display and you *do not* have another message or symptom, follow "PDP 6100: U003 Message" in topic 6.10.

U004

U004

Explanation:

4683 - The 4683-xx1 has completed its power-ON self tests and has started to communicate over the store loop with the store controller. It has received store loop polls from the store controller. It has not yet received a response to messages it has sent to the store controller. A partner 4683-xx2 also displays U004.

When the option feature "Terminal Program Load" is being used, this message indicates:

- This 4683 Master Terminal has not received a load request from any other 4683.
- or -
- This 4683 has not received a response to a load request it sent to the 4683 Master Terminal.

4684 - The 4684 has completed its power-ON self tests and the terminal load has started. A partner 4683-xx2 also displays U004.

User Response:

4683 - Wait a maximum of 10 minutes for the next message to display. This time can be between 30 seconds and 10 minutes, depending on the store system configuration. If U004 remains on the display, follow "PDP 6110: U004 Message" in topic 6.11.

Note: If Terminal Program Load is being used, and U004 remains on the display for longer than 10 minutes, Terminal Program Load is not operating correctly. Report this problem to the store programmer. See the documentation for the application program.

4684 - Wait a maximum of 30 seconds for the next message to display.

- If U004 remains on the display and you have another message or symptom:
 - Follow the *User Response* for the message in this chapter **or** in the *IBM 4680 Store System: Messages Guide*.
 - Follow the *Repair Action* for the symptom. See Chapter 3, "Symptoms."
- If U004 remains on the display and you *do not* have another message or symptom, follow "PDP 6110: U004 Message" in topic 6.11.

U005

U005

Explanation: The 4683-xx1 has completed its power-ON self tests and started the IPL process. The first load block has been received. A partner 4683-xx2 also displays U005.

When the option feature "Terminal Program Load" is being used, this message indicates:

- This 4683 Master Terminal has received a load request from another 4683 and it is transferring its storage across the store loop.
- or -
- This 4683 has received a response to a load request it sent to the 4683 Master Terminal and it is receiving a storage load.

User Response: Wait a maximum of 10 minutes for the next message to display. This time can be between 30 seconds and 10 minutes, depending on the store system configuration. If U005 remains on the display, follow "PDP 6120: U005 Message" in topic 6.12.

Note: If Terminal Program Load is being used, and U005 remains on the display for longer than 10 minutes, Terminal Program Load is not operating correctly. Report this problem to the store programmer. See the documentation for the application program.

U006

U006

Explanation:

4683 - The 4683-xx1 has completed its IPL process and the terminal operating system load is complete. The

terminal operating system has control and option drivers are being installed. A partner 4683-xx2 also displays U006.

4684 - The 4684 has completed its power-ON self tests and the terminal operating system load has established communications on the device channel. A partner 4683-xx2 also displays U006.

User Response:

4683 - Wait a maximum of 10 minutes for the next message to display. This time can be between 30 seconds and 10 minutes, depending on the store system configuration. If U006 remains on the display, follow "PDP 6130: U006 Message" in topic 6.13.

4684 - Wait a maximum of 30 seconds for the next message to display.

- If U006 remains on the display and you have another message or symptom:
 - Follow the *User Response* for the message in this chapter **or** in the *IBM 4680 Store System: Messages Guide*.
 - Follow the *Repair Action* for the symptom. See Chapter 3, "Symptoms."
- If U006 remains on the display and you *do not* have another message or symptom, follow "PDP 6130: U006 Message" in topic 6.13.

U007

U007

Explanation:

4683 - The 4683-xx1 IPL process has loaded terminal message records and I/O data translation tables into storage. Point-of-sale terminal I/O driver programs are being loaded into storage. The display option driver is installed. The remaining option drivers are being installed.

4684 - Communications on the device channel have been completed and the 4684 is waiting for the terminal operating system to load.

User Response:

4683 - Wait a maximum of 10 minutes for the next message to display. This time can be between 30 seconds and 10 minutes, depending on the store system configuration. If U007 remains on the display, follow "PDP 6140: U007 Message" in topic 6.14.

4684 - Wait a maximum of 10 seconds for the next message to display.

- If U007 remains on the display and you have another message or symptom:
 - Follow the *User Response* for the message in this chapter **or** in the *IBM 4680 Store System: Messages Guide*.
 - Follow the *Repair Action* for the symptom. See Chapter 3, "Symptoms."
- If U007 remains on the display and you *do not* have another message or symptom, follow "PDP 6140: U007 Message" in topic 6.14.

U008

U008

Explanation: A storage dump is in progress.

User Response: Wait for the dump to complete (approximately 10 minutes). Follow the *User Response* for

the message (W051, W052, W053, or W054) displayed at the store controller. The 4683-xx1 IPLs when the dump is complete. If U008 remains on the display, follow "PDP 6150: U008 Message" in topic 6.15.

U009

U009

Explanation: Three consecutive storage dumps have occurred at the 4683 as a result of the same problem. To prevent a continuous Dump/IPL loop, processing has been suspended and message U009 has been displayed **or** the 4683 has detected a software error and software error recovery procedures were not successful.

User Response:

If the terminal was in a Dump/IPL loop prior to message U009:

1. Fill in a copy of the "Problem Data Collection Form" in topic B.7.
2. Use as primary keyword MSGU009.
3. Create a 4683 storage dump. See "Requesting a 4683 Storage Dump" in topic B.2.
4. Report this problem to the store programmer and provide the preceding information.

If the terminal was not in a Dump/IPL loop prior to message U009:

1. Fill in a copy of the "Problem Data Collection Form" in topic B.7.
2. Use as primary keyword MSGU009.
3. Create a 4683 storage dump. See "Requesting a 4683 Storage Dump" in topic B.2.
4. Report this problem to the store programmer and provide the preceding information.
5. Switch the **POWER OFF**, wait 5 seconds, and switch power ON.
6. The IPL counter will be reset, allowing the terminal to complete the IPL.

U999

U999

Explanation: While running point-of-sale tests using the 4684 Reference Diskette, **S1** was pressed to end the tests.

User Response: Follow the instructions on the primary (system) display.

2.9 Wnnn Messages

These messages are generated by the IBM 4680 Operating System during store operations.

Only Wnnn (nnn = any number) HARDWARE error messages are listed here. If a Wnnn message is not listed in this book, see the *IBM 4680 Store System: Messages Guide*.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

W000 **W000 A SYSTEM EVENT HAS BEEN LOGGED**
Bx/Sxxx/Exxx RC=xxxxxxxx

Explanation: A system event has occurred and the event has been recorded in the system log. Examples of system events are a power line disturbance (PLD) and loading an application program.

User Response: If the B5/S030/E004 is displayed, see Table 2-1,

If the B5/S030/E004 is **not** displayed, see "System Log Descriptions" in the *IBM 4680 Store System: Messages Guide*. Base your response on the information in the System Log description.

Note: The Personal Computer/System maintenance package should always be used for solid failures and to test replaced assemblies.

 Table 2-1. Message W000 indicates a fixed disk problem.

B5/S030/E004	ACTION
<p>Explanation: B5/S030/E004 is generated by intermittent hardware problems that cause a store controller IPL. These problems can be such things as power disruptions and other unexpected events. If B5/S030/E004 occurs with a frequency that adversely effects store system performance, follow the ACTION in this table at the first opportunity.</p>	<ol style="list-style-type: none"> 1. Check the UNIQUE DATA that accompanied the message. See UNIQUE DATA on the following topic. <ul style="list-style-type: none"> <input type="checkbox"/> If the aa in the UNIQUE DATA is F0, continue at step 2. <input type="checkbox"/> If the aa in the UNIQUE DATA is 00, continue problem determination using the maintenance documentation for the store controller memory. 2. Do the following based on the location of the fixed disk adapter in the store controller: <ul style="list-style-type: none"> <input type="checkbox"/> If the fixed disk adapter is part of the fixed disk, continue at step 3. <input type="checkbox"/> If the fixed disk adapter is not part of the fixed disk, replace the adapter and retry the operation. If the problem persists after replacing the adapter, continue at step 3.
<p>UNIQUE DATA ----- DIAGNOSTIC CODE:</p>	<ol style="list-style-type: none"> 3. Do the following based on the type of store controller you have.

Wnnn Messages

xx04aaxxxxxxxxxxxxxxxxxxxxxxxxxxxxx	Warning: All data on the fixed disk will be lost, make sure the disk is backed up before doing these procedures.
x = Any Character	
aa = F0 Indicates a hardware problem with the fixed disk or fixed disk adapter.	<input type="checkbox"/> For a PS/2, use the advanced diagnostics to format the fixed disk. <input type="checkbox"/> For a Personal Computer AT, use the following advanced diagnostics procedure to format the fixed disk.
aa = 00 Indicates a memory parity error occurred.	<ol style="list-style-type: none"> 1. Load the fixed disk diagnostics. 2. Run "Read Verify" to determine the flagged sectors. 3. Run "Unconditional Format" and enter any flagged sectors obtained during the "Read Verify" step. 4. Run "Surface Analysis" to detect additional marginal bad sectors. Any additional flagged sectors are automatically added to the list of bad sectors.
	4. If the problem persists, replace the fixed disk.

W001

W001 OPEN LOOP - NOT BEACONING

Explanation: The 4683-xx1 is not receiving store loop communications. It is not beaconing because it does not have a terminal number. Its keyboard OFFLINE light is ON. A 4683-xx2 displays the status of its partner 4683-xx1.

Possible causes for this message:

- The store loop is open up-loop from the 4683-xx1 displaying message W001.
- Another 4683-xx1 is failing up-loop from the one displaying message W001.
- The 4683-xx1 store loop cable is failing.
- The 4683-xx1 base unit is failing.
- The primary store controller is failing.
- The backup store controller is failing.
- The distance between powered-ON 4683-xx1s on the store loop exceeds 1220 m (4000 ft.).

User Response: Follow "PDP 6160: W001 Message" in topic 6.16.

W002

W002 LOOP ADAPTER PROBLEM

Explanation: A problem was detected by the 4683-xx1 Store Loop Adapter test or the Store Loop Adapter failed to respond to a store loop command. A 4683-xx2 displays the status of its partner 4683-xx1.

User Response: Continue operating the 4683 in offline mode and do the following:

1. Switch **POWER OFF**, wait 10 seconds, and switch power ON.
If this is a 4683-xx2, switch **POWER OFF** at its partner 4683-xx1, wait 10 seconds, and switch power ON.
To find the partner 4683-xx1, obtain the

filled-in "Terminal Identification Chart" from the book *IBM 4680 Store System: Preparing Your Site*. OR obtain a store loop layout chart containing the following:

- Physical location of store controller(s) and point-of-sale terminals
- Order of store controller(s) and point-of-sale terminals on the store loop
- Terminal numbers.

2. If the problem persists, switch **POWER OFF** and service the 4683-xx1 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

W003

W003 CONTROLLER OFF LOOP

Explanation: The 4683-xx1 is not receiving store loop communications. The 4683-xx1 Store Loop Adapter test was run automatically and it detected no problems. The 4683 beacons and then received its own beacon. Other 4683s are now signaling that the store controller is not communicating on the loop (message W003). The store loop appears to be OK. The 4683 keyboard OFFLINE light is ON. A 4683-xx2 displays the status of its partner 4683-xx1.

Possible causes for this message:

- The store controller is powered-OFF.
- The store controller is disconnected from the store loop.
- The store controller store loop cable is failing.
- The 4683-xx1 is disconnected from the store loop.
- The 4683-xx1 store loop cable is failing.
- The store controller is failing.
- The 4683-xx1 base unit is failing.

User Response: Continue operating the 4683 in offline mode and follow "PDP 6170: W003 Message" in topic 6.17.

W004

W004 CONTROLLER DOES NOT RESPOND

Explanation: The 4683-xx1 is receiving store loop communications from the store controller, but no responses are being received for messages that it has sent to the store controller. The 4683 keyboard OFFLINE light is ON. The store controller may be communicating with other 4683s on the store loop. A 4683-xx2 displays the status of its partner 4683-xx1.

Possible causes for this message:

- The store loop is open down-loop from the 4683-xx1 displaying message W004.
- Another 4683-xx1 is failing down-loop from the one displaying message W004.
- The 4683-xx1 store loop cable is failing.
- The 4683-xx1 base unit is failing.
- The primary store controller is failing.
- The backup store controller is failing.
- The distance between powered-ON 4683-xx1s on the store loop exceeds 1220 m (4000 ft.).

User Response: Continue operating the 4683 in offline mode and follow "PDP 6180: W004 Message" in topic 6.18.

W005

W005 OPEN LOOP - BEACONING

Explanation: The 4683-xx1 is not receiving store loop communications. The 4683-xx1 Store Loop Adapter test was run automatically and it detected no problems. The 4683 is sending beacons, but it is not receiving beacons. The 4683 keyboard OFFLINE light is ON. A 4683-xx2 displays the status of its partner 4683-xx1.

Possible causes for this message:

- The store loop is open up-loop from the 4683-xx1 displaying message W005.
- Another 4683-xx1 is failing up-loop from the one displaying message W005.

- The 4683-xx1 store loop cable is failing.
- The 4683-xx1 base unit is failing.
- The primary store controller is failing.
- The backup store controller is failing.
- The distance between powered-ON 4683-xx1s on the store loop exceeds 1220 m (4000 ft.).

User Response: Continue operating the 4683 in offline mode and follow "PDP 6190: W005 Message" in topic 6.19.

W006

W006 TERMINAL xxx IS ALREADY IN USE

Explanation: This point-of-sale terminal is attempting to come online and there is another point-of-sale terminal either online or attempting to come online using the same terminal number as this terminal. The point-of-sale terminal that is online displays message W400 and any point-of-sale terminal attempting to come online displays message W006. Each point-of-sale terminal in the store must have a unique terminal number assigned to it.

User Response: Verify that the terminal number is correct. The terminal number can be displayed by pressing **S1 (Esc)**, typing **7**, and pressing **S2 (Enter)**.

- If the terminal number is correct:
 1. You can continue normal operation.
 2. The other point-of-sale terminal must be removed from the store loop or its terminal number must be changed. See "Changing the Terminal Number" in topic A.7.5.
- If the terminal number is **not** correct, see "Changing the Terminal Number" in topic A.7.5.

W007

W007 TERMINAL xxx IS BEACONING

Explanation: The 4683-xx1 is not receiving store loop communications. The 4683 Store Loop Adapter test was run automatically and it detected no problems. This 4683 was sending beacons but it stopped when it received beacons from the 4683 specified in this W007 message. A 4683-xx2 displays the status of its partner 4683-xx1.

Possible causes for this message:

- An open store loop *up-loop* from this 4683-xx1.
- Another 4683-xx1 is failing on the store loop.
- The store controller is failing.

User Response: Note the terminal number in the W007 message and follow "PDP 6050: Store Loop Problem" in topic 6.5.

W008 through W299

User Response: See the *IBM 4680 Store System: Messages Guide* for these messages.

W300

W300 DEVICE CHANNEL ADAPTER PROBLEM

Explanation: A hardware failure has been detected in the point-of-sale terminal. All devices attached to the terminal are likely to be affected.

User Response: Switch **POWER OFF**, wait 10 seconds, and switch power ON.

If the problem persists, switch **POWER OFF** and service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

W301

W301 CASH DRAWER HARDWARE PROBLEM

Explanation: A hardware failure has been detected in the cash drawer.

Possible causes for this message:

- The cash drawer is failing.
- The 4683 base unit or 4684 system unit is failing.

User Response: Run "TEST 4020: Cash Drawer (4683/4684)" in topic 4.2.

W302 W302 TOTAL RETENTION HARDWARE PROBLEM

Explanation: A hardware failure has been detected in totals retention.

User Response: Switch **POWER OFF** and service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

W303 W303 KEYBOARD/TONE HARDWARE PROBLEM

Explanation: A hardware failure has been detected in the keyboard or tone.

User Response: Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 or for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
2. Exchange the keyboard cable.
3. Service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

W304 W304 PRINTER HARDWARE PROBLEM

Explanation: A hardware failure has been detected in the printer. This message displays if the printer cover is open when you try to run a test.

Possible causes for this message:

- The printer is failing.
- The 4683 base unit or 4684 system unit is failing.

User Response: Run "TEST 4100: Point of Sale Printer (4683/4684)" in topic 4.10.

W305 W305 PRINT HEAD CARRIER PROBLEM

Explanation: Incorrect print head motion has been detected.

Possible causes for this message:

- The printer is failing.
- The 4683 base unit or 4684 system unit is failing.

User Response: Run "TEST 4100: Point of Sale Printer (4683/4684)" in topic 4.10.

W306 W306 ALPHANUMERIC, OPERATOR DISPLAY PROBLEM

Explanation: A hardware failure has been detected in the alphanumeric display or the display on the combined keyboard/display.

Possible causes for this message:

- The alphanumeric display is failing.
- The operator display is failing.
- The combined keyboard/display is failing.
- The cable is failing.
- The 4683 base unit or 4684 system unit is failing.

User Response: Run "TEST 4010: Alphanumeric, Operator, or Combined Keyboard/Display (4683/4684)" in topic 4.1.

W307

W307 VIDEO DISPLAY ADAPTER PROBLEM

Explanation: A hardware failure has been detected in the Feature Expansion card for the video display.

User Response: Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange the Feature Expansion card for the video display. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
2. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

W308

W308 MSR HARDWARE PROBLEM

Explanation: A hardware failure has been detected.

Possible causes for this message:

- The MSR is failing.
- The keyboard is failing.
- The 4683 base unit or 4684 system unit is failing.

User Response: Run "TEST 4060: Magnetic Stripe Reader (4683/4684 MSR)" in topic 4.6.

W309

W309 BAR CODE READER HARDWARE PROBLEM

Explanation: A hardware failure has been detected in the IBM Hand-Held Bar Code Reader.

Possible causes for this message:

- The hand-held bar code reader is failing.
- The 4683 base unit or 4684 system unit is failing.

User Response: Run "TEST 4050: Hand-Held Bar Code Reader (4683/4684)" in topic 4.5.

W310

W310 SERIAL PORT ADAPTER PROBLEM

Explanation: A hardware failure has been detected in the Feature Expansion card in location 2A.

User Response: Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange the Feature Expansion card in location 2A. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
2. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

W311

W311 OCR HARDWARE PROBLEM

Explanation: A hardware failure has been detected in the Feature Expansion card in location 2A.

Possible causes for this message:

- The Feature Expansion card is failing.
- The 4683 base unit is failing.

User Response:

- If you are using a 1520 Hand-Held Scanner Model A01, run "TEST 4210: 1520 Hand-Held Scanner Model A01 (4683 Only)" in topic 4.21.
- If you are using an OCR device, run "TEST 4080: Optical Character Reader (4683 Only)" in topic 4.8.

W312

W312 3687-2 SCANNER HARDWARE PROBLEM

Explanation: A hardware failure has been detected in the point-of-sale scanner. If the scanner is a 3687 Checkout Scanner Model 2, a hardware failure has been detected in the scanner adapter.

Possible causes for this message:

- The scanner adapter is failing (3687 Checkout Scanner Model 2 only).
- The point-of-sale scanner is failing.
- The 4683 base unit or 4684 system unit is failing.

User Response:

- If the scanner is a 3687 Checkout Scanner Model 2, run "TEST 4110: Point of Sale Scanner (4683/4684)" in topic 4.11.
- If the scanner is **not** a 3687 Checkout Scanner Model 2, continue problem determination using the maintenance documentation for the scanner.

W313

W313 1520-A02 SCANNER PROBLEM

Explanation: A hardware failure has been detected in the IBM 1520 Hand-Held Scanner Model A02.

Possible causes for this message:

- The 1520 A02 is failing.
- The 4683 base unit or 4684 system unit is failing.

User Response: Verify that the 1520 Model A02 control unit is powered-ON. If it is, run "TEST 4220: 1520 Hand-Held Scanner Model A02 (4683/4684)" in topic 4.22.

W314

W314 MAG WAND HARDWARE PROBLEM

Explanation: A hardware failure has been detected in the Feature Expansion card for the magnetic wand.

Possible causes for this message:

- The Feature Expansion card is failing.
- The 4683 base unit is failing.

User Response: Run "TEST 4070: Magnetic Wand (4683 Only)" in topic 4.7.

W315

W315 REDUCED RAM DISK CAPACITY

Explanation: The RAM (random access memory) disk that was installed on the 4683 has less storage than the amount specified in the configuration. This happened because the 4683 does not have enough storage to create a RAM disk using the configured amount.

User Response:

1. Fill in a copy of the "Problem Data Collection Form" in topic B.7. Use keyword MSGW315.
2. Report this problem to the store programmer and supply the preceding information.

W316

W316 SERIAL PORT ADAPTER PROBLEM

Explanation: A hardware failure has been detected in the Feature Expansion card in location 2B.

User Response: Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange the Feature Expansion card in location 2B. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
2. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal*:

W317

W317 OCR HARDWARE PROBLEM

Explanation: A hardware failure has been detected in the Feature Expansion card in location 2B.

Possible causes for this message:

- The Feature Expansion card is failing.
- The 4683 base unit is failing.

User Response:

- If you are using a 1520 Hand-Held Scanner Model A01, run "TEST 4210: 1520 Hand-Held Scanner Model A01 (4683 Only)" in topic 4.21.
- If you are using an OCR device, run "TEST 4080: Optical Character Reader (4683 Only)" in topic 4.8.

W318

W318 REQUIRED DEVICE PROBLEM - TONE

Explanation: The I/O processor has stopped because it cannot successfully open the tone.

User Response: Ensure that the keyboard is attached to the correct socket in the base unit. Normally it is attached to socket 5A. However, it can be configured to attach to socket 5B. Your store programmer should be able to determine the correct socket.

If the keyboard is attached correctly, switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 **or** for service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
2. Exchange the keyboard cable.
3. Service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

W319

W319 OPTIONAL DEVICE PROBLEM - OCR WAND

Explanation: The I/O processor is operating in a degraded mode because it cannot successfully open a configured device.

Possible causes for this message:

- The Feature Expansion card is failing.
- The 4683 base unit is failing.

User Response:

- If you are using a 1520 Hand-Held Scanner Model A01, run "TEST 4210: 1520 Hand-Held Scanner Model A01 (4683 Only)" in topic 4.21.
- If you are using an OCR device, run "TEST 4080: Optical Character Reader (4683 Only)" in topic 4.8.

W320

W320 KEYBOARD MUST BE CONFIGURED

Explanation: The I/O processor has stopped because the point-of-sale keyboard driver is not configured.

User Response: Configure the point-of-sale terminal with a keyboard. See the *IBM 4680 Store System: Planning Guide* and the *IBM 4680 Store System: User's Guide*.

W321

W321 PROCESSING... WAIT FOR PROMPT

Explanation:

- If the point-of-sale terminal keyboard WAIT light is ON, the application is not ready for I/O processor input.
- If the point-of-sale terminal keyboard WAIT light is **not** ON, the message indicates the reason for the last wait condition (it is no longer current).

User Response:

- If the point-of-sale terminal keyboard WAIT light is ON, wait for a prompt message from the application.
- If the point-of-sale terminal keyboard WAIT light is **not** ON, press **S1 (Esc)**, **S2 (Enter)**, and resume normal operations.
- If W321 remains on the screen:
 1. Fill in a copy of the "Problem Data Collection Form" in topic B.7.
 2. Use as primary keyword MSGW321.
 3. Report this problem to the store programmer and provide the preceding information.

W322

W322 COIN HARDWARE PROBLEM

Explanation: A hardware failure has been detected in the Feature Expansion card for the coin dispenser.

Possible causes for this message:

- The Feature Expansion card is failing.
- The 4683 base unit is failing.

User Response: Run "TEST 4030: Coin Dispenser (4683 Only)" in topic 4.3.

W323

W323 SCALE HARDWARE PROBLEM

Explanation: A hardware problem has been detected in the scale adapter.

User Response:

- If the scale is connected to a Feature Expansion card, run "TEST 4140: Scale (4683 Only)" in topic 4.14.
- If the scale is connected to socket 17, continue problem determination using the maintenance documentation for the scanner.

W324

W324 REQUIRED DEVICE PROBLEM - DISPLAY

Explanation: The I/O processor has stopped because it cannot successfully open the display.

Note: This problem can be caused by the display or combined keyboard/display being plugged into the wrong socket.

User Response:

- If you have an alphanumeric display, operator display, or combined keyboard/display, switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.
 1. Verify that the display or combined keyboard/display is plugged into the correct socket.
 2. Exchange the display. See Chapter 7, "Removal and Replacement Procedures."
 3. Service the combined keyboard/display. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
 4. Exchange the display cable.
 5. Exchange the combined keyboard/display cable.
 6. Service the 4683 base unit or 4684 system unit.

For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

- If you have a point-of-sale video display, switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.
 1. Exchange the Feature Expansion card for the video display. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
 2. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

W325

W325 OPTIONAL DEVICE PROBLEM - SCANNER

Explanation: The I/O processor is operating in a degraded mode because it cannot successfully open a configured scanner.

Possible causes for this message:

- The scanner adapter is failing (3687 Checkout Scanner Model 2 only).
- The point-of-sale scanner is failing.
- The scanner cable is failing.
- The 4683 base unit or 4684 system unit is failing.

User Response: Run "TEST 4110: Point of Sale Scanner (4683/4684)" in topic 4.11.

W326

W326 DISPLAY MUST BE CONFIGURED

Explanation: The I/O processor has stopped because the point-of-sale display driver is not configured.

User Response: Configure the point-of-sale terminal with a display. See the *IBM 4680 Store System: Planning Guide* and the *IBM 4680 Store System: User's Guide*.

W327

W327 OPTIONAL DEVICE PROBLEM - MAG WAND

Explanation: The I/O processor is operating in a degraded mode because it cannot successfully open a configured magnetic wand.

Possible causes for this message:

- The magnetic wand is failing.
- The Feature Expansion card is failing.
- The 4683 base unit is failing.

User Response: Run "TEST 4070: Magnetic Wand (4683 Only)" in topic 4.7.

W328

W328 VIDEO PROBLEM CARD 2A

Explanation: A hardware failure has been detected in the video display Feature Expansion card in location 2A.

User Response: Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange the Feature Expansion card in location 2A. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
2. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

W329

W329 DISPLAY PROBLEM SOCKET 4A/5A

Explanation: A hardware failure has been detected in the display connected to socket 4A/5A.

Possible causes for this message:

- The display connected to socket 4A is failing.
- The combined keyboard/display connected to socket

- 5A is failing.
- The display cable is failing.
- The combined keyboard/display cable is failing.
- The 4683 base unit or 4684 system unit is failing.

Note: The operator display cannot be plugged into socket 4A when the combined keyboard/display is connected to socket 5A.

User Response: Run "TEST 4010: Alphanumeric, Operator, or Combined Keyboard/Display (4683/4684)" in topic 4.1 OR "TEST 4150: Shopper Display (4683/4684)" in topic 4.15.

W330

W330 VIDEO PROBLEM CARD 2B

Explanation: A hardware failure has been detected in the video display Feature Expansion card in location 2B.

User Response: Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange the Feature Expansion card in location 2B. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
2. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

W331

W331 DISPLAY PROBLEM SOCKET 4B/5B

Explanation: A hardware failure has been detected in the display connected to socket 4B/5B.

Possible causes for this message:

- The display connected to socket 4B is failing
- The combined keyboard/display connected to socket 5B is failing
- The display cable is failing.
- The combined keyboard/display cable is failing.
- The 4683 base unit or 4684 system unit is failing.

Note: The operator display cannot be plugged into socket 4B when the combined keyboard/display is connected to socket 5B.

User Response: Run "TEST 4010: Alphanumeric, Operator, or Combined Keyboard/Display (4683/4684)" in topic 4.1 OR "TEST 4150: Shopper Display (4683/4684)" in topic 4.15.

W332 through W353

User Response: See the *IBM 4680 Store System: Messages Guide* for these messages.

W354

**W354 PRINTER JOURNAL BUFFER EXCEEDED
Bx/Sxxx/Exxx**

Explanation: The amount of data being buffered exceeds the size of the buffer.

User Response: Change the journal buffer size in the terminal device group for the terminal that logged this error.

W355

**W355 PRINTER MODELS DO NOT MATCH
Bx/Sxxx/Exxx**

Explanation: The printer attached to the 4683-xx2 must be the same model as the printer attached to the 4683-xx1. If the printer models are not the same, this error is logged at both the store controller and the 4683-xx2. Printer models are checked during terminal IPL, so this message will be logged at that time only.

User Response: Ensure the printer attached the 4683-xx2 is the same model as the printer attached to the

4683-xx1.

W356 through W499

User Response: See the *IBM 4680 Store System: Messages Guide* for these messages.

W500

W500 LOOP ADAPTER PROBLEM DETECTED DURING IPL TESTS
Bx/Sxxx/Exxx

Explanation: The test detected a hardware problem in the store controller Store Loop Adapter.

User Response: Follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

W501

User Response: See the *IBM 4680 Store System: Messages Guide* for this message.

W502

W502 (No message text)

Explanation: There is no Store Loop Adapter installed in the store controller or the Store Loop Adapter is failing.

User Response: Follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

W503 through W751

User Response: See the *IBM 4680 Store System: Messages Guide* for these messages.

W752

W752 SUCCESSFUL RECOVERY FROM FIXED DISK ERROR
Bx/Sxxx/Exxx RC=xxxxxxxx

Explanation: A file error occurred while reading from or writing to a file on the fixed disk. If these errors occur consistently, this can indicate a potential disk drive problem.

The event (Exxx) in the message indicates the cause of the problem.

- **E019** - A hardware error occurred while reading from or writing to fixed disk drive C or D.
 - RC=802x4300 indicates the disk is full.
 - All other RCs indicate a fault in the disk drive or adapter.
- **E020** - A hardware error occurred while reading from or writing to a diskette.
 - RC=802x4300 indicates the diskette is full.
 - RC=802x4301 indicates the diskette has been removed or replaced.
 - All other RCs indicate a fault in the diskette drive, adapter, or media.

User Response: If these errors are occurring consistently, follow the ACTION in Table 2-2 based on the EVENT (Exxx) in the message.

Note: The Personal Computer/System maintenance package should always be used for solid failures and to test replaced assemblies.

+-----+ Table 2-2. Message W752 +-----+	
EVENT	ACTION
E019 - A hardware error occurred while reading from or writing to fixed disk drive C or D.	1. Do the following based on the location of the fixed disk adapter in the store controller.
This message is	□ If the fixed disk adapter is part of the fixed disk, continue at step 2.
	□ If the fixed disk adapter is not part

<p>caused by intermittent hardware errors. These errors can be such things as power disruptions and other unexpected events. When E019 errors occur, software retries the operation and in most cases the store controller resumes operations without requiring user action.</p>	<p>of the fixed disk, replace the adapter and retry the operation. If the problem persists after replacing the adapter, continue at step 2.</p>
<p>When the system does not resume operation, the error is considered solid, message W754 is logged, and the user should follow the response for message W754.</p> <p>However, if W752 errors occur with a frequency that adversely effects store system performance, then and only then follow the ACTION in this table at the first opportunity.</p>	<p>2. Do the following based on the type of store controller you have.</p> <p>Warning: All data on the fixed disk will be lost, make sure the disk is backed up before doing these procedures.</p> <ul style="list-style-type: none"> □ For a PS/2, use the advanced diagnostics to format the fixed disk. □ For a Personal Computer AT, use the following advanced diagnostics procedure to format the fixed disk. <ul style="list-style-type: none"> a. Load the fixed disk diagnostics. b. Run "Read Verify" to determine the flagged sectors. c. Run "Unconditional Format" and enter any flagged sectors obtained during the "Read Verify" step. d. Run "Surface Analysis" to detect additional marginal bad sectors. Any additional flagged sectors are automatically added to the list of bad sectors. <p>3. If the problem persists, replace the fixed disk.</p>
<p>E020 - A hardware error occurred while reading from or writing to a diskette. The operation was retried.</p>	<ol style="list-style-type: none"> 1. Verify that the diskette is compatible with the diskette drive. 2. If it is compatible, use a backup diskette. 3. If the problem persists after using a backup diskette, continue problem determination using the maintenance documentation for the store controller diskette drive.

W753

W753 HARDWARE PROBLEM WITH DISKETTE ADAPTER OR DRIVE x Bx/Sxxx/Exxx RC=xxxxxxxx

Explanation: A diskette drive or diskette drive adapter hardware problem has been detected.

If streaming tape drive operations are currently in progress, use of the diskette drive is prevented. Diskette drive operations and streaming tape drive operations cannot be performed at the same time.

User Response: If streaming tape drive operations are **not** currently in progress, retry the diskette drive procedure.

1. Verify that the diskette is compatible with the diskette drive.
2. If the diskette is compatible, use a back up diskette.
3. If the problem persists, continue problem determination using the maintenance documentation for the store controller diskette drive.

W754

W754 HARDWARE PROBLEM WITH FIXED DISK ADAPTER OR DRIVE Bx/Sxxx/Exxx DRIVE=x RC=xxxxxxxx

Explanation: A fixed disk hardware error occurred while reading from or writing to fixed disk drive C or D. For identification of the drive, see DRIVE= in this message.

Note: The Personal Computer/System maintenance package should always be used for solid failures and to test

replaced assemblies.

User Response:

1. Do the following based on the location of the fixed disk adapter in the store controller.
 - If the fixed disk adapter is part of the fixed disk, continue at step 2.
 - If the fixed disk adapter is **not** part of the fixed disk, replace the adapter and retry the operation. If the problem persists after replacing the adapter, continue at step 2.
2. Do the following based on the type of store controller you have.

Warning: All data on the fixed disk will be lost, make sure the disk is backed up before doing these procedures.

- For a PS/2, use the advanced diagnostics to format the fixed disk.
 - For a Personal Computer AT, use the following advanced diagnostics procedure to format the fixed disk.
 - a. Load the fixed disk diagnostics.
 - b. Run "Read Verify" to determine the flagged sectors.
 - c. Run "Unconditional Format" and enter any flagged sectors obtained during the "Read Verify" step.
 - d. Run "Surface Analysis" to detect additional marginal bad sectors. Any additional flagged sectors are automatically added to the list of bad sectors.
3. If the problem persists, replace the fixed disk.

W755 through W759

User Response: See the *IBM 4680 Store System: Messages Guide* for these messages.

W760

W760 OPEN LOOP - TERMINAL xxx IS BEACONING
Bx/Sxxx/Exxx

Explanation: The store controller is sending store loop communications but it is receiving beacons from the 4683-xx1 specified in this W760 message.

Possible causes for this message:

- The store loop is open up-loop from the beaconing 4683-xx1.
- Another 4683-xx1 is failing on the store loop.
- The 4683-xx1 store loop cable is failing.
- The 4683-xx1 base unit is failing.
- The primary store controller is failing.
- The backup store controller is failing.

User Response: Note the terminal number in the W760 message and follow "PDP 6050: Store Loop Problem" in topic 6.5.

W761

User Response: See the *IBM 4680 Store System: Messages Guide* for this message.

W762

W762 TERMINAL xxx DOES NOT RESPOND
Bx/Sxxx/Exxx

Explanation: The terminal number in this W762 message does not respond to messages sent to it by the store controller. The active store controller is receiving end-of-polls. The active store controller is **not** receiving beacons. The store loop appears to be OK.

Possible causes for this message:

- The point-of-sale terminal may be powered-OFF (terminal number displayed in message W762).

- The point-of-sale terminal may be offline (terminal number displayed in message W762).
- The point-of-sale terminal is failing (terminal number displayed in message W762).
- The primary store controller is failing.
- The backup store controller is failing.
- The distance between powered-ON 4683-xxls on the store loop exceeds 1220 m (4000 ft.).

User Response: Follow "PDP 6200: W762 Message" in topic 6.20.

W763

**W763 CONTROLLER OFF LOOP - STORE LOOP ADAPTER
PROBLEM Bx/Sxxx/Exxx**

Explanation: The self-test detected a store controller Store Loop Adapter problem OR the adapter failed to respond to a store loop command.

This message is posted for intermittent and permanent problems. If the problem is intermittent, the store controller automatically recovers.

User Response: Verify that the store loop is operating correctly.

- If the store loop is operating correctly, no action is required.
- If the store loop is **not** operating correctly, follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

W764

**W764 OPEN LOOP AFTER LAST ACTIVE TERMINAL
Bx/Sxxx/Exxx**

Explanation: The active store controller is transmitting store loop polls, but it is not receiving end-of-polls or beacons.

Possible causes for this message:

- The store loop is open down-loop from the last active 4683-xxl.
- An inactive 4683-xxl is failing down-loop from the last active 4683-xxl.
- The store loop cable is failing on the last active 4683-xxl.
- The 4683 base unit is failing on the last active 4683-xxl.
- The store loop cable is failing on the active store controller.
- The active store controller is failing.
- The distance between the last active 4683-xxl and the active store controller exceeds 1220 m (4000 ft.).

User Response: Follow "PDP 6210: W764 Message" in topic 6.21.

W765 through W769

User Response: See the *IBM 4680 Store System: Messages Guide* for these messages.

W770

W770 BACKUP LOOP IN CONTROL

Explanation: The backup store controller has taken control of the store loop. This message is displayed at the backup store controller.

User Response: Look for a message at the primary store controller.

The primary store controller is the controller that has been designated to control the store loop. It is supported by the backup store controller.

- If a message is displayed, follow the *User Response* for the displayed message.

- If a message is **not** displayed, follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

W771

W771 BACKUP REQUESTED - DISABLED

Explanation: A 4683 has requested backup, but the backup function was not enabled at the backup store controller. This message is displayed at the backup store controller.

User Response: Enable the backup function at the backup store controller console:

1. Press **System Request** and type **C** to display the STORE CONTROLLER FUNCTIONS screen.
2. Type **2** and press **Enter** to display the CONTROLLER FUNCTIONS screen.
3. Type **2** and press **Enter** to enable (allow) loop controller backup.

Look for a message at the primary store controller.

The primary store controller is the controller that has been designated to control the store loop. It is supported by the backup store controller.

- If a message is displayed, follow the *User Response* for the displayed message.
- If a message is **not** displayed, follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

W772

W772 OPEN LOOP - BEACONING

Explanation: The backup store controller is not receiving store loop communications. The backup store controller is sending beacons but it is not receiving beacons. This message is displayed at the backup store controller.

Possible causes for this message:

- The store loop is open up-loop from the store controller.
- A 4683 is failing up-loop from the store controller.
- The backup store controller is failing.
- The primary store controller is failing.
- The distance between powered-ON 4683-xx1s on the store loop exceeds 1220 m (4000 ft.).

User Response: Follow "PDP 6220: W772 Message" in topic 6.22.

W773

User Response: See the *IBM 4680 Store System: Messages Guide* for this message.

W774

W774 CONTROLLER OFF LOOP

Explanation: The backup store controller, acting as a 4683, is not receiving store loop communications. The Store Loop Adapter self-test was run automatically and it detected no problems in the backup store controller. The backup store controller beacons and received its own beacon in response. It is now signaling (message W774) that the primary store controller is not communicating on the loop. The store loop appears to be OK.

Possible causes for this message:

- The backup store controller is disconnected from the store loop.
- The backup store controller is failing.
- The primary store controller power is switched OFF.
- The primary store controller is disconnected from the store loop.
- The primary store controller is failing.

User Response: Look for a message at the primary store controller.

The primary store controller is the controller that has been designated to control the store loop. It is supported by the backup store controller.

- If a message is displayed, follow the *User Response* for the displayed message.
- If a message is **not** displayed, follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

W775 through W799

User Response: See the *IBM 4680 Store System: Messages Guide* for these messages.

W800

W800 ASYNC HOST COMMUNICATIONS IS NOT OPERATIONAL
Bx/Sxxx/Exxx RC=xxxxxxxx

Explanation: Host communications are not operational.

The event (Exxx) in the message indicates the following:

- E001** - Data Set Ready (DSR) signal not raised within a specified time limit.
- E002** - Clear to Send (CTS) signal not raised within a specified time limit.
- E003** - Receive Line Signal Detect (RSLD) not raised within a specified time limit.
- E009** - On a line configured as autodial, with a modem that is not "Attention Command Set" - compatible, the Data Set Ready (DSR) signal raised before Data Terminal Ready (DTR) OR the Clear to Send (CTS) signal raised before Request to Send (RTS).

User Response: Follow "PDP 6030: Store Controller Communications Problem" in topic 6.3.

W801

W801 ASYNC AUTO-DIAL LINE DID NOT RESPOND
Bx/Sxxx/Exxx

Explanation: The line did not respond (auto-dial timeout) within the specified time limit.

User Response: Follow "PDP 6030: Store Controller Communications Problem" in topic 6.3.

W802

W802 ASYNC AUTO-ANSWER LINE DID NOT RESPOND
Bx/Sxxx/Exxx

Explanation: The line did not respond (auto-answer timeout) within the specified time limit.

User Response: Follow "PDP 6030: Store Controller Communications Problem" in topic 6.3.

W803

User Response: See the *IBM 4680 Store System: Messages Guide* for this message.

W804

W804 HOST ADAPTER LINE xxxxxxxx IS NOT OPERATIONAL
Bx/Sxxx/Exxx

Explanation: The communications adapter is not functioning properly.

The event (Exxx) in the message indicates the following:

- E002** - First communications adapter, BSC or SDLC
- E003** - Second communications adapter, BSC or SDLC.

User Response: Follow "PDP 6030: Store Controller

Communications Problem" in topic 6.3.

W805

**W805 BSC/SNA COMMUNICATIONS ENDED DUE TO LINK
FAILURE Bx/Sxxx/Exxx RC=xxxxxxxx**

Explanation: Host communications ended abnormally on this BSC link.

The event (Exxx) in the message indicates the following:

- E006** - PCREATE problem occurred when attempting to create the BSC/SNA interface process.
- E007** - Communications with host ended. The reason is indicated in the return code.

User Response: Re-establish the host session.

If the problem persists,

1. Fill in a copy of the "Problem Data Collection Form" in topic B.7.
2. Use as primary keyword MSGW805.
3. Report this problem to the store programmer and provide the preceding information.

W806

**W806 HOST COMMUNICATIONS PROBLEM ON LINE xxxxxxxx
Bx/Sxxx/Exxx**

Explanation: A host communications problem has occurred.

The event (Exxx) in the message indicates the following:

- E007** - An unexpected disconnect message was received.
- E009** - Data Set Ready (DSR) signal dropped while the line was active.
- E010** - The clear-to-send (CTS) signal was not returned by the modem when the request-to-send (RTS) signal was raised.

User Response: Re-establish the connection.

If the problem persists, follow "PDP 6030: Store Controller Communications Problem" in topic 6.3.

W807 or W808

User Response: See the *IBM 4680 Store System: Messages Guide* for these messages.

W809

**W809 HCP ENDED DUE TO LINK FAILURE
Bx/Sxxx/Exxx FN=xxxxxxxxxxxxx RC=xxxxxxxxx CMD=xxxx TYPE=x**

Explanation: The Host Command Processor detected a host error that is unrecoverable. This message can be caused by either hardware or software.

User Response: Follow "PDP 6030: Store Controller Communications Problem" in topic 6.3.

W810 or W811

User Response: See the *IBM 4680 Store System: Messages Guide* for these messages.

W812

**W812 HOST COMMUNICATIONS LOAD/UNLOAD PROBLEM
Bx/Sxxx/Exxx NAME=xxxxxxxxx RC=xxxxxxxxx**

Explanation: This message can be caused by either hardware or software.

The event (Exxx) in the message indicates the following:

- E003** - Unable to find the link configuration.
- E004** - Unable to load host subdriver. The most likely cause is insufficient storage or system resources.

E005 - Unable to unload host subdriver.
E006 - Host subdriver error.

This message can be caused by attempts to cancel a communications application from the Background screen or from Command Mode.

User Response: You should note that the "Background Application Cancel" function returns the message 'Cancelled' even though the cancellation may not be complete. Allow a reasonable time period to lapse before attempting to restart an application after cancellation. You can expect to see several messages displayed after cancelling an application.

If this message did **not** appear as a result of canceling a background or communication application, follow "PDP 6030: Store Controller Communications Problem" in topic 6.3.

W813 **W813 HOST COMMUNICATIONS LINE xxxxxxxx**
WAS IDLE TOO LONG Bx/Sxxx/Exxx

Explanation: This message can be caused by either hardware or software. Host communications were lost because of inactivity (timeout). No information was sent or received within the configured time limit, so the connection was broken.

User Response: Follow "PDP 6030: Store Controller Communications Problem" in topic 6.3.

W814 through W816

User Response: See the *IBM 4680 Store System: Messages Guide* for these messages.

W817 **W817 ASYNC HOST UNLOAD PROBLEM**
Bx/Sxxx/Exxx

Explanation: ASYNC host unload problem.

The event (Exxx) in the message indicates the following:

- E006** - Operating system error when releasing storage for internal buffer.
- E007** - Operating system error when releasing storage for control block.
- E008** - Operating system error when releasing event flag.

User Response: Follow "PDP 6030: Store Controller Communications Problem" in topic 6.3.

W818

User Response: See the *IBM 4680 Store System: Messages Guide* for this message.

W819 **W819 RCMS ENDED ABNORMALLY**
Bx/Sxxx/Exxx FN=xxxxxxxxxxxxx RC=xxxxxxxxx CMD=xxxx

Explanation: The Remote Change Management Server (RCMS) detected a host error that is unrecoverable. This message can be caused by either hardware or software.

User Response: Follow "PDP 6030: Store Controller Communications Problem" in topic 6.3.

W820 through W823

User Response: See the *IBM 4680 Store System: Messages Guide* for these messages.

W824 **W824 PARITY ERROR IN ARTIC ADAPTER RAM**
Bx/Sxxx/Exxx CARD=xx PAGE=xx REG=xxxx

Explanation: A parity error occurred in the ARTIC adapter RAM (random access memory). The ARTIC adapter card numbers are:

- First ARTICm/2 (multiport adapter) = Card 0
- Second ARTICm/2 (multiport adapter) = Card 1
- First ARTICx/2 (X.25 adapter) = Card 2
- Second ARTICx/2 (X.25 adapter) = Card 3.

User Response: Continue problem determination using the maintenance documentation for the ARTIC adapter.

W825 or W826

User Response: See the *IBM 4680 Store System: Messages Guide* for these messages.

W827

W827 ARTIC ADAPTER HARDWARE PROBLEM
Bx/Sxxx/Exxx CARD NUMBER=xx

Explanation: A problem was detected with the IBM Realtime Interface Co-Processor Multiport/2 (ARTICm/2) adapter at IPL time.

User Response: Continue problem determination using the maintenance documentation for the IBM Realtime Interface Co-Processor Multiport/2 (ARTICm/2) adapter.

W828

User Response: See the *IBM 4680 Store System: Messages Guide* for this message.

W829

W829 ASYNC HOST COMMUNICATIONS IS NOT OPERATIONAL
Bx/Sxxx/Exxx RC=xxxxxxxx

Explanation: IBM Realtime Interface Co-Processor Multiport/2 (ARTICm/2) adapter host communications are not operational.

The event (Exxx) in the message indicates the following:

- E001** - Data Set Ready (DSR) signal not raised within a specified time limit (OPEN fails).
- E002** - Clear to Send (CTS) signal not raised within a specified time limit (OPEN Fails).
- E003** - Receive Line Signal Detect (RSLD) not raised within a specified time limit (OPEN fails).
- E009** - On a line configured as autodial, with a modem that is not "Attention Command Set" compatible, the Data Set Ready (DSR) signal raised before Data Terminal Ready (DTR) or the Clear to Send (CTS) signal raised before Request to Send (RTS). OPEN fails.

User Response: Continue problem determination using the maintenance documentation for the IBM Realtime Interface Co-Processor Multiport/2 (ARTICm/2) adapter.

W830 through W899

User Response: See the *IBM 4680 Store System: Messages Guide* for these messages.

W900

W900 (No message text)

Explanation: This store controller does not have a node ID.

User Response: Key a valid node ID for this controller and press **Enter**. See the *IBM 4680 Store System: Planning Guide* and the *IBM 4680 Store System: User's Guide* for information about valid store controller node IDs. Message W909 is logged when you respond to this message. See message W909.

W901

W901 NO ACTING MASTER CONTROLLER FOUND

Explanation: During the IPL process, the store controller displaying message W901 could not find an acting Master Store Controller. This message is continuously displayed until the acting Master has completed the IPL process and W905 has been cleared from the display at the acting Master. *This can take 30 minutes or more.* This message is then cleared from the store controller display without operator intervention.

User Response: Check the acting Master Store Controller.

- If the acting Master Store Controller is up or coming up:
 1. Return to the store controller displaying message W901 and verify that the message is cleared from the display. *It can take 30 minutes or more for the message to be cleared.*
 2. If message W901 is not cleared, go to the failing store controller and:
 - a. Fill in a copy of the "Problem Data Collection Form" in topic B.7.
 - b. Use as primary keyword MSGW901.
 - c. Report this problem to the store programmer and provide the preceding information.
- If the acting Master Store Controller is **not** up or coming up:
 1. Activate the alternate Master Store Controller as acting Master Store Controller. See the *IBM 4680 Store System: User's Guide*.
 2. Fill in a copy of the "Problem Data Collection Form" in topic B.7.
 3. Use as primary keyword MSGW901.
 4. Report this problem to the store programmer and provide the preceding information.

W902

W902 NO ACTING FILE SERVER CONTROLLER FOUND

Explanation: During the IPL process, the store controller displaying message W902 could not find an acting File Server. This message is continuously displayed until the acting File Server has completed the IPL process and W905 has been cleared from the display at the acting File Server. *This can take 30 minutes or more.* This message is then cleared from the store controller display without operator intervention.

User Response: Check the acting File Server.

- If the acting File Server is up or coming up:
 1. Return to the store controller displaying message W902 and verify that the message is cleared from the display. *It can take 30 minutes or more for the message to be cleared.*
 2. If message W902 is not cleared, go to the failing store controller and:
 - a. Fill in a copy of the "Problem Data Collection Form" in topic B.7.
 - b. Use as primary keyword MSGW902.
 - c. Report this problem to the store programmer and provide the preceding information.
- If the acting File Server is **not** up or coming up:
 1. Activate the alternate File Server as acting File Server. See the *IBM 4680 Store System: User's Guide*.
 2. Fill in a copy of the "Problem Data Collection Form" in topic B.7.
 3. Use as primary keyword MSGW901.
 4. Report this problem to the store programmer and provide the preceding information.

W903 through W956

User Response: See the *IBM 4680 Store System: Messages Guide* for these messages.

W957

W957 TOKEN RING ADAPTER OPEN FAILURE
Bx/Sxxx/Exxx

Explanation: The Token-Ring Adapter could not be opened.

The event (Exxx) in the message indicates the following:

- E006** - The Token-Ring Adapter has detected an open or short condition in the cable that connects the adapter to the multistation access unit (MAU).
- E007** - The adapter has tried to connect to a token-ring that is operating at a different data rate.
- E008** - The adapter has detected that another station on the ring has an adapter address equal to its own.
- E009** - An error condition has occurred that may indicate an adapter or token-ring hardware error.

User Response: Choose one of the following based on the event (Exxx) that is displayed. If the indicated actions do not correct the problem, continue problem determination using the maintenance documentation for the Token-Ring Adapter.

- E006** -
Check the cable connected to the Token-Ring Adapter and multiple access unit (MAU).
- E007** -
Using the diagnostic reference diskette for the store controller that returned the error, insure the data rate for the Token-Ring Adapter matches that of the other Token-Ring Adapters on the ring. Verify that **all** adapters on the LAN are set to either a data rate of 4 Mbps or 16 Mbps.
- E008** -
Change the adapter address so that it is different from other adapters on the ring. This error occurs only if the adapter address has been changed by the user.
- E009** -
Continue problem determination using the maintenance documentation for the Token-Ring Adapter.

W958 - and - Up

User Response: See the *IBM 4680 Store System: Messages Guide* for these messages.

2.10 Xnnn Messages

The Xnnn messages (nnn = any number) are generated by IBM 4680 Operating System DEBUG.

Find these messages in the *IBM 4680 Store System: Messages Guide*.

2.11 Ynnn Messages

The Ynnn messages (nnn = any number) are generated by IBM 4680 Operating System UTILITIES.

Find these messages in the *IBM 4680 Store System: Messages Guide*.

2.12 Znnn Messages

+-----+
| **These messages are generated by the IBM 4680 Operating System during**
| **Set Terminal Characteristics.** The store system is an IBM 4680 Store
| System when the IBM 4680 Operating System is running in the store
| controller.
|
| **Note:** On the ANPOS Keyboard (during some procedures) and on the
| Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.
|
|
| Warning: Switching **POWER OFF** at a 4684 affects operations at all
| point-of-sale terminals attached to it.
|
+-----+

Z000 **Z000 (No Message Text)**

Explanation: This message clears the display when Set Terminal Characteristics (STC) ends. Normally this message will not display because the application loader displays message W008 immediately after STC ends.

User Response: If this message displays longer than 60 seconds:

1. Fill in a copy of the "Problem Data Collection Form" in topic B.7.
2. Use as primary keyword MSGZ000.
3. Create a 4683 storage dump. See "Requesting a 4683 Storage Dump" in topic B.2.
4. Report this problem to the store programmer and provide the preceding information.

Z001 **Z001 (The absence of message text indicates this terminal does not have a terminal number and the store controller files cannot be read.)**

- or -

Z001 ENTER TERMINAL NUMBER, KEY S2

Explanation: The point-of-sale terminal is prompting you to enter the terminal number.

User Response:

Type a 4-digit terminal number (lxxx - xxx = 001 to 999) and press **S2 (Enter)**.

- or -

Type **3333** and press **S2** to exit.

Before **S2** is pressed, you can reset the entry by pressing **S1 (Esc)**.

Note: This message is displayed at a 4683-xx2 when the terminal number is not valid or the configuration count does not match the configuration count in its partner 4683-xx1. To update the 4683-xx2 configuration information, switch **POWER OFF** and then ON at the 4683-xx2.

Z002 **Z002 ENTER REQUEST, KEY S2**

Explanation: This message is displayed in response to the user entering **S1 71 S2** when the point-of-sale terminal has a terminal number.

The following can be done:

Type a 4-digit terminal number (lxxx - xxx = 001 to 999) and press **S2 (Enter)**.

- If a valid terminal number other than the current number is entered, the point-of-sale terminal is reloaded using the newly-entered terminal number.

- If a valid terminal number other than the current number is entered at a 4683-xx2, message Z004 is displayed. You can press **S1 (Esc)** to reset the Z004 message and return to the original terminal number.
- If the current terminal number is entered, the point-of-sale terminal configuration information is displayed.

Type **1000** and press **S2**.

- The terminal number is set to 000.
- The terminal operating system is reloaded.
- Message Z001 displays.

Type **2222** and press **S2**.

- The point-of-sale terminal is reloaded with the current version of the operating system and configuration information.
- You must switch **POWER OFF** at a partner 4683-xx2 during this operation.

Type **3333** and press **S2**.

- Set Terminal Characteristics (STC) is canceled and the initial point-of-sale terminal application is reloaded.
 - If Customer Setup (CSU) is complete, the initial application is the user application.
 - If CSU is **not** complete, the initial application is CSU.

User Response:

Type a 4-digit terminal number (lxxx - xxx = 001 to 999) and press **S2 (Enter)**.

- or -

Type **1000** and press **S2** to reset the terminal number.

- or -

Type **2222** and press **S2** to reconfigure the point-of-sale terminal.

- or -

Type **3333** and press **S2** to exit.

Before you press **S2**, you can reset the entry by pressing **S1 (Esc)**.

Z003

Z003 TURN OFF 4683-2
KEY AT 4683-1

Explanation: Reconfiguration must be done at the partner 4683-xx1.

User Response: Type **2222** and press **S2 (Enter)**. at the partner 4683-xx1.

Switch **POWER OFF** at the 4683-xx2 before going to the 4683xx1 or cancel the request by pressing **S1 (Esc)**. If you cancel the request, the default application loads.

Z004

Z004 POWER OFF
THIS TERMINAL

Explanation: You must switch **POWER OFF** at the point-of-sale terminal.

User Response: Switch **POWER OFF** or cancel the request by pressing **S1 (Esc)**. If you cancel the request, the default application loads.

Z005

Z005 (No message text)

- or -

Z005 TERMINAL NUMBER
NOT VALID. KEY S2

Explanation: The terminal number that was entered in response to message Z001 or message Z002 is not configured or is not defined as a partner if you are running STC at a 4683-xx2.

User Response: Press **S2 (Enter)** to restore the original prompt and then verify the configuration of the terminal number.

Z006 **Z006 POWER OFF
PARTNER TERMINAL**

Explanation: A function has been selected at the 4683-xx1 that requires its partner 4683-xx2 to be powered-OFF.

User Response: Switch **POWER OFF** at the partner 4683-xx2 or cancel the request by pressing **S1 (Esc)**.

Z008 **Z008 ABNORMAL ENDING
KEY S2 AND RETRY**

- or -

**Z008 Bx/Sxxx/Exxx
RC=xxxxxxxx**

Explanation: Both messages indicate that Set Terminal Characteristics (STC) ended abnormally.

- If the point-of-sale terminal can communicate with the store controller, the message is Z008 ABNORMAL ENDING KEY S2 AND RETRY. Error data is also logged in the System Log.
- If the point-of-sale terminal cannot communicate with the store controller, the message is Z008 Bx/Sxxx/Exxx RC=xxxxxxxx.

User Response:

- If the message is Z008 ABNORMAL ENDING KEY S2 AND RETRY, reload STC (**S1 71 S2**) and try the operation again.

If the problem persists:

1. Fill in a copy of the "Problem Data Collection Form" in topic B.7.
2. Use as primary keyword MSGZ008.
3. Report this problem to the store programmer and provide the preceding information.

- If the message is Z008 Bx/Sxxx/Exxx RC=xxxxxxxx, follow the Action for the return code (RC) in the following table.

Table 2-3. Message Z008 Error Data		
Error Data	Cause	Action
B5/S086/E001 RC=80830005	Totals retention is inaccessible.	Switch POWER OFF and service the 4683 base unit or 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
B5/S086/E001 RC=80830007	Totals retention failure.	Switch POWER OFF and service the 4683 base unit or 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
B5/S086/E001 RC=808304A4	Totals retention internal cyclical redundancy check (CRC) error.	Switch POWER OFF and service the 4683 base unit or 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
B5/S086/E006	Keyboard or primary	Verify that the keyboard

RC=80840005	(system) display is inaccessible.	<p>and display are connected to the proper sockets and their cables are not damaged. If the cables, sockets, and connections are OK, switch POWER OFF.</p> <ol style="list-style-type: none"> 1. If the primary (system) display is video, exchange the Feature Expansion card for the video display. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5. 2. Exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 or for service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>. 3. Exchange the primary (system) display. See Chapter 7, "Removal and Replacement Procedures." 4. Exchange the keyboard cable. 5. Exchange the primary (system) display cable.
B5/S086/E006 RC=808404C1	Keyboard failure.	Switch POWER OFF and exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 or for service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
B5/S086/E006 RC=808404C2	Keyboard failure.	Switch POWER OFF and exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 or for service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
B5/S086/E006 RC=808404C3	Keyboard failure.	Switch POWER OFF and exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 or for service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
B5/S086/E006 RC=808404C4	Keyboard device is inaccessible.	Verify that the keyboard is connected to the proper socket and its cable is not damaged. If the cable, sockets, and connections are OK, switch POWER OFF and exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 or for service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .

B5/S086/E007 RC=80830005	Totals retention is inaccessible.	Switch POWER OFF and service the 4683 base unit or 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
B5/S086/E007 RC=80830007	Totals retention failure.	Switch POWER OFF and service the 4683 base unit or 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
B5/S086/E007 RC=808304A4	Totals retention internal cyclical redundancy check (CRC) error.	Switch POWER OFF and service the 4683 base unit or 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
B5/S086/E008 RC=80840005	Keyboard or primary (system) display is inaccessible.	<p>Verify that the keyboard and display are connected to the proper sockets and their cables are not damaged. If the cable, sockets, and connections are OK, switch POWER OFF at the point-of-sale terminal.</p> <ol style="list-style-type: none"> 1. If the primary (system) display is video, exchange the Feature Expansion card for the video display. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5. 2. Exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 or for service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>. 3. Exchange the primary (system) display. See Chapter 7, "Removal and Replacement Procedures." 4. Exchange the keyboard cable. 5. Exchange the primary (system) display cable.
B5/S086/E008 RC=808404C3	Keyboard failure.	Switch POWER OFF and exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 or for service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
B5/S086/E008 RC=808404C4	Keyboard is inaccessible.	Verify that the keyboard is connected to the proper socket and its cable is not damaged. If the cable, sockets, and connections are OK, switch POWER OFF and

		exchange or service the keyboard. See "Keyboard Removal and Replacement" in topic 7.6 or for service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
B5/S086/E009 RC=80A00005	The operator display or primary (system) display is inaccessible.	<p>Verify that the display is connected to the proper socket and its cable is not damaged. If the cable, sockets, and connections are OK, switch POWER OFF at the point-of-sale terminal.</p> <ol style="list-style-type: none"> 1. If the primary (system) display is video, exchange the Feature Expansion card for the video display. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5. 2. Exchange the operator display. See "Operator Display Removal and Replacement" in topic 7.13. 3. Exchange the primary (system) display. See Chapter 7, "Removal and Replacement Procedures." 4. Exchange the operator display cable. 5. Exchange the primary (system) display cable.
B5/S086/E009 RC=80A10005	The primary (system) display is inaccessible.	<p>Verify that the display is connected to the correct socket and its cable is not damaged. If the cable, sockets, and connections are OK, switch POWER OFF and exchange the Feature Expansion card for the primary (system) display. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.</p>
B5/S086/E010	Too many devices are configured.	<p>Using system configuration, reconfigure the terminal device groups and select fewer I/O devices.</p>

Z009

Z009 PARTNER NUMBER NOT VALID. RETRY

Explanation: This message indicates that the partner 4683-xx2 terminal number that was entered in response to message Z011 is the same as its partner 4683-xx1 terminal number.

Note: This message is used in the Setup and Verification system only.

User Response: Enter a valid 4683-xx2 terminal number.

Press **S2 (Enter)** to retry.

Z010

Z010 TO VIEW CONFIG
KEY S2 ELSE KEY S1

Explanation: This message indicates that the point-of-sale terminal is ready for the operator to view the point-of-sale terminal configuration messages (Z014 - Z025) by pressing S2.

User Response:

- To view configuration records, press S2 (Enter).
- To bypass the configuration records and go directly to message Z012, press S1 (Esc).

Z011

Z011 ENTER PARTNER
TERMINAL NUMBER

Explanation: This message prompts the operator to enter the partner 4683-xx2 terminal number.

Note: This message is used in the Setup and Verification system only.

User Response:

- If a 4683-xx2 is attached, type a valid partner 4683-xx2 terminal number (lxxx - xxx = 001 to 999) and press S2 (Enter).
- If a 4683-xx2 is not attached, type 1000 and press S2.

Before you press S2, the input can be cleared by pressing S1 (Esc).

Z012

Z012 CONFIGURATION
COMPLETE. KEY S2

Explanation: This message indicates that Set Terminal Characteristics has completed a normal operation.

User Response:

To continue, press S2 (Enter).

- or -

If a terminal number was entered and a correction must be made, press S1 (Esc). Message Z001 or message Z002 is redisplayed.

Note: The terminal number will not become permanent until S2 is pressed.

Z013

Z013 TERMINAL IS
DEFINED AS 4683-2

Explanation: The terminal number that was entered for a 4683-xx2 in response to message Z001 or message Z002, is assigned to a 4683-xx1. Either the terminal load definition for the 4683-xx2 is in error or an incorrect terminal number has been entered.

User Response: Press S2 (Enter) to restore the original prompt and then verify that the entered terminal number is assigned correctly.

Z014

Z014 D A
SOCKET 3 xx xx

Explanation: This message identifies the device that is configured for, or attached to, socket 3. The xx under the D identifies the configured device, while the xx under the A identifies the attached device. If the socket has no device configured or attached, this message is not displayed.

For a list of valid point-of-sale terminal device IDs,

see "Device IDs for the Point of Sale Terminal" in topic A.7.1.

Valid device ID for this socket:

- 54 = Cash drawer.

Note: One ID is used for the cash drawer.
The cash drawers may be plugged into socket 3A, 3B, or both sockets.

User Response: Verify that the displayed configuration information is correct.

- To view the next message, press **S2 (Enter)**.
- To skip the remaining configuration messages and go directly to message Z012, press **S1 (Esc)**.

Z015

Z015 D A
SOCKET 4A xx xx

Explanation: This message identifies the device that is configured for, or attached to, socket 4A. The xx under the D identifies the configured device, while the xx under the A identifies the attached device. If the socket has no device configured or attached, this message is not displayed.

For a list of valid point-of-sale terminal device IDs, see "Device IDs for the Point of Sale Terminal" in topic A.7.1.

Valid device IDs for this socket:

- 20 = Alphanumeric display
- 22 = Operator display
- 26 = Shopper display.

User Response: Verify that the displayed configuration information is correct.

- To view the next message, press **S2 (Enter)**.
- To skip the remaining configuration messages and go directly to message Z012, press **S1 (Esc)**.

Z016

Z016 D A
SOCKET 4B xx xx

Explanation: This message identifies the device that is configured for, or attached to, socket 4B. The xx under the D identifies the configured device, while the xx under the A identifies the attached device. If the socket has no device configured or attached, this message is not displayed.

For a list of valid point-of-sale terminal device IDs, see "Device IDs for the Point of Sale Terminal" in topic A.7.1.

Valid device IDs for this socket:

- 21 = Alphanumeric display
- 23 = Operator display
- 27 = Shopper display.

User Response: Verify that the displayed configuration information is correct.

- To view the next message, press **S2 (Enter)**.
- To skip the remaining configuration messages and go directly to message Z012, press **S1 (Esc)**.

Z017

Z017 D A
SOCKET 5A xx xx

Explanation: This message identifies the device that is configured for, or attached to, socket 5A. The xx under the D identifies the configured device, while the xx under the A identifies the attached device. If the socket has no device configured or attached, this message is not displayed.

For a list of valid point-of-sale terminal device IDs, see "Device IDs for the Point of Sale Terminal" in topic A.7.1.

Valid device IDs for this socket:

- 10 = 50-key Keyboard or Keyboard on the Combined Keyboard/Display
- 12 = Alphanumeric Keyboard
- 16 = Matrix Keyboard
- 1A = ANPOS Keyboard
- 22 = Display on the combined keyboard/display
- 40 = Single-Track Magnetic Stripe Reader
- 46 = Dual-Track MSR on the Combined Keyboard/Display.

User Response: Verify that the displayed configuration information is correct.

- To view the next message, press **S2 (Enter)**.
- To skip the remaining configuration messages and go directly to message Z012, press **S1 (Esc)**.

Z018 **Z018** **D** **A**
 SOCKET 5B **xx** **xx**

Explanation: This message identifies the device that is configured for, or attached to, socket 5B. The xx under the D identifies the configured device, while the xx under the A identifies the attached device. If the socket has no device configured or attached, this message is not displayed.

For a list of valid point-of-sale terminal device IDs, see "Device IDs for the Point of Sale Terminal" in topic A.7.1.

Valid device IDs for this socket:

- 11 = 50-key Keyboard or Keyboard on the Combined Keyboard/Display
- 13 = Alphanumeric Keyboard
- 17 = Matrix Keyboard
- 1B = ANPOS Keyboard
- 23 = Display on the Combined Keyboard/Display
- 41 = Single-Track Magnetic Stripe Reader
- 47 = Dual-Track Magnetic Stripe Reader.

User Response: Verify that the displayed configuration information is correct.

- To view the next message, press **S2 (Enter)**.
- To skip the remaining configuration messages and go directly to message Z012, press **S1 (Esc)**.

Z019 **Z019** **D** **A**
 SOCKET 7 **xx** **xx**

Explanation: This message identifies the device that is configured for, or attached to, socket 7. The xx under the D identifies the configured device, while the xx under the A identifies the attached device. If the socket has no device configured or attached, this message is not displayed.

For a list of valid point-of-sale terminal device IDs, see "Device IDs for the Point of Sale Terminal" in topic A.7.1.

Valid device ID for this socket:

- 30 = Printer.

User Response: Verify that the displayed configuration information is correct.

- To view the next message, press **S2 (Enter)**.
- To skip the remaining configuration messages and go directly to message Z012, press **S1 (Esc)**.

Z021 Z021 D A
 SLOT 2A x x

Explanation: This message identifies the Feature Expansion card that is configured for, or installed in, location 2A. The x under the D identifies the configured Feature Expansion card, while the x under the A identifies the installed card. If location 2A has no Feature Expansion card configured or installed, this message is not displayed.

Valid Feature Expansion cards for this location are A, B, C, or D.

User Response: Verify that the displayed configuration information is correct.

- To view the next message, press **S2 (Enter)**.
- To skip the remaining configuration messages and go directly to message Z012, press **S1 (Esc)**.

Z022 Z022 D A
 SLOT 2B x x

Explanation: This message identifies the Feature Expansion card that is configured for, or installed in, location 2B. The x under the D identifies the configured Feature Expansion card, while the x under the A identifies the installed card. If location 2B has no Feature Expansion card configured or installed, this message is not displayed.

Valid Feature Expansion cards for this location are A, B, C, or D.

User Response: Verify that the displayed configuration information is correct.

- To view the next message, press **S2 (Enter)**.
- To skip the remaining configuration messages and go directly to message Z012, press **S1 (Esc)**.

Z023 Z023 D A
 SOCKET 17 xx xx

Explanation: This message identifies the device that is configured for, or attached to, socket 17. The xx under the D identifies the configured device, while the xx under the A identifies the attached device. If the socket has no device configured or attached, this message is not displayed.

For a list of valid point-of-sale terminal device IDs, see "Device IDs for the Point of Sale Terminal" in topic A.7.1.

Valid device ID for this socket:

- 4A = Point-of-Sale Scanner.

User Response: Verify that the displayed configuration information is correct.

- To view the next message, press **S2 (Enter)**.
- To skip the remaining configuration messages and go directly to message Z012, press **S1 (Esc)**.

Z024 Z024 D A
 READER/1520 xx xx

Explanation: This message indicates that a bar code reader or a 1520 hand-held scanner is configured for or attached to the point-of-sale terminal.

- 4B under the D indicates that an IBM Hand-Held Bar Code Reader OR a 1520 Hand-Held Scanner Model A02 is configured.
- 4B under the A indicates that an IBM Hand-Held Bar Code Reader is attached to socket 9B OR a 1520

Hand-Held Scanner Model A02 is attached to socket 5B
on the point-of-sale terminal.

User Response: To verify the configured device, you have
to view system configuration at the store controller.

- To view the next message, press **S2 (Enter)**.
- To skip the remaining configuration messages and go
directly to message Z012, press **S1 (Esc)**.

Z025

Z025 xxxxxxxxxxxxxxxx
xxxxxxxxxxxxx yyy zzz -

Explanation: This message identifies the initial
application name, current terminal number, and partner
terminal number. A dash (-) in this message indicates
Customer Setup (CSU) is incomplete.

Note: The initial application name is not displayed
if "Set Terminal Characteristics" is running on the
Setup and Verification system.

xxx...xxx = Initial application name (defined during
configuration).

yyy = Current terminal number.

zzz = Partner terminal number. If the partner
terminal number is 000, no partner is
defined.

A dash (-) = Incomplete CSU indication.

- A dash in this position indicates that
CSU has not been run at the point-of-sale
terminal.
- After CSU is complete, the position
should be blank.
- The dash (-) is not displayed if you are
performing Setup and Verification.

User Response: Verify that the displayed configuration
information is correct.

- To view the next message, press **S2 (Enter)**.
- To skip the remaining configuration messages and go
directly to message Z012, press **S1 (Esc)**.

Z026

**Z026 TERMINAL IS
DEFINED AS 4684**

Explanation: The terminal number that was entered for a
4684 in response to message Z001 or message Z002 is
assigned to a 4683-xx1.

User Response: Press **S2 (Enter)** to restore the original
prompt and then verify that the entered terminal number
is assigned correctly.

Z100

Z100 (No Message Text)

Explanation: This message indicates that the Remote STC
Application is running.

User Response: No user action is required. This message
is for information only.

2.13 Backup Mode Error Messages on a 4683 Model A02

These messages are displayed at the terminal display or printed at the terminal printer when the IBM 4683 Model A02 is in Stand-Alone Test Mode or Backup Mode.

CHK DOCUMENT INSERT
PRESS THE ENTER KEY

Explanation: During 4683 Model A02 Backup Mode or Stand-Alone Test Mode, a document was inserted into the printer document insert station when **not** expected.

User Response: Follow this list to isolate and correct the cause of the problem.

1. If there is a document in the document insert station, remove it.
2. Switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

CLOSE PRINTER COVER
PRESS THE ENTER KEY

Explanation: During 4683 Model A02 Backup Mode or Stand-Alone Test Mode, the printer cover was opened.

User Response: Follow this list to isolate and correct the cause of the problem.

1. Close the printer cover.
2. Switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

DISPLAY OFFLINE
*** OPERATION HALTED ***

Explanation: During 4683 Model A02 Backup Mode, no displays responded.

User Response: Continue problem determination using Appendix E, "IBM 4683 Model A02 Stand-Alone Test Procedure."

JOURNAL PAPER ERROR
PRESS THE ENTER KEY

Explanation: During 4683 Model A02 Backup Mode or Stand-Alone Test Mode, a printer journal station problem was detected.

User Response: Follow this list to isolate and correct the cause of the problem.

1. Put paper in the journal station.
2. Remove torn paper from the journal station.
3. Remove paper jam from the journal station.
4. Switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

NO DISPLAY FOUND
*** OPERATION HALTED ***

Explanation: When 4683 Model A02 Backup Mode was entered, no displays were found.

User Response: Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Ensure that the display is attached to the IBM 4683 Model A02 base unit.
2. Exchange the display. See Chapter 7, "Removal and

Replacement Procedures."

3. Exchange the display cable that runs from the display to the IBM 4683.
4. Service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

*** OPERATION HALTED ***
BAD HARD TOTALS DATA

Explanation: During 4683 Model A02 Backup Mode, a hard totals error was detected.

User Response: Switch **POWER OFF** and service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

*** OPERATION HALTED ***
CASH DRAWER OFFLINE

Explanation: During 4683 Model A02 Backup Mode, the cash drawer failed to respond.

User Response: Continue problem determination using Appendix E, "IBM 4683 Model A02 Stand-Alone Test Procedure."

*** OPERATION HALTED ***
HARD TOTALS DISABLED

Explanation: When 4683 Model A02 Backup Mode or Stand-Alone Test Mode was entered, hard totals failed to respond.

User Response: Switch **POWER OFF** and service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

*** OPERATION HALTED ***
KEYBOARD OFFLINE

Explanation: During 4683 Model A02 Backup Mode or Stand-Alone Test Mode, the keyboard failed to respond.

User Response: Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Ensure that the keyboard is connected to the 4683.
2. Exchange or service the keyboard. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
3. Exchange the keyboard cable.
4. Service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

*** OPERATION HALTED ***
MAXIMUM EXCEEDED

Explanation: During 4683 Model A02 Backup Mode, an accumulated total exceeded its allowed capacity.

User Response: Follow your store procedures.

*** OPERATION HALTED ***
NO KEYBOARD FOUND

Explanation: When 4683 Model A02 Backup Mode was entered, no keyboard was found.

User Response: Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Ensure that the keyboard is connected to the 4683.

2. Exchange or service the keyboard. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
3. Exchange the keyboard cable.
4. Service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

*** OPERATION HALTED ***
NO PRINTER FOUND

Explanation: When 4683 Model A02 Backup Mode was entered, no printer was found.

User Response: Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Ensure that the printer is connected to the 4683.
2. Exchange the printer cable.
3. Service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
4. Service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

*** OPERATION HALTED ***
PRINTER OFFLINE

Explanation: During 4683 Model A02 Backup Mode, a printer error occurred.

User Response: Continue problem determination using Appendix E, "IBM 4683 Model A02 Stand-Alone Test Procedure."

*** OPERATION HALTED ***
W302 BAD HT MEMORY

Explanation: During 4683 Model A02 Backup Mode, a hard totals memory error occurred.

User Response: Switch **POWER OFF** and service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

VIDEO OFFLINE
*** OPERATION HALTED ***

Explanation: During 4683 Model A02 Backup Mode, no video displays responded.

User Response: Continue problem determination using Appendix E, "IBM 4683 Model A02 Stand-Alone Test Procedure."

3.0 Chapter 3. Symptoms

CAUTION:

For your safety, you must connect the power cord of any equipment to a correctly wired and grounded receptacle. An incorrectly wired receptacle can place a hazardous voltage on accessible metal parts of the equipment. If you are unsure of the receptacle wiring, have a qualified electrician check the receptacle prior to connecting any equipment to it or working on any equipment connected to it.

DANGER

```
+-----+
| During periods of lightning activity, do not connect or disconnect any |
| cables, or perform installation, maintenance, or reconfiguration.    |
+-----+
```

Subtopics

- 3.1 Store Controller Symptoms
- 3.2 Store Loop Symptoms and Messages
- 3.3 Point of Sale Terminal Symptoms

3.1 Store Controller Symptoms

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Note: You must switch **POWER OFF** at the store controller when connecting it to the store loop.

Table 3-1. Store Controller Symptoms	
Symptom	Action
End-of-Poll Timeouts are occurring.	Follow "PDP 6210: W764 Message" in topic 6.21.
The local area network (LAN) is failing. This includes: <input type="checkbox"/> The IBM PC Network <input type="checkbox"/> The IBM Multiple Controller Feature <input type="checkbox"/> The IBM PC Network Adapter in the store controller <input type="checkbox"/> The IBM Token-Ring Adapter in the store controller.	Continue problem determination using the maintenance documentation for the store controller, and the IBM PC Network Feature or IBM Token-Ring Feature.
A parity check occurred.	Continue problem determination using the maintenance documentation for the store controller.
The store loop is failing.	Follow "Store Loop Symptoms and Messages" in topic 3.2.
A ROM error occurred.	Continue problem determination using the maintenance documentation for the store controller.
Store loop beacons are being received.	Follow "PDP 6050: Store Loop Problem" in topic 6.5.
System Message Available is indicated.	Display the ten most recent messages at the store controller by pressing System Request , and typing M to display each message. For more information, see "Displaying a Store Controller Message" in topic A.5.4.
A Wnnn message is displayed.	Follow the <i>User Response</i> for the message. See "Wnnn Messages" in topic 2.9 or in the <i>IBM 4680 Store System: Messages Guide</i> .
You have a store controller symptom that is not covered in this table.	Continue problem determination using the maintenance documentation for the store controller.
Host Communications is failing.	Look for SYSTEM MESSAGE AVAILABLE at the bottom of the store controller display screen. <input type="checkbox"/> If SYSTEM MESSAGE AVAILABLE is present: 1. Press System Request . 2. Type M . 3. Look for a W8nn message. - If one of these messages is logged, follow the <i>User Response</i> for the message in "Wnnn Messages" in topic 2.9 or in the <i>IBM 4680 Store System: Messages Guide</i> . - If one of these messages is not logged, continue problem determination using the maintenance documentation for the communications adapter.

If no problem is found with the communications adapter, continue problem determination using the maintenance documentation for the store controller.

If SYSTEM MESSAGE AVAILABLE is **not** present:

1. Continue problem determination using the maintenance documentation for the communications adapter.
2. If no problem is found with the communications adapter, continue problem determination using the maintenance documentation for the store controller.

3.2 Store Loop Symptoms and Messages

Table 3-2. Store Loop Symptoms and Messages	
Symptom	Action
End-of-poll Timeouts are occurring at the store controller.	Follow "PDP 6210: W764 Message" in topic 6.21.
Store loop beacons are being received at the store controller.	Follow "PDP 6050: Store Loop Problem" in topic 6.5.
W001 is displayed at a 4683.	Follow "PDP 6160: W001 Message" in topic 6.16.
W002 is displayed at a 4683.	Follow the <i>User Response</i> for message W002 in topic 2.9.
W003 is displayed at a 4683.	Follow "PDP 6170: W003 Message" in topic 6.17.
W004 is displayed at a 4683.	Follow "PDP 6180: W004 Message" in topic 6.18.
W005 is displayed at a 4683.	Follow "PDP 6190: W005 Message" in topic 6.19.
W006 is displayed at a 4683.	Follow the <i>User Response</i> for message W006 in topic 2.9.
W007 is displayed at a 4683.	Follow "PDP 6050: Store Loop Problem" in topic 6.5.
W760 is displayed at the store controller.	Follow "PDP 6050: Store Loop Problem" in topic 6.5.
W762 is displayed at the store controller.	Follow "PDP 6200: W762 Message" in topic 6.20.
W763 is displayed at the store controller.	Follow the <i>User Response</i> for message W763 in topic 2.9.
W764 is displayed at the store controller.	Follow "PDP 6210: W764 Message" in topic 6.21.
W771 is displayed at the store controller.	Follow the <i>User Response</i> for message W771 in topic 2.9.
W772 is displayed at the store controller.	Follow "PDP 6220: W772 Message" in topic 6.22.
W774 is displayed at the store controller.	Follow the <i>User Response</i> for message W774 in topic 2.9.
You have a store loop symptom that is not covered in this table.	Continue problem determination using the maintenance documentation for the Store Loop Adapter. If no problem is found in the Store Loop Adapter, continue problem determination using the maintenance documentation for the store controller.

3.3 Point of Sale Terminal Symptoms

- If more than one point-of-sale device is failing on a 4683 or you observe multiple symptoms on a 4683 that are not associated with just one device, go to "PDP 6250: 4683 Multiple Symptoms" in topic 6.25.
- If you do not know which device is causing a problem, go to Chapter 4, "IBM 4680 Operating System Test Procedures" in topic 4.0 or Chapter 5, "IBM 4684 Reference Diskette Test Procedures" in topic 5.0 and test all devices attached to the 4683 or 4684.
- If you have a message that relates to one of the devices attached to the point-of-sale terminal, follow the *User Response* for the message in Chapter 2, "Messages."

Subtopics

- 3.3.1 Alphanumeric, Operator, or Combined Keyboard/Display Symptoms (4683/4684)
- 3.3.2 Backup Mode Symptoms (4683-A02 Only)
- 3.3.3 Baseband Network Symptoms (4684 Only)
- 3.3.4 Cash Drawer Symptoms (4683/4684)
- 3.3.5 Coin Dispenser Symptoms (4683 Only)
- 3.3.6 Diskette Drive Symptoms (4684 Only)
- 3.3.7 Dump Switch Symptoms (4683-xx1 Only)
- 3.3.8 Fan Symptoms (4683 Base Unit or 4684 System Unit)
- 3.3.9 Fixed Disk Drive Symptoms (4684 Only)
- 3.3.10 Hand-Held Bar Code Reader Symptoms (4683/4684)
- 3.3.11 Magnetic Stripe Reader (MSR) Symptoms (4683/4684)
- 3.3.12 Magnetic Wand Symptoms (4683 Only)
- 3.3.13 Mouse (Pointing Device) Symptoms (4684 Only)
- 3.3.14 Optical Character Reader (OCR) Symptoms (4683 Only)
- 3.3.15 Option Adapter Symptoms (4684 Only)
- 3.3.16 Point of Sale Keyboard Symptoms (4683/4684)
- 3.3.17 Point of Sale Printer Model 1 or 2 Symptoms (4683/4684)
- 3.3.18 Point of Sale Printer Model 3 Symptoms (4683/4684)
- 3.3.19 Point of Sale Scanner Symptoms (4683/4684)
- 3.3.20 Reference Diskette Symptoms (4684 Only)
- 3.3.21 Remote Alarm Symptoms (4683/4684)
- 3.3.22 Scale Symptoms (4683 Only)
- 3.3.23 Shopper Display Symptoms (4683/4684)
- 3.3.24 Socket 23 or 25 Symptoms (4683 RS-232 or Current Loop Feature)
- 3.3.25 Storage Retention Symptoms (4683-xx1 Only)
- 3.3.26 Store Loop Adapter/A Symptoms (4684 Only)
- 3.3.27 System Unit Printer Symptoms (4684 Only)
- 3.3.28 System Unit Video Display Symptoms (4684 Only)
- 3.3.29 Token-Ring Network Symptoms (4684 Only)
- 3.3.30 Totals Retention Symptoms (4683/4684)
- 3.3.31 Video Display Symptoms (4683 Only)
- 3.3.32 1520 Hand-Held Scanner Model A01 Symptoms (4683 Only)
- 3.3.33 1520 Hand-Held Scanner Model A02 Symptoms (4683/4684)
- 3.3.34 4683 Point of Sale Terminal Symptoms
- 3.3.35 4684 Point of Sale Terminal Symptoms

3.3.1 Alphanumeric, Operator, or Combined Keyboard/Display Symptoms (4683/4684)

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Table 3-3. Alphanumeric, Operator, or Combined Keyboard/Display Symptoms (4683/4684)	
Symptom	Repair Actions Listed in Most Likely Order of Failure
<ul style="list-style-type: none"> <input type="checkbox"/> A horizontal or vertical row of dots is displayed. <input type="checkbox"/> Character brightness is not correct. <input type="checkbox"/> Characters appear in the wrong positions. <input type="checkbox"/> Characters are not stable. <input type="checkbox"/> Characters are wrong, unusual, or missing. <input type="checkbox"/> Characters have missing dots or extra dots. <input type="checkbox"/> The display does not change, while other devices seem to be working correctly. <input type="checkbox"/> The display is blank, while other devices seem to be working correctly. <input type="checkbox"/> The display is not working correctly. 	<ol style="list-style-type: none"> 1. The display is failing. <ul style="list-style-type: none"> <input type="checkbox"/> Exchange the alphanumeric or operator display. See "Alphanumeric Display Removal and Replacement" in topic 7.1 or "Operator Display Removal and Replacement" in topic 7.13. <input type="checkbox"/> Service the combined keyboard/display. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>. 2. Exchange the display or combined keyboard/display cable. See "Cable Sockets and Devices" in topic C.7. 3. Service the 4683 base unit to exchange the base card or the 4684 system unit to exchange the system board. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
The display is blank.	Follow "PDP 6010: Blank Display (Except Video)" in topic 6.1.
The display on the combined keyboard/display is blank but other displays on the point-of-sale terminal are working correctly. -- or --	<ul style="list-style-type: none"> <input type="checkbox"/> If the keyboard power LED is OFF: <ol style="list-style-type: none"> 1. Exchange the combined keyboard/display cable. See "Cable Sockets and Devices" in topic C.7. 2. Service the 4683 base unit or 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
The display on the combined keyboard/display is blank but the keyboard is working correctly. -- or --	<ul style="list-style-type: none"> <input type="checkbox"/> If the keyboard power LED is ON: <ol style="list-style-type: none"> 1. Service the combined keyboard/display. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>. 2. Exchange the combined keyboard/display cable. See "Cable Sockets and Devices" in topic C.7.
The display on the combined keyboard/display is blank and there are	<ol style="list-style-type: none"> 3. Service the 4683 base unit or 4684 system unit. For service information,

<p>no other displays attached to the point-of sale terminal.</p>	<p>see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.</p>
<p>After the point-of-sale terminal is powered-ON: The display is blank. -- and -- At least two of the keyboard lights are ON.</p>	<ol style="list-style-type: none"> 1. The display is failing. <ul style="list-style-type: none"> <input type="checkbox"/> Exchange the alphanumeric or operator display. See "Alphanumeric Display Removal and Replacement" in topic 7.1 or "Operator Display Removal and Replacement" in topic 7.13. <input type="checkbox"/> Service the combined keyboard/display. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>. 2. Exchange the display or combined keyboard/display cable. See "Cable Sockets and Devices" in topic C.7. 3. Service the 4683 base unit or 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
<p>After the point-of-sale terminal is powered-ON: The display is blank. -- and -- All keyboard lights are OFF or none seem to be working.</p>	<ol style="list-style-type: none"> 1. No power to the point-of-sale terminal. <ol style="list-style-type: none"> a. Ensure power is available at the power receptacle. b. Ensure the point-of-sale terminal power cord is OK and connected to the power receptacle and the terminal. 2. The 4683 base unit, 4684 system unit, or one of the point-of-sale devices attached to the terminal is failing. <ol style="list-style-type: none"> a. Switch POWER OFF at the terminal. b. With the exception of the point-of-sale keyboard, disconnect all other point-of-sale devices from the terminal. This includes Feature Expansion cards on a 4683. See "Cable Sockets and Devices" in topic C.7. c. Switch power ON at the terminal, observing the keyboard lights. <ul style="list-style-type: none"> <input type="checkbox"/> If any of the keyboard lights come ON, one of the devices, cables, or Feature Expansion cards you disconnected is the cause of the problem. <ol style="list-style-type: none"> 1) Switch POWER OFF at the terminal. 2) Reconnect one of the disconnected devices to its original socket. 3) Switch power ON at the terminal, observing the keyboard lights. <ul style="list-style-type: none"> - If <i>none</i> of the keyboard lights comes ON, the device that was just reconnected is failing. - If any of the keyboard lights come ON, repeat the preceding steps until the failing device has been identified. <input type="checkbox"/> If <i>none</i> of the keyboard lights comes ON, the failure is caused by the 4683 base unit, 4684 system unit, or point-of-sale keyboard. <ol style="list-style-type: none"> 1) Switch POWER OFF at the terminal. 2) Disconnect the point-of-sale keyboard.

	<ol style="list-style-type: none"> 3) Connect the point-of-sale display to its original socket. 4) Switch power ON at the terminal. <ul style="list-style-type: none"> - If the display is still blank, service the 4683 base unit or 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>. - If the display is not blank, service or exchange the point-of-sale keyboard or exchange its cable. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
<p>After the point-of-sale terminal is powered-ON: U001 is displayed. -- and -- ALL keyboard lights are ON.</p>	<p>The 4683 base unit, 4684 system unit, or one of the point-of-sale devices attached to the terminal is failing.</p> <ol style="list-style-type: none"> 1. Switch POWER OFF at the terminal. 2. Disconnect the power cord. 3. With the exception of the primary (system) display, disconnect all other point-of-sale devices from the terminal. This includes Feature Expansion cards on a 4683. See "Cable Sockets and Devices" in topic C.7. Exception: If the primary (system) display is a video display, do not remove its Feature Expansion card. 4. Connect the power cord. 5. Switch power ON at the terminal. <ul style="list-style-type: none"> □ If the display message progresses to at least the U003 message, one of the devices, cables, or Feature Expansion cards you disconnected is the cause of the problem. <ol style="list-style-type: none"> a. Switch POWER OFF at the terminal. b. Reconnect one of the disconnected devices to its original socket. c. Switch power ON at the terminal. <ul style="list-style-type: none"> - If the display messages do not progress past U001, the device that was just reconnected is failing. - If the display messages progress past U001, repeat the preceding steps until the failing device has been identified. □ If the display message does not progress to U003, the failure is caused by the 4683 base unit, 4684 system unit, or primary (system) display. <ol style="list-style-type: none"> a. Switch POWER OFF at the terminal. b. Disconnect the primary (system) display. If it is a video display, remove its Feature Expansion card. c. Connect the point-of-sale keyboard to its original socket. d. Switch power ON at the terminal, observing the keyboard lights. <ul style="list-style-type: none"> - If ALL FOUR keyboard lights stay ON, service the 4683 base unit or 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>. - If ALL FOUR keyboard lights come ON, and then TWO of them go OFF leaving the WAIT and OFFLINE lights ON, the failing device is one of the following. Return them one at a time until you identify which one is failing. <ol style="list-style-type: none"> 1) If applicable, the Feature Expansion card for the video display.

	2) The point-of-sale display. 3) The point-of-sale display cable.
After the point-of-sale terminal is powered-ON: U001 is displayed. -- and -- Only the keyboard WAIT and OFFLINE lights are ON.	1. The display is failing. <ul style="list-style-type: none"> <input type="checkbox"/> Exchange the alphanumeric or operator display. See "Alphanumeric Display Removal and Replacement" in topic 7.1 or "Operator Display Removal and Replacement" in topic 7.13. <input type="checkbox"/> Service the combined keyboard/display. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>. 2. Exchange the display or combined keyboard/display cable. See "Cable Sockets and Devices" in topic C.7. 3. Service the 4683 base unit or 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
4683-A02 in Backup Mode One of these messages is printed: NO DISPLAY FOUND * OPERATION HALTED * -- or -- DISPLAY OFFLINE * OPERATION HALTED *	1. The display is failing. <ul style="list-style-type: none"> <input type="checkbox"/> Exchange the alphanumeric or operator display. See "Alphanumeric Display Removal and Replacement" in topic 7.1 or "Operator Display Removal and Replacement" in topic 7.13. <input type="checkbox"/> Service the combined keyboard/display. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>. 2. Exchange the display or combined keyboard/display cable. See "Cable Sockets and Devices" in topic C.7. 3. Service the 4683 base unit to exchange the base card. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .

3.3.2 Backup Mode Symptoms (4683-A02 Only)

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Table 3-4. Backup Mode Symptoms (4683-A02 Only)	
Symptoms	Repair Actions Listed in Most Likely Order of Failure
Cannot start Backup Mode.	<ol style="list-style-type: none"> 1. Ensure that this is a 4683-A02. The 4683-A02 is the only 4683 that supports Backup Mode. 2. Service the 4683 base unit to exchange the base card. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
Cannot stop Backup Mode.	<p>Switch POWER OFF at the 4683, and then ON again.</p> <p>If the problem persists, service the 4683 base unit to exchange the base card. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.</p>
The 4683 goes into Backup Mode when it is powered ON.	Service the 4683 base unit to exchange the base card. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .

3.3.3 Baseband Network Symptoms (4684 Only)

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Table 3-5. Baseband Network Symptoms (4684 Only)	
Symptoms	Repair Actions Listed in Most Likely Order of Failure
The Baseband Network is not operating correctly.	Ensure that the wrap plug, terminator plug, and network cables are connected correctly. If no problems are found, service the 4684 system. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .

3.3.4 Cash Drawer Symptoms (4683/4684)

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Table 3-6. Cash Drawer Symptoms (4683/4684)	
Symptom	Repair Actions Listed in Most Likely Order of Failure
<p><input type="checkbox"/> The cash drawer will not open when doing store transactions or running cash drawer tests.</p> <p><input type="checkbox"/> The cash drawer will not stay closed.</p> <p><input type="checkbox"/> The cash drawer is not working correctly.</p>	<ol style="list-style-type: none"> 1. Service the cash drawer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>. 2. Exchange the cash drawer cable (3A or 3B). See "Cable Sockets and Devices" in topic C.7. 3. Service the 4683 base unit to exchange the base card or service the 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
<p>The cash drawer keylock will not turn in either direction.</p>	<ol style="list-style-type: none"> 1. Exchange the keylock. See "Keylock Insert Removal and Replacement" in topic 7.7. 2. Service the cash drawer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
<p>The cash drawer will not open when its keylock is turned counterclockwise.</p>	<p>Service the cash drawer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.</p>
<p>The status displayed by the cash drawer test does not agree with the actual status of cash drawer A.</p> <p>Example:</p> <p>Cash drawer tests say CD A NOT FOUND -- or -- CD B NOT FOUND when the cash drawer is actually connected.</p>	<ol style="list-style-type: none"> 1. Service the cash drawer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>. 2. Exchange the cash drawer cable (3A or 3B). See "Cable Sockets and Devices" in topic C.7. 3. Service the 4683 base unit to exchange the base card or the 4684 system unit to exchange the system board. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
<p>4683-A02 in Backup Mode</p> <p>This message is displayed:</p> <p>* OPERATION HALTED * CASH DRAWER OFFLINE</p>	<ol style="list-style-type: none"> 1. Service the cash drawer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>. 2. Exchange the cash drawer cable (3A or 3B). See "Cable Sockets and Devices" in topic C.7. 3. Service the 4683 base unit to exchange the base card. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.

3.3.5 Coin Dispenser Symptoms (4683 Only)

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Symptom	Repair Actions Listed in Most Likely Order of Failure
The coin dispenser is not working correctly.	<ol style="list-style-type: none">1. Exchange the coin dispenser. See "Coin Dispenser Removal and Replacement (4683 Only)" in topic 7.4.2. Exchange the coin dispenser cable. See "Cable Sockets and Devices" in topic C.7.3. Exchange the Feature Expansion card for the coin dispenser. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.4. Service the 4683 base unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.

3.3.6 Diskette Drive Symptoms (4684 Only)

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Table 3-8. Diskette Drive Symptoms (4684 Only)	
Symptoms	Repair Actions Listed in Most Likely Order of Failure
The diskette drive in-use light stays ON.	<ol style="list-style-type: none"> If there is a diskette in the drive, ensure that: <ul style="list-style-type: none"> <input type="checkbox"/> The diskette is good and not damaged. Try a backup copy if you have one. <input type="checkbox"/> The diskette is inserted correctly. (label up and metal shutter end first) <input type="checkbox"/> Your software program is running correctly. If the preceding items are correct and the diskette drive in-use light still stays ON, service the 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
The diskette drive does not work correctly.	<ol style="list-style-type: none"> If there is a diskette in the drive, ensure that: <ul style="list-style-type: none"> <input type="checkbox"/> The diskette is good and not damaged. Try a backup copy if you have one. <input type="checkbox"/> The diskette is inserted correctly. (label up and metal shutter end first) <input type="checkbox"/> Your software program is running correctly. If the preceding items are correct and the diskette drive still does not work correctly, service the 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.

3.3.7 Dump Switch Symptoms (4683-xx1 Only)

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Symptom	Repair Actions Listed in Most Likely Order of Failure
After pressing the dump switch on the 4683-xx1, a U008 message does not appear in the terminal display.	Service the 4683-xx1 base unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .

3.3.8 Fan Symptoms (4683 Base Unit or 4684 System Unit)

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Table 3-10. Fan Symptoms (4683 Base Unit or 4684 System Unit)	
Symptom	Repair Actions Listed in Most Likely Order of Failure
The fan is not working correctly.	Ensure that the power cord is plugged in and the power receptacle has power. If these are correct, service the 4683 base unit or 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .

3.3.9 Fixed Disk Drive Symptoms (4684 Only)

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Table 3-11. Fixed Disk Drive Symptoms (4684 Only)	
Symptoms	Repair Actions Listed in Most Likely Order of Failure
The disk drive in-use light is always ON.	Service the 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
-- or --	
The disk drive in-use light is never ON.	

3.3.10 Hand-Held Bar Code Reader Symptoms (4683/4684)

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Table 3-12. Hand-Held Bar Code Reader Symptoms (4683/4684)	
Symptom	Repair Actions Listed in Most Likely Order of Failure
Label data does not compare with printed data.	<ol style="list-style-type: none"> 1. The label is defective. 2. Exchange the Hand-Held Bar Code Reader. See "Hand-Held Bar Code Reader Removal and Replacement" in topic 7.5. 3. Service the 4683 base unit to exchange the base card or the 4684 system unit to exchange the system board. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
The Hand-Held Bar Code Reader is not working correctly.	<ol style="list-style-type: none"> 1. Exchange the Hand-Held Bar Code Reader. See "Hand-Held Bar Code Reader Removal and Replacement" in topic 7.5. 2. Service the 4683 base unit to exchange the base card or the 4684 system unit to exchange the system board. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.

3.3.11 Magnetic Stripe Reader (MSR) Symptoms (4683/4684)

These symptoms are for:

- The single-track MSR connected to socket 6 on the keyboard
- The dual-track MSR connected to socket 5B
- The ANPOS Keyboard MSR (low-profile dual-track)
- The Combined Keyboard/Display MSR (low-profile dual-track).

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Table 3-13. Magnetic Stripe Reader (MSR) Symptoms (4683/4684)	
Symptom	Repair Actions Listed in Most Likely Order of Failure
The magnetic stripe reader (MSR) is not working correctly.	<ol style="list-style-type: none"> 1. The MSR read head is dirty. Use MSR wiper card (IBM P/N 6019483) to clean the read head. 2. Exchange the MSR. See Chapter 7, "Removal and Replacement Procedures." 3. Service or exchange the point-of-sale keyboard. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>. To exchange, see Chapter 7, "Removal and Replacement Procedures." 4. Exchange the keyboard cable. See "Cable Sockets and Devices" in topic C.7. 5. Service the 4683 base unit to exchange the base card or the 4684 system unit to exchange the system board. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.

3.3.12 Magnetic Wand Symptoms (4683 Only)

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Symptom	Repair Actions Listed in Most Likely Order of Failure
The magnetic wand is not working correctly.	<ol style="list-style-type: none">1. Exchange the magnetic wand and its cable. See "Magnetic Wand Removal and Replacement (4683 Only)" in topic 7.12.2. Exchange the Feature Expansion card for the magnetic wand. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.3. Service the 4683 base unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.

3.3.13 Mouse (Pointing Device) Symptoms (4684 Only)

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Table 3-15. Mouse (Pointing Device) Symptoms (4684 Only)	
Symptoms	Repair Actions Listed in Most Likely Order of Failure
The mouse (pointing device) does not work correctly.	Run the MOUSE PORT test in MENU-T4 under "Running System Unit Tests" in topic 5.5. <input type="checkbox"/> If the test does not find the cause of the problem, check for additional testing information in the instructions that were supplied with the pointing device. <input type="checkbox"/> If no testing information is available, exchange the mouse (the pointing device).

3.3.14 Optical Character Reader (OCR) Symptoms (4683 Only)

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Table 3-16. Optical Character Reader (OCR) Symptoms (4683 Only)	
Symptom	Repair Actions Listed in Most Likely Order of Failure
Label data does not compare with printed data.	<ol style="list-style-type: none"> 1. The label is defective. 2. Exchange the optical character reader. See "Optical Character Reader Removal and Replacement (4683 Only)" in topic 7.14. 3. Exchange the Feature Expansion card for the optical character reader. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5. 4. Exchange the optical character reader cable. See "Cable Sockets and Devices" in topic C.7. 5. Service the 4683 base unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
The optical character reader (OCR) is not working correctly.	<ol style="list-style-type: none"> 1. Exchange the optical character reader. See "Optical Character Reader Removal and Replacement (4683 Only)" in topic 7.14. 2. Exchange the Feature Expansion card for the optical character reader. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5. 3. Exchange the optical character reader cable. See "Cable Sockets and Devices" in topic C.7. 4. Service the 4683 base unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.

3.3.15 Option Adapter Symptoms (4684 Only)

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Table 3-17. Option Adapter Symptoms (4684 Only)	
Symptoms	Repair Actions Listed in Most Likely Order of Failure
<p>An option adapter was just installed and it does not work.</p> <p>Example:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Baseband Network Adapter <input type="checkbox"/> Dual Asynchronous Adapter <input type="checkbox"/> Expanded Memory <input type="checkbox"/> ISDN Interface Co-Processor/2 Adapter <input type="checkbox"/> Multiprotocol Communications Adapter <input type="checkbox"/> PC Network Baseband Adapter/A <input type="checkbox"/> 300/1200/2400 Internal Modem/A Adapter <input type="checkbox"/> Realtime Interface Co-Processor Multiport/2 Adapter (ARTICm/2) <input type="checkbox"/> Token-Ring Network Adapter <input type="checkbox"/> X.25 Interface Co-Processor/2 Adapter (ARTICx/2) <input type="checkbox"/> 2-8Mb 80286 Memory Expansion Adapter <input type="checkbox"/> 4684 Store Loop Adapter/A <input type="checkbox"/> 6157 Tape Attachment Adapter <input type="checkbox"/> Any other option adapter. 	<ol style="list-style-type: none"> 1. Ensure that the adapter is supported by the 4684 Point of Sale Terminal. 2. Ensure that the instructions that were supplied with the adapter were followed correctly. 3. Ensure that other adapters or cables were not loosened when this adapter was installed. 4. Ensure that the 4684 Backup Reference Diskette was used to START CONFIGURATION and the configuration was ACTIVATED to automatically configure this adapter. 5. If the preceding items are correct, run the test for the adapter in MENU-T4 under "Running System Unit Tests" in topic 5.5. 6. If no problem is found when running the test, service the 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
<p>An option adapter that used to work does not work now.</p>	<ol style="list-style-type: none"> 1. Ensure that all of the adapter's hardware and cable(s) are correctly connected. 2. If the preceding items are correct, run the test for the adapter in MENU-T4 under "Running System Unit Tests" in topic 5.5. 3. If no problem is found when running the test, service the 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
<p>An option adapter is installed and configured but it does not appear in MENU-T4.</p>	<p>The adapter is failing. Service the 4684 system unit to exchange the adapter. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.</p>

3.3.16 Point of Sale Keyboard Symptoms (4683/4684)

These symptoms are for:

<input type="checkbox"/> The 50-Key Keyboard	<input type="checkbox"/> The Combined Keyboard/Display
<input type="checkbox"/> The Alphanumeric Keyboard	- For display symptoms, see topic 3.3.1.
<input type="checkbox"/> The ANPOS Keyboard	- For MSR symptoms, see topic 3.3.11.
- For MSR symptoms, see topic 3.3.11.	<input type="checkbox"/> The Matrix Keyboard

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Table 3-18. Point of Sale Keyboard Symptoms (4683/4684)	
Symptom	Repair Actions Listed in Most Likely Order of Failure
<input type="checkbox"/> The audible tone symptom is: <ul style="list-style-type: none"> - The tone has changed from when it was working correctly. The change could be in tone, loudness, or duration. - The tone is always ON. - The tone never comes ON. 	1. Look for other symptoms such as a blank display or a U001 message. <ul style="list-style-type: none"> <input type="checkbox"/> If you have a blank display, follow the <i>Repair Action</i> for this symptom in this chapter. <input type="checkbox"/> If you have a U001 message, follow the <i>User Response</i> for the message under "Unnn Messages" in topic 2.8. 2. Service or exchange the keyboard. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> . To exchange, see Chapter 7, "Removal and Replacement Procedures."
<input type="checkbox"/> The keyboard lights symptom is: <ul style="list-style-type: none"> - All keyboard lights are ON. - One or more keyboard lights are always ON. - One or more keyboard lights that should come ON never come ON. - One or more keyboard lights are blinking. 	3. Exchange the keyboard cable. See "Cable Sockets and Devices" in topic C.7. 4. Service the 4683 base unit or service the 4684 system unit to exchange the system board. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
<input type="checkbox"/> One or more keys cause: <ul style="list-style-type: none"> - Extra character(s) to display. - No character(s) to display. - Wrong character(s) to display. 	
<input type="checkbox"/> The keyboard is not working correctly.	The manager's Service or exchange the keyboard. For service

<p>keylock turns with the key, but it is not detected by the application or the tests.</p>	<p>information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>. To exchange, see Chapter 7, "Removal and Replacement Procedures."</p>
<p>The manager's keylock will not turn with the key.</p>	<p>Exchange the keylock. See "Keylock Insert Removal and Replacement" in topic 7.7 or to exchange the entire keylock assembly, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.</p>
<p>More than one keyboard is attached to the point-of-sale terminal and all keyboards are failing.</p>	<ol style="list-style-type: none"> 1. Look for other symptoms such as a blank display or a U001 message. <ul style="list-style-type: none"> <input type="checkbox"/> If you have a blank display, follow the <i>Repair Action</i> for this symptom in this chapter. <input type="checkbox"/> If you have a U001 message, follow the <i>User Response</i> for the message under "Unnn Messages" in topic 2.8. 2. Service the 4683 base unit or 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
<p>This symptom assumes that terminal power remains ON.</p> <p>After the point-of-sale terminal is powered-ON:</p> <p>All keyboard lights are OFF or none seem to be working. -- and -- The keyboard power LED (Light Emitting Diode) is OFF.</p> <p>The LED is visible through an opening beside the cable connector in the back of the ANPOS keyboard or combined keyboard/display.</p>	<ol style="list-style-type: none"> 1. Exchange the keyboard cable. See "Cable Sockets and Devices" in topic C.7. 2. Service the 4683 base unit or 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>. 3. Service the keyboard. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
<p>This symptom assumes that terminal power remains ON.</p> <p>After the point-of-sale terminal is powered-ON:</p> <p>All keyboard lights are OFF or none seem to be working. -- and -- The keyboard power LED (Light Emitting Diode) is ON.</p> <p>The LED is visible through an opening beside the cable connector in the back of the ANPOS keyboard or combined keyboard/display.</p>	<p>Service the keyboard. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.</p>
<p>After the point-of-sale terminal is powered-ON:</p> <p>All keyboard lights</p>	<ol style="list-style-type: none"> 1. Service or exchange the keyboard. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>. To exchange, see Chapter 7, "Removal and Replacement Procedures."

<p>are OFF or none seem to be working.</p> <p>-- but --</p> <p>The primary (system) display is working correctly.</p>	<ol style="list-style-type: none"> 2. Exchange the keyboard cable. See "Cable Sockets and Devices" in topic C.7. 3. Service the 4683 base unit or 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
<p>After the point-of-sale terminal is powered-ON:</p> <p>ALL keyboard lights are ON.</p> <p>-- and --</p> <p>The primary (system) display is working correctly.</p>	<ol style="list-style-type: none"> 1. Service or exchange the keyboard. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>. To exchange, see Chapter 7, "Removal and Replacement Procedures." 2. Exchange the keyboard cable. See "Cable Sockets and Devices" in topic C.7. 3. Service the 4683 base unit or 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
<p>4683-A02 in Backup Mode</p> <p>One of these messages is printed:</p> <p>* OPERATION HALTED * KEYBOARD OFFLINE</p> <p>-- or --</p> <p>* OPERATION HALTED * NO KEYBOARD FOUND</p>	<ol style="list-style-type: none"> 1. Service or exchange the keyboard. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>. To exchange, see Chapter 7, "Removal and Replacement Procedures." 2. Exchange the keyboard cable. See "Cable Sockets and Devices" in topic C.7. 3. Service the 4683 base unit to exchange the base card. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
<p>After the point-of-sale terminal is powered-ON:</p> <p>All keyboard lights are OFF or none seem to be working.</p> <p>-- and --</p> <p>The primary (system) display is blank.</p>	<ol style="list-style-type: none"> 1. No power to the point-of-sale terminal. <ol style="list-style-type: none"> a. Ensure power is available at the power receptacle. b. Ensure the point-of-sale terminal power cord is OK and connected to the power receptacle and the terminal. 2. The 4683 base unit, 4684 system unit, or one of the point-of-sale devices attached to the terminal is failing. <ol style="list-style-type: none"> a. Switch POWER OFF at the terminal. b. With the exception of the point-of-sale keyboard, disconnect all other point-of-sale devices from the terminal. This includes Feature Expansion cards on a 4683. See "Cable Sockets and Devices" in topic C.7. c. Switch power ON at the terminal, observing the keyboard lights. <ul style="list-style-type: none"> □ If any of the keyboard lights come ON, one of the devices, cables, or Feature Expansion cards you disconnected is the cause of the problem. <ol style="list-style-type: none"> 1) Switch POWER OFF at the terminal. 2) Reconnect one of the disconnected devices to its original socket. 3) Switch power ON at the terminal, observing the keyboard lights. <ul style="list-style-type: none"> - If none of the keyboard lights comes ON, the device that was just reconnected is failing.

	<ul style="list-style-type: none"> - If any of the keyboard lights come ON, repeat the preceding steps until the failing device has been identified. □ If none of the keyboard lights comes ON, the failure is caused by the 4683 base unit, 4684 system unit, or point-of-sale keyboard. <ol style="list-style-type: none"> 1) Switch POWER OFF at the terminal. 2) Disconnect the point-of-sale keyboard. 3) Connect the display to its original socket. 4) Switch power ON at the terminal. <ul style="list-style-type: none"> - If the display is still blank, service the 4683 base unit or 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>. - If the display is not blank, service or exchange the point-of-sale keyboard or exchange its cable. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
<p>After the point-of-sale terminal is powered-ON:</p> <p>ALL keyboard lights are ON.</p> <p>-- and --</p> <p>U001 is displayed.</p>	<p>The 4683 base unit, 4684 system unit, or one of the point-of-sale devices attached to the terminal is failing.</p> <ol style="list-style-type: none"> 1. Switch POWER OFF at the terminal. 2. Disconnect the power cord. 3. With the exception of the primary (system) display, disconnect all other point-of-sale devices from the terminal. This includes Feature Expansion cards on a 4683. See "Cable Sockets and Devices" in topic C.7. <p>Exception: If the primary (system) display is a video display, do not remove its Feature Expansion card.</p> 4. Connect the power cord. 5. Switch power ON at the terminal. <ul style="list-style-type: none"> □ If the display message progresses to at least the U003 message, one of the devices, cables, or Feature Expansion cards you disconnected is the cause of the problem. <ol style="list-style-type: none"> a. Switch POWER OFF at the terminal. b. Reconnect one of the disconnected devices to its original socket. c. Switch power ON at the terminal. <ul style="list-style-type: none"> - If the display messages do not progress past U001, the device that was just reconnected is failing. - If the display messages progress past U001, repeat the preceding steps until the failing device has been identified. □ If the display message does not progress to U003, the failure is caused by the 4683 base unit, 4684 system unit, or primary (system) display. <ol style="list-style-type: none"> a. Switch POWER OFF at the terminal. b. Disconnect the primary (system) display. If it is a video display, remove its Feature Expansion card. c. Connect the point-of-sale keyboard to its original socket. d. Switch power ON at the terminal, observing the keyboard lights. <ul style="list-style-type: none"> - If ALL FOUR keyboard lights stay ON, service the 4683 base

unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

- If ALL FOUR keyboard lights come ON, and then TWO of them go OFF leaving the WAIT and OFFLINE lights ON, the failing device is one of the following. Return them one at a time until you identify which one is failing.

- 1) If applicable, the Feature Expansion card for the video display.
- 2) The display.
- 3) The display cable.

3.3.17 Point of Sale Printer Model 1 or 2 Symptoms (4683/4684)

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Table 3-19. Point of Sale Printer Model 1 or 2 Symptoms (4683/4684)	
Symptom	Repair Actions Listed in Most Likely Order of Failure
The cover interlock does not work correctly.	Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
The document insert / customer receipt station:	Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
<input type="checkbox"/> Advances receipt paper continuously. <input type="checkbox"/> Does not sense an inserted document. <input type="checkbox"/> Does not close on an inserted document. <input type="checkbox"/> Does not stop documents at the document insert gate.	
The document insert / customer receipt station:	1. Ensure paper is inserted correctly. 2. Ensure the print head is not interfering with paper movement.
<input type="checkbox"/> Does not advance inserted documents. <input type="checkbox"/> Does not advance receipt paper. <input type="checkbox"/> Is overprinting. Paper does not advance correctly.	3. Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> . 4. Exchange the printer cable. See "Cable Sockets and Devices" in topic C.7. 5. Service the 4683 base unit or 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
The document insert / customer receipt station gets paper jams.	1. Ensure paper is installed correctly. 2. Ensure the print head is not interfering with paper movement. 3. Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
The document insert / customer receipt station printing is light.	1. Exchange the ribbon cartridge. See "Printer Ribbon Cartridge Removal and Replacement (Model 1 or 2)" in topic 7.15.6. 2. Exchange the print head. See "Print Head Removal and Replacement (Model 1 or 2)" in topic 7.15.5. 3. Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
The journal station:	Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
<input type="checkbox"/> Advances paper continuously.	

<input type="checkbox"/> Paper take-up is not working.	
<p>The journal station:</p> <input type="checkbox"/> Does not advance paper. <input type="checkbox"/> Is overprinting. Paper does not advance correctly.	<ol style="list-style-type: none"> 1. Ensure paper is installed correctly. 2. Ensure the print head is not interfering with paper movement. 3. Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>. 4. Exchange the printer cable. See "Cable Sockets and Devices" in topic C.7. 5. Service the 4683 base unit or 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
<p>The journal station gets paper jams.</p>	<ol style="list-style-type: none"> 1. Ensure paper is installed correctly. 2. Ensure the print head is not interfering with paper movement. 3. Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
<p>The journal station printing is light.</p>	<ol style="list-style-type: none"> 1. Exchange the ribbon cartridge. See "Printer Ribbon Cartridge Removal and Replacement (Model 1 or 2)" in topic 7.15.6. 2. Exchange the print head. See "Print Head Removal and Replacement (Model 1 or 2)" in topic 7.15.5. 3. Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
<p>The keylock is not working correctly.</p>	<p>Exchange the keylock insert. See "Keylock Insert Removal and Replacement" in topic 7.7.</p>
<p>One or more of the keypad keybuttons do not work correctly.</p>	<p>Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.</p>
<p>The margins are not correct.</p>	<p>Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.</p>
<p>Nothing Prints</p> <p>The print head and ribbon both move.</p>	<ol style="list-style-type: none"> 1. Ensure the print head preload spring is in position to hold the print head against the platen. 2. Exchange the print head. See "Print Head Removal and Replacement (Model 1 or 2)" in topic 7.15.5. 3. Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
<p>The print head does not move when attempting to print.</p>	<ol style="list-style-type: none"> 1. Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>. 2. Exchange the printer cable. See "Cable Sockets and Devices" in topic C.7. 3. Service the 4683 base unit to exchange the base card or the 4684 system unit to exchange the system board. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
<p>Printed characters:</p> <input type="checkbox"/> Are light <input type="checkbox"/> Are smudged <input type="checkbox"/> Are not clear.	<ol style="list-style-type: none"> 1. Ensure the print head preload spring is in position to hold the print head against the platen. 2. Exchange the ribbon cartridge. See "Printer Ribbon Cartridge Removal and

	<p>Replacement (Model 1 or 2)" in topic 7.15.6.</p> <p>3. Exchange the print head. See "Print Head Removal and Replacement (Model 1 or 2)" in topic 7.15.5.</p> <p>4. Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.</p>
<p>Printed characters:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Are missing <input type="checkbox"/> Are not spaced correctly. 	<p>Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.</p>
<p>Printed characters have missing or extra dots.</p>	<ol style="list-style-type: none"> 1. Exchange the ribbon cartridge. See "Printer Ribbon Cartridge Removal and Replacement (Model 1 or 2)" in topic 7.15.6. 2. Exchange the print head. See "Print Head Removal and Replacement (Model 1 or 2)" in topic 7.15.5. 3. Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
<p>The printer:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Advances paper continuously. <input type="checkbox"/> Causes the point-of-sale display to go blank. <input type="checkbox"/> Causes the point-of-sale terminal power supply to shut down. 	<p>Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.</p>
<p>The printer does not print.</p> <p>The print head and ribbon both move.</p>	<ol style="list-style-type: none"> 1. Ensure the print head preload spring is in position to hold the print head against the platen. 2. Exchange the ribbon cartridge. See "Printer Ribbon Cartridge Removal and Replacement (Model 1 or 2)" in topic 7.15.6. 3. Exchange the printer cable. See "Cable Sockets and Devices" in topic C.7. 4. Exchange the print head. See "Print Head Removal and Replacement (Model 1 or 2)" in topic 7.15.5. 5. Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
<p>The printer does not print when the T button is pressed.</p>	<ol style="list-style-type: none"> 1. Exchange the printer cable. See "Cable Sockets and Devices" in topic C.7. 2. Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>. 3. Service the 4683 base unit to exchange the base card or the 4684 system unit to exchange the system board. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
<p>The printer is noisy when reset.</p>	<p>Some printers make a noise when they are reset. This is not a problem. The printer should not be exchanged if it makes a noise when reset.</p> <p>The printer is reset when:</p>

	<ol style="list-style-type: none"> 1. Opening and then closing the cover 2. The power at the terminal is switched ON 3. The terminal is restarted to do store transactions.
<p>The printer is noisy other than when it is reset. It makes a continuous grinding noise.</p>	<ol style="list-style-type: none"> 1. Ensure the print head preload spring is in position to hold the print head against the platen. 2. Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
<p>The ribbon does not advance -- and -- journal paper does not advance.</p>	<p>Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.</p>
<p>The ribbon does not advance -- or -- the ribbon cartridge does not stay seated correctly.</p>	<ol style="list-style-type: none"> 1. Exchange the ribbon cartridge. See "Printer Ribbon Cartridge Removal and Replacement (Model 1 or 2)" in topic 7.15.6. 2. Ensure the print head is not interfering with paper movement. 3. Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
<p>The ribbon is damaged by the printer.</p>	<ol style="list-style-type: none"> 1. Exchange the print head. See "Print Head Removal and Replacement (Model 1 or 2)" in topic 7.15.5. 2. Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
<p>The printer is not working correctly.</p>	<ol style="list-style-type: none"> 1. Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>. 2. Exchange the print head. See "Print Head Removal and Replacement (Model 1 or 2)" in topic 7.15.5. 3. Exchange the printer cable. See "Cable Sockets and Devices" in topic C.7. 4. Service the 4683 base unit or 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
<p>This message is displayed: CHK DOCUMENT INSERT PRESS THE ENTER KEY</p>	<p>The document insert / customer receipt station detected that a document has been inserted when not expected.</p> <ul style="list-style-type: none"> <input type="checkbox"/> If a document is inserted, remove the document and press Enter. <input type="checkbox"/> If a document is not inserted, service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
<p>This message is displayed: CLOSE PRINTER COVER PRESS THE ENTER KEY</p>	<p>The printer detected that the printer cover is open.</p> <ul style="list-style-type: none"> <input type="checkbox"/> If the cover is open, close it and press Enter. <input type="checkbox"/> If the cover is not open, service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
<p>This message is displayed:</p>	<ol style="list-style-type: none"> 1. Ensure the printer is not out of paper. 2. Ensure printer paper is not torn.

JOURNAL PAPER ERROR PRESS THE ENTER KEY	3. Ensure printer paper is not jammed. 4. Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
4683-A02 in Backup Mode One of these messages is displayed: * OPERATION HALTED * NO PRINTER FOUND -- or -- * OPERATION HALTED * PRINTER OFFLINE	1. Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> . 2. Exchange the printer cable. See "Cable Sockets and Devices" in topic C.7. 3. Service the 4683 base unit to exchange the base card. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .

3.3.18 Point of Sale Printer Model 3 Symptoms (4683/4684)

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Table 3-20. Point of Sale Printer Model 3 Symptoms (4683/4684)	
Symptom	Repair Actions Listed in Most Likely Order of Failure
The cover interlock does not work correctly.	Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
The customer receipt paper cutter: <input type="checkbox"/> Folds the paper. <input type="checkbox"/> Does not cut properly.	Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
The customer receipt station: <input type="checkbox"/> Advances paper continuously. <input type="checkbox"/> Does not print any characters. <input type="checkbox"/> Gets paper jams. <input type="checkbox"/> Printing is light (only at the customer receipt station).	<ol style="list-style-type: none"> For jams, ensure paper is installed correctly. Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
The customer receipt station: <input type="checkbox"/> Does not advance paper. <input type="checkbox"/> Is overprinting. Paper does not advance correctly.	<ol style="list-style-type: none"> Ensure paper is installed correctly. Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
The document insert ready (green) light: <input type="checkbox"/> Is always on. <input type="checkbox"/> Never comes on. <input type="checkbox"/> Is flickering. <input type="checkbox"/> Does not come on when a document is inserted.	Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
When a document is inserted: <input type="checkbox"/> The document advances continuously. <input type="checkbox"/> The document gets jammed. <input type="checkbox"/> No characters print.	<ol style="list-style-type: none"> For jams, ensure the document is inserted correctly. Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
When a document is inserted: <input type="checkbox"/> The document does not advance. <input type="checkbox"/> The document has overprinted	<ol style="list-style-type: none"> Ensure the document is inserted correctly. Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.

lines. It does not advance correctly.	
The journal paper spool does not take up paper.	Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
The journal station: <input type="checkbox"/> Advances paper continuously. <input type="checkbox"/> Does not print any characters. <input type="checkbox"/> Gets paper jams. <input type="checkbox"/> Printing is light (only at the journal station).	1. For jams, ensure the paper and take up spool are loaded correctly. 2. Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
The journal station: <input type="checkbox"/> Does not advance paper. <input type="checkbox"/> Is overprinting. Paper does not advance correctly.	1. Ensure the paper and take up spool are loaded correctly. 2. Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
One or more of the keybuttons do not work correctly.	Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
The keylock is not working correctly.	Exchange the keylock insert. See "Keylock Insert Removal and Replacement" in topic 7.7.
The paper does not advance correctly (jams or print line spacing is not correct).	1. Ensure paper is installed correctly. 2. Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
The print head does not return to center home.	Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
The printed characters: <input type="checkbox"/> Are light. <input type="checkbox"/> Are missing one or more dot rows. <input type="checkbox"/> Are not centered on the paper. <input type="checkbox"/> Are not clear. <input type="checkbox"/> Are not spaced correctly. <input type="checkbox"/> Are smudged. <input type="checkbox"/> Have extra dots.	Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
The printer: <input type="checkbox"/> Advances paper continuously. <input type="checkbox"/> Causes the point-of-sale display to go blank. <input type="checkbox"/> Causes the point-of-sale terminal power supply to shut	Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .

down.	
The printer	1. Exchange the printer cable. See "Cable Sockets and Devices" in topic C.7.
<input type="checkbox"/> Does not power-ON.	2. Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
<input type="checkbox"/> Does not print	3. Service the 4683 base unit or 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
The ribbon:	1. Exchange the ribbon cartridge. See "Printer Ribbon Cartridge Removal and Replacement (Model 3)" in topic 7.16.5.
<input type="checkbox"/> Does not advance.	2. Service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
<input type="checkbox"/> Is damaged by the printer.	
This message is displayed: CHK DOCUMENT INSERT PRESS THE ENTER KEY	The document insert / customer receipt station detected that a document has been inserted when not expected. <input type="checkbox"/> If a document is inserted, remove it and press Enter . <input type="checkbox"/> If a document is not inserted, service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
This message is displayed: CLOSE PRINTER COVER PRESS THE ENTER KEY	The printer detected that the printer cover is open. <input type="checkbox"/> If the cover is open, close it and press Enter . <input type="checkbox"/> If the cover is not open, service the printer. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .

3.3.19 Point of Sale Scanner Symptoms (4683/4684)

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Table 3-21. Point of Sale Scanner Symptoms (4683/4684)	
Symptom	Repair Actions Listed in Most Likely Order of Failure
The green light does not flash when a label is scanned.	Service the scanner. See the maintenance documentation for the scanner.
The printed data is not correct when a label is scanned during a test.	Service the scanner. See the maintenance documentation for the scanner.
The scanner does not successfully complete its self-tests.	Service the scanner. See the maintenance documentation for the scanner.
The scanner is not working correctly.	<ol style="list-style-type: none"> 1. Run the scanner self-tests. See the maintenance documentation for the scanner. <ul style="list-style-type: none"> <input type="checkbox"/> If the scanner is attached to a 4684, follow "Testing the Point of Sale Scanner" in topic 5.4.8. <input type="checkbox"/> If the scanner is an IBM 3687 Checkout Scanner Model 2 and you are using the 4680 Operating System, run "TEST 4110: Point of Sale Scanner (4683/4684)" in topic 4.11. <input type="checkbox"/> Any other, see the maintenance documentation for the scanner. 2. Service the scanner. See the maintenance documentation for the scanner. 3. Exchange the scanner cable. See "Cable Sockets and Devices" in topic C.7. 4. Service the 4683 base unit to exchange the base card or the 4684 system unit to exchange the system board. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.

3.3.20 Reference Diskette Symptoms (4684 Only)

Table 3-22. Reference Diskette Symptoms (4684 Only)	
Symptoms	Repair Actions Listed in Most Likely Order of Failure
Problems are experienced when using the Reference Diskette.	<ol style="list-style-type: none"> 1. Ensure that you are using the Backup Reference Diskette and that it is current. It contains the current configuration and testing programs for your system. 2. If an adapter with an Option Diskette was installed, ensure that the Option Diskette was used to update the Backup Reference Diskette before installation. (The Option Diskette contains the adapter's testing program, configuration information, and instructions to update the Backup Reference Diskette.) 3. If the above items are correct and the problem persists, see Appendix G, "IBM 4684 Configuration and Utility Procedures" to create a new Backup Reference Diskette. Be sure to copy all Option Diskettes to the new Backup Reference Diskette.

3.3.21 Remote Alarm Symptoms (4683/4684)

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Table 3-23. Remote Alarm Symptoms (4683/4684)	
Symptom	Repair Actions Listed in Most Likely Order of Failure
The remote alarm is not working correctly.	<ol style="list-style-type: none">1. Exchange the remote alarm. See "Remote Alarm Removal and Replacement" in topic 7.18.2. Exchange the remote alarm cable. See "Cable Sockets and Devices" in topic C.7.3. Service the 4683 base unit to exchange the base card or the 4684 system unit to exchange the system board. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.

3.3.22 Scale Symptoms (4683 Only)

Symptom	Repair Actions Listed in Most Likely Order of Failure
The scale is not working correctly.	<ul style="list-style-type: none"><li data-bbox="478 257 1117 329">□ If this is an IBM scale, continue problem determination using the maintenance documentation for the scale.<li data-bbox="478 331 1117 405">□ If this is not an IBM scale and you are using the 4680 Operating System, run "TEST 4140: Scale (4683 Only)" in topic 4.14.

3.3.23 Shopper Display Symptoms (4683/4684)

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Table 3-25. Shopper Display Symptoms (4683/4684)	
Symptom	Repair Actions Listed in Most Likely Order of Failure
<ul style="list-style-type: none"> <input type="checkbox"/> Character brightness is not correct. <input type="checkbox"/> Characters appear in the wrong positions. <input type="checkbox"/> Characters are not stable. <input type="checkbox"/> Characters are wrong, unusual, or missing. <input type="checkbox"/> Characters have missing segments or extra segments. <input type="checkbox"/> The display does not change, while other devices seem to be working correctly. <input type="checkbox"/> The display is blank, while other devices seem to be working correctly. <input type="checkbox"/> The display is not working correctly. 	<p>Note: For a 4684, see "Restrictions When Connecting Displays" in topic G.2.5.</p> <ol style="list-style-type: none"> 1. Exchange the shopper display. See "Shopper Display Removal and Replacement" in topic 7.20. 2. Exchange the shopper display cable. See "Cable Sockets and Devices" in topic C.7. 3. Service the 4683 base unit to exchange the base card or the 4684 system unit to exchange the system board. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
The shopper display guidance indicators do not work correctly.	Exchange the shopper display. See "Shopper Display Removal and Replacement" in topic 7.20.
<p>After the point-of-sale terminal is powered-ON:</p> <p>The shopper display is blank.</p> <p>-- but --</p> <p>The primary (system) display is working correctly.</p>	<ol style="list-style-type: none"> 1. Exchange the shopper display. See "Shopper Display Removal and Replacement" in topic 7.20. 2. Exchange the shopper display cable. See "Cable Sockets and Devices" in topic C.7. 3. Service the 4683 base unit to exchange the base card or the 4684 system unit to exchange the system board. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
<p>After the point-of-sale terminal is powered-ON:</p> <p>U001 is displayed.</p> <p>-- and --</p> <p>The primary (system) display is working correctly.</p>	<ol style="list-style-type: none"> 1. Exchange the shopper display. See "Shopper Display Removal and Replacement" in topic 7.20. 2. Exchange the shopper display cable. See "Cable Sockets and Devices" in topic C.7. 3. Service the 4683 base unit to exchange the base card or the 4684 system unit to exchange the system board. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
<p>After the point-of-sale terminal is powered-ON:</p> <p>The display is blank.</p>	<ol style="list-style-type: none"> 1. No power to the point-of-sale terminal. <ol style="list-style-type: none"> a. Ensure power is available at the power receptacle. b. Ensure the point-of-sale terminal power cord is OK and connected to the power receptacle and the terminal.

<p>-- and --</p> <p>The primary (system) display is not working correctly.</p>	<p>2. The 4683 base unit, 4684 system unit, or one of the point-of-sale devices attached to the terminal is failing.</p> <p>a. Switch POWER OFF at the terminal.</p> <p>b. With the exception of the point-of-sale keyboard, disconnect all other point-of-sale devices from the terminal. This includes Feature Expansion cards on a 4683. See "Cable Sockets and Devices" in topic C.7.</p> <p>c. Switch power ON at the terminal, observing the keyboard lights.</p> <p>□ If any of the keyboard lights come ON, one of the devices, cables, or Feature Expansion cards you disconnected is the cause of the problem.</p> <p>1) Switch POWER OFF at the terminal.</p> <p>2) Reconnect one of the disconnected devices to its original socket.</p> <p>3) Switch power ON at the terminal, observing the keyboard lights.</p> <p>- If <i>none</i> of the keyboard lights comes ON, the device that was just reconnected is failing.</p> <p>- If any of the keyboard lights come ON, repeat the preceding steps until the failing device has been identified.</p> <p>□ If <i>none</i> of the keyboard lights comes ON, the failure is caused by the 4683 base unit, 4684 system unit, or point-of-sale keyboard.</p> <p>1) Switch POWER OFF at the terminal.</p> <p>2) Disconnect the point-of-sale keyboard.</p> <p>3) Connect the primary (system) display to its original socket.</p> <p>4) Switch power ON at the terminal.</p> <p>- If the display is still blank, service the 4683 base unit or 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.</p> <p>- If the display is not blank, service or exchange the point-of-sale keyboard or exchange its cable. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.</p>
<p>After the point-of-sale terminal is powered-ON:</p> <p>U001 is displayed.</p> <p>-- and --</p> <p>ALL keyboard lights are ON.</p>	<p>The 4683 base unit, 4684 system unit, or one of the point-of-sale devices attached to the terminal is failing.</p> <p>1. Switch POWER OFF at the terminal.</p> <p>2. Disconnect the power cord.</p> <p>3. With the exception of the primary (system) display, disconnect all other point-of-sale devices from the terminal. This includes Feature Expansion cards on a 4683. See "Cable Sockets and Devices" in topic C.7.</p> <p>Exception: If the primary (system) display is a video display, do not remove its</p>

Feature Expansion card.

4. Connect the power cord.
5. Switch power ON at the terminal.
 - If the display message progresses to at least the U003 message, one of the devices, cables, or Feature Expansion cards you disconnected is the cause of the problem.
 - a. Switch **POWER OFF** at the terminal.
 - b. Reconnect one of the disconnected devices to its original socket.
 - c. Switch power ON at the terminal.
 - If the display messages **do not** progress past U001, the device that was just reconnected is failing.
 - If the display messages progress past U001, repeat the preceding steps until the failing device has been identified.
 - If the display message does not progress to U003, the failure is caused by the 4683 base unit, 4684 system unit, or primary (system) display.
 - a. Switch **POWER OFF** at the terminal.
 - b. Disconnect the primary (system) display. If it is a video display, remove its Feature Expansion card.
 - c. Connect the point-of-sale keyboard to its original socket.
 - d. Switch power ON at the terminal, observing the keyboard lights.
 - If ALL FOUR keyboard lights stay ON, service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
 - If ALL FOUR keyboard lights come ON, and then TWO of them go OFF leaving the WAIT and OFFLINE lights ON, the failing device is one of the following. Return them one at a time until you identify which one is failing.
 - 1) If applicable, the Feature Expansion card for the video display.
 - 2) The display.
 - 3) The display cable.

3.3.24 Socket 23 or 25 Symptoms (4683 RS-232 or Current Loop Feature)

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Table 3-26. Socket 23 or 25 Symptoms (4683 RS-232 or Current Loop Feature)	
Symptom	Repair Actions Listed in Most Likely Order of Failure
The device connected to socket 23 or 25 is not working correctly. Note: These are asynchronous communications devices.	<ol style="list-style-type: none">1. Exchange the Feature Expansion card. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.2. Exchange the device attached to the Feature Expansion card.3. Exchange the device cable. See "Cable Sockets and Devices" in topic C.7.4. Service the 4683 base unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.

3.3.25 Storage Retention Symptoms (4683-xx1 Only)

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Table 3-27. Storage Retention Symptoms (4683-xx1 Only)	
Symptom	Repair Actions Listed in Most Likely Order of Failure
When the 4683-xx1 was powered-ON with storage retention enabled, it did an IPL (initial program load).	<ol style="list-style-type: none"> 1. Exchange the storage retention battery pack. See "4683 Battery Pack Removal and Replacement" in topic 7.28.4. 2. Service the 4683-xx1 base unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
When the 4683-xx1 was powered-ON with storage retention disabled, it did not IPL (initial program load).	Service the 4683-xx1 base unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
Storage retention is not working correctly.	<ol style="list-style-type: none"> 1. Exchange the storage retention battery pack. See "4683 Battery Pack Removal and Replacement" in topic 7.28.4. 2. Service the 4683-xx1 base unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.

3.3.26 Store Loop Adapter/A Symptoms (4684 Only)

Table 3-28. Store Loop Adapter/A Symptoms (4684 Only)	
Symptoms	Repair Actions Listed in Most Likely Order of Failure
The store loop adapter is installed and configured, but it does not appear in Menu-T4 (cannot be selected for test).	Service the 4684 system unit to exchange the store loop adapter. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
The store loop adapter is not operating correctly.	Run the 4684 STORE LOOP ADAPTER/A test in MENU-T4 under "Running System Unit Tests" in topic 5.5.

3.3.27 System Unit Printer Symptoms (4684 Only)

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Table 3-29. System Unit Printer Symptoms (4684 Only)	
Symptoms	Repair Actions Listed in Most Likely Order of Failure
The printer does not work correctly.	<ol style="list-style-type: none"> 1. Ensure that the printer is powered ON and online. 2. Ensure that the printer cable is connected to the 4684 system unit printer socket. For the location of the system unit printer socket, see Figure C-2 in topic C.7.2. 3. If the preceding items are correct and the printer still does not work correctly, run the PRINTER PORT test in MENU-T4 under "Running System Unit Tests" in topic 5.5. Also, run any printer test found in the documentation for the printer. 4. If no problem is found when running the tests, view configuration to ensure that the parallel port is enabled. See Appendix G, "IBM 4684 Configuration and Utility Procedures" in topic G.0. 5. Service the 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.

3.3.28 System Unit Video Display Symptoms (4684 Only)

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Table 3-30. System Unit Video Display Symptoms (4684 Only)	
Symptoms	Repair Actions Listed in Most Likely Order of Failure
<input type="checkbox"/> Character brightness is not correct.	1. Ensure that the system unit video display is connected to a good power source and powered ON.
<input type="checkbox"/> Characters appear in the wrong positions.	2. View configuration to ensure that the system unit video display is configured. See Appendix G, "IBM 4684 Configuration and Utility Procedures" in topic G.0.
<input type="checkbox"/> Characters are not stable.	3. Exchange the video display. See "Video Display (Except 5-Inch) Removal and Replacement" in topic 7.23.
<input type="checkbox"/> Characters are out of focus.	4. Service the 4684 system unit to exchange the system board. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
<input type="checkbox"/> Characters are wrong, unusual, or missing.	5. Exchange the video display cable (if detachable). See "Cable Sockets and Devices" in topic C.7.
<input type="checkbox"/> Characters cannot be read or are difficult to read.	
<input type="checkbox"/> Character colors are incorrect (color display only).	
<input type="checkbox"/> The display attributes such as highlighting, underlining, blinking, and reverse video are not working correctly.	
<input type="checkbox"/> The display does not change while other devices seem to be working correctly.	
<input type="checkbox"/> The display is blank or only has a raster while other devices seem to be working correctly. A raster is a pattern of lines on a lighted background.	
<input type="checkbox"/> The video display is not working correctly.	
The video display is blank.	Follow "PDP 6020: Blank Video Display" in topic 6.2.
The video display is blank and other attached displays are displaying U001.	Follow "PDP 6080: U001 Message" in topic 6.8.

3.3.29 Token-Ring Network Symptoms (4684 Only)

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Table 3-31. Token-Ring Network Symptoms (4684 Only)	
Symptoms	Repair Actions Listed in Most Likely Order of Failure
The Token-Ring Network Adapter is installed and configured but does not appear in MENU-T4.	The adapter is failing. Service the 4684 system unit to exchange the adapter. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
The Token-Ring Network does not work correctly.	Follow "Running Token-Ring Adapter Tests" in topic 5.7.

3.3.30 Totals Retention Symptoms (4683/4684)

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Table 3-32. Totals Retention Symptoms (4683/4684). If the terminal number is zero when Test Mode is requested, T0098 is displayed. The terminal number can be zero if totals retention is failing or if the terminal number has been reset and then not set to a valid number.	
Symptom	Repair Actions Listed in Most Likely Order of Failure
Terminal Number cannot be set or is not retained by totals retention.	Service the 4683 base unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
Totals retention is not working correctly.	Service the 4683 base unit or 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
4683-A02 in Backup Mode One of these messages is displayed: * OPERATION HALTED * BAD HARD TOTALS DATA -- or -- * OPERATION HALTED * HARD TOTALS DISABLED -- or -- * OPERATION HALTED * W302 BAD HT MEMORY	Service the 4683 base unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .

3.3.31 Video Display Symptoms (4683 Only)

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Table 3-33. Video Displays Symptoms (4683 Only)	
Symptom	Repair Actions Listed in Most Likely Order of Failure
<input type="checkbox"/> Character brightness is not correct.	1. Ensure that the video display is connected to a good power source and powered ON.
<input type="checkbox"/> Characters appear in the wrong positions.	2. Exchange the video display. See "Video Display (Except 5-Inch) Removal and Replacement" in topic 7.23.
<input type="checkbox"/> Characters are not stable.	3. Exchange the Feature Expansion card for the video display. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
<input type="checkbox"/> Characters are out of focus.	4. Exchange the video display cable (if detachable). See "Cable Sockets and Devices" in topic C.7.
<input type="checkbox"/> Characters are wrong, unusual, or missing.	
<input type="checkbox"/> Characters cannot be read or are difficult to read.	
<input type="checkbox"/> Character colors are incorrect (color display only).	
<input type="checkbox"/> The display attributes, such as highlighting, underlining, blinking, reverse video, are not working correctly.	
<input type="checkbox"/> The display does not change while other devices seem to be working correctly.	
<input type="checkbox"/> The display is blank or only has a raster while other devices seem to be working correctly. A raster is a pattern of lines on a lighted background.	
<input type="checkbox"/> The video display is not working correctly.	
There is no video raster when the brightness control is set to maximum.	1. Ensure the display is powered-ON. 2. Ensure power is available at the display power receptacle.
A raster is a pattern of lines on a lighted background.	3. Exchange the video display. See "Video Display (Except 5-Inch) Removal and Replacement" in topic 7.23. 4. Exchange the Feature Expansion card for the video display. See "4683 Feature Expansion Card Removal and Replacement" in

	topic 7.28.5.
After the point-of-sale terminal is powered-ON: The video display is blank. -- and -- At least two of the keyboard lights are ON.	<ol style="list-style-type: none"> 1. Ensure the display is powered-ON. 2. Ensure power is available at the display power receptacle. 3. Exchange the video display. See "Video Display (Except 5-Inch) Removal and Replacement" in topic 7.23. 4. Exchange the Feature Expansion card for the video display. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5. 5. Service the 4683 base unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
After the point-of-sale terminal is powered-ON: U001 is displayed. -- and -- Only the keyboard WAIT and OFFLINE lights are ON.	<ol style="list-style-type: none"> 1. Exchange the Feature Expansion card for the video display. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5. 2. Exchange the video display cable. See "Cable Sockets and Devices" in topic C.7. 3. Service the 4683 base unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
4683-A02 in Backup Mode One of these messages is printed: NO DISPLAY FOUND * OPERATION HALTED * -- or -- VIDEO OFFLINE * OPERATION HALTED *	<ol style="list-style-type: none"> 1. Exchange the video display. See "Video Display (Except 5-Inch) Removal and Replacement" in topic 7.23. 2. Exchange the Feature Expansion card for the video display. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5. 3. Exchange the video display cable. See "Cable Sockets and Devices" in topic C.7. 4. Service the 4683 base unit to exchange the base card. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
After the point-of-sale terminal is powered-ON: The video display is blank. -- and -- None of the keyboard lights come ON.	<ol style="list-style-type: none"> 1. No power to the point-of-sale terminal. <ol style="list-style-type: none"> a. Ensure power is available at the power receptacle. b. Ensure the point-of-sale terminal power cord is OK and connected to the power receptacle and the 4683 base unit. 2. The 4683 base unit or one of the point-of-sale devices attached to the base unit is failing. <ol style="list-style-type: none"> a. Switch POWER OFF at the terminal. b. With the exception of the point-of-sale keyboard, disconnect all other point-of-sale devices from the 4683 base unit. This includes Feature Expansion cards. See "Cable Sockets and Devices" in topic C.7. c. Switch power ON at the terminal, observing the keyboard lights. <ul style="list-style-type: none"> □ If any of the keyboard lights come ON, one of the devices, cables, or Feature Expansion cards you disconnected is the cause of the problem.

	<ol style="list-style-type: none"> 1) Switch POWER OFF at the terminal. 2) Reconnect one of the disconnected devices to its original socket. 3) Switch power ON at the terminal, observing the keyboard lights. <ul style="list-style-type: none"> - If none of the keyboard lights comes ON, the device that was just reconnected is failing. - If any of the keyboard lights come ON, repeat the preceding steps until the failing device has been identified. <p>□ If none of the keyboard lights comes ON, the failure is caused by the 4683 base unit or point-of-sale keyboard.</p> <ol style="list-style-type: none"> 1) Switch POWER OFF at the terminal. 2) Disconnect the point-of-sale keyboard. 3) Connect the video display to its original socket. 4) Switch power ON at the terminal. <ul style="list-style-type: none"> - If the display is still blank, service the 4683 base unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>. - If the display is not blank, service or exchange the point-of-sale keyboard or exchange its cable. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
<p>After the point-of-sale terminal is powered-ON: U001 is displayed. -- and -- ALL keyboard lights are ON.</p>	<p>The 4683 base unit or one of the point-of-sale devices attached to the base unit is failing.</p> <ol style="list-style-type: none"> 1. Switch POWER OFF at the terminal. 2. Disconnect the power cord. 3. With the exception of the primary (system) display, disconnect all other point-of-sale devices from the 4683 base unit. This includes Feature Expansion cards. See "Cable Sockets and Devices" in topic C.7. Exception: If the primary (system) display is a video display, do not remove its Feature Expansion card. 4. Connect the power cord. 5. Switch power ON at the terminal. <ul style="list-style-type: none"> □ If the display message progresses to at least the U003 message, one of the devices, cables, or Feature Expansion cards you disconnected is the cause of the problem. <ol style="list-style-type: none"> a. Switch POWER OFF at the terminal. b. Reconnect one of the disconnected devices to its original socket. c. Switch power ON at the terminal. <ul style="list-style-type: none"> - If the display messages do not progress past U001, the device that was just reconnected is failing. - If the display messages progress past U001, repeat the preceding steps until the failing device has been identified. □ If the display message does not progress to U003, the failure is caused by the 4683 base unit or primary

(system) display.

- a. Switch **POWER OFF** at the terminal.
- b. Disconnect the primary (system) display. If it is a video display, remove its Feature Expansion card.
- c. Connect the point-of-sale keyboard to its original socket.
- d. Switch power ON at the terminal, observing the keyboard lights.
 - If ALL FOUR keyboard lights stay ON, service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
 - If ALL FOUR keyboard lights come ON, and then TWO of them go OFF leaving the WAIT and OFFLINE lights ON, the failing device is one of the following. Return them one at a time until you identify which one is failing.
 - 1) If applicable, the Feature Expansion card for the video display.
 - 2) The display.
 - 3) The display cable.

3.3.32 1520 Hand-Held Scanner Model A01 Symptoms (4683 Only)

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Table 3-34. 1520 Hand-Held Scanner Model A01 Symptoms (4683 Only)	
Symptom	Repair Actions Listed in Most Likely Order of Failure
Label data does not compare with printed data.	<ol style="list-style-type: none"> 1. The label is defective. 2. Exchange the 1520 Model A01. See "1520 Hand-Held Scanner Model A01 Removal and Replacement (4683 Only)" in topic 7.25. 3. Exchange the Feature Expansion card for the 1520 Model A01. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5. 4. Exchange the 1520 Model A01 cable. See "Cable Sockets and Devices" in topic C.7.
The 1520 Hand-Held Scanner Model A01 is not working correctly.	<ol style="list-style-type: none"> 1. Ensure the 1520 Model A01 is powered-ON. 2. Exchange the 1520 Model A01. See "1520 Hand-Held Scanner Model A01 Removal and Replacement (4683 Only)" in topic 7.25. 3. Exchange the Feature Expansion card for the 1520 Model A01. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5. 4. Exchange the 1520 Model A01 cable. See "Cable Sockets and Devices" in topic C.7.

3.3.33 1520 Hand-Held Scanner Model A02 Symptoms (4683/4684)

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Table 3-35. 1520 Hand-Held Scanner Model A02 Symptoms (4683/4684)	
Symptom	Repair Actions Listed in Most Likely Order of Failure
Label data does not compare with printed data.	<ol style="list-style-type: none"> 1. The label is defective. 2. Exchange the 1520 Model A02. See "1520 Hand-Held Scanner Model A02 Removal and Replacement" in topic 7.26. 3. Exchange the 1520 Model A02 cable. See "Cable Sockets and Devices" in topic C.7. 4. Service the 4683 base unit or 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
The 1520 Hand-Held Scanner Model A02 is not working correctly.	<ol style="list-style-type: none"> 1. Ensure the 1520 Model A02 is powered-ON. 2. Exchange the 1520 Model A02. See "1520 Hand-Held Scanner Model A02 Removal and Replacement" in topic 7.26. 3. Exchange the 1520 Model A02 cable. See "Cable Sockets and Devices" in topic C.7. 4. Service the 4683 base unit or 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.

3.3.34 4683 Point of Sale Terminal Symptoms

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Table 3-36. 4683 Point of Sale Terminal Symptoms	
Symptom	Repair Actions Listed in Most Likely Order of Failure
Intermittent symptoms that cannot be associated with any particular device.	<ol style="list-style-type: none"> 1. Ensure that all cables and cords are correctly connected to the 4683 base unit. 2. Ensure that when the 4683 is powered ON and the 4683 base unit fan is running. If no air is flowing, the base unit can overheat and cause intermittent problems. 3. If the preceding items are correct and the problem persists, make a note of what the 4683 was doing when the problem occurred and service the 4683 base unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
Multiple symptoms at a 4683-xx1 or more than one point-of-sale device appears to be failing.	Follow "PDP 6250: 4683 Multiple Symptoms" in topic 6.25.
Blank display (except video)	Follow "PDP 6010: Blank Display (Except Video)" in topic 6.1.
Blank video display	Follow "PDP 6020: Blank Video Display" in topic 6.2.
All displays are blank. The 4683 is completely non-operational.	Follow "PDP 6010: Blank Display (Except Video)" in topic 6.1 or "PDP 6020: Blank Video Display" in topic 6.2.
The message in the display does not change. The terminal appears to be in a hang condition.	Follow "PDP 6240: 4683 Hang Condition" in topic 6.24.
The base unit continuously powers ON and OFF.	Service the 4683 base unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
The 4683 does not IPL. -- or -- The 4683 does not start the application program after the terminal number is keyed.	Continue at "Start Problem Determination" in topic 1.1.
The 4683 is switched ON but will not	Run "TEST 4120: Power-On Self Test (4683 Only)" in topic 4.12.

operate.	
The 4683 starts an IPL by itself.	Follow "PDP 6260: 4683 Unexpected IPL" in topic 6.26.
<p>The terminal number cannot be set.</p> <p>-- or --</p> <p>The terminal number is not retained by totals retention.</p>	Service the 4683 base unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
<p>Terminals will not load from the designated master terminal.</p> <p>-- or --</p> <p>The Terminal Program Load (optional feature) is not working correctly.</p>	<p>See the documentation for the application.</p> <p>-- and --</p> <p>Report this problem to the store programmer.</p>
The 4683 is not functioning. (No visible symptoms)	<ol style="list-style-type: none"> 1. No power to the point-of-sale terminal. <ol style="list-style-type: none"> a. Ensure power is available at the power receptacle. b. Ensure the point-of-sale terminal power cord is OK and connected to the power receptacle and the 4683 base unit. 2. The 4683 base unit or one of the point-of-sale devices attached to the base unit is failing. <ol style="list-style-type: none"> a. Switch POWER OFF at the terminal. b. With the exception of the point-of-sale keyboard, disconnect all other point-of-sale devices from the 4683 base unit. This includes Feature Expansion cards. See "Cable Sockets and Devices" in topic C.7. c. Switch power ON at the terminal, observing the keyboard lights. <ul style="list-style-type: none"> <input type="checkbox"/> If any of the keyboard lights come ON, one of the devices, cables, or Feature Expansion cards you disconnected is the cause of the problem. <ol style="list-style-type: none"> 1) Switch POWER OFF at the terminal. 2) Reconnect one of the disconnected devices to its original socket. 3) Switch power ON at the terminal, observing the keyboard lights. <ul style="list-style-type: none"> - If none of the keyboard lights comes ON, the device that was just reconnected is failing. - If any of the keyboard lights come ON, repeat the preceding steps until the failing device has been identified. <input type="checkbox"/> If none of the keyboard lights comes ON, the failure is caused by

the 4683 base unit or point-of-sale keyboard.

- 1) Switch **POWER OFF** at the terminal.
- 2) Disconnect the point-of-sale keyboard.
- 3) Connect the video display to its original socket.
- 4) Switch power ON at the terminal.
 - If the display is still blank, service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
 - If the display is **not** blank, service or exchange the point-of-sale keyboard **or** exchange its cable. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

3.3.35 4684 Point of Sale Terminal Symptoms

Switch **POWER OFF** when exchanging or servicing a point-of-sale terminal device.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Table 3-37. 4684 Point of Sale Terminal Symptoms	
Symptoms	Repair Actions Listed in Most Likely Order of Failure
Intermittent failures that cannot be associated with any particular device.	<ol style="list-style-type: none"> 1. Ensure that all cables and cords are correctly connected to the 4684 system unit. 2. Ensure that when the 4684 is powered ON the system unit fan is running. If no air is flowing, the system unit can overheat and cause intermittent problems. 3. If the preceding items are correct and the problem persists, make a note of what the 4684 was doing when the problem occurred and service the system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
All displays are blank. The 4684 is completely non-operational.	Follow "PDP 6010: Blank Display (Except Video)" in topic 6.1 or "PDP 6020: Blank Video Display" in topic 6.2.
Blank display (except video)	Follow "PDP 6010: Blank Display (Except Video)" in topic 6.1.
Blank video display	Follow "PDP 6020: Blank Video Display" in topic 6.2.
The video display message does not change. The terminal appears to be in a hang condition.	Service the system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
The video display is showing ET - nn:nn:nn in the top left of the screen (<i>nn</i> = any character).	<p>This indicates that there is a Token-Ring Adapter installed and when the 4684 was powered-ON, there was no diskette in the diskette drive and the fixed disk had no disk boot record.</p> <p>Try to IPL using the Backup Reference Diskette.</p> <ul style="list-style-type: none"> <input type="checkbox"/> If the IPL is successful, contact the store programmer to ensure that the fixed disk has a disk boot record. <input type="checkbox"/> If the IPL is not successful, service the system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
The video display is showing nn:nn:nn in the top right of the screen (<i>nn</i> = any character).	<p>This indicates that there is a Baseband Network Adapter installed and when the 4684 was powered-ON, there was no diskette in the diskette drive and the fixed disk had no disk boot record.</p> <p>Try to IPL using the Backup Reference Diskette.</p> <ul style="list-style-type: none"> <input type="checkbox"/> If the IPL is successful, contact the store programmer to ensure that the fixed disk has a disk boot record. <input type="checkbox"/> If the IPL is not successful, service the system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.
The system unit green POWER GOOD	Follow "PDP 6010: Blank Display (Except Video)" in topic 6.1.

light is OFF when power is switched ON.	
The INSERT DISKETTE prompt appears even if a diskette is inserted in the diskette drive when the 4684 is powering ON. This appears only on a video display.	<ol style="list-style-type: none"> 1. Service the system unit to exchange the diskette drive. 2. Service the system unit to exchange the system board. <p>For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.</p>
The DOS C> prompt appears after power ON and IPL using an Application Diskette or the Reference Diskette. This appears only on a video display.	<ol style="list-style-type: none"> 1. Service the 4684 system unit to exchange the diskette drive. 2. Service the 4684 system unit to exchange the system board. <p>For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.</p>
A new option adapter cannot be configured.	Service the 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
An option adapter is installed and configured, but it does not appear in MENU-T4.	The adapter is failing. Service the 4684 system unit to exchange the adapter. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
The system unit is emitting short beeps or a continuous beep.	Service the 4684 system unit to exchange the system board. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
The system unit beeper does not work.	Service the 4684 system unit to exchange the system board. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i> .
The IPL results in BASIC being loaded rather than the expected application.	<ol style="list-style-type: none"> 1. Look for error messages during the IPL. 2. Try using a different diskette for the IPL. 3. The diskette drive may be failing. Service the 4684 system unit. For service information, see the <i>IBM 4683/4684 Point of Sale Terminal: Maintenance Manual</i>.

4.0 Chapter 4. IBM 4680 Operating System Test Procedures

Where applicable, the tests in this chapter should be run after each repair action to verify the problem has been corrected.

CAUTION:

For your safety, you must connect the power cord of any equipment to a correctly wired and grounded receptacle. An incorrectly wired receptacle can place a hazardous voltage on accessible metal parts of the equipment. If you are unsure of the receptacle wiring, have a qualified electrician check the receptacle prior to connecting any equipment to it or working on any equipment connected to it.

DANGER

```
+-----+
| During periods of lightning activity, do not connect or disconnect any |
| cables, or perform installation, maintenance, or reconfiguration.     |
+-----+
```

Subtopics

- 4.1 TEST 4010: Alphanumeric, Operator, or Combined Keyboard/Display (4683/4684)
- 4.2 TEST 4020: Cash Drawer (4683/4684)
- 4.3 TEST 4030: Coin Dispenser (4683 Only)
- 4.4 TEST 4040: Dump Switch (4683-xx1 Only)
- 4.5 TEST 4050: Hand-Held Bar Code Reader (4683/4684)
- 4.6 TEST 4060: Magnetic Stripe Reader (4683/4684 MSR)
- 4.7 TEST 4070: Magnetic Wand (4683 Only)
- 4.8 TEST 4080: Optical Character Reader (4683 Only)
- 4.9 TEST 4090: Point of Sale Keyboard (4683/4684)
- 4.10 TEST 4100: Point of Sale Printer (4683/4684)
- 4.11 TEST 4110: Point of Sale Scanner (4683/4684)
- 4.12 TEST 4120: Power-On Self Test (4683 Only)
- 4.13 TEST 4130: Remote Alarm (4683/4684)
- 4.14 TEST 4140: Scale (4683 Only)
- 4.15 TEST 4150: Shopper Display (4683/4684)
- 4.16 TEST 4160: Socket 23 or 25 Device (4683 RS-232 or Current Loop)
- 4.17 TEST 4170: Store Loop (4683/4684)
- 4.18 TEST 4180: Storage Retention (4683-xx1 Only)
- 4.19 TEST 4190: Totals Retention (4683/4684)
- 4.20 TEST 4200: Video Display (4683 Only)
- 4.21 TEST 4210: 1520 Hand-Held Scanner Model A01 (4683 Only)
- 4.22 TEST 4220: 1520 Hand-Held Scanner Model A02 (4683/4684)
- 4.23 TEST 4230: Point of Sale Terminal Verification (4683/4684)
- 4.24 Point of Sale Terminal Test Procedure Summary

4.1 TEST 4010: Alphanumeric, Operator, or Combined Keyboard/Display (4683/4684)

```

+-----+
| Test Description |
+-----+
| Use this procedure to perform problem determination and verify correct |
| operation of: |
| |
|  Alphanumeric displays connected to socket 4A or 4B. |
| |
|  Operator displays connected to socket 4A or 4B. |
| |
|  Combined keyboard/displays connected to socket 5A or 5B. |
+-----+

```

PICTURE 2

Figure 4-1. Operator Display

PICTURE 3

Figure 4-2. Combined Keyboard/Display

PICTURE 4

Figure 4-3. Alphanumeric Display

```

+----+
|001|
+----+

```

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Alphanumeric or Operator Display -- There can be two alphanumeric or operator displays attached to the point-of-sale terminal. If two displays are attached, they must be connected to sockets 4A and 4B. Displays are **not** interchangeable between sockets 4A and 4B unless they are the same.

Combined Keyboard/Display -- One display can be attached to a point-of-sale terminal with the combined keyboard/display. If a display is attached, it must be connected to socket 4A or 4B.

Note: An operator display **cannot** be connected to socket 4A when the combined keyboard/display is connected to socket 5A. An operator display **cannot** be connected to socket 4B when the combined keyboard/display is connected to socket 5B.

System Display -- When multiple displays are attached to a point-of-sale terminal, one must be configured as the primary (system) display. When only one display is attached, it is the primary (system) display. System messages (Wnnn), test messages (Tnnnn), and other messages appear only on the primary (system) display.

- Ensure the point-of-sale terminal is powered-ON and ready to run this test.

- Press **S1**, type **91**, and press **S2** to enter Test Mode.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard,
Esc = S1 and **Enter** = S2.

Message W008 displays followed by message T0010.

Did message W008 and then message T0010 display at any of the attached displays?

Yes No

```

| |
| |
| +----+ |
| |002| |
| +----+ |

```

- Continue at Step 004.

```

+----+
|003|

```

+----+

- Continue at Step 010.

+----+

|004|

+----+

(From step 002)

Did any Tnnnn messages print on the point-of-sale printer?

Yes No

|

|

+----+

|005|

+----+

- Continue at Step 007.

+----+

|006|

+----+

- Continue at Step 019.

PICTURE 5

Figure 4-4. Display Test Patterns

+----+

|007|

+----+

(From step 005)

Is anything displayed on the display you are testing?

Yes No

|

|

+----+

|008|

+----+

Follow the *Repair Action* for the symptom. See "Alphanumeric, Operator, or Combined Keyboard/Display Symptoms (4683/4684)" in topic 3.3.1.

- or -

Follow "PDP 6010: Blank Display (Except Video)" in topic 6.1.

+----+

|009|

+----+

- Switch **POWER OFF** at the point-of-sale terminal.

Exchange the alphanumeric or operator display. See "Alphanumeric Display Removal and Replacement" in topic 7.1 or "Operator Display Removal and Replacement" in topic 7.13.

- or -

Service the combined keyboard/display. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+

|010|

+----+

(From step 003)

- Type **41** and press **S2 (Enter)** to start the display test.

If an alphanumeric or operator display is attached to socket 4A or 4B and a combined keyboard/display is attached to socket 5A or 5B, this test exercises all displays.

Did a Tnnnn message display at any of the attached displays?

Yes No

|

|

+----+

|011|

+----+

- Continue at Step 013.

+----+

|012|

+----+

- Continue at Step 019.

+----+

|013|

+----+

(From step 011)

The display(s) show:

step49

1. A pattern of double vertical bars shifting across the display from left to right. See Figure 4-4.
2. A pattern of double horizontal bars shifting down the display from top to bottom.
3. The two test patterns repeat continuously.

Did both patterns display as described?

Yes No

|

+----+

|014|

+----+

- Switch **POWER OFF** at the point-of-sale terminal.

Exchange the alphanumeric or operator display. See "Alphanumeric Display Removal and Replacement" in topic 7.1 or "Operator Display Removal and Replacement" in topic 7.13.

- or -

Service the combined keyboard/display. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+

|015|

+----+

Is a Tnnnn message displayed or printed?

Yes No

|

+----+

|016|

+----+

- Continue at Step 018.

+----+

|017|

+----+

- Continue at Step 019.

+----+

|018|

+----+

(From step 016)

The display hardware is operating correctly.

- Type **0** and press **S2 (Enter)** to stop the test.
- When message T0010 displays, type **99** and press **S2** to exit Test Mode.

The user application program is reloaded.

To run additional tests, see the table-of-contents on topic 4.0.

The software can also cause display problems.

- If you are running this test to resolve a display problem:

1. Put the point-of-sale terminal back in service.

2. If the same problem occurs, fill in a copy of the "Problem Data Collection Form" in topic B.7. Use keyword DISPLAY.
3. Request a storage dump. See "Requesting a 4683 Storage Dump" in topic B.2.
4. Report this problem to the store programmer and supply the preceding information.

+---+
|019|
+---+

(From steps 006, 012, and 017)

Follow the *User Response* for the displayed or printed message. See "Tnnnn Messages" in topic 2.7.

To end testing:

1. Type **0** and press **S2 (Enter)** to stop the test.
2. When message T0010 displays, type **99** and press **S2** to exit Test Mode.

4.2 TEST 4020: Cash Drawer (4683/4684)

```

+-----+
| Test Description
+-----+
| Use this procedure to perform problem determination and verify correct
| operation of cash drawers connected to socket 3A or 3B.
+-----+
  
```

PICTURE 6

Figure 4-5. Cash Drawer Keylock

```

+----+
|001|
+----+
  
```

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

- Ensure the point-of-sale terminal is powered-ON and ready to run this test.

Is message T0010 displayed?

Yes No

```

| |
| |
| +----+
| |002|
| +----+
  
```

The point-of-sale terminal is not in Test Mode.

- Press **S1**, type **91**, and press **S2** to enter Test Mode.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = **S1** and **Enter** = **S2**.

- When message T0010 displays, continue at Step 003.

```

+----+
|003|
+----+
  
```

(From step 002)

- Type **31** and press **S2 (Enter)** to start the cash drawer test.

When the cash drawer test starts running, the status of each of the drawers is tested and displayed. The display indicates whether each cash drawer is OPEN, CLOSED, or NOT FOUND (not detected by the program).

Did a cash drawer status message display?

Yes No

```

| |
| |
| +----+
| |004|
| +----+
  
```

- Continue at Step 051.

```

+----+
|005|
+----+
  
```

- Examine each cash drawer to see if it is open or closed.

- Compare the actual condition of each cash drawer to the status displayed.

Does each cash drawer match the status displayed by the test?

Yes No

```

| |
| |
| +----+
| |006|
| +----+
  
```

- Continue at Step 024.

```

+----+
|007|
  
```

+---+

The test senses a change in the status of a cash drawer and it displays the new status.

Do the cash drawers have keylocks? See Figure 4-5.

Yes No

|
| +---+
| |008|
| +---+

- Continue at Step 017.

+---+

|009|

+---+

- Using the cash drawer keylock, open and close each cash drawer several times. Observe the display each time a drawer is opened or closed.

Did the keylock turn OK?

Yes No

|
| +---+
| |010|
| +---+

Exchange the keylock insert. See "Keylock Insert Removal and Replacement" in topic 7.7.

PICTURE 7

Figure 4-6. Manager Keylock on the 50-Key Keyboard

|

+---+

|011|

+---+

Did each cash drawer spring open easily when it was manually opened?

Yes No

|
| +---+
| |012|
| +---+

- Switch **POWER OFF** at the point-of-sale terminal.

Service the cash drawer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+---+

|013|

+---+

Did each cash drawer remain closed after it was opened and closed?

Yes No

|
| +---+
| |014|
| +---+

- Continue at Step 024.

+---+

|015|

+---+

Did the display show the correct status of each cash drawer as it was opened and closed?

Yes No

|
| +---+
| |016|
| +---+

- Continue at Step 024.

+---+

|017|

+---+

(From step 008)

- Ensure the keyboard manager's keylock, if present, is turned to the ON (counterclockwise) position. See Figure 4-6.
- Ensure the cash drawer keylocks, if present, are in the unlocked (vertical) position so that the drawers can be opened by the program.
- Type **11** and press **S2 (Enter)** to open cash drawer A.
- Type **22** and press **S2 (Enter)** to open cash drawer B if present.

Did each cash drawer open?

Yes No

```
| |
| +---+
| |018|
| +---+
```

- Continue at Step 024.

```
+---+
```

```
|019|
```

```
+---+
```

Does the display show that each cash drawer is open?

Yes No

```
| |
| +---+
| |020|
| +---+
```

- Continue at Step 024.

```
+---+
```

```
|021|
```

```
+---+
```

- Close each cash drawer and observe the display.

Does the display show that each cash drawer is closed?

Yes No

```
| |
| +---+
| |022|
| +---+
```

- Continue at Step 024.

```
+---+
```

```
|023|
```

```
+---+
```

The cash drawer hardware is operating correctly.

- Type **0** and press **S2 (Enter)** to stop the test.
- When message T0010 displays, type **99** and press **S2** to exit Test Mode.

The user application program is reloaded.

To run additional tests, see the table-of-contents on topic 4.0.

The software can also cause cash drawer problems.

If you are running this test to resolve a cash drawer problem:

1. Put the point-of-sale terminal back in service.
2. If the same problem occurs, fill in a copy of the "Problem Data Collection Form" in topic B.7. Use keywords 4683-X or 4684, and CASHDRAWER.
3. Request a storage dump. See "Requesting a 4683 Storage Dump" in topic B.2.
4. Report this problem to the store programmer and supply the preceding information.

```
+---+
```

```
|024|
```

```
+---+
```

(From steps 006, 014, 016, 018, 020, and 022)

An **ERROR** was detected.

- Switch **POWER OFF** at the point-of-sale terminal.

Does this point-of-sale terminal have two cash drawers?

Yes No

```
|
| |
| +---+
| |025|
| +---+
```

- Continue at Step 029.

```
+---+
|026|
+---+
```

Are both cash drawers failing?

Yes No

```
|
| |
| +---+
| |027|
| +---+
```

- Continue at Step 029.

```
+---+
|028|
+---+
```

Service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
+---+
|029|
+---+
```

(From steps 025 and 027)

Is cash drawer A failing?

Yes No

```
|
| |
| +---+
| |030|
| +---+
```

The cash drawer connected to socket 3B is failing.

- Unplug cable 3 connected to socket 3A. See "Cable Sockets and Devices" in topic C.7.

- Label this cable as 3A and leave it disconnected.

- Unplug cable 3 connected to socket 3B.

- Label this cable as 3B.

- Connect the cable labeled as 3B into socket 3A.

- Switch power ON at the point-of-sale terminal.

- Type 1 and press **S2 (Enter)** to restart the cash drawer test.

Note: The failing cash drawer is now connected to socket 3A. CD-B status is NOT FOUND because there is no cable connected to socket 3B. To answer the following questions, use the status displayed for CD-A.

- Continue at Step 032.

```
+---+
|031|
+---+
```

The cash drawer connected to socket 3A is failing.

- Unplug cable 3 connected to socket 3A. See "Cable Sockets and Devices" in topic C.7.

- Label this cable as 3A.

- Unplug cable 3 connected to socket 3B.

- Label this cable as 3B and leave it disconnected.
- Connect the cable labeled as 3A into socket 3B.
- Switch power ON at the point-of-sale terminal.
- Type 1 and press **S2 (Enter)** to restart the cash drawer test.

Note: The failing cash drawer is now connected to socket 3B. CD-A status is NOT FOUND because there is no cable connected to socket 3A. To answer the following questions, use the status displayed for CD-B.

- Continue at Step 035.

+----+

| 032 |

+----+

(From step 030)

Does the cash drawer connected to socket 3A match the status displayed for CD-A?

Yes No

|

|

+----+

| 033 |

+----+

Switch **POWER OFF** at the point-of-sale terminal and follow this list to isolate and correct the cause of the problem.

1. Service the cash drawer connected to socket 3A. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
2. Exchange the cash drawer cable connected to socket 3A. See "Cable Sockets and Devices" in topic C.7.

+----+

| 034 |

+----+

- Continue at Step 037.

+----+

| 035 |

+----+

(From step 031)

Does the cash drawer connected to socket 3B match the status displayed for CD-B?

Yes No

|

|

+----+

| 036 |

+----+

Switch **POWER OFF** at the point-of-sale terminal and follow this list to isolate and correct the cause of the problem.

1. Service the cash drawer connected to socket 3B. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
2. Exchange the cash drawer cable connected to socket 3B. See "Cable Sockets and Devices" in topic C.7.

+----+

| 037 |

+----+

(From step 034)

Does the cash drawer have a keylock? See Figure 4-5.

Yes No

|

|

+----+

| 038 |

+----+

| - Continue at Step 043.

+----+
| 039 |
+----+

- Using the cash drawer keylock, open and close the drawer several times. Observe the display each time the drawer is opened or closed.

Did the cash drawer remain closed after it was opened and closed?

Yes No

| |
| +----+
| | 040 |
| +----+

| - Continue at Step 050.

+----+
| 041 |
+----+

Did the display show the correct status of the cash drawer as it was opened and closed?

Yes No

| |
| +----+
| | 042 |
| +----+

| - Continue at Step 050.

+----+
| 043 |
+----+

(From step 038)

- Ensure the keyboard manager's keylock, if present, is turned to the ON (counterclockwise) position. See Figure 4-6.
- Ensure the cash drawer keylock, if present, is in the unlocked (vertical) position so that the drawer can be opened by the program.
- If the cash drawer is now connected to socket 3A, type 11 and press S2 (Enter) to open the drawer.
- If the cash drawer is now connected to socket 3B, type 22 and press S2 (Enter) to open the drawer.

Did the cash drawer open?

Yes No

| |
| +----+
| | 044 |
| +----+

| - Continue at Step 050.

+----+
| 045 |
+----+

Does the display show that the cash drawer is open?

Yes No

| |
| +----+
| | 046 |
| +----+

| - Continue at Step 050.

+----+
| 047 |
+----+

- Close the cash drawer and observe the display.

Does the display show that the cash drawer is closed?

Yes No

| |
| +----+
| | 048 |
| +----+

|
| - Continue at Step 050.
|

+----+
| 049 |
+----+

Switch **POWER OFF** and service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+
| 050 |
+----+

(From steps 040, 042, 044, 046, and 048)

- Type **0** and press **S2 (Enter)** to stop the test.

- Switch **POWER OFF** at the point-of-sale terminal and examine for damage or a loose connection:

- Both ends of the cash drawer cable
- Cable socket 3A and 3B
- The cable socket on the cash drawer. See "Cable Sockets and Devices" in topic C.7.

If the cable, sockets, and connections are OK, follow this list to correct the cause of the problem.

1. Service the cash drawer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
2. Exchange the cash drawer cable.
3. Service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+
| 051 |
+----+

(From step 004)

Follow the *User Response* for the displayed or printed message. See "Tnnnn Messages" in topic 2.7.

To end testing:

1. Type **0** and press **S2 (Enter)** to stop the test.
2. When message T0010 displays, type **99** and press **S2** to exit Test Mode.

4.3 TEST 4030: Coin Dispenser (4683 Only)

```
+-----+
| Test Description
+-----+
| Use this procedure to perform problem determination and verify correct
| operation of the Feature Expansion card (B, C, or D) for the coin
| dispenser.
|
| The coin dispenser is connected to socket 29 on the Feature Expansion
| card.
|
| The Feature Expansion card can be in location 2A or 2B in the 4683
| base unit.
+-----+
```

```
+----+
|001|
+----+
```

This procedure is for the 4683 ONLY.

- Ensure the 4683 is powered-ON and ready to run this test.

Is message T0010 displayed?

Yes No

```
|
|
| +----+
| |002|
| +----+
```

The 4683 is not in Test Mode.

- Press **S1**, type **91**, and press **S2** to enter Test Mode.

When message T0010 displays, continue at Step 003.

```
+----+
|003|
+----+
```

(From step 002)

- Type **291** and press **S2** to start the coin dispenser test.

Is message T2901 displayed?

Yes No

```
|
|
| +----+
| |004|
| +----+
```

- Continue at Step 010.

```
+----+
|005|
+----+
```

- At the keyboard, enter the amount of coins to be dispensed.

This can be 01 to 9999.

- Press **S2** to dispense the coins.

Is message T2901 displayed again?

Yes No

```
|
|
| +----+
| |006|
| +----+
```

- Continue at Step 010.

```
+----+
|007|
+----+
```

Did the correct amount of coins dispense?

Yes No

```
|
|
| +----+
| |008|
| +----+
```

Switch **POWER OFF** at the 4683, unplug the coin dispenser power cord, and follow this list to isolate and correct the cause of the problem.

1. Exchange the coin dispenser. See "Coin Dispenser Removal and Replacement (4683 Only)" in topic 7.4.
2. Exchange the coin dispenser cable. See "Cable Sockets and Devices" in topic C.7.

+---+
|009|
+---+

The coin dispenser hardware is operating correctly. The coin dispenser can be tested more thoroughly by entering other amounts to dispense other coin combinations.

- Type **0** and press **S2** to stop the test.
- When message T0010 displays, type **99** and press **S2** to exit Test Mode.

The user application program is reloaded.

To run additional tests, see the table-of-contents on topic 4.0.

The software can also cause coin dispenser problems.

- If you are running this test to resolve a coin dispenser problem:
 1. Put the 4683 back in service.
 2. If the same problem occurs, fill in a copy of the "Problem Data Collection Form" in topic B.7. Use keyword COIN.
 3. Request a storage dump. See "Requesting a 4683 Storage Dump" in topic B.2.
 4. Report this problem to the store programmer and supply the preceding information.

+---+
|010|
+---+

(From steps 004 and 006)

Follow the *User Response* for the displayed or printed message. See "Tnnnn Messages" in topic 2.7.

To end testing:

1. Type **0** and press **S2** to stop the test.
 2. When message T0010 displays, type **99** and press **S2** to exit Test Mode.
-

4.4 TEST 4040: Dump Switch (4683-xx1 Only)

```
+-----+
| Test Description
+-----+
| Use this procedure to perform problem determination and verify correct
| operation of the dump switch on the 4683-xx1. base unit.
+-----+
```

```
+----+
|001|
+----+
```

This procedure is for the 4683-xx1 ONLY.

Warning: This procedure interrupts user operations at an attached 4683-xx2 and can cause a 4683-xx1. to IPL.

- Ensure the point-of-sale terminal is powered-ON and ready to run this test.

The following sequence of events is started by pressing the 4683-xx1 dump switch:

1. Message U008 displays. This message can stay on the display for approximately ten minutes.
2. The store controller logs the storage dump event in a System Log record.
3. The 4683-xx1 automatically IPLs.

- Remove the side cover (battery access). See Figure 4-7.

- Press the dump switch.

Note: If an IPL is in progress, do not press the dump switch before message U006 is displayed.

Is message U008 displayed?

Yes No

```
|
|
| +----+
| |002|
| +----+
```

The dump switch is **not** operating correctly.

Switch **POWER OFF** and service the 4683-xx1. base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
+----+
|003|
+----+
```

The dump switch is operating correctly.

To run additional tests, see the table-of-contents on topic 4.0.

PICTURE 8

Figure 4-7. Dump Switch Location

4.5 TEST 4050: Hand-Held Bar Code Reader (4683/4684)

```
+-----+
| Test Description
+-----+
| Use this procedure to perform problem determination and verify correct
| operation of the Hand-Held Bar Code Reader connected to socket 9B.
+-----+
```

PICTURE 9

Figure 4-8. Hand-Held Bar Code Reader

```
+---+
|001|
+---+
```

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

- Ensure the point-of-sale terminal is powered-ON and ready to run this test.

Is message T0010 displayed?

Yes No

```
|
|
+---+
|002|
+---+
```

The point-of-sale terminal is not in Test Mode.

- Press **S1**, type **91**, and press **S2** to enter Test Mode.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard,
Esc = **S1** and **Enter** = **S2**.

When message T0010 displays, continue at Step 003.

```
+---+
|003|
+---+
```

(From step 002)

- Type **94** and press **S2 (Enter)** to start the hand-held bar code reader test.

Is message T9401 displayed?

Yes No

```
|
|
+---+
|004|
+---+
```

- Continue at Step 015.

```
+---+
|005|
+---+
```

When the bar code reader reads successfully:

- A beep sounds.
- Label data is formatted and printed on the point-of-sale printer.
- Message T9401 displays again.

- Read all the UPC or EAN test labels on the test card that were supplied with the bar code reader.

Did the data print for each label?

Yes No

```
|
|
+---+
|006|
+---+
```

- Continue at Step 010.

```
|  
+---+  
|007|  
+---+
```

- Compare the printed data with the labels that were read. See Figure 4-9 and Figure 4-10.

Does the printed data match the labels?

Yes No

```
| |  
| |  
| +---+  
| |008|  
| +---+  
| |
```

- Continue at Step 014.

PICTURE 10

Figure 4-9. Label Data Formats Printed by this Test

```
|  
+---+  
|009|  
+---+
```

The bar code reader hardware is operating correctly.

At this point any valid label from the store may be read and printed. If all test labels read correctly but problems occur while reading a store label, this indicates the store label is defective.

- Type 0 and press **S2 (Enter)** to stop the test.
- When message T0010 displays, type **99** and press **S2** to exit Test Mode.

The user application program is reloaded.

To run additional tests, see the table-of-contents on topic 4.0.

The software can also cause hand-held bar code reader problems.

- If you are running this test to resolve a Hand-Held Bar Code Reader problem:
 1. Put the point-of-sale terminal back in service.
 2. If the same problem occurs, fill in a copy of the "Problem Data Collection Form" in topic B.7. Use keyword READER.
 3. Request a storage dump. See "Requesting a 4683 Storage Dump" in topic B.2.
 4. Report this problem to the store programmer and supply the preceding information.

```
+---+  
|010|  
+---+  
(From step 006)
```

Is message T9401 still displayed?

Yes No

```
| |  
| |  
| +---+  
| |011|  
| +---+  
| |
```

- Continue at Step 015.

```
+---+  
|012|  
+---+
```

Some error messages are not displayed on the first failure.

- Read the failing test label again.

Is message T9401 still displayed?

Yes No

```
| |
```



```
| +---+  
| |013|  
| +---+
```

- Continue at Step 015.

```
+---+  
|014|  
+---+
```

(From step 008)

Switch **POWER OFF** at the point-of-sale terminal and follow this list to isolate and correct the cause of the problem.

1. Exchange the Hand-Held Bar Code Reader. See "Hand-Held Bar Code Reader Removal and Replacement" in topic 7.5.
2. Service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
+---+  
|015|  
+---+
```

(From steps 004, 011, and 013)

Follow the *User Response* for the displayed or printed message. See "Tnnnn Messages" in topic 2.7.

To end testing:

1. Type **0** and press **S2 (Enter)** to stop the test.
2. When message T0010 displays, type **99** and press **S2** to exit Test Mode.

PICTURE 11

Figure 4-10. Examples of UPC and EAN Labels

4.6 TEST 4060: Magnetic Stripe Reader (4683/4684 MSR)

```

+-----+
| Test Description |
+-----+
| Use this procedure to perform problem determination and verify correct |
| operation of: |
| |
|  The single-track MSR |
| (socket 6 on the keyboard) |
| |
|  The dual-track MSR (socket 5B) |
| |
|  The ANPOS keyboard MSR |
| (low-profile dual-track) |
| |
|  The combined keyboard/display MSR |
| (low-profile dual-track) |
| |
| Note: You can clean the MSR read head using the MSR cleaning card |
| (IBM P/N 6019483). |
+-----+
  
```

PICTURE 12

Figure 4-11. Instructions for Reading a Card. The single-track MSR has one line on the top-front as shown here. The dual-track MSR has two lines.

PICTURE 13

Figure 4-12. Rear View of 50-Key Keyboard and Single-Track Magnetic Stripe Reader

```

+----+
|001|
+----+
  
```

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

- Ensure the point-of-sale terminal is powered-ON and ready to run this test.

Is message T0010 displayed?

Yes No

```

| |
| |
| +----+ |
| |002| |
| +----+ |
  
```

The point-of-sale terminal is not in Test Mode.

- Press **S1**, type **91**, and press **S2** to enter Test Mode.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = **S1** and **Enter** = **S2**.

When message T0010 displays, continue at Step 003.

```

+----+
|003|
+----+
  
```

(From step 002)

- Type **61** and press **S2 (Enter)** to start the MSR test.

Is message T6101 or T6111 displayed?

Yes No

```

| |
| |
| +----+ |
| |004| |
| +----+ |
  
```

- Continue at Step 013.

```

+----+
  
```

|005|
+----+

The single-track MSR uses IBM test card P/N 4055210.
The dual-track MSR uses IBM test card P/N 90X9640.

- Read the test card by sliding it through the slot in the MSR. See Figure 4-11.

When the test card is read, the display goes blank momentarily and then a message is displayed. If the display does **not** go blank, this is an indication that the point-of-sale terminal did not recognize a read operation from the MSR.

Does the display go blank and then display message T6102?

Yes No

| |
| |
| +----+
| |006|
| +----+
| |

- Continue at Step 008.

+----+
|007|
+----+

The magnetic stripe reader hardware is operating correctly.

Note: If the test card reads correctly but problems occur while reading another card, this can indicate that magnetic stripe data is defective on the other card.

- Type **0** and press **S2 (Enter)** to stop the test.
- When message T0010 displays, type **99** and press **S2** to exit Test Mode.

The user application program is reloaded.

To run additional tests, see the table-of-contents on topic 4.0.

The software can also cause MSR problems.

- If you are running this test to resolve an MSR problem:
 1. Put the point-of-sale terminal back in service.
 2. If the same problem occurs, fill in a copy of the "Problem Data Collection Form" in topic B.7. Use keyword MSR.
 3. Request a storage dump. See "Requesting a 4683 Storage Dump" in topic B.2.
 4. Report this problem to the store programmer and supply the preceding information.

+----+
|008|
+----+
(From step 006)

Is message T6101 or T6111 displayed?

Yes No

| |
| |
| +----+
| |009|
| +----+
| |

- Continue at Step 013.

+----+
|010|
+----+

Is message T6101 displayed?

Yes No

| |
| |
| +----+
| |011|
| +----+
| |

Message T6111 is displayed.

Defective data on the magnetic stripe can cause the MSR to fail.

- Ensure the card you are having trouble with has good data on the magnetic stripe.

If the card you are using is OK, switch **POWER OFF** at the point-of-sale terminal and follow this list to isolate and correct the cause of the problem.

1. Exchange the MSR. See Chapter 7, "Removal and Replacement Procedures."
2. Service the keyboard. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+---+
|012|
+---+

Defective data on the magnetic stripe can cause the MSR to fail.

- Ensure the card you are having trouble with has good data on the magnetic stripe.
- If the card you are using is OK, switch **POWER OFF** at the point-of-sale terminal.
- If this is a combined keyboard/display MSR, ensure it is seated correctly and latched to the keyboard.
- Examine for damage or a loose connection:
 - If present, the MSR cable and socket(s)
 - If present, the **Y** cable. This cable allows the dual-track MSR and the 1520 Model A02 to be attached to socket 5B at the same time. See "Cable Sockets and Devices" in topic C.7.

If the cables, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.

1. Exchange the MSR. See Chapter 7, "Removal and Replacement Procedures."
2. Exchange:
 - If present, the MSR cable.
 - If present, the **Y** cable.
3. Service the keyboard. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+---+
|013|
+---+

(From steps 004 and 009)

Follow the *User Response* for the displayed or printed message. See "Tnnnn Messages" in topic 2.7.

To end testing:

1. Type **0** and press **S2 (Enter)** to stop the test.
2. When message T0010 displays, type **99** and press **S2** to exit Test Mode.

4.7 TEST 4070: Magnetic Wand (4683 Only)

```
+-----+
| Test Description
+-----+
| Use this procedure to perform problem determination and verify correct
| operation of Feature Expansion card D and the magnetic wand connected
| to socket 26 on the Feature Expansion card.
|
| Feature Expansion card D can be in location 2A or 2B in the 4683 base
| unit.
+-----+
```

PICTURE 14

Figure 4-13. Magnetic Wand

```
+----+
|001|
+----+
```

This procedure is for the 4683 ONLY.

- Ensure the 4683 is powered-ON and ready to run this test.

Is message T0010 displayed?

Yes No

```
|
|
| +----+
| |002|
| +----+
```

The 4683 is not in Test Mode.

- Press **S1**, type **91**, and press **S2** to enter Test Mode.

When message T0010 displays, continue at Step 003.

```
+----+
|003|
+----+
```

(From step 002)

- Type **261** and press **S2** to start the magnetic wand test.

Is message T2601 displayed?

Yes No

```
|
|
| +----+
| |004|
| +----+
```

- Continue at Step 011.

```
+----+
|005|
+----+
```

- Wand a good label several times.

Each time the label is read successfully, a beep sounds and message T2603 displays.

Is message T2603 displayed?

Yes No

```
|
|
| +----+
| |006|
| +----+
```

- Continue at Step 008.

```
+----+
|007|
+----+
```

The magnetic wand hardware is operating correctly.

If you want to read and print the labels, type **5** and press **S2** and read the labels again.

- Type **0** and press **S2** to stop the test.
- When message T0010 displays, type **99** and press **S2** to exit Test Mode.

The user application program is reloaded.

To run additional tests, see the table-of-contents on topic 4.0.

The software can also cause magnetic wand problems.

- If you are running this test to resolve a magnetic wand problem:
 1. Put the 4683 back in service.
 2. If the same problem occurs, fill in a copy of the "Problem Data Collection Form" in topic B.7. Use keyword MAGWAND
 3. Request a storage dump. See "Requesting a 4683 Storage Dump" in topic B.2.
 4. Report this problem to the store programmer and supply the preceding information.

+---+
|008|
+---+
(From step 006)

Is message T2601 displayed?

Yes No

| |
| +---+
| |009|
| +---+
|
| - Continue at Step 011.
|

+---+
|010|
+---+

Switch **POWER OFF** at the 4683 and follow this list to isolate and correct the cause of the problem.

1. Exchange the wand and cable assembly. See "Magnetic Wand Removal and Replacement (4683 Only)" in topic 7.12.
2. Exchange Feature Expansion card D. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.

+---+
|011|
+---+
(From steps 004 and 009)

Follow the *User Response* for the displayed or printed message. See "Tnnnn Messages" in topic 2.7.

To end testing:

1. Type **0** and press **S2** to stop the test.
 2. When message T0010 displays, type **99** and press **S2** to exit Test Mode.
-

4.8 TEST 4080: Optical Character Reader (4683 Only)

```
+-----+
| Test Description
+-----+
| Use this procedure to perform problem determination and verify correct
| operation of the Feature Expansion card (B, C, or D) for the optical
| character reader (OCR) device.
|
| The OCR device is connected to socket 21 on the Feature Expansion
| card.
|
| The Feature Expansion card can be in location 2A or 2B in the 4683
| base unit.
+-----+
```

```
+----+
|001|
+----+
```

This procedure is for the 4683 ONLY.

- Ensure the 4683 is powered-ON and ready to run this test.

Is message T0010 displayed?

Yes No

```
|
|
| +----+
| |002|
| +----+
```

The 4683 is not in Test Mode.

- Press **S1**, type **91**, and press **S2** to enter Test Mode.

When message T0010 displays, continue at Step 003.

```
+----+
|003|
+----+
```

(From step 002)

- Ensure that the OCR device is powered-ON.

- Type **211** and press **S2** to start the OCR test.

Is message T2102 displayed?

Yes No

```
|
|
| +----+
| |004|
| +----+
```

- Continue at Step 015.

```
+----+
|005|
+----+
```

At this point data from the device connected to the OCR adapter is printed on the point-of-sale printer exactly as it is received from the OCR adapter. The data is user-defined and is printed in unformatted mode. If you have questions about what should be printed, check with the store programmer.

- Use the OCR device to read a test label or a valid label for the OCR reader.

Did any data print?

Yes No

```
|
|
| +----+
| |006|
| +----+
```

- Continue at Step 010.

```
+----+
|007|
+----+
```

- Compare the printed data with the label that was read.

Note: The label data format is user-defined. If you have questions about what should be printed, check with the store programmer.

Is the printed data correct for the label?

Yes No

```
| |
| +---+
| |008|
| +---+
```

- Continue at Step 010.

```
+---+
|009|
+---+
```

The OCR hardware is operating correctly.

- Type **0** and press **S2** to stop the test.
- When message T0010 displays, type **99** and press **S2** to exit Test Mode.

The user application program is reloaded.

To run additional tests, see the table-of-contents on topic 4.0.

The software can also cause OCR problems.

- If you are running this test to resolve an OCR problem:
 1. Put the 4683 back in service.
 2. If the same problem occurs, fill in a copy of the "Problem Data Collection Form" in topic B.7. Use keyword OCR.
 3. Request a storage dump. See "Requesting a 4683 Storage Dump" in topic B.2.
 4. Report this problem to the store programmer and supply the preceding information.

```
+---+
|010|
+---+
```

(From steps 006 and 008)

Is message T2102 displayed?

Yes No

```
| |
| +---+
| |011|
| +---+
```

- Continue at Step 015.

```
+---+
|012|
+---+
```

- Use the OCR device to read the label again.
Some error messages are not displayed on the first failure.

Is message T2102 still displayed?

Yes No

```
| |
| +---+
| |013|
| +---+
```

- Continue at Step 015.

```
+---+
|014|
+---+
```

The failure is caused by the OCR device, the Feature Expansion card, or the cable connected to socket 21 on the Feature Expansion card.

- Switch **POWER OFF** at the 4683 and unplug the OCR power cord.
- Examine for damage or a loose connection:

- Socket 21 on the Feature Expansion card for the OCR device. See "Cable Sockets and Devices" in topic C.7.
- Both ends of the cable connected to socket 21.

If the cable, socket, and connections are OK, follow this list to isolate and correct the cause of the problem.

1. Exchange the OCR device. See "Optical Character Reader Removal and Replacement (4683 Only)" in topic 7.14.
2. Exchange the OCR device cable.
3. Exchange the Feature Expansion card for the OCR device. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.

+---+
|015|
+---+

(From steps 004, 011, and 013)

Follow the *User Response* for the displayed or printed message. See "Tnnnn Messages" in topic 2.7.

To end testing:

1. Type **0** and press **S2** to stop the test.
 2. When message T0010 displays, type **99** and press **S2** to exit Test Mode.
-

4.9 TEST 4090: Point of Sale Keyboard (4683/4684)

```

+-----+
| Test Description |
+-----+
| Use this procedure to perform problem determination and verify correct |
| operation of keyboards connected to socket 5A or 5B. Use it also to |
| verify correct operation of the audible tone and lights on the |
| keyboards. |
| |
| This procedure tests: |
| |
|  The 50-key keyboard |
|  The alphanumeric keyboard |
|  The ANPOS keyboard |
|  The combined keyboard/display |
|  The matrix keyboard. |
+-----+

```

PICTURE 15

Figure 4-14. 50-Key Keyboard. For other keyboards, see "Point of Sale Terminal Keyboards" in topic C.6.

```

+----+
|001|
+----+

```

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Note: The newest 50-key keyboards are updated to provide an audible feedback (the audible alarm is activated briefly) when you press a key. The older keyboards are not updated. If a keyboard does not provide feedback, this does not mean the keyboard is failing. **DO NOT** replace the current keyboard with a new keyboard in order to get the audible feedback.

System Display -- When multiple displays are attached to a point-of-sale terminal, one must be configured as the primary (system) display. When only one display is attached, it is the primary (system) display. System messages (Wnnn), test messages (Tnnnn), and other messages appear only on the primary (system) display.

- Ensure the point-of-sale terminal is powered-ON and ready to run this test.

Are you testing a 4683-xx1 or a 4683-xx2 attached to a 4683-xx1?

Yes No

```

| |
| |
| +----+ |
| |002| |
| | +----+ |
| |

```

You are testing a 4684 **or** a 4683-xx2 attached to a 4684.

- Switch **POWER OFF** at the terminal you are testing.

- Continue at Step 004.

```

+----+
|003|
+----+

```

- Hold the 4683-xx1 dump switch pressed and switch **POWER OFF** at the 4683-xx1. See Figure 4-15.

This clears storage retention and causes the 4683 to IPL when power is switched ON again.

- Release the dump switch.

- If you are testing the 4683-xx2., switch its **POWER OFF**.

- Continue at Step 004.

```

+----+
|004|
+----+

```

(From steps 002 and 003)

- At the terminal you are testing, ensure the keyboard cable is connected to the keyboard socket and socket 5A or 5B. See "Cable Sockets and Devices" in topic C.7.
- Determine which of the displays is the primary (system) display.
- Switch power ON while observing the primary (system) display.

Are there any characters displayed on the primary (system) display?

Yes No

```
|
| |
| +---+
| |005|
| +---+
```

Depending on the primary (system) display, follow "PDP 6010: Blank Display (Except Video)" in topic 6.1 **or** "PDP 6020: Blank Video Display" in topic 6.2.

```
+---+
|006|
+---+
```

- Wait for the U001 through U007 messages to display while the IPL is taking place. This can take up to 10 minutes.

Does the point-of-sale terminal appear to be stopped with a Unnn message displayed?

Yes No

```
|
| |
| +---+
| |007|
| +---+
```

- Continue at Step 009.

```
+---+
|008|
+---+
```

Follow the *User Response* for the message. See "Unnn Messages" in topic 2.8.

```
+---+
|009|
+---+
```

(From step 007)

- Wait for the W008 message to display.

Is message W008 displayed on the primary (system) display?

Yes No

```
|
| |
| +---+
| |010|
| +---+
```

The failure symptom has changed.

Follow the *User Response* for the message. See Chapter 2, "Messages" in this book **or** the *IBM 4680 Store System: Messages Guide*.

- or -

Follow the *Repair Action* for the symptom. See Chapter 3, "Symptoms."

```
+---+
|011|
+---+
```

- Press **S1**, type **91**, and press **S2** to enter Test Mode.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard,
Esc = S1 and **Enter** = S2.

Message W008 displays followed by message T0010.

Did message W008 and then message T0010 display at the primary (system) display?

Yes No

PICTURE 16

Figure 4-15. Dump Switch location

```
|
|
| +---+
| |012|
| +---+
|
| - Switch POWER OFF at the point-of-sale terminal.
|
| - Examine the keyboard and cable for a loose or damaged connection.
|   See "Cable Sockets and Devices" in topic C.7.
|
| If the cable, sockets, and connections are OK, follow this list to
| isolate and correct the cause of the problem.
|
| 1. Service or exchange the keyboard. For service information, see
|    the IBM 4683/4684 Point of Sale Terminal: Maintenance Manual. To
|    exchange, see "Keyboard Removal and Replacement" in topic 7.6.
|
| 2. Exchange the keyboard cable.
|
| 3. Service the 4683 base unit or 4684 system unit. For service
|    information, see the IBM 4683/4684 Point of Sale Terminal:
|    Maintenance Manual.
```

```
+---+
|013|
+---+
```

- Type **51** and press **S2 (Enter)** to start the keyboard test.

The keyboard connected to socket 5A or 5B is tested.

Are you testing a combined keyboard/display?

Yes No

```
|
|
| +---+
| |014|
| +---+
```

1. The audible tone sounds at LOW volume for one-half second for each of the three possible frequencies.
2. The audible tone then sounds at HIGH volume for one-half second for each of the three possible frequencies.
3. Steps 1 and 2 repeat until you press **S2 (Enter)**.

- Look for these messages as the audible tone sounds:

```
Message T5101
Message T5102
Message T5103
Message T5104
Message T5105
Message T5106
Message T5107
```

- Continue at Step 016.

```
+---+
|015|
+---+
```

1. The audible tone sounds for one-half second.
 2. Step 1 repeats until you press **S2 (Enter)**.
- Look for message T5115 as the audible tone sounds.
- Continue at Step 016.
-

```
+---+
|016|
+---+
```

(From steps 014 and 015)

Did the test work as described for the keyboard?

Yes No

```
|
|
```

```
+----+
|017|
+----+
```

Switch **POWER OFF** at the point-of-sale terminal and follow this list to isolate and correct the cause of the problem.

1. Service or exchange the keyboard. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*. To exchange, see "Keyboard Removal and Replacement" in topic 7.6.
2. Service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

PICTURE 17

Figure 4-16. Manager Keylock on the 50-Key Keyboard. The ON and OFF direction is the same on all keyboards. For other keyboards, see "Point of Sale Terminal Keyboards" in topic C.6.

```
|
+----+
|018|
+----+
```

- Press **S2 (Enter)** to start testing the keyboard lights.

1. Message T5108 is displayed.
2. All keyboard lights come ON for one-half second.
3. The lights then come ON one at a time (from left to right) for one-half second each.
4. Message T5109 is displayed for five seconds.
5. Steps 2, 3, and 4 repeat until you press **S2**.

Did message T5108 display?

Yes No

```
|
|
+----+
|019|
+----+
```

- Continue at Step 035.

```
+----+
|020|
+----+
```

Did the keyboard lights work as described?

Yes No

```
|
|
+----+
|021|
+----+
```

- Switch **POWER OFF** at the point-of-sale terminal.

Service or exchange the keyboard. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*. To exchange, see "Keyboard Removal and Replacement" in topic 7.6.

```
+----+
|022|
+----+
```

- Press **S2 (Enter)** to start testing the keys on keyboard.

The layout of the keyboard is shown on the display.

Note: For some keyboards, only a part of the keyboard is shown on the display at first. The display changes to show other sections of the keyboard as they are tested.

- If present, turn the manager's keylock to the OFF (clockwise) position. See Figure 4-16.

Is the keyboard layout displayed?

Yes No

```
|
| |
| +---+
| |023|
| +---+
```

- Continue at Step 035.

```
+---+
|024|
+---+
```

- Press the keyboard keys one at a time, **except** S1 and S2.

The rectangular character on the screen, corresponding to the key, changes to X each time you press a key.

Note: For keyboards that do not have the standard layout, (for example, keybuttons that span two keys) the displayed portion of the test can operate differently. When you press a keybutton that spans two keys, the results can be:

- Either one of the corresponding positions on the screen can change.
- Both of the corresponding positions on the screen can change.

Do all keys work as described?

Yes No

```
|
| |
| +---+
| |025|
| +---+
```

- Switch **POWER OFF** at the point-of-sale terminal.

Service or exchange the keyboard. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*. To exchange, see "Keyboard Removal and Replacement" in topic 7.6.

```
+---+
|026|
+---+
```

Is the manager's keylock installed? See Figure 4-16.

Yes No

```
|
| |
| +---+
| |027|
| +---+
```

- Continue at Step 034.

```
+---+
|028|
+---+
```

- Turn the manager's keylock to the ON (counterclockwise) position.

Did the keylock turn OK?

Yes No

```
|
| |
| +---+
| |029|
| +---+
```

Exchange the keylock insert. See "Keylock Insert Removal and Replacement" in topic 7.7.

```
+---+
|030|
+---+
```

- At the keyboard, enter any numeric character.

Did the rectangular character on the display, representing the manager's keylock, change to X?

Yes No

```
|
| |
| +---+
| |031|
| +---+
```

- Switch **POWER OFF** at the point-of-sale terminal.

Service or exchange the keyboard. For service information, see the

IBM 4683/4684 Point of Sale Terminal: Maintenance Manual. To exchange, see "Keyboard Removal and Replacement" in topic 7.6.

+----+
| 032 |
+----+

- Turn the manager's keylock to the OFF (clockwise) position and enter any character **except** S1 or S2.

Did the X on the display, representing the manager's keylock, change to a rectangular character?

Yes No

+----+
| 033 |
+----+

- Switch **POWER OFF** at the point-of-sale terminal.

Service or exchange the keyboard. For service information, see the IBM 4683/4684 Point of Sale Terminal: Maintenance Manual. To exchange, see "Keyboard Removal and Replacement" in topic 7.6.

+----+
| 034 |
+----+

(From step 027)

The keyboard hardware is operating correctly.

- Type **0** and press **S2 (Enter)** to stop the test.
- When message T0010 displays, type **99** and press **S2** to exit Test Mode.

The user application program is reloaded.

To run additional tests, see the table-of-contents on topic 4.0.

The software can also cause keyboard problems.

- If you are running this test to resolve a keyboard problem:
 1. Put the point-of-sale terminal back in service.
 2. If the same problem occurs, fill in a copy of the "Problem Data Collection Form" in topic B.7. Use keyword KEYBOARD.
 3. Request a storage dump. See "Requesting a 4683 Storage Dump" in topic B.2.
 4. Report this problem to the store programmer and supply the preceding information.

+----+
| 035 |
+----+

(From steps 019 and 023)

Follow the *User Response* for the displayed or printed message. See "Tnnnn Messages" in topic 2.7.

To end testing:

1. Type **0** and press **S2 (Enter)** to stop the test.
2. When message T0010 displays, type **99** and press **S2** to exit Test Mode.

4.10 TEST 4100: Point of Sale Printer (4683/4684)

```
+-----+
| Test Description
+-----+
| Use this procedure to perform problem determination and verify correct
| operation of the point-of-sale printer connected to socket 7.
+-----+
```

PICTURE 18

Figure 4-17. Printer Buttons (Model 1 or Model 2)

```
+----+
|001|
+----+
```

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

- Ensure the point-of-sale terminal is powered-ON and ready to run this test.

Is the printer cable connected to socket 7?

Yes No

```
|
| |
| +----+
| |002|
| +----+
```

The printer cable is connected to a socket other than 7.

Go the test procedure for that socket.

For example: If the printer is connected to socket 23 or 25 on a 4683 Feature Expansion card, go to "TEST 4160: Socket 23 or 25 Device (4683 RS-232 or Current Loop)" in topic 4.16 to test these sockets.

```
+----+
|003|
+----+
```

Is the printer a Model 1 or Model 2?

Yes No

```
|
| |
| +----+
| |004|
| +----+
```

The printer is a Model 3.

- Continue at Step 028.

PICTURE 19

Figure 4-18. Print Head Preload Spring (Model 1 or 2)

```
|
+----+
|005|
+----+
```

Model 1 or 2 Stand-Alone Test

- Open the cover on the Model 1 or Model 2 printer.
- Ensure the following before running the stand-alone test.
 - The paper is installed correctly in both print stations.
 - There is no document inserted in the printer.
 - The ribbon is in good working condition and that it is seated correctly.
 - The print head preload spring is in place and holding the print head against the platen. See Figure 4-18.
 - The print head cable is plugged into the printer card. See Figure 4-20.

- Press the printer **II** button to advance paper at the customer receipt station.

Did the customer receipt paper advance?

Yes No

PICTURE 20

Figure 4-19. Inserting a Document (Model 1 or 2)

```
|
| +---+
| |006|
| +---+
|
| Switch POWER OFF and service the printer. For service information,
| see the IBM 4683/4684 Point of Sale Terminal: Maintenance Manual.
|
| +---+
| |007|
| +---+
```

- Press the printer **III** button to advance paper at the journal station.

Did the journal paper advance?

Yes No

```
|
| +---+
| |008|
| +---+
|
| Switch POWER OFF and service the printer. For service information,
| see the IBM 4683/4684 Point of Sale Terminal: Maintenance Manual.
|
| +---+
| |009|
| +---+
```

- Press the printer **T** button to start the stand-alone test. See Figure 4-17.

The test begins and prints 2 lines of 38 characters at the customer receipt and journal stations.

- Observe the print head.

Did the print head move?

Yes No

```
|
| +---+
| |010|
| +---+
|
| - Switch POWER OFF and examine for damage or a loose connection:
|
|  Socket 7
|  Both ends of the printer cable
|  The cable socket on the printer. See "Cable Sockets and
| Devices" in topic C.7.
|
| If the cable, sockets, and connections are OK, follow this list to
| isolate and correct the cause of the problem.
|
| 1. Service the printer. For service information, see the IBM
| 4683/4684 Point of Sale Terminal: Maintenance Manual.
|
| 2. Exchange the printer cable.
|
| 3. Service the 4683 base unit or 4684 system unit. For service
| information, see the IBM 4683/4684 Point of Sale Terminal:
| Maintenance Manual.
```

PICTURE 21

Figure 4-20. Print Head Cable (Model 1 or 2)

```
|
| +---+
| |011|
| +---+
```

- Press the **T** button again.
- This time observe the ribbon movement while the print head is moving.

Is the ribbon moving correctly?

Yes No

```
|
| +---+
| |012|
| +---+
```

Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange the ribbon. See "Printer Ribbon Cartridge Removal and Replacement (Model 1 or 2)" in topic 7.15.6.
2. Exchange the print head. See "Print Head Removal and Replacement (Model 1 or 2)" in topic 7.15.5.
3. Service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

PICTURE 22

Figure 4-21. Stand-Alone Test Pattern

```
|
| +---+
| |013|
| +---+
```

Did anything print?

Yes No

```
|
| +---+
| |014|
| +---+
```

Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange the print head. See "Print Head Removal and Replacement (Model 1 or 2)" in topic 7.15.5.
2. Service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
+---+
|015|
+---+
```

- Compare the printing at each print station with Figure 4-21.

Is the IH... pattern at each station the same as the figure?

Yes No

```
|
| +---+
| |016|
| +---+
```

- Continue at Step 022.

```
+---+
|017|
+---+
```

- Insert a document into the DI (document insert) station. See Figure 4-19.

The document stops when it contacts the DI (document insert) stop.

Can you insert the document against the DI stop without difficulty?

Yes No

```
|
| +---+
| |018|
| +---+
```

Switch **POWER OFF** and service the printer. For service information,

| see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+
| 019 |
+----+

- Press the printer **I** button to close the DI station.
- Press the printer **T** button to start printing the **IH...** pattern at the DI station.
- Compare the printing on the inserted document with Figure 4-21.

Is the IH... pattern the same as the figure?

Yes No

| |
| |
| +----+
| | 020 |
| +----+
| |

| Switch **POWER OFF** and service the printer. For service information,
| see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+
| 021 |
+----+

The stand-alone test of the printer is finished. Additional testing can be performed by requesting the online test.

- Remove the document from the DI station.
- Leave the printer cover open.
- Continue at Step 059.

+----+
| 022 |
+----+
(From step 016)

Does the print head interfere with paper movement in either station?

Yes No

| |
| |
| +----+
| | 023 |
| +----+
| |

| - Continue at Step 025.

+----+
| 024 |
+----+

Switch **POWER OFF** and exchange the print head. See "Print Head Removal and Replacement (Model 1 or 2)" in topic 7.15.5.

+----+
| 025 |
+----+
(From step 023)

Is the line spacing correct at each print station? See Figure 4-21.

Yes No

| |
| |
| +----+
| | 026 |
| +----+
| |

| Switch **POWER OFF** and service the printer. For service information,
| see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+
| 027 |
+----+

Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange the print head. See "Print Head Removal and Replacement (Model 1 or 2)" in topic 7.15.5.

2. Service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

PICTURE 23

- [1] = Journal Button
[2] = Customer Receipt Button
[3] = **Ready** Button. The ready (green) light next to this button comes ON when a document is inserted.
[4] = DI (Document Insert) **up** Button.
[5] = DI (Document Insert) **down** Button.

Figure 4-22. Printer Buttons (Model 3)

```
+----+
|028|
+----+
(From step 004)
```

Model 3 Stand-Alone Test

- Open the cover on the Model 3 printer.
- Ensure the following before running the stand-alone test.
 - The paper is installed correctly in both print stations.
 - There is no document inserted in the printer.
 - The ribbon is in good working condition and that it is seated correctly.
- Press the journal button [1] to advance paper at the journal station. See Figure 4-22.

Did the journal paper advance?

Yes No

```
|
|
| +----+
| |029|
| +----+
|
| Switch POWER OFF and service the printer. For service information,
| see the IBM 4683/4684 Point of Sale Terminal: Maintenance Manual.
|
|
+----+
|030|
+----+
```

- Press the customer receipt button [2] to advance paper at the customer receipt station. See Figure 4-22.

Did the customer receipt paper advance?

Yes No

PICTURE 24

Figure 4-23. Stand-Alone Test Pattern

```
|
|
| +----+
| |031|
| +----+
|
| Switch POWER OFF and service the printer. For service information,
| see the IBM 4683/4684 Point of Sale Terminal: Maintenance Manual.
|
|
+----+
|032|
+----+
```

- Press and hold the ready button [3] and then press the journal button [1] to start the stand-alone test at the **journal station**. See

Figure 4-22.

The test begins and prints 50 lines of 38 characters.

Allow at least 10 lines to print before stopping the test.

You can stop the test at any time by pressing the ready button [3].

- Press the ready button [3].

Did anything print?

Yes No

```
|
| |
| +---+
| |033|
| +---+
```

Switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
+---+
|034|
+---+
```

- Compare the printing at the journal station with Figure 4-23.

Is the IH... pattern the same as the figure?

Yes No

PICTURE 25

Figure 4-24. Inserting a Document into the Top of the Model 3 Printer

```
|
| |
| +---+
| |035|
| +---+
```

Switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
+---+
|036|
+---+
```

- Press and hold the ready button [3] and then press the customer receipt button [2] to start the stand-alone test at the **customer receipt station**. See Figure 4-22.

The test begins and prints 50 lines of 38 characters.

Allow at least 10 lines to print before stopping the test.

You can stop the test at any time by pressing the ready button [3]. This will also cause the paper cutter to cut the paper.

- Press the ready button [3].

Did anything print?

Yes No

```
|
| |
| +---+
| |037|
| +---+
```

Switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
+---+
|038|
+---+
```

- Compare the printing at the customer receipt station with Figure 4-23.

Is the IH... pattern the same as the figure?

Yes No

```
|
| |
| +---+
| |039|
| +---+
```

Switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
|  
+----+  
| 040 |  
+----+
```

Did the paper cutter cut the receipt tape correctly?

Yes No

```
|  
+----+  
| 041 |  
+----+
```

Switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
+----+  
| 042 |  
+----+
```

- Insert a document into the top of the printer. See Figure 4-24.

Can you insert the document without difficulty?

Yes No

```
|  
+----+  
| 043 |  
+----+
```

Switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
+----+  
| 044 |  
+----+
```

Did the printer indicator (green) light come ON?

Yes No

PICTURE 26

Figure 4-25. Inserting a Document into the Front of the Model 3 Printer

```
|  
+----+  
| 045 |  
+----+
```

Switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
+----+  
| 046 |  
+----+
```

- Press and hold the DI **down** button [5] to move the document into the printer. See Figure 4-22.

Did the document move into the printer.

Yes No

```
|  
+----+  
| 047 |  
+----+
```

Switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
+----+  
| 048 |  
+----+
```

- When the document is in position, press and hold the ready button [3] and then press the DI **up** button [4] to start printing on the inserted document.

The test begins and prints lines of 38 characters for 50 lines or until the end of the document is reached.

Allow several lines to print before stopping the test.

You can stop the test at any point by pressing the ready button [3].

- Press the ready button [3].

- Compare the printing on the inserted document with Figure 4-23.

Is the IH... pattern the same as the figure?

Yes No

| |
| |
| +---+
| |049|
| +---+
| |

Switch **POWER OFF** and service the printer. For service information,
see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+---+

|050|

+---+

- To remove the document, press and hold the DI **up** button [4] to back it
out of the printer. See Figure 4-22.

- After removing the document from the top of the printer, insert a
document into the front of the printer. See Figure 4-25.

Can you insert the document without difficulty?

Yes No

| |
| |
| +---+
| |051|
| +---+
| |

Switch **POWER OFF** and service the printer. For service information,
see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+---+

|052|

+---+

Did the printer indicator (green) light come ON?

Yes No

| |
| |
| +---+
| |053|
| +---+
| |

Switch **POWER OFF** and service the printer. For service information,
see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+---+

|054|

+---+

- Press and hold the DI **up** button [4] to move the document into the
printer. See Figure 4-22.

Did the document move into the printer.

Yes No

| |
| |
| +---+
| |055|
| +---+
| |

Switch **POWER OFF** and service the printer. For service information,
see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+---+

|056|

+---+

- When the document is in position, press and hold the ready button [3]
and then press the DI **down** button [5] to start printing on the inserted
document.

The test begins and prints lines of 38 characters for 50 lines or until
the end of the document is reached.

Allow several lines to print before stopping the test.

You can stop the test at any point by pressing the ready button [3].

- Press the ready button [3].

- Compare the printing on the inserted document with Figure 4-23.

Is the IH... pattern the same as the figure?

Yes No

```
| |
| +---+
| |057|
| +---+
```

Switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
+---+
|058|
+---+
```

- To remove the document, press and hold the DI **down** button [5] to back it out of the printer. See Figure 4-22.

The stand-alone test of the printer is finished. Additional testing can be performed by requesting the online test.

- Remove the inserted document.

- Leave the printer cover open.

- Continue at Step 059.

```
+---+
|059|
+---+
```

(From steps 021 and 058)

Model 1, 2, or 3 Online Test

- Open the printer cover, if it is not already open.

Is message T0010 displayed?

Yes No

```
| |
| +---+
| |060|
| +---+
```

The point-of-sale terminal is not in Test Mode.

- Press **S1**, type **91**, and press **S2** to enter Test Mode.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard,
Esc = **S1** and **Enter** = **S2**.

When message T0010 displays, continue at Step 061.

```
+---+
|061|
+---+
```

(From step 060)

- Type **71** and press **S2 (Enter)** to start the printer test.

When the printer cover is open, message T7153 is displayed.

Is message T7153 displayed?

Yes No

```
| |
| +---+
| |062|
| +---+
```

The cover interlock switch is failing.

Switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
+---+
|063|
+---+
```

- Close the printer cover.

When the cover is closed the printer is reset. This causes a noise inside the printer that should not be considered a problem.

- Press **S2 (Enter)** to continue the test.

Is message T7110 displayed?
Yes No

PICTURE 27

Figure 4-26. Online Test Pattern

```
| |
| |
| +---+
| |064|
| +---+
|
| Follow the User Response for the message that is displayed or
| printed. See "Tnnnn Messages" in topic 2.7.
|
|
| +---+
| |065|
| +---+
```

- Press **S2 (Enter)** to stop printing.

Is message T7101 displayed?
Yes No

```
| |
| |
| +---+
| |066|
| +---+
|
| Follow the User Response for the message that is displayed or
| printed. See "Tnnnn Messages" in topic 2.7.
|
|
| +---+
| |067|
| +---+
```

- Compare the printing at the customer receipt station with Figure 4-26.

Is the **IH...** pattern the same as the figure?
Yes No

```
| |
| |
| +---+
| |068|
| +---+
|
| Switch POWER OFF and service the printer. For service information,
| see the IBM 4683/4684 Point of Sale Terminal: Maintenance Manual.
|
|
| +---+
| |069|
| +---+
```

- To start printing the **IH...** pattern at the journal station, press **S2 (Enter)**.

- Wait at least ten seconds.

Is message T7120 displayed?
Yes No

```
| |
| |
| +---+
| |070|
| +---+
|
| Follow the User Response for the message that is displayed or
| printed. See "Tnnnn Messages" in topic 2.7.
|
|
| +---+
| |071|
| +---+
```

- Press **S2 (Enter)** to stop printing.

Is message T7131 displayed?
Yes No

```
| |
| |
| +---+
| |072|
| +---+
|
| Follow the User Response for the message that is displayed or
| printed. See "Tnnnn Messages" in topic 2.7.
|
|
```

+----+
|073|
+----+

- Compare the printing at the journal station with Figure 4-26.

Is the IH... pattern the same as the figure?

Yes No

|
|
| +----+
| |074|
| +----+

| Switch **POWER OFF** and service the printer. For service information,
| see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+
|075|
+----+

Is the printer a Model 1 or Model 2?

Yes No

|
|
| +----+
| |076|
| +----+

| The printer is a Model 3.

| - Continue at Step 086.

PICTURE 28

Figure 4-27. Inserting a Document (Model 1 or 2)

|
|
| +----+
| |077|
| +----+

Model 1 or 2 Online Document Insert Test

- Insert a document into the DI (document insert) station. See
Figure 4-27.

The document stops when it contacts the DI stop.

Can you insert the document against the DI stop without difficulty?

Yes No

|
|
| +----+
| |078|
| +----+

| Switch **POWER OFF** and service the printer. For service information,
| see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+
|079|
+----+

- To close the DI station, press the **I** button on the printer.

- To start printing the IH... pattern at the DI station, press **S2 (Enter)**.

- Wait at least ten seconds.

Is message T7130 displayed?

Yes No

|
|
| +----+
| |080|
| +----+

| Follow the *User Response* for the message that **is** displayed or
| printed. See "Tnnnn Messages" in topic 2.7.

+----+
|081|
+----+

- Press **S2 (Enter)** to stop printing.

Is message T7132 displayed?

Yes No

| |
| |
| +---+
| |082|
| +---+

| Follow the *User Response* for the message that **is** displayed or
| printed. See "Tnnnn Messages" in topic 2.7.

+---+
|083|
+---+

- Remove the document.

- Compare the printing with Figure 4-26.

The **IH...** pattern begins approximately 20mm (3/4 in.) from the top edge of the document.

Is the **IH...** pattern the same as the figure?

Yes No

| |
| |
| +---+
| |084|
| +---+

| Switch **POWER OFF** and service the printer. For service information,
| see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+---+
|085|
+---+

The printer hardware is operating correctly.

Continue at Step 106.

+---+
|086|
+---+

(From step 076)

Model 3 Online Document Insert Test

Document insertion can be done from the top or front of the Model 3 printer.

- Insert a document into the top of the printer. See Figure 4-28.

Can you insert the document without difficulty?

Yes No

PICTURE 29

Figure 4-28. Inserting a Document into the Top of the Model 3 Printer

| |
| |
| +---+
| |087|
| +---+

| Switch **POWER OFF** and service the printer. For service information,
| see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+---+
|088|
+---+

Did the printer indicator (green) light come ON?

Yes No

| |
| |
| +---+
| |089|
| +---+

| Switch **POWER OFF** and service the printer. For service information,
| see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+---+
|090|

+---+

- Press the ready button [3] to move the document into the printer. See Figure 4-22.
- When the document is in position, press **S2 (Enter)** to start printing the **IH...** pattern on the inserted document.
- Wait at least ten seconds.

Is message T7130 displayed?

Yes No

| |
| |
| +---+
| |091|
| +---+
| |

Follow the *User Response* for the message that **is** displayed or printed. See "Tnnnn Messages" in topic 2.7.

+---+

|092|

+---+

- Press **S2 (Enter)** to stop printing.

Is message T7132 displayed?

Yes No

| |
| |
| +---+
| |093|
| +---+
| |

Follow the *User Response* for the message that **is** displayed or printed. See "Tnnnn Messages" in topic 2.7.

+---+

|094|

+---+

- Press the ready button [3] and remove the document from the top of the printer. See Figure 4-22.
- Compare the **IH...** pattern with Figure 4-26.

Is the **IH...** pattern the same as the figure?

Yes No

| |
| |
| +---+
| |095|
| +---+
| |

Switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+---+

|096|

+---+

- Insert document into the front of the printer. See Figure 4-29.

Can you insert the document without difficulty?

Yes No

| |
| |
| +---+
| |097|
| +---+
| |

Switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+---+

|098|

+---+

Did the printer indicator (green) light come ON?

Yes No

| |
| |
| +---+
| |099|
| +---+
| |

Switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
|  
+----+  
|100|  
+----+
```

- Press the ready button [3] to move the document into the printer. See Figure 4-22.
- Press **S2 (Enter)** to start printing the **IH...** pattern on the inserted document.
- Wait at least ten seconds.

Is message T7130 displayed?

Yes No

```
|  
|  
+----+  
|101|  
+----+
```

Follow the *User Response* for the message that **is** displayed or printed. See "Tnnnn Messages" in topic 2.7.

```
+----+  
|102|  
+----+
```

- Press **S2 (Enter)** to stop printing.

Is message T7132 displayed?

Yes No

PICTURE 30

Figure 4-29. Inserting a Document into the Front of the Model 3 Printer

```
|  
+----+  
|103|  
+----+
```

Follow the *User Response* for the message that **is** displayed or printed. See "Tnnnn Messages" in topic 2.7.

```
+----+  
|104|  
+----+
```

- Press the ready button [3] and remove the document from the front of the printer. See Figure 4-22.
- Compare the **IH...** pattern with Figure 4-26.

Is the **IH...** pattern the same as the figure?

Yes No

```
|  
+----+  
|105|  
+----+
```

Switch **POWER OFF** and service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
+----+  
|106|  
+----+
```

(From step 085)

The printer hardware is operating correctly.

- Type **0** and press **S2 (Enter)** to stop the test.
- When message T0010 displays, type **99** and press **S2** to exit Test Mode.

The user application program is reloaded.

To run additional tests, see the table-of-contents on topic 4.0.

The software can also cause printer problems.

- If you are running this test to resolve a printer problem:

1. Put the point-of-sale terminal back in service.
2. If the same problem occurs, fill in a copy of the "Problem Data Collection Form" in topic B.7. Use keyword PRINTER.
3. Request a storage dump. See "Requesting a 4683 Storage Dump" in topic B.2.
4. Report this problem to the store programmer and supply the preceding information.

4.11 TEST 4110: Point of Sale Scanner (4683/4684)

```
+-----+
| Test Description
+-----+
| This procedure verifies correct operation of the 3687 Checkout Scanner
| Model 2 connected to socket 17.
+-----+
```

PICTURE 31

Figure 4-30. Using the Scanner Test Label

```
+----+
|001|
+----+
```

This procedure is for the 3687 Checkout Scanner Model 2 ONLY. If the scanner is not a 3687 Model 2, continue problem determination using the maintenance documentation for the scanner.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Note: To run this test, you must have the low contrast test label card (IBM P/N 6317966) that is supplied with the scanner. The test label is read by the scanner and printed on the point-of-sale printer. Compare the printed data with the test label to verify correct operation.

- Ensure the point-of-sale terminal is powered-ON and ready to run this test.
- Switch **POWER OFF** at the scanner using the external ac power switch.
- Wait five seconds and switch power ON again
 1. The scanner starts its self test.
 2. The following characters appear on the scanner display: 8, 0, 1, 2, 3, 4, 5, 6, 7.
 3. The scanner sounds a short beep.
 4. **L** remains on the scanner display for ten seconds.
 5. The scanner stops with a blank display or a **C** alternating with a blank display.

Did the scanner self test work as described?

Yes No

```
|
|
| +----+
| |002|
| +----+
```

- Switch **POWER OFF** at the scanner using the external ac power switch.

Service the scanner. For service information, see *IBM 3687 Checkout Scanner Model 2: Maintenance Information, SY27-0277*.

```
+----+
|003|
+----+
```

Is message T0010 displayed?

Yes No

```
|
|
| +----+
| |004|
| +----+
```

The point-of-sale terminal is not in Test Mode.

- Press **S1**, type **91**, and press **S2** to enter Test Mode.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard,
Esc = **S1** and **Enter** = **S2**.

When message T0010 displays, continue at Step 005.

```
|  
+----+  
|005|  
+----+  
(From step 004)
```

- Type 171 and press S2 (Enter) to start the 3687 Model 2 test.

Is message T1701 displayed?

Yes No

```
| |  
| |  
| +----+  
| |006|  
| +----+  
| |
```

- Continue at Step 015.

```
+----+  
|007|  
+----+
```

- Locate the low contrast test label card (IBM P/N 6317966).

- Lay the test label card flat on the scanner in front of the scanner window with the label facing up. See Figure 4-30.

- Scan the label by turning the test label card over onto the scanner window as shown in Figure 4-30.

The scanner green light comes on and item code 871040000626 8 prints.

- Turn the test label card back to the flat position in front of the scanner window.

- Scan the test label ten times (about once per second).

Are any error messages displayed?

Yes No

```
| |  
| |  
| +----+  
| |008|  
| +----+  
| |
```

- Continue at Step 010.

```
+----+  
|009|  
+----+
```

- Continue at Step 015.

PICTURE 32

Figure 4-31. Examples of UPC and EAN Labels

```
+----+  
|010|  
+----+  
(From step 008)
```

Did the green light flash each time the test label was scanned?

Yes No

```
| |  
| |  
| +----+  
| |011|  
| +----+  
| |
```

- Switch POWER OFF at the scanner using the external ac power switch.

Service the scanner. For service information, see IBM 3687 Checkout Scanner Model 2: Maintenance Information, SY27-0277.

```
+----+  
|012|  
+----+
```

Did the item code 871040000626 8 print ten times?

Yes No

```
| |  
| |  
| +----+  
| |013|  
| |
```


+----+

The failure is caused by the scanner adapter, the scanner, or scanner cable.

- Switch **POWER OFF** at the point-of-sale terminal and unplug the scanner power cord.
- Examine for damage or a loose connection:
 - Socket 17
 - Both ends of the scanner cable
 - The cable socket on the 3687 Model 2 scanner adapter. See "Cable Sockets and Devices" in topic C.7.

If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.

1. Exchange the scanner adapter. See "3687 Model 2 Scanner Adapter Removal and Replacement" in topic 7.27.
2. Exchange the scanner cable.
3. Service the scanner. For service information, see *IBM 3687 Checkout Scanner Model 2: Maintenance Information*, SY27-0277.

+----+

|014|

+----+

The scanner hardware is operating correctly.

- Type **0** and press **S2 (Enter)** to stop the test.
- When message T0010 displays, type **99** and press **S2** to exit Test Mode.

The user application program is reloaded.

To run additional tests, see the table-of-contents on topic 4.0.

The software can also cause 3687 Model 2 problems.

If you are running this test to resolve a 3687 Model 2 problem:

1. Put the point-of-sale terminal back in service.
2. If the same problem occurs, fill in a copy of the "Problem Data Collection Form" in topic B.7. Use keywords 3687-2 and SCANNER.
3. Request a storage dump. See "Requesting a 4683 Storage Dump" in topic B.2.
4. Report this problem to the store programmer and supply the preceding information.

+----+

|015|

+----+

(From steps 006 and 009)

Follow the *User Response* for the displayed or printed message. See "Tnnnn Messages" in topic 2.7.

To end testing:

1. Type **0** and press **S2 (Enter)** to stop the test.
 2. When message T0010 displays, type **99** and press **S2** to exit Test Mode.
-

4.12 TEST 4120: Power-On Self Test (4683 Only)

```
+-----+
| Test Description
+-----+
| Use this procedure to perform problem determination and verify correct
| operation of a 4683.
|
| The power-on self test runs automatically each time the 4683 is
| powered ON.
|
| The Feature Expansion cards and the devices connected to the 4683 base
| unit are not tested.
+-----+
```

PICTURE 33

Figure 4-32. Dump Switch location

```
+----+
|001|
+----+
```

This procedure is for the 4683 ONLY.

To test a 4683-xx1, it must be connected to an operating store loop.

To test a 4683-xx2, it must be connected to an operating 4683-xx1 that is connected to an operating store loop.

- Ensure the 4683 is powered-ON and ready to run this test.

Is this a 4683-xx1?

Yes No

```
|
|
| +----+
| |002|
| +----+
```

- Switch **POWER OFF** at the 4683-xx2.
- Wait five seconds and switch power ON again.
- Continue at Step 006.

```
+----+
|003|
+----+
```

- Hold the 4683-xx1 dump switch pressed and switch **POWER OFF**. See Figure 4-32.

This clears storage retention and causes the 4683 to IPL when power is switched ON again.

- Release the dump switch.

When power is switched ON, a sequence of Unnn messages is displayed.

When the sequence is completed, message W008 is displayed.

- Switch power ON.

- Wait for message W008 to display. This could take several minutes.

Did message W008 display?

Yes No

```
|
|
| +----+
| |004|
| +----+
```

- Continue at Step 006.

```
+----+
|005|
+----+
```

The 4683 power-on self tests detected no failures.

- To test devices connected to the 4683 base unit, see the

table-of-contents in topic 4.0.

+----+

|006|

+----+

(From steps 002 and 004)

Is the display blank?

Yes No

|

+----+

|007|

+----+

| The 4683 is displaying a *Unnn* message, an unexpected message from the operating system, or an application-generated message.

| Follow the *User Response* for the message. See Chapter 2, "Messages" in this book, the *IBM 4680 Store System: Messages Guide*, or the documentation for the application.

+----+

|008|

+----+

Depending on the display, follow "PDP 6010: Blank Display (Except Video)" in topic 6.1 or "PDP 6020: Blank Video Display" in topic 6.2.

4.13 TEST 4130: Remote Alarm (4683/4684)

```
+-----+
| Test Description
+-----+
| This procedure verifies correct operation of the remote alarm
| connected to socket 3B.
+-----+
```

```
+----+
|001|
+----+
```

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

- Ensure the point-of-sale terminal is powered-ON and ready to run this test.

Is message T0010 displayed?

Yes No

```
|
| +----+
| |002|
| +----+
```

The point-of-sale terminal is not in Test Mode.

- Press **S1**, type **91**, and press **S2** to enter Test Mode.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = **S1** and **Enter** = **S2**.

When message T0010 displays, continue at Step 003.

```
+----+
|003|
+----+
```

(From step 002)

- Type **34** and press **S2 (Enter)** to start the remote alarm test.

The remote alarm connected to socket 3B is tested.

Is message T3401 or T3402 displayed?

Yes No

```
|
| +----+
| |004|
| +----+
```

- Continue at Step 011.

```
+----+
|005|
+----+
```

- Press **S2 (Enter)** to activate the alarm.

Message T3401 is displayed.

The alarm is activated for one-half second and message T3402 is displayed.

Did the alarm work as described?

Yes No

```
|
| +----+
| |006|
| +----+
```

- Continue at Step 008.

```
+----+
|007|
+----+
```

The remote alarm hardware is operating correctly.

- Type **0** and press **S2 (Enter)** to stop the test.

- When message T0010 displays, type **99** and press **S2** to exit Test Mode.

The user application program is reloaded.

To run additional tests, see the table-of-contents on topic 4.0.

The software can also cause remote alarm problems.

- If you are running this test to resolve a remote alarm problem:

1. Put the point-of-sale terminal back in service.
2. If the same problem occurs, fill in a copy of the "Problem Data Collection Form" in topic B.7. Use keyword INCORROUT.
3. Request a storage dump. See "Requesting a 4683 Storage Dump" in topic B.2.
4. Report this problem to the store programmer and supply the preceding information.

+----+
|008|
+----+
(From step 006)

Did message T3401 and T3402 display?

Yes No

| |
| +----+
| |009|
| +----+
|
| Continue at Step 011.
|

+----+
|010|
+----+

- Switch **POWER OFF** at the point-of-sale terminal.

- Examine the remote alarm device and the cable attached to socket 3B for damage or a loose connection. See "Cable Sockets and Devices" in topic C.7.

If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.

1. Exchange the remote alarm. See "Remote Alarm Removal and Replacement" in topic 7.18.
2. Exchange the remote alarm cable.
3. Service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+
|011|
+----+
(From steps 004 and 009)

Follow the *User Response* for the displayed or printed message. See "Tnnnn Messages" in topic 2.7.

To end testing:

1. Type 0 and press **S2 (Enter)** to stop the test.
2. When message T0010 displays, type **99** and press **S2** to exit Test Mode.

4.14 TEST 4140: Scale (4683 Only)

```
+-----+
| Test Description
+-----+
| This procedure verifies correct operation of the Feature Expansion
| card (B or C) for the scale.
|
| The scale is connected to socket 21 on the Feature Expansion card.
|
| If the scale is connected to Socket 17, continue problem determination
| using the maintenance documentation for the scanner/scale.
|
| The Feature Expansion card can be in location 2A or 2B in the 4683
| base unit.
+-----+
```

```
+----+
|001|
+----+
```

This procedure is for the 4683 ONLY.

Note: The scale must have power ON and read zero to begin the test. As test weights are placed on the scale, the weight appears on the 4683 display.

Is this scale connected to socket 21?

Yes No

```
|
| |
| +----+
| |002|
| +----+
```

Go to the test procedure for the scale cable/socket location.

For example: If the scale is connected to socket 23 or 25 on a Feature Expansion card, go to "TEST 4160: Socket 23 or 25 Device (4683 RS-232 or Current Loop)" in topic 4.16 to test these sockets.

```
+----+
|003|
+----+
```

- Ensure the 4683 is powered-ON and ready to run this test.

Is message T0010 displayed?

Yes No

```
|
| |
| +----+
| |004|
| +----+
```

The 4683 is not in Test Mode.

- Press **S1**, type **91**, and press **S2** to enter Test Mode.

When message T0010 displays, continue at Step 005.

```
+----+
|005|
+----+
```

(From step 004)

- Ensure that the scale is powered-ON.

- Type **213** and press **S2** to start the scale test.

Is message T2103 displayed on the 4683 display?

Yes No

```
|
| |
| +----+
| |006|
| +----+
```

- Continue at Step 015.

```
+----+
|007|
+----+
```

- Place the test weights on the scale as required for the scale test procedure. See the maintenance documentation for the scale.

The 4683 display shows the weight that is read from the scale.

Is a weight displayed on the 4683 display?

Yes No

```
| |
| |
| +---+
| |008|
| +---+
```

- Continue at Step 017.

```
+---+
|009|
+---+
```

Does the weight displayed on the 4683 display equal the total weight placed on the scale?

Yes No

```
| |
| |
| +---+
| |010|
| +---+
```

- Continue at Step 012.

```
+---+
|011|
+---+
```

The scale hardware is operating correctly.

- Type 0 and press S2 to stop the test.

- When message T0010 displays, type 99 and press S2 to exit Test Mode.

The user application program is reloaded.

To run additional tests, see the table-of-contents on topic 4.0.

The software can also cause scale problems.

- If you are running this test to resolve a scale problem:

1. If the same problem occurs, fill in a copy of the "Problem Data Collection Form" in topic B.7. Use keyword SCALE.
2. Request a storage dump. See "Requesting a 4683 Storage Dump" in topic B.2.
3. Report this problem to the store programmer and supply the preceding information.

```
+---+
|012|
+---+
```

(From step 010)

Does the weight displayed on the scale display equal the total weight placed on the scale?

Yes No

```
| |
| |
| +---+
| |013|
| +---+
```

- Switch **POWER OFF** at the 4683 and unplug the scale power cord.

Exchange the scale. See "Scale Removal and Replacement (4683 Only)" in topic 7.19.

```
+---+
|014|
+---+
```

At this point the scale display shows the correct weight but the 4683 display is not correct.

- Continue at Step 017.

```
+---+
```

| 015 |
+----+
(From step 006)

Does the scale display read zero?

Yes No

|
+----+
| 016 |
+----+

- Type 0 and press S2 to stop the test.

- Perform the scale zero procedure for the scale. See the maintenance documentation for the scale.

Note: Ensure scale power is switched ON.

If the scale continues to read other than zero, switch **POWER OFF** at the 4683 and unplug the scale power cord.

Exchange the scale. See "Scale Removal and Replacement (4683 Only)" in topic 7.19.

+----+
| 017 |
+----+

(From steps 008 and 014)

- Switch **POWER OFF** at the 4683 and unplug the scale power cord.

- Disconnect the scale cable from socket 21 on the Feature Expansion card. See "Cable Sockets and Devices" in topic C.7.

- Switch power ON.

- Type 1 and press S2 to restart the scale test.

Is message T2159 displayed on the 4683 display?

Yes No

|
+----+
| 018 |
+----+

- Continue at Step 022.

+----+
| 019 |
+----+

- Switch **POWER OFF** at the 4683.

- Reconnect the cable to the Feature Expansion card socket 21.

- Disconnect the scale cable from the scale. See the maintenance documentation for the scale.

- Switch power ON.

- Type 1 and press S2 to restart the scale test.

Is message T2159 displayed on the 4683 display?

Yes No

|
+----+
| 020 |
+----+

- Switch **POWER OFF** at the 4683.

Exchange the scale cable.

+----+
| 021 |
+----+

Switch **POWER OFF** at the 4683 and follow this list to isolate and correct the cause of the problem.

1. Exchange the scale. See "Scale Removal and Replacement (4683 Only)" in topic 7.19.

2. Exchange the scale cable.
3. Exchange the Feature Expansion card for the scale. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.

+---+
|022|
+---+

(From step 018)

Follow the *User Response* for the displayed or printed message. See "Tnnnn Messages" in topic 2.7.

To end testing:

1. Type 0 and press **S2** to stop the test.
 2. When message T0010 displays, type **99** and press **S2** to exit Test Mode.
-

4.15 TEST 4150: Shopper Display (4683/4684)

```
+-----+
| Test Description
+-----+
| This procedure verifies correct operation of shopper displays
| connected to socket 4A or 4B.
+-----+
```

PICTURE 34

Figure 4-33. Shopper Display

```
+----+
|001|
+----+
```

System Display -- When multiple displays are attached to a point-of-sale terminal, one must be configured as the primary (system) display. When only one display is attached, it is the primary (system) display. System messages (Wnnn), test messages (Tnnnn), and other messages appear only on the primary (system) display.

- Ensure the point-of-sale terminal is powered-ON and ready to run this test.

Are you testing a 4683-xx1 or a 4683-xx2 attached to a 4683-xx1?

Yes No

```
|
|
| +----+
| |002|
| +----+
```

You are testing a 4684 or a 4683-xx2 attached to a 4684.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

- Switch **POWER OFF** at the 4684.
- Wait five seconds and switch power ON again.
- Continue at Step 004.

```
+----+
|003|
+----+
```

- Hold the 4683-xx1 dump switch pressed and switch **POWER OFF** at the 4683-xx1. See Figure 4-32 in topic 4.12.

This clears storage retention and causes the 4683 to IPL when power is switched ON again.

- Release the dump switch.
- If you are testing the 4683-xx2., switch its **POWER OFF**.
- Wait five seconds and switch power ON again.
- Continue at Step 004.

```
+----+
|004|
+----+
```

(From steps 002 and 003)

Is the shopper display blank?

Yes No

```
|
|
| +----+
| |005|
| +----+
```

- Continue at Step 009.

```
+----+
|006|
```

+----+

Is the primary (system) display also blank?

Yes No

|
|
| +----+
| |007|
| +----+

- Switch **POWER OFF** at the point-of-sale terminal.
- Examine both ends of the shopper display cable and the cable socket on the display for damage or loose connection. See "Cable Sockets and Devices" in topic C.7.

If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.

1. Exchange the shopper display. See "Shopper Display Removal and Replacement" in topic 7.20.
2. Exchange the shopper display cable.
3. Service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+
|008|
+----+

Depending on the display, follow "PDP 6010: Blank Display (Except Video)" in topic 6.1 or "PDP 6020: Blank Video Display" in topic 6.2.

+----+
|009|
+----+

(From step 005)

Is the point-of-sale terminal stopped with U001 on the primary (system) display?

Yes No

|
|
| +----+
| |010|
| +----+

- Continue at Step 012.

+----+
|011|
+----+

Follow "PDP 6080: U001 Message" in topic 6.8.

+----+
|012|
+----+

(From step 010)

Is message T0010 displayed on the primary (system) display?

Yes No

|
|
| +----+
| |013|
| +----+

The point-of-sale terminal is not in Test Mode.

- Press **S1**, type **91**, and press **S2** to enter Test Mode.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard,
Esc = S1 and **Enter** = S2.

When message T0010 is on the primary (system) display, continue at Step 014.

PICTURE 35

Figure 4-34. Shopper Display Test Patterns

```
|
|
+----+
|014|
+----+
(From step 013)
```

- Type **43** and press **S2 (Enter)** to start the shopper display test.

Message T4300 is displayed on the primary (system) display.

The pattern shown in Figure 4-34 is displayed on the shopper display.

1. A pattern of vertical bars
2. A pattern of horizontal bars
3. A pattern of 8s and 4 commas
4. A pattern of 8s and 3 periods.

The six guidance indicators turn on and off, one at a time.

The display and guidance test patterns repeat continuously.

Did the shopper display operate as described?

Yes No

```
|
|
|
|
|
|
|
|
|
|
|
|
+----+
|015|
+----+
- Continue at Step 017.
```

```
+----+
|016|
+----+
```

The shopper display hardware is operating correctly.

- Type **0** and press **S2 (Enter)** to stop the test.

- When message T0010 displays, type **99** and press **S2** to exit Test Mode.

The user application program is reloaded.

To run additional tests, see the table-of-contents on topic 4.0.

The software can also cause shopper display problems.

- If you are running this test to resolve a shopper display problem:

1. Put the point-of-sale terminal back in service.
2. If the same problem occurs, fill in a copy of the "Problem Data Collection Form" in topic B.7. Use keyword DISPLAY.
3. Request a storage dump. See "Requesting a 4683 Storage Dump" in topic B.2.
4. Report this problem to the store programmer and supply the preceding information.

```
+----+
|017|
+----+
(From step 015)
```

Is a T43nn message (other than T4300) displayed on the primary (system) display?

Yes No

```
|
|
|
|
|
|
|
|
|
|
|
|
+----+
|018|
+----+
- Switch POWER OFF at the point-of-sale terminal.

Exchange the shopper display. See "Shopper Display Removal and Replacement" in topic 7.20.
```

```
+----+
|019|
```

+---+

Follow the *User Response* for the message. See "Tnnnn Messages" in topic 2.7.

To end testing:

1. Type **0** and press **S2 (Enter)** to stop the test.
2. When message T0010 displays, type **99** and press **S2** to exit Test Mode.

4.16 TEST 4160: Socket 23 or 25 Device (4683 RS-232 or Current Loop)

```

+-----+
| Test Description |
+-----+
| This procedure verifies correct operation of the Feature Expansion |
| card (C or D) for devices that operate using the RS-232 or Current |
| Loop interface. These devices are connected by cable 23 to Feature |
| Expansion card socket 23 or by cable 25 to Feature Expansion card |
| socket 25. |
| |
| The device cable is also tested by this procedure. The device is not |
| tested. |
| |
| The Feature Expansion card can be in location 2A or 2B in the 4683 |
| base unit. |
| |
| Note: The test plugs mentioned in this procedure are supplied with |
| cable 23 or 25. The test plugs connect the cable transmit wires to |
| the cable receive wires. This allows the 4683 to test the cable by |
| sending a signal and receiving it back. |
+-----+

```

PICTURE 36

Figure 4-35. Cable and Test Plug.
The test plug can be
RS test plug (IBM P/N 6165746)
or **CL** test plug (IBM P/N 6165745).

```

+----+
| 001 |
+----+

```

This procedure is for the 4683 ONLY. For RS-232 on a 4684, see "Running System Unit Tests" in topic 5.5 .

- Ensure the 4683 is powered-ON and ready to run this test.

Is message T0010 displayed?

Yes No

```

| |
| +----+ |
| | 002 | |
| +----+ |

```

The 4683 is not in Test Mode.

- Press **S1**, type **91**, and press **S2** to enter Test Mode.

When message T0010 displays, continue at Step 003.

```

+----+
| 003 |
+----+

```

(From step 002)

- Type **231** and press **S2** to start the test.

Message T2300 is displayed.

After message T2300, a series of messages is displayed. The messages vary depending upon the configuration of Feature Expansion cards C and D.

These messages inform you about what the test is doing, prompt you for a yes or no answer, and inform you of detected errors.

- Find the displayed or printed message in the following list and take the indicated action.
- To locate a cable socket on the 4683, see "Cable Sockets and Devices" in topic C.7.
- If a message occurs that is not listed here, follow the *User Response* for the message. See "Tnnnn Messages" in topic 2.7.

T2302

Prepare to test the cable connected to socket 23 on the Feature Expansion card in location 2A.

Disconnect the device from the cable, attach test plug **RS** (IBM P/N 6165746) to the device-end of the cable, and press **S2**. See Figure 4-35.

T2304

Testing the cable connected to socket 23 on the Feature Expansion card in location 2A.

T2305

The cable test is complete.

Remove the test plug from the cable, reconnect the cable to the device, press **S2**. and wait for the next message to display.

T2307

Prepare to test the cable connected to socket 23 on the Feature Expansion card in location 2B.

Disconnect the device from the cable, attach test plug **RS** (IBM P/N 6165746) to the device-end of the cable, and press **S2**. See Figure 4-35.

T2309

Testing the cable connected to socket 23 on the Feature Expansion card in location 2B.

T2310

Testing the Feature Expansion card in location 2B.

T2311

The test detected a failure in the Feature Expansion card or the cable connected to socket 25.

Ensure the cable is connected to socket 25 and the test plug **RS** (IBM P/N 6165746) is attached to the end of the cable.

- If the cable is connected and the test plug is in place, press **S2**.
- If the cable is **not** connected or the test plug is **not** in place, type **3** and press **S2**.

T2313

The test is ready to test the cable connected to socket 23 on the Feature Expansion card in location 2A.

You have the option of testing the cable or bypassing the cable test.

- Press **S2** to test the cable.
- Type **3** and press **S2** to bypass the cable test.

T2314

The test has determined that two socket 23 and 25 Feature Expansion cards are installed.

You have the option of bypassing the remainder of the test on the Feature Expansion card in location 2A or continuing with the cable test.

- Press **S2** to test the cable.
- Type **3** and press **S2** to bypass the remainder of the test.

T2315

The test has determined that two socket 23 and 25 Feature Expansion cards are installed.

You have the option of bypassing the remainder of the test on the Feature Expansion card in location 2B or continuing with the cable test.

- Press **S2** to test the cable.
- Type **3** and press **S2** to bypass the remainder of the test.

T2318

The test on the Feature Expansion card is complete. Continue at Step 004.

T2319

The test is ready to test the cable connected to socket 23 on the Feature Expansion card in location 2B. You have the option of testing the cable or bypassing the cable test.

- Press **S2** to test the cable.
- Type **3** and press **S2** to bypass the cable test.

T2320

Prepare to test the cable connected to socket 23 on the Feature Expansion card in location 2A.

Disconnect the device from the cable, attach test plug **RS** (IBM P/N 6165746) to the device-end of the cable, and press **S2**. See Figure 4-35.

T2322

Prepare to test the cable connected to socket 23 on the Feature Expansion card in location 2B.

Disconnect the device from the cable, attach test plug **RS** (IBM P/N 6165746) to the device-end of the cable, and press **S2**. See Figure 4-35.

T2502

Prepare to test the cable connected to socket 25 on the Feature Expansion card in location 2A.

Disconnect the device from the cable, attach test plug **RS** (IBM P/N 6165746) to the device-end of the cable, and press **S2**. See Figure 4-35.

T2503

Prepare to test the cable connected to socket 25 on the Feature Expansion card in location 2A.

Disconnect the device from the cable, attach test plug **CL** (IBM P/N 6165745) to the device-end of the cable, and press **S2**. See Figure 4-35.

T2504

Testing the cable connected to socket 25 on the Feature Expansion card in location 2A.

T2505

The cable test is complete.

Remove the test plug from the cable, reconnect the cable to the device, press **S2**. and wait for the next message to display.

T2507

Prepare to test the cable connected to socket 25 on the Feature Expansion card in location 2B.

Disconnect the device from the cable, attach test plug **RS** (IBM P/N 6165746) to the device-end of the cable, and press **S2**. See Figure 4-35.

T2508

Prepare to test the cable connected to socket 25 on the Feature Expansion card in location 2B.

Disconnect the device from the cable, attach test plug **CL** (IBM P/N 6165745) to the device-end of the cable, and press **S2**. See Figure 4-35.

T2509

Testing the cable connected to socket 25 on the Feature Expansion card

in location 2B.

T2510

The test detected a failure in the Feature Expansion card or the cable connected to socket 25.

Ensure the cable is connected to socket 25 and the test plug **RS** (IBM P/N 6165746) is attached to the end of the cable.

- If the cable is connected and the test plug is in place, press **S2**.
- If the cable is **not** connected or the test plug is **not** in place, type **3** and press **S2**.

T2512

The test is ready to test the cable connected to socket 25 on the Feature Expansion card in location 2A. You have the option of testing the cable or bypassing the cable test.

- Press **S2** to test the cable.
- Type **3** and press **S2** to bypass the cable test.

T2513

The test is ready to test the cable connected to socket 25 on the Feature Expansion card in location 2B. You have the option of testing the cable or bypassing the cable test.

- Press **S2** to test the cable.
- Type **3** and press **S2** to bypass the cable test.

T2514

Prepare to test the cable connected to socket 25 on the Feature Expansion card in location 2A.

Disconnect the device from the cable, attach test plug **RS** (IBM P/N 6165746) to the device-end of the cable, and press **S2**. See Figure 4-35.

T2516

Prepare to test the cable connected to socket 25 on the Feature Expansion card in location 2A.

Disconnect the device from the cable, attach test plug **CL** (IBM P/N 6165745) to the device-end of the cable, and press **S2**. See Figure 4-35.

T2518

Prepare to test the cable connected to socket 25 on the Feature Expansion card in location 2B.

Disconnect the device from the cable, attach test plug **RS** (IBM P/N 6165746) to the device-end of the cable, and press **S2**. See Figure 4-35.

T2519

Prepare to test the cable connected to socket 25 on the Feature Expansion card in location 2B.

Disconnect the device from the cable, attach test plug **CL** (IBM P/N 6165745) to the device-end of the cable, and press **S2**. See Figure 4-35.

To end testing:

1. Type **0** and press **S2** to stop the test.
2. When message T0010 displays, type **99** and press **S2** to exit Test Mode.

+----+
|004|
+----+
(From step 003)

The Feature Expansion card sockets 23 and 25, and the cable are operating correctly.

- Remove the test plug from the cable.

The device connected to socket 23 or 25 may be failing.

- Connect a known working device to help isolate the failure.

If the same problem occurs with a working device, the software should be suspected.

- Type **0** and press **S2** to stop the test.
- When message T0010 displays, type **99** and press **S2** to exit Test Mode.

The user application program is reloaded.

To run additional tests, see the table-of-contents on topic 4.0.

- If the software is suspected:

1. Put the 4683 back in service.
2. If the same problem occurs, fill in a copy of the "Problem Data Collection Form" in topic B.7.
 - Use keyword INCORROUT.
 - Add FEATURE CARD 2x, and SOCKET 2n to the problem description.
 - Record 2x as 2A or 2B depending on where the socket 23 and 25 Feature Expansion card is located.
 - Record 2n as 23 or 25 depending upon which socket is failing.
3. Request a storage dump. See "Requesting a 4683 Storage Dump" in topic B.2.
4. Report this problem to the store programmer and supply the preceding information.

4.17 TEST 4170: Store Loop (4683/4684)

```
+-----+
| Test Description
+-----+
| This procedure verifies correct operation of the store loop. It
| verifies that the 4683 can communicate with the store controller and
| that the store controller can communicate with the 4683.
+-----+
```

```
+----+
|001|
+----+
```

- Select a 4683 to test.
- Ensure the 4683 is powered-ON and ready to run this test.

Is the 4683 keyboard OFFLINE light OFF?

Yes No

```
|
|
| +----+
| |002|
| +----+
```

- At the 4683, press **S1**, type **2**, and press **S2** to display the OFFLINE message.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard,
Esc = **S1** and **Enter** = **S2**.

Follow the *User Response* for the message. See Chapter 2, "Messages" in this book or the *IBM 4680 Store System: Messages Guide*.

```
+----+
|003|
+----+
```

- At the 4683, press **S1**, type **7**, and press **S2** to display the terminal number.
- When message W012 displays, note the terminal number in the message.
- Go to the store controller and follow this procedure to display the status of the 4683.

1. Press **System Request**.
2. Type **C**.
3. Type **1**.
4. Press **Enter**.
5. Type **1** again.
6. Press **Enter** again.
7. Type **xxx** (xxx = terminal number).
8. Press **Enter**.

- Wait at least 30 seconds for the 4683 to respond.

Did the status display?

Yes No

```
|
|
| +----+
| |004|
| +----+
```

- Continue at Step 006.

```
+----+
|005|
+----+
```

The store loop is operating correctly.

To run additional tests, see the table-of-contents on topic 4.0.

```
+----+
|006|
+----+
```

(From step 004)

- At the store controller, press **System Request** and then type **M**.

Did the store controller display message W760 or W764?

Yes No

|
+----+
|007|
+----+

- Continue at Step 010.

+----+
|008|
+----+

Did message W761 also display?

Yes No

|
+----+
|009|
+----+

For message W760, follow "PDP 6050: Store Loop Problem" in topic 6.5.

- or -

For message W764, follow "PDP 6210: W764 Message" in topic 6.21.

+----+
|010|
+----+

(From step 007)

- Switch **POWER OFF** at the 4683.

- Wait five seconds and switch power ON again.

Did the 4683 complete the IPL sequence OK?

Yes No

|
+----+
|011|
+----+

The failure symptom has changed.

Follow the *User Response* for the message. See Chapter 2, "Messages" in this book, the *IBM 4680 Store System: Messages Guide*.

- or -

Follow the *Repair Action* for the symptom. See Chapter 3, "Symptoms."

+----+
|012|
+----+

Is this a 4683-xx2?

Yes No

|
+----+
|013|
+----+

- Continue at Step 016.

+----+
|014|
+----+

- Go to its partner 4683-xx1.

- Switch **POWER OFF** at the 4683-xx1.

- Wait five seconds and switch power ON again.

Did the 4683-xx1 complete the IPL sequence OK?

Yes No

|
+----+
|015|
+----+

The failure symptom has changed.

| Follow the *User Response* for the message. See Chapter 2, "Messages"
| in this book, the *IBM 4680 Store System: Messages Guide*.

| - or -

| Follow the *Repair Action* for the symptom. See Chapter 3, "Symptoms."

+---+

|016|

+---+

(From step 013)

The store loop is operating correctly.

- If you are running this test to resolve a store loop problem:

1. Put the 4683 back in service.
2. If the same problem occurs, fill in a copy of the "Problem Data Collection Form" in topic B.7. Use keyword STORELOOP.
3. Request a storage dump. See "Requesting a 4683 Storage Dump" in topic B.2.
4. Report this problem to the store programmer and supply the preceding information.

4.18 TEST 4180: Storage Retention (4683-xx1 Only)

```

+-----+
| Test Description
+-----+
| This procedure verifies correct operation of storage retention in the
| 4683-xx1.
+-----+
  
```

PICTURE 37

Figure 4-36. Side Cover (Battery Access)

```

+----+
|001|
+----+
  
```

This procedure is for the 4683-xx1 ONLY.

Warning: This procedure interrupts user operations at an attached 4683-xx2 and can cause a 4683-xx1 to IPL.

Note: To fully charge the 4683-xx1 storage retention battery, power must be supplied to the 4683-xx1 through the power cord for approximately 16 hours. The battery charges enough to run this test if power is supplied for approximately 3 hours.

- Ensure the 4683 is powered-ON and ready to run this test.

Is message T0010 displayed?

Yes No

```

|
|
| +----+
| |002|
| +----+
  
```

The 4683-xx1 is not in Test Mode.

- Press **S1**, type **91**, and press **S2** to enter Test Mode.

When message T0010 displays, continue at Step 003.

```

+----+
|003|
+----+
  
```

(From step 002)

- Type **02** and press **S2** to start the storage retention test.

Is message T0201 displayed?

Yes No

```

|
|
| +----+
| |004|
| +----+
  
```

- Continue at Step 019.

```

+----+
|005|
+----+
  
```

- Remove the 4683-xx1 base unit side cover (dump switch access). See Figure 4-36.

Warning: Do not press the dump switch. If you press the dump switch, the 4683 will require an IPL.

- Unplug the battery cable.

- Switch **POWER OFF** at the 4683-xx1.

- Wait five seconds and switch power ON again.

Did U001 display followed by message T0201?

Yes No

```

|
|
| +----+
| |006|
| +----+
  
```

- Switch **POWER OFF** at the 4683.

Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+
|007|
+----+

- Reconnect the battery cable.

Warning: If you press the dump switch, the 4683 will require an IPL.

- Unplug the power cord from the power receptacle.

- Wait five seconds and plug the power cord back into the power receptacle.

Did U001 display followed by message T0201?

Yes No

|
+----+
|008|
+----+

Follow this list to isolate and correct the cause of the problem.

1. Exchange the battery pack (ensure the new pack is fully charged). See "4683 Battery Pack Removal and Replacement" in topic 7.28.4.
2. Switch **POWER OFF** and service the 4683-xx1 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+
|009|
+----+

- Press **S2** to continue.

Is message T0202 displayed?

Yes No

|
+----+
|010|
+----+

- Continue at Step 019.

+----+
|011|
+----+

Warning: The storage retention function is OFF. If ac power is removed, the 4683 will require an IPL.

Do you want to test the storage retention disable function?

Yes No

|
+----+
|012|
+----+

- Continue at Step 016.

+----+
|013|
+----+

- Unplug the power cord from the power receptacle.

- Wait five seconds and plug the power cord back into the power receptacle.

Did the 4683-xx1 complete the IPL sequence OK?

Yes No

|
+----+
|014|
+----+

Switch **POWER OFF** and service the 4683 base unit. For service

information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
+----+
| 015 |
+----+
```

The storage retention hardware is operating correctly.

To run additional tests, see the table-of-contents on topic 4.0.

```
+----+
| 016 |
+----+
```

(From step 012)

- Type **0** and press **S2** to stop the test.

Is message T0010 displayed?

Yes No

```
|      |
|      |
| +----+
| | 017 |
| +----+
```

- Continue at Step 019.

```
+----+
| 018 |
+----+
```

The storage retention hardware is operating correctly. To run additional tests, see the table-of-contents on topic 4.0

- or -

To exit Test Mode, type **99** and press **S2**.

```
+----+
| 019 |
+----+
```

(From steps 004, 010, and 017)

Follow the *User Response* for the displayed or printed message. See "Tnnnn Messages" in topic 2.7.

To end testing:

1. Type **0** and press **S2** to stop the test.
2. When message T0010 displays, type **99** and press **S2** to exit Test Mode.

4.19 TEST 4190: Totals Retention (4683/4684)

```
+-----+
| Test Description
+-----+
| This procedure verifies correct operation of totals retention in the
| point-of-sale terminal.
+-----+
```

```
+----+
|001|
+----+
```

Warning: This procedure interrupts user operations at an attached 4683-xx2 and can cause a 4683-xx1 to IPL.

Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

If the terminal number is zero when Test Mode is requested, message T0098 is displayed. The terminal number can be zero if:

Totals retention is failing.
-- or --
The terminal number has been reset to zero and a new terminal number has not been entered.

- Ensure the point-of-sale terminal is powered-ON and ready to run this test.

Is message T0010 displayed?

Yes No

```
|
|
+----+
|002|
+----+
```

The point-of-sale terminal is not in Test Mode.

- Press **S1**, type **91**, and press **S2** to enter Test Mode.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard,
Esc = **S1** and **Enter** = **S2**.

When message T0010 displays, continue at Step 003.

```
+----+
|003|
+----+
```

(From step 002)

- Type **01** and press **S2 (Enter)** to start the totals retention test.

After the test is loaded, two messages are displayed:

T0100 during test execution.
-- then --
Message T0010 after error free completion of the test.

Did message T0100 display followed by message T0010?

Yes No

```
|
|
+----+
|004|
+----+
```

- Continue at Step 006.

```
+----+
|005|
+----+
```

The totals retention hardware is operating correctly.

To run additional tests, see the table-of-contents on topic 4.0

- or -

To exit Test Mode, type **99** and press **S2 (Enter)**.

The user application program is reloaded.

+---+
|006|
+---+

(From step 004)

Follow the *User Response* for the displayed or printed message. See "Tnnnn Messages" in topic 2.7.

To end testing:

Type **0** and press **S2 (Enter)** to stop the test.
When message T0010 displays, type **99** and press **S2** to exit Test Mode.

4.20 TEST 4200: Video Display (4683 Only)

```
+-----+
| Test Description
+-----+
| This procedure verifies correct operation of Feature Expansion card A
| and the video display connected to socket 81 or 82 on the Feature
| Expansion card.
|
| Feature Expansion card A can be in location 2A or 2B in the 4683 base
| unit.
+-----+
```

```
+----+
|001|
+----+
```

This procedure is for the 4683 ONLY. For a video display on a 4684, see the "Testing the Video Display" in topic 5.4.4 .

System Display -- When multiple displays are attached to a point-of-sale terminal, one must be configured as the primary (system) display. When only one display is attached, it is the primary (system) display. System messages (Wnnn), test messages (Tnnnn), and other messages appear only on the primary (system) display.

Is this video display connected to socket 81 or 82 on the Feature Expansion card?

Yes No

```
|
|
| +----+
| |002|
| +----+
```

Go to the test procedure for the display cable/socket location.

For example: If the display is connected to socket 23 or 25 on a Feature Expansion card, go to "TEST 4160: Socket 23 or 25 Device (4683 RS-232 or Current Loop)" in topic 4.16 to test these sockets.

```
+----+
|003|
+----+
```

- Ensure the 4683 powered-ON and ready to run this test.
- Press **S1**, type **91**, and press **S2** to enter Test Mode.

The following two messages are displayed:

```
Message W008
-- then --
Message T0010
```

Did message W008 display followed by message T0010 at any of the attached displays?

Yes No

```
|
|
| +----+
| |004|
| +----+
```

- Continue at Step 006.

```
+----+
|005|
+----+
```

- Continue at Step 012.

```
+----+
|006|
+----+
```

(From step 004)

Did any Tnnnn messages print on the point-of-sale printer?

Yes No

```
|
|
| +----+
| |007|
| +----+
```

- Continue at Step 009.

|
+----+
| 008 |
+----+

Follow the *User Response* for the message. See "Tnnnn Messages" in topic 2.7.

+----+
| 009 |
+----+
(From step 007)

Is anything displayed on the video display being tested?

Yes No

|
| |
| +----+
| | 010 |
| +----+
|

Follow "PDP 6020: Blank Video Display" in topic 6.2.

+----+
| 011 |
+----+

Switch **POWER OFF** at the 4683, unplug the video display power cord, and follow this list to isolate and correct the cause of the problem.

1. Exchange Feature Expansion card for the failing video display. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
2. Exchange the video display. See "Video Display (Except 5-Inch) Removal and Replacement" in topic 7.23.

+----+
| 012 |
+----+
(From step 005)

- Type **80** and press **S2** to start the video display test.

If there are two video displays attached to Feature Expansion card sockets 81 and 82, this test exercises both displays.

Did a T805n or T806n message display at any of the attached displays (n = any number)?

Yes No

|
| |
| +----+
| | 013 |
| +----+
|

- Continue at Step 015.

+----+
| 014 |
+----+

Follow the *User Response* for the message. See "Tnnnn Messages" in topic 2.7.

+----+
| 015 |
+----+
(From step 013)

- Observe the attribute pattern test on the video display(s).

Note: You may have to adjust the contrast to be able to observe the intensified line.

The video display attribute test pattern displays lines demonstrating each of these attributes.

- A normal line
- A blank line
- A normal line
- A reverse video line
- An underlined line

- A blinking line
- An intensified line.

Note: The intensified line does not appear to be intensified on a 14-inch color display.

Are the characters on the display in focus?

Yes No

```
|
|
| +---+
| |016|
| +---+
```

Switch **POWER OFF** at the 4683, unplug the video display power cord, and follow this list to correct the cause of the problem.

1. Exchange Feature Expansion card for the failing video display. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
2. Exchange the video display. See "Video Display (Except 5-Inch) Removal and Replacement" in topic 7.23.
3. Exchange the video display cable. See "Cable Sockets and Devices" in topic C.7.

```
+---+
|017|
+---+
```

Did the attribute test pattern display as described?

Yes No

```
|
|
| +---+
| |018|
| +---+
```

- Switch **POWER OFF** at the 4683 and unplug the video display power cord.
- Examine the video display cable and socket 81 or 82 on the Feature Expansion card for loose or damaged connections. See "Cable Sockets and Devices" in topic C.7.

If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.

1. Exchange Feature Expansion card for the failing video display. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
2. Exchange the video display. See "Video Display (Except 5-Inch) Removal and Replacement" in topic 7.23.
3. Exchange the video display cable.

```
+---+
|019|
+---+
```

- Press **S2** to display the character generator test pattern.

The character generator test pattern of all 256 possible characters is displayed.

On a 6x20 display, three screens are required to display the character generator patterns. Press **S2** to view each screen.

Did the character generator test pattern display as described?

Yes No

```
|
|
| +---+
| |020|
| +---+
```

Switch **POWER OFF** at the 4683, unplug the video display power cord, and follow this list to isolate and correct the cause of the problem.

1. Exchange the Feature Expansion card for the video display. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.

2. Exchange the video display. See "Video Display (Except 5-Inch) Removal and Replacement" in topic 7.23.

+----+
| 021 |
+----+

- Press **S2** to display the first of five **aU...** test patterns.

The **aU...** test pattern consists of a lower case **a** and an upper case **U** with the **a** underlined. The screen is completely filled with the test pattern.

Each time you press **S2**, a test pattern with a different attribute is displayed. The attributes are:

- A normal screen
- A reverse video screen
- A blinking screen
- An intensified screen
- An underlined screen.

- Press **S2** until all five test patterns have been displayed.

Did all test patterns and attributes display as described?

Yes No

|
+----+
| 022 |
+----+

- If an error message is displayed or printed, continue at Step 028.

If an error message is **not** displayed or printed, switch **POWER OFF** at the 4683, unplug the video display power cord, and follow this list to isolate and correct the cause of the problem.

1. Exchange the Feature Expansion card for the video display. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
2. Exchange the video display. See "Video Display (Except 5-Inch) Removal and Replacement" in topic 7.23.

+----+
| 023 |
+----+

If you are testing one or two monochrome displays, the test stops when you press **S2** after the last test pattern.

If you are testing a color display **or** a color display and a monochrome display, the color test starts when you press **S2** after the last test pattern.

Are you testing a color display?

Yes No

|
+----+
| 024 |
+----+

- Continue at Step 027.

+----+
| 025 |
+----+

- Press **S2** to start the color test.

- Observe the colors that are displayed.

Are the colors OK?

Yes No

|
+----+
| 026 |
+----+

Switch **POWER OFF** at the 4683, unplug the video display power cord, and follow this list to isolate and correct the cause of the problem.

1. Exchange the color display. See "Video Display (Except 5-Inch)

Removal and Replacement" in topic 7.23.

2. Exchange the Feature Expansion card for the color display. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
3. Exchange the color display cable. See "Cable Sockets and Devices" in topic C.7.

+----+
|027|

+----+

(From step 024)

The video display hardware is operating correctly.

- Press **S2** to stop the test.
- When message T0010 displays, type **99** and press **S2** to exit Test Mode.

The user application program is reloaded.

To run additional tests, see the table-of-contents on topic 4.0.

The software can also cause video display problems.

- If you are running this test to resolve a video display problem:
 1. Put the 4683 back in service.
 2. If the same problem occurs, fill in a copy of the "Problem Data Collection Form" in topic B.7. Use keyword DISPLAY.
 3. Request a storage dump. See "Requesting a 4683 Storage Dump" in topic B.2.
 4. Report this problem to the store programmer and supply the preceding information.

+----+

|028|

+----+

(From step 022)

Follow the *User Response* for the displayed or printed message. See "Tnnnn Messages" in topic 2.7.

To end testing:

1. Type **0** and press **S2** to stop the test.
 2. When message T0010 displays, type **99** and press **S2** to exit Test Mode.
-

4.21 TEST 4210: 1520 Hand-Held Scanner Model A01 (4683 Only)

```

+-----+
| Test Description |
+-----+
| This procedure verifies correct operation of the Feature Expansion |
| card (B, C, or D) for the point-of-sale scanner or the 1520 Hand-Held |
| Scanner Model A01. |
| |
| The scanners are connected to socket 21 on the Feature Expansion card. |
| |
| The Feature Expansion card can be in location 2A or 2B in the 4683 |
| base unit. |
| |
| Note: This device is a UPC or EAN bar code reader. |
+-----+

```

PICTURE 38

Figure 4-37. 1520 Hand-Held Scanner Model A01

```

+----+
|001|
+----+

```

This procedure is for the 4683 ONLY.

- Ensure the 4683 powered-ON and ready to run this test.

Is message T0010 displayed?**Yes No**

```

| |
| |
| +----+ |
| |002| |
| +----+ |

```

The 4683 is not in Test Mode.

- Press **S1**, type **91**, and press **S2** to enter Test Mode.

When message T0010 displays, continue at Step 003.

```

+----+
|003|
+----+

```

(From step 002)

- Ensure that the 1520 Model A01 is powered-ON.

- Type **211** and press **S2** to start the 1520 Model A01 test.**Is message T2101 displayed?****Yes No**

```

| |
| |
| +----+ |
| |004| |
| +----+ |

```

- Continue at Step 025.

```

+----+
|005|
+----+

```

When the 1520 Model A01 reads successfully:

- The 1520 Model A01 DECODE light flashes.
- A beep sounds.
- Label data is formatted and printed on the point-of-sale printer.
- Message T2101 continues to display.

- Read all test labels on the test card that was supplied with the 1520 Model A01.

Did the data print for each test label?**Yes No**

```

| |
| |
| +----+ |
| |006| |

```



```
| +---+  
|  
| - Continue at Step 013.  
|  
+---+  
|007|  
+---+
```

- Compare the printed data with the labels that were read. See Figure 4-38 and Figure 4-39.

Does the printed data match the labels?

Yes No

```
| |  
| +---+  
| |008|  
| +---+  
|  
| - Continue at Step 010.  
|  
+---+  
|009|  
+---+
```

The 1520 Model A01 hardware is operating correctly.

At this point any valid label from the store may be read and printed. If all test labels read correctly but problems occur while reading a store label, this indicates the store label is defective.

- Type **0** and press **S2** to stop the test.
- When message T0010 displays, type **99** and press **S2** to exit Test Mode.

The user application program is reloaded.

To run additional tests, see the table-of-contents on topic 4.0.

The software can also cause 1520 Model A01 problems.

- If you are running this test to resolve a 1520 Model A01 problem:
 1. Put the 4683 back in service.
 2. If the same problem occurs, fill in a copy of the "Problem Data Collection Form" in topic B.7. Use keyword 1520-A01.
 3. Request a storage dump. See "Requesting a 4683 Storage Dump" in topic B.2.
 4. Report this problem to the store programmer and supply the preceding information.

PICTURE 39

Figure 4-38. Label Data Formats Printed by this Test

```
+---+  
|010|  
+---+  
(From step 008)
```

Is message T2101 still displayed?

Yes No

```
| |  
| +---+  
| |011|  
| +---+  
|  
| - Continue at Step 025.  
|  
+---+  
|012|  
+---+
```

- Switch **POWER OFF** at the 4683.
- Switch **POWER OFF** at the 1520 Model A01 console and unplug the console power cord. See Figure 4-37.

- Examine the 1520 Model A01 output cable and sockets for damage or a loose connection. See "Cable Sockets and Devices" in topic C.7.

If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.

1. Exchange the 1520 Model A01. See "1520 Hand-Held Scanner Model A01 Removal and Replacement (4683 Only)" in topic 7.25.
2. Exchange the 1520 Model A01 output cable.
3. Exchange the Feature Expansion card for the 1520 Model A01. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.

+----+
|013|
+----+
(From step 006)

Is message T2101 still displayed?
Yes No

| |
| +----+
| |014|
| +----+
| - Continue at Step 025.
|

+----+
|015|
+----+

Some error messages are not displayed on the first failure.

- Read the test labels again.

Is message T2101 still displayed?
Yes No

| |
| +----+
| |016|
| +----+
| - Continue at Step 025.
|

+----+
|017|
+----+

(From step 025)

- Switch **POWER OFF** at the 4683.
- Switch **POWER OFF** at the 1520 Model A01 console and unplug the console power cord. See Figure 4-37.
- Disconnect the 1520 Model A01 output cable from the console.
- Plug in the 1520 Model A01 console power cord.
- Switch power ON at the 1520 Model A01 console.

The 1520 Model A01 beeps three times indicating that it is operating correctly.

Did the 1520 Model A01 beep three times?
Yes No

PICTURE 40

Figure 4-39. Examples of UPC and EAN Labels

| |
| +----+
| |018|
| +----+
| - Ensure ac power is present and that the power supply is correctly
| connected to the 1520 Model A01 console. See Figure 4-37.
|
| - Ensure the input voltage and frequency rating on the power supply

are correct for the store.

- If these items are OK, switch **POWER OFF** at the 1520 Model A01 console and unplug the console power cord.

Exchange the 1520 Model A01.

+----+
|019|
+----+

- Read all test labels on the test card that was supplied with the 1520 Model A01.

As each label is read:

1. The decode light on the 1520 Model A01 comes ON.
2. After approximately ten seconds it goes OFF.
3. The unit beeps three times, indicating normal operation when not connected to the 4683.

Did the 1520 Model A01 work as described?

Yes No

|
|
+----+
|020|
+----+

- Continue at Step 022.

+----+
|021|
+----+

The 1520 Model A01 is working correctly while offline.

- Switch **POWER OFF** at the 1520 Model A01 console and unplug the console power cord. See Figure 4-37.

- Examine the 1520 Model A01 output cable and sockets for damage or a loose connection. See "Cable Sockets and Devices" in topic C.7.

If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.

1. Exchange the Feature Expansion card for the 1520 Model A01. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
2. Exchange the 1520 Model A01. See "1520 Hand-Held Scanner Model A01 Removal and Replacement (4683 Only)" in topic 7.25.
3. Exchange the 1520 Model A01 output cable.

+----+
|022|
+----+

(From step 020)

Does the 1520 Model A01 emit a continuous tone when the trigger is pressed?

Yes No

|
|
+----+
|023|
+----+

- Switch **POWER OFF** at the 1520 Model A01 console and unplug the console power cord.

Exchange the 1520 Model A01. See "1520 Hand-Held Scanner Model A01 Removal and Replacement (4683 Only)" in topic 7.25.

+----+
|024|
+----+

The gas tank is empty. Leave power ON and allow the 1520 Model A01 to rest approximately 16 minutes to restore normal operation. Repeat this test after 16 minutes.

- If the 1520 Model A01 is still failing, switch **POWER OFF** at the 1520 Model A01 console and unplug the console power cord.

Exchange the 1520 Model A01. See "1520 Hand-Held Scanner Model A01 Removal and Replacement (4683 Only)" in topic 7.25.

Note: The gas tank is a laser safety feature required for class IIa laser devices. It ensures that the laser is ON less than 90 seconds out of the last 1000 seconds.

+---+

|025|

+---+

(From steps 004, 011, 014, and 016)

- If message T2152 is displayed, continue at Step 017.

-- otherwise --

Follow the *User Response* for the displayed or printed message. See "Tnnnn Messages" in topic 2.7.

To end testing:

1. Type **0** and press **S2** to stop the test.
2. When message T0010 displays, type **99** and press **S2** to exit Test Mode.

4.22 TEST 4220: 1520 Hand-Held Scanner Model A02 (4683/4684)

```

+-----+
| Test Description |
+-----+
| This procedure verifies correct operation of the 1520 Hand-Held |
| Scanner Model A02 connected to socket 5B. |
+-----+

```

PICTURE 41

Figure 4-40. 1520 Hand-Held Scanner Model A02

```

+----+
|001|
+----+

```

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

- Ensure the point-of-sale terminal is powered-ON and ready to run this test.

Is message T0010 displayed?

Yes No

```

| |
| |
| +----+ |
| |002| |
| +----+ |
| |

```

The point-of-sale terminal is not in Test Mode.

- Press **S1**, type **91**, and press **S2** to enter Test Mode.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard,
Esc = **S1** and **Enter** = **S2**.

When message T0010 displays, continue at Step 003.

```

+----+
|003|
+----+

```

(From step 002)

- Ensure that the 1520 Model A02 is powered-ON.

- Type **54** and press **S2 (Enter)** to start the 1520 Model A02 test.

Is message T5401 displayed?

Yes No

```

| |
| |
| +----+ |
| |004| |
| +----+ |
| |

```

- Continue at Step 025.

```

+----+
|005|
+----+

```

When the 1520 Model A02 reads successfully:

- The 1520 Model A02 DECODE light flashes.
- A beep sounds.
- Label data is formatted and printed on the point-of-sale printer.
- Message T5401 is displayed again.

- Read all test labels on the test card that was supplied with the 1520 Model A02.

Did the data print for each test label?

Yes No

```

| |
| |
| +----+ |
| |006| |
| +----+ |
| |

```

- Continue at Step 010.

```
|  
+----+  
|007|  
+----+
```

- Compare the printed data with the labels that were read. See Figure 4-41 and Figure 4-42.

Does the printed data match the labels?

Yes No

```
| |  
| |  
| +----+  
| |008|  
| +----+  
| |
```

- Continue at Step 022.

```
+----+  
|009|  
+----+
```

The 1520 Model A02 hardware is operating correctly.

At this point any valid label from the store may be read and printed. If all test labels read correctly but problems occur while reading a store label, this indicates the store label is defective.

- Type **0** and press **S2 (Enter)** to stop the test.
- When message T0010 displays, type **99** and press **S2** to exit Test Mode.

The user application program is reloaded.

To run additional tests, see the table-of-contents on topic 4.0.

The software can also cause 1520 Model A02 problems.

- If you are running this test to resolve a 1520 Model A02 problem:

1. Put the point-of-sale terminal back in service.
2. If the same problem occurs, fill in a copy of the "Problem Data Collection Form" in topic B.7. Use keyword 1520-A02.
3. Request a storage dump. See "Requesting a 4683 Storage Dump" in topic B.2.
4. Report this problem to the store programmer and supply the preceding information.

PICTURE 42

Figure 4-41. Label Data Formats Printed by this Test

```
+----+  
|010|  
+----+  
(From step 006)
```

Is message T5401 still displayed?

Yes No

```
| |  
| |  
| +----+  
| |011|  
| +----+  
| |
```

- Continue at Step 025.

```
+----+  
|012|  
+----+
```

Some error messages are not displayed on the first failure.

- Read the test labels again.

Is message T5401 still displayed?

Yes No

```
| |  
| +----+
```

```
| |013|  
+---+  
|  
- Continue at Step 025.  
|
```

```
+---+  
|014|  
+---+
```

- Switch **POWER OFF** at the point-of-sale terminal.
- Switch **POWER OFF** at the 1520 Model A02 console and unplug the console power cord. See Figure 4-40.
- Disconnect the 1520 Model A02 output cable from the console.
- Plug in the 1520 Model A02 console power cord.
- Switch power ON at the 1520 Model A02 console.

The 1520 Model A02 beeps three times indicating that it is operating correctly.

Did the 1520 Model A02 beep three times?

Yes No

```
| |  
+---+  
| |015|  
+---+  
|  
- Ensure ac power is present and that the power supply is correctly  
  connected to the 1520 Model A02 console. See Figure 4-40.  
|  
- Ensure the input voltage and frequency rating on the power supply  
  are correct for the store.  
|  
- If these items are OK, switch POWER OFF at the 1520 Model A02  
  console and unplug the console power cord.  
|  
Exchange the 1520 Model A02.  
|
```

```
+---+  
|016|  
+---+
```

- Read all test labels on the test card that was supplied with the 1520 Model A02.

As each label is read:

1. The decode light on the 1520 Model A02 comes ON.
2. After approximately ten seconds it goes OFF.
3. The unit beeps three times, indicating normal operation when not connected to the point-of-sale terminal.

Did the 1520 Model A02 work as described?

Yes No

PICTURE 43

Figure 4-42. Examples of UPC and EAN Labels

```
| |  
+---+  
| |017|  
+---+  
|  
- Continue at Step 019.  
|
```

```
+---+  
|018|  
+---+
```

The 1520 Model A02 is working correctly while offline.

- Switch **POWER OFF** at the 1520 Model A02 console and unplug the console power cord. See Figure 4-40.
- Examine the 1520 Model A02 output cable and sockets for damage or a loose connection. See "Cable Sockets and Devices" in topic C.7.

If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.

1. Exchange the 1520 Model A02 output cable.
2. If present, exchange the Y cable. This cable allows the dual-track MSR and the 1520 Model A02 to be attached to socket 5B at the same time.
3. Exchange the 1520 Model A02. See "1520 Hand-Held Scanner Model A02 Removal and Replacement" in topic 7.26.
4. Service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

 +---+
 | 019 |
 +---+
 (From step 017)

Does the 1520 Model A02 emit a continuous tone when the trigger is pressed?

Yes No

| |
 | +---+
 | | 020 |
 | +---+
 | - Switch **POWER OFF** at the 1520 Model A02 console and unplug the console power cord.
 |
 | Exchange the 1520 Model A02. See "1520 Hand-Held Scanner Model A02 Removal and Replacement" in topic 7.26.
 |

+---+
 | 021 |
 +---+

The gas tank is empty. Leave power ON and allow the 1520 Model A02 to rest approximately 16 minutes to restore normal operation. Repeat this test after 16 minutes.

- If the 1520 Model A02 is still failing, switch **POWER OFF** at the 1520 Model A02 console and unplug the console power cord.

Exchange the 1520 Model A02. See "1520 Hand-Held Scanner Model A02 Removal and Replacement" in topic 7.26.

Note: The gas tank is a laser safety feature required for class IIa laser devices. It ensures that the laser is ON less than 90 seconds out of the last 1000 seconds.

 +---+
 | 022 |
 +---+
 (From step 008)

Is message T5401 still displayed?

Yes No

| |
 | +---+
 | | 023 |
 | +---+
 | - Continue at Step 025.
 |

+---+
 | 024 |
 +---+

- Switch **POWER OFF** at the point-of-sale terminal.

- Switch **POWER OFF** at the 1520 Model A02 console and unplug the console power cord. See Figure 4-40.

- Examine the 1520 Model A02 output cable and sockets for damage or a loose connection. See "Cable Sockets and Devices" in topic C.7.

If the cable, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.

1. Exchange the 1520 Model A02. See "1520 Hand-Held Scanner Model A02 Removal and Replacement" in topic 7.26.
2. Exchange the 1520 Model A02 output cable.
3. If present, exchange the **Y** cable. This cable allows the dual-track MSR and the 1520 Model A02 to be attached to socket 5B at the same time.
4. Service the 4683 base unit or 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+---+
|025|
+---+

(From steps 004, 011, 013, and 023)

Follow the *User Response* for the displayed or printed message. See "Tnnnn Messages" in topic 2.7.

To end testing:

1. Type **0** and press **S2 (Enter)** to stop the test.
 2. When message T0010 displays, type **99** and press **S2** to exit Test Mode.
-

4.23 TEST 4230: Point of Sale Terminal Verification (4683/4684)

Test Description

When the 4680 Operating System is running, the terminal verification tests (sometimes called CSU tests) verify correct operation of the Feature Expansion cards in the 4683 and the point-of-sale devices connected to the 4683 base unit or 4684 system unit. The progress and results of these tests is shown as a series of messages on the point-of-sale terminal display.

The tests run for the Feature Expansion cards and point-of-sale devices that are configured for the point-of-sale terminal.

Tests are bypassed for the Feature Expansion cards and point-of-sale devices that are **not** configured.

The following list contains the test messages in the order in which they are displayed for a successful test run.

Ensure the point-of-sale terminal is powered-ON and ready to run this test.

If the testing stops with a message displayed that is not in the following table, follow the *User Response* for the message after completion of the remaining verification tests. See Chapter 2, "Messages" in this book or the *IBM 4680 Store System: Messages Guide*.

Some tests require that you press some keys or take some other action in order to perform parts of the procedure. This action, if required, is included in the *User Response* column for each test.

To start the terminal verification tests, press **S1**, type **92**, and press **S2**. Once the tests begin, use the following list to find the *User Response* for each of the displayed messages.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.

Table 4-1. Terminal Verification Test

Device	Message Number	User Response
- START -	W008	None
(Ready Message)	T0016	Terminal Verification (CSU) mode has started. To start testing, press S2 .
(Ready Message)	T0015	The point-of-sale terminal is ready to start testing. To start testing, press S2 . -- or -- To skip testing, type 0 and press S2 .
Totals Retention	T0100	None
Keyboard	T5101	If the tone does not sound or seems to be incorrect, run "TEST 4090: Point of Sale Keyboard (4683/4684)" in topic 4.9 after completion of the remaining verification tests.
Keyboard	T5102	If the tone does not sound or seems to be incorrect, run "TEST 4090: Point of Sale Keyboard (4683/4684)" in topic 4.9 after completion of the remaining verification tests.
Keyboard	T5103	If the tone does not sound or seems to be incorrect, run "TEST 4090: Point of Sale Keyboard (4683/4684)" in topic 4.9 after completion of the remaining verification tests.
Keyboard	T5104	If the tone does not sound or seems to

		be incorrect, run "TEST 4090: Point of Sale Keyboard (4683/4684)" in topic 4.9 after completion of the remaining verification tests.
Keyboard	T5105	If the tone does not sound or seems to be incorrect, run "TEST 4090: Point of Sale Keyboard (4683/4684)" in topic 4.9 after completion of the remaining verification tests.
Keyboard	T5106	If the tone does not sound or seems to be incorrect, run "TEST 4090: Point of Sale Keyboard (4683/4684)" in topic 4.9 after completion of the remaining verification tests.
Keyboard	T5107	Press S2 . If you do not press S2 at this time, the tone test starts again, repeats all tones, and then pauses again for you to press S2.
Keyboard	T5108	All keyboard lights come ON for one-half second. The lights then come ON one at a time (from left to right) for one-half second each. If this keyboard light sequence does not operate correctly, run "TEST 4090: Point of Sale Keyboard (4683/4684)" in topic 4.9 after completion of the remaining verification tests.
Keyboard	T5109	Press S2 . If you do not press S2 at this time, the keyboard lights test starts again, repeats all lights, and then pauses again for you to press S2.
Keyboard	A matrix pattern representing the keyboard is displayed. Note: If you have the alphanumeric keyboard or the matrix keyboard, only a part of the keyboard is shown on the display. The display changes to show each section of the keyboard as it is tested.	Turn the manager's keylock to the ON (counterclockwise) position. The corresponding rectangular character on the screen changes to X. Each time you press a key, its corresponding symbol changes to X. If any of the keys do not operate correctly, run "TEST 4090: Point of Sale Keyboard (4683/4684)" in topic 4.9 after completion of the remaining verification tests. To stop the test, type 0 and press S2 . The next device test is loaded.
MSR	T6101	Slide the IBM-supplied test card through the MSR. If message T6102 does not display, run "TEST 4060: Magnetic Stripe Reader (4683/4684 MSR)" in topic 4.6 after completion of the remaining verification tests.
MSR	T6102	Slide the IBM-supplied test card through the MSR a second time. If this message does not display again, run "TEST 4060: Magnetic Stripe Reader (4683/4684 MSR)" in topic 4.6 after completion of the remaining verification tests. To end the test, press S2 . The next device test is loaded.

Alphanumeric Display -- or -- Operator Display -- or -- Combined Keyboard/Display	Shifting vertical and horizontal double-bar patterns are displayed.	If any of the patterns appear to be incorrect, run "TEST 4010: Alphanumeric, Operator, or Combined Keyboard/Display (4683/4684)" in topic 4.1 after completion of the remaining verification tests. <i>This test runs continuously until you stop it.</i> To stop the test, type 0 and press S2 . The next device test is loaded.
Shopper Display	Vertical and horizontal bars, and 8s with periods and commas are displayed.	If any of the patterns appear to be incorrect, run "TEST 4150: Shopper Display (4683/4684)" in topic 4.15 after completion of the remaining verification tests. <i>This test runs continuously until you stop it.</i> To stop the test, type 0 and press S2 . The next device test is loaded.
Video Display (4683 Only)	Next line is blank Normal Reverse Underlined Blinking Intensified	A series of test pattern screens is displayed, one each time you press S2 , until all have been displayed. The verification test then continues. If any of the patterns appear to be incorrect, run "TEST 4200: Video Display (4683 Only)" in topic 4.20 after completion of the remaining verification tests. Press S2 . The next device test is loaded or if a color display is attached, a color test is displayed. If any of the colors appear to be incorrect, run "TEST 4200: Video Display (4683 Only)" in topic 4.20 after completion of the remaining verification tests. Press S2 . The next device test is loaded.
Printer Model 1, 2, or 3	T7110	Press S2 to stop printing. If any of the printer tests do not operate correctly, run "TEST 4100: Point of Sale Printer (4683/4684)" in topic 4.10 after completion of the remaining verification tests. The next device test is loaded.
Printer Model 1, 2, or 3	T7101	Check the printer receipt station to see if the IH... pattern has printed. Press S2 . The next printer test begins.
Printer Model 1, 2, or 3	T7120	Press S2 to stop printing. Check the printer journal station to see if the IH... pattern has printed.
Printer Model 1, 2, or 3	T7131	Insert a document into the printer. If this is a Model 1 or 2 printer, press the I button on the printer. Press S2 .
Printer Model 1, 2, or 3	T7130	Press S2 to stop printing. Check the printing on the inserted document to see if the IH... pattern has printed.
Printer Model 1, 2,	T7132	Remove the inserted document from the printer.

or 3		Press S2 . The next device test is loaded.
Cash Drawer	T3100 T3101 T3102 T3110 T3111 T3112 T3120 T3121 T3122	The present status of each cash drawer is tested and displayed. Open and close each cash drawer while observing the display. To open the cash drawers with the program, turn the keyboard manager's keylock to the ON (counterclockwise) position and type 11 and press S2 for drawer A. Type 22 and press S2 for drawer B. If any cash drawer fails to operate correctly, run "TEST 4020: Cash Drawer (4683/4684)" in topic 4.2 after completion of the remaining verification tests. To stop the test, type 0 and press S2 . The next device test is loaded.
Remote Alarm	T3401	If the remote alarm does not operate correctly, run "TEST 4130: Remote Alarm (4683/4684)" in topic 4.13 after completion of the remaining verification tests. <i>This test runs continuously until you stop it.</i>
Remote Alarm	T3402	To stop the test, type 0 and press S2 . The next device test is loaded.
Socket 23 or 25	T2300	The next device test is loaded following the completion of this test.
RS-232 or Current Loop (4683 Only)	T2301 -- or -- T2310	If this test does not run correctly, run "TEST 4160: Socket 23 or 25 Device (4683 RS-232 or Current Loop)" in topic 4.16 after completion of the remaining verification tests.
1520 Hand-Held Scanner Model A01 -- or -- OCR Device (4683 Only)	T2100	None.
1520 Hand-Held Scanner Model A01 -- or -- OCR Device (4683 Only)	T2101 -- or -- T2102	Use the device to read a label. The label data is printed. If the 1520 Model A01 does not operate correctly, run "TEST 4210: 1520 Hand-Held Scanner Model A01 (4683 Only)" in topic 4.21 after completion of the remaining verification tests. If the OCR device does not operate correctly, run "TEST 4080: Optical Character Reader (4683 Only)" in topic 4.8 after completion of the remaining verification tests. Press S2 . The next device test is loaded.
Point of Sale Scanner	T1701	Use the scanner to read a label. The label data is printed. If the scanner does not operate correctly, continue problem determination using the maintenance documentation for the scanner after completion of the remaining verification tests.

		<p><input type="checkbox"/> If the scanner is a 3687 Checkout Scanner Model 2, run "TEST 4110: Point of Sale Scanner (4683/4684)" in topic 4.11.</p> <p><input type="checkbox"/> If the scanner is not a 3687 Checkout Scanner Model 2, continue problem determination using the maintenance documentation for the scanner.</p> <p>Press S2. The next device test is loaded.</p>
1520 Hand-Held Scanner Model A02	T5401	<p>Use the 1520 Model A02 to read a label. The label data is printed.</p> <p>If the 1520 Model A02 does not operate correctly, run "TEST 4220: 1520 Hand-Held Scanner Model A02 (4683/4684)" in topic 4.22 after completion of the remaining verification tests.</p> <p>Press S2. The next device test is loaded.</p>
Hand-Held Bar Code Reader	T9401	<p>Use the hand-held bar code reader to read a label. The label data is printed.</p> <p>If the hand-held bar code reader does not operate correctly, run "TEST 4050: Hand-Held Bar Code Reader (4683/4684)" in topic 4.5 after completion of the remaining verification tests.</p> <p>Press S2. The next device test is loaded.</p>
Magnetic Wand (4683 Only)	T2601	<p>Wand a good label.</p>
Magnetic Wand (4683 Only)	T2603	<p>Wand a good label.</p> <p>If the magnetic wand does not operate correctly, run "TEST 4070: Magnetic Wand (4683 Only)" in topic 4.7 after completion of the remaining verification tests.</p> <p>Press S2. The next device test is loaded.</p>
Scale (4683 Only)	T2103	<p>Place test weight on scale. The weight on the scale is displayed.</p> <p>The weight displayed on the <i>scale</i> display should equal the weight displayed on the point-of-sale display.</p> <p>If the scale is a non-IBM scale and it does not operate correctly, run "TEST 4140: Scale (4683 Only)" in topic 4.14 after completion of the remaining verification tests.</p> <p>If the scale is an IBM scale, continue problem determination using the maintenance documentation for the scale after completion of the remaining verification tests.</p> <p>Press S2. The next device test is loaded.</p>
Coin Dispenser (4683 Only)	T2901	<p>At the keyboard, type an amount that is valid for the coin dispenser. The test accepts any amount from 01 through 9999.</p>

		<p>If the coin dispenser does not operate correctly, run "TEST 4030: Coin Dispenser (4683 Only)" in topic 4.3 after completion of the remaining verification tests.</p> <p>Press S2. The next device test is loaded.</p>
<p>Storage Retention (4683 Only)</p>	T0201	<p>The test program has enabled Storage Retention.</p> <p>Switch POWER OFF at the point-of-sale terminal, and then ON again.</p> <p>If Storage Retention performed correctly, message T0201 is displayed again after power is switched ON. If you want to perform a complete Storage Retention test, including the battery, run "TEST 4180: Storage Retention (4683-xx1 Only)" in topic 4.18 after completion of the remaining verification tests.</p> <p>Press S2 to continue.</p>
<p>Storage Retention (4683 Only)</p>	T0202	<p>The test program has disabled Storage Retention.</p> <p>Before leaving this test, the program returns Storage Retention to the status that it was in when the test started.</p> <p>Press S2. All verification tests have been completed.</p>
<p>Completion Indicator</p>	T0041	<p>The Terminal Verification Test is complete. The default application program is loaded.</p>

4.24 Point of Sale Terminal Test Procedure Summary

To run tests on a 4683-xx1, it must be connected to an operating store loop, its initial program load (IPL) must be completed, and it must have the 4680 Operating System running.

To run tests on a 4683-xx2, it must be connected to a 4683-xx1 or 4684 that has completed its IPL and has the 4680 Operating System running.

To run tests on a 4684, its (IPL) must be completed and it must have the 4680 Operating System running.

Entering Test Mode	
1.	Ensure the point-of-sale terminal is powered-ON and ready to run the test.
2.	Press S1 , type 91 , and press S2 to enter Test Mode. On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, Esc = S1 and Enter = S2 .
3.	Message W008 PROGRAM IS BEING LOADED is displayed.
4.	Message T0010 ENTER TEST REQUEST is displayed. This indicates the point-of-sale terminal is in Test Mode.

The following is an alphabetical summary of test procedures that are used to verifying the correct operation of point-of-sale terminal devices and features. This is intended for use as a guide only. Complete details can be found on the topics listed for each procedure.

Device to be Tested	Topic	When T0010 displays:	Comments
Alphanumeric Display -- or -- Operator Display -- or -- Combined Keyboard / Display	4.1	Type 41 and press S2 .	A pattern of double vertical bars shifts across the display. A pattern of double horizontal bars shifts down the display. Type 1 and press S2 to RESTART the test. Type 0 and press S2 to STOP the test.
Cash Drawer	4.2	Type 31 and press S2 .	The current status of each cash drawer is displayed. Open and close each drawer with the cash drawer key. To open the each drawer with the program, turn the keyboard manager's keylock to the ON (counterclockwise) position and: Type 11 and press S2 to open drawer A. Type 22 and press S2 to open drawer B. Type 1 and press S2 to RESTART the test. Type 0 and press S2 to STOP the test.
Coin Dispenser (4683 Only)	4.3	Type 291 and press S2 .	At the keyboard, type 01 to 9999 and press S2 to dispense coins. Type 1 and press S2 to RESTART the test. Type 0 and press S2 to STOP the test.
Dump Switch (4683 Only)	4.4	Press the dump switch after the IPL has progressed to	Message U008 is displayed while the storage dump is created (as long as five minutes).

		message U006. Warning: This procedure causes the 4683-xx1 to IPL and interrupts user operations at an attached 4683-xx2.	The store controller logs the storage dump event in a System Log record. The 4683-xx1 automatically IPLs after the dump data is transferred to the store controller.
Hand-Held Bar Code Reader	4.5	Type 94 and press S2 .	Use the hand-held bar code reader to read a label. The label data is printed. Type 1 and press S2 to RESTART the test. Type 0 and press S2 to STOP the test.
Keyboard <input type="checkbox"/> 50-key <input type="checkbox"/> Alphanumeric <input type="checkbox"/> ANPOS <input type="checkbox"/> Combined Keyboard/Display <input type="checkbox"/> Matrix	4.9	Type 51 and press S2 .	The keyboard tone test runs continuously until you press S2 at the prompt. The keyboard lights test runs continuously until you press S2 at the prompt. The keyboard key test is started, allowing a visual check of each key. Type 1 and press S2 to RESTART the test. Type 0 and press S2 to STOP the test.
MSR	4.6	Type 61 and press S2 .	Slide the IBM-supplied test card through the MSR. Type 1 and press S2 to RESTART the test. Type 0 and press S2 to STOP the test.
Magnetic Wand (4683 Only)	4.7	Type 261 and press S2 .	Wand a magnetic label. A beep sounds on a good read and label data prints at the customer receipt station of the printer. Type 1 and press S2 to RESTART the test. Type 0 and press S2 to STOP the test.
Optical Character Reader (4683 Only)	4.8	Type 211 and press S2 .	Use the device to read a label. The label data is printed. Type 1 and press S2 to RESTART the test. Type 0 and press S2 to STOP the test.
Printer (Model 1, 2, or 3)	4.10	Type 71 and press S2 .	Press S2 to stop printing at the journal or customer receipt station. Type 1 and press S2 to RESTART the test. Type 0 and press S2 to STOP the test.
Remote Alarm	4.13	Type 34 and press S2 .	The remote alarm operates for one-half second each time you press S2 . Type 0 and press S2 to STOP the test.

Scale (4683 Only)	4.14	Type 213 and press S2 .	Place a test weight on scale. Type 1 and press S2 to RESTART the test. Type 0 and press S2 to STOP the test.
Shopper Display	4.15	Type 43 and press S2 .	A pattern of double vertical bars shifts across the display. A pattern of double horizontal bars shifts down the display. A pattern of 8s and 4 commas is displayed. A pattern of 8s and 3 periods is displayed. The guidance indicators blink on and off. Type 1 and press S2 to RESTART the test. Type 0 and press S2 to STOP the test.
Socket 23 or 25 RS-232 or Current Loop (4683 Only)	4.16	Type 231 and press S2 .	Install the Wrap Plug and press S2 when prompted by the display messages. Type 1 and press S2 to RESTART the test. Type 0 and press S2 to STOP the test.
Storage Retention (4683 Only)	4.18	Type 02 and press S2 .	The program enables Storage Retention. Switch POWER OFF at the point-of-sale terminal, and then ON again. T0201 is displayed again if the test was successful. Press S2 to display T0202. The program disables Storage Retention and then restores it to its original status. Type 1 and press S2 to RESTART the test. Type 0 and press S2 to STOP the test.
Totals Retention	4.19	Type 01 and press S2 .	Message T0010 is displayed after successful completion.
Video Display (4683 Only)	4.20	Type 80 and press S2 .	The video attribute test pattern is displayed, each line describing its own attribute. Press S2 to view each of the different test patterns until all have been displayed. If a color display is being tested, color bars are displayed so that the colors can be evaluated. Type 1 and press S2 to RESTART the test. Type 0 and press S2 to STOP the test.
1520 Hand-Held	4.21	Type 211 and	Use the 1520 Model A01 to

Scanner Model A01 (4683 Only)		press S2 .	read a label. The label data is printed. Type 1 and press S2 to RESTART the test. Type 0 and press S2 to STOP the test.
1520 Hand-Held Scanner Model A02	4.22	Type 54 and press S2 .	Read the test labels on the test card that was supplied with the 1520 Model A02. Label data is printed if read successfully. Type 1 and press S2 to RESTART the test. Type 0 and press S2 to STOP the test.
3687 Checkout Scanner Model 2	4.11	Type 171 and press S2 .	Use the scanner to read a label. Label data is printed. Type 1 and press S2 to RESTART the test. Type 0 and press S2 to STOP the test.
Point of Sale Terminal Verification Test	4.23	Press S1 , type 192 , and press S2 .	Follow "TEST 4230: Point of Sale Terminal Verification (4683/4684)" in topic 4.23.

Exiting Test Mode

1. When message T0010 displays, type **99** and press **S2** to exit Test Mode.
2. Message T0014 LEAVING TEST MODE is displayed.
3. Message W008 PROGRAM IS BEING LOADED is displayed.
4. The first message of the store application is displayed.

5.0 Chapter 5. IBM 4684 Reference Diskette Test Procedures

Where applicable, the tests in this chapter should be run after each repair action to verify the problem has been corrected.

CAUTION:

For your safety, you must connect the power cord of any equipment to a correctly wired and grounded receptacle. An incorrectly wired receptacle can place a hazardous voltage on accessible metal parts of the equipment. If you are unsure of the receptacle wiring, have a qualified electrician check the receptacle prior to connecting any equipment to it or working on any equipment attached to it.

DANGER

```
+-----+
| During periods of lightning activity, do not connect or disconnect any |
| cables, or perform installation, maintenance, or reconfiguration.      |
+-----+
```

Subtopics

- 5.1 Test Introduction
- 5.2 Preparing to Run Tests
- 5.3 Running Verification Tests
- 5.4 Running POS (Point of Sale) Device Tests
- 5.5 Running System Unit Tests
- 5.6 Running Baseband Network Tests
- 5.7 Running Token-Ring Adapter Tests
- 5.8 Running X.25 Interface Co-Processor/2 Adapter (ARTICx/2) Tests

5.1 Test Introduction

Subtopics

5.1.1 Flow Chart of Menus

5.1.2 4684 Initial Program Load (IPL) Sequence

5.1.1 Flow Chart of Menus

MENU-T7 appears only if a 4683 is attached to the 4684.

PICTURE 44

5.1.2 4684 Initial Program Load (IPL) Sequence

The following list shows the sequence of events during an 4684 IPL when using the Reference Diskette. The sequence changes depending upon whether your 4684 has a 40-character A/N display or a video display as a primary display.

40-Character Alphanumeric Primary Display

1. Switch POWER ON.
2. U001 displays; the diskette drive accesses.
3. U003 displays.
 - If no errors are detected, one (1) beep sounds and U004 displays.
 - If errors are detected, two (2) beeps sound and error messages display. The IPL sequence stops at this point so you can see the messages. These messages will display again later in the sequence with more detail about the cause.

Press **S1** to continue. **Note:** On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.
4. U004 displays; the diskette drive accesses.
5. U006 displays followed by U007.
6. The copyright message displays.
7. M0001 PRESS THE 1 KEY displays.

Press the **1** key on the primary keyboard.
This helps the program determine which type of keyboard is being used.
8. MENU-M1 displays; the IPL is complete.
 - If errors were detected earlier they are now re-displayed along with additional information about the cause.

Press **S1** to continue to MENU-M1.
 - If a configuration error was detected, M0101 A CONFIGURATION ERROR HAS OCCURRED. DO YOU WANT TO RUN CONFIGURATION? displays.

Answer YES if you have just added or removed a device. Configuration will load and run.
Otherwise answer NO.

Video Primary Display

1. Switch POWER ON.
2. The memory test progression displays at the top left corner of the screen; the diskette drive accesses.
3. U003 displays.
 - If no errors are detected, one (1) beep sounds and U004 displays.
 - If errors are detected, two (2) beeps sound and error messages display. The IPL sequence stops at this point so you can see the messages. These messages will display again later in the sequence with more detail about the cause.

Press **S1** to continue. **Note:** On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.
4. U004 displays; the diskette drive accesses.
5. The display is cleared; the Diagnostic Driver message displays.
6. The copyright message displays.
7. MENU-M1 displays; the IPL is complete.
 - If errors were detected earlier they are now re-displayed along with additional information about the cause.

Press **S1** to continue to MENU-M1.

- If a configuration error was detected, M0101 A CONFIGURATION ERROR HAS OCCURRED. DO YOU WANT TO RUN CONFIGURATION? displays.

Answer YES if you have just added or removed a device. Configuration will load and run.
Otherwise answer NO.

Subtopics

- 5.1.2.1 Power-ON Self Tests
- 5.1.2.2 Verification Tests
- 5.1.2.3 Point of Sale Device Tests
- 5.1.2.4 System Unit Tests
- 5.1.2.5 Baseband Network and Token-Ring Tests

5.1.2.1 *Power-ON Self Tests*

The Power-On Self tests run automatically when power is switched ON. They test all the basic functions of the 4684 system unit.

5.1.2.2 Verification Tests

The Verification Tests test the basic functions of both the 4684 and the 4683 point-of-sale terminal with a minimum amount of operator intervention. Use these tests to help determine which device is failing. The tests are also useful in testing the 4684 or 4683 after exchanging a failing device. These tests can be used by the operator or service personnel.

Note: The IBM 4684 operates with a 1.44 Mb diskette drive (1.44 is printed on the eject button). These drives use 2.0 Mb (HD) diskettes. A 2.0 Mb diskette must be formatted to 1.44 Mb using a 1.44 Mb diskette drive.

5.1.2.3 *Point of Sale Device Tests*

The point-of-sale Device Tests are designed for use by operator or service personnel. They test each point-of-sale device attached to the 4684 system unit or the 4683 base unit.

PICTURE 45

5.1.2.4 System Unit Tests

The System Unit Tests are designed primarily for use by service personnel. They test each device within the 4684 system unit, such as the diskette drive, the fixed disk drive, and option adapters.

Note: The IBM 4684 operates with a 1.44 Mb diskette drive (1.44 is printed on the eject button). These drives use 2.0 Mb (HD) diskettes. A 2.0 Mb diskette must be formatted to 1.44 Mb using a 1.44 Mb diskette drive.

PICTURE 46

5.1.2.5 *Baseband Network and Token-Ring Tests*

The Baseband Network and Token-Ring Tests are designed for use by customer or service personnel. They test the Baseband Network Adapter and the Token-Ring Adapter as well as provide other network test functions.

PICTURE 47

5.2 Preparing to Run Tests

Read the following test sequence before beginning to run the tests. Some of the events happen quickly. Be careful not to miss them if you are reading this book as the test proceeds.

The Reference Diskette is required to run tests on the 4684 and an attached 4683. The recommended storage place for the diskette is under the 4684 cash drawer till. We strongly recommend that you use a backup copy of the Reference Diskette and avoid using the original unless absolutely necessary. This will prevent damage to the original and ensure that it is available if the backup copy is destroyed and a new copy is needed.

1. Use the store procedures to stop any application programs that are running.
2. IPL (Initial Program Load).
 - a. Switch **POWER OFF** at the 4684.
 - b. Insert the Reference Diskette into the 4684 diskette drive.
 - c. Switch **POWER ON** at the 4683 (if attached).
 - d. Switch **POWER ON** at the 4684.
3. Power-on self tests start automatically when power is switched ON. See "4684 Initial Program Load (IPL) Sequence" in topic 5.1.2.
4. If the video display is present, it displays characters that represent the progress of the memory test.
5. A series of *Unnn* messages are displayed that represent the progress of the IPL.
6. A Reference Diskette Copyright message is displayed.

If the alphanumeric display is present, it displays M0001 PRESS THE 1 KEY. Press the 1 key on the primary keyboard.

7. MENU-M1 is displayed indicating the IPL is complete.
 - If any display is blank or unreadable, see Chapter 3, Symptoms.
 - If an error number is displayed, note the number and then press **S1** (**Esc**).

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.

 - If the IPL does not continue after pressing **S1**, follow the *User Response* for the message in Chapter 2, "Messages."
8. When MENU-M1 is displayed, you are ready to start testing.

Table 5-1. MENU-M1	
To run Verification Tests --	Continue at 5.3.
To run POS (Point-of-Sale) Device Tests --	Continue at 5.4.
To run System Unit Tests --	Continue at 5.5.
To run Baseband Network Tests --	Continue at 5.6.

5.3 Running Verification Tests

To run these tests, begin at "Preparing to Run Tests" in topic 5.2.

A good high-density scratch diskette is required to run the verification tests. Ensure that the diskette is not write-protected.

1. Select START TESTS from MENU-M1.
2. Select RUN VERIFICATION TESTS from MENU-T1.
3. Follow the instructions on the display.

When the 4684 system unit verification tests are running, progress messages are displayed. For example, COMPLETED TESTING KEYBOARD 3.

- If an error message is displayed, follow the instructions on the display.
- If an error symptom is observed from one of the tests, follow the *Repair Action* for the symptom in Chapter 3, "Symptoms."

5.4 Running POS (Point of Sale) Device Tests

To run these tests, begin at "Preparing to Run Tests" in topic 5.2.

1. Select START TESTS from MENU-M1.
2. Select RUN POS DEVICE TESTS from MENU-T1.
3. If a 4683 is **not** attached to the 4684, continue at step 6.
4. MENU-T7 is displayed if a 4683 is attached to the 4684.
5. Select 4684 I/O or 4683 I/O test.
6. MENU-T6 is displayed.
7. Select the desired test from MENU-T6.
 - or -
 To quit and return to MENU-T1, press **S1**.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.

The following table shows some of the devices that can be displayed for MENU-T6.

Your MENU-T6 contains only the devices that are configured for your system.

Table 5-2. MENU-T6	
Menu Item	Action
KEYBOARD TEST	Follow the test procedure in topic 5.4.1.
ALPHANUMERIC, OPERATOR DISPLAY, OR COMBINED KEYBOARD/DISPLAY TEST	Follow the test procedure in topic 5.4.2.
SHOPPER DISPLAY TEST	Follow the test procedure in topic 5.4.3.
VIDEO DISPLAY TEST	Follow the test procedure in topic 5.4.4.
4680 PRINTER TEST	Follow the test procedure in topic 5.4.5.
MAGNETIC STRIPE READER TEST	Follow the test procedure in topic 5.4.7.
POINT OF SALE SCANNER TEST	Follow the test procedure in topic 5.4.8.
IBM HAND-HELD BAR CODE READER TEST	Follow the test procedure in topic 5.4.9.
TOTALS RETENTION TEST	Follow the test procedure in topic 5.4.11.
CASH DRAWER TEST	Follow the test procedure in topic 5.4.10.

CARDS 2A AND 2B, SOCKETS 23 AND 25	Follow the test procedure in topic 5.4.12.
---------------------------------------	---

Subtopics

- 5.4.1 Testing the Keyboard
- 5.4.2 Testing the Alphanumeric, Operator, or Combined Keyboard/Display
- 5.4.3 Testing the Shopper Display
- 5.4.4 Testing the Video Display
- 5.4.5 Testing the 4680 Printer Model 1 or 2
- 5.4.6 Testing the 4680 Printer Model 3
- 5.4.7 Testing the Magnetic Stripe Reader
- 5.4.8 Testing the Point of Sale Scanner
- 5.4.9 Testing the IBM Hand-Held Bar Code Reader
- 5.4.10 Testing the Cash Drawer
- 5.4.11 Testing Totals Retention
- 5.4.12 Testing Socket 23 and 25 on Feature Expansion Cards in Location 2A and 2B

5.4.1 *Testing the Keyboard*

The procedure beginning on the following topic tests a 50-Key Keyboard, Alphanumeric, ANPOS, Combined Keyboard/Display, or Matrix connected to socket 5A or 5B or the Enhanced A/N Keyboard connected to the 4684 system-unit-keyboard socket.

PICTURE 48

Figure 5-1. Testing the Keyboard. The back panel of the 4683 Model 002 looks the same as the Model A02 except the Model 002 does not have socket 9A.

Subtopics

5.4.1.1 Keyboard Test Procedure

5.4.1.1 Keyboard Test Procedure

To run this test, begin at "Preparing to Run Tests" in topic 5.2 and select **KEYBOARD TEST** from **MENU-T6**.

1. If more than one keyboard is attached, the following message is displayed:

PRESS ANY KEY ON THE KEYBOARD TO TEST

2. Press any key on the keyboard that you want to test.
 - If an error symptom is observed during this test, follow the *Repair Action* for the symptom in "Point of Sale Keyboard Symptoms (4683/4684)" in topic 3.3.16.
 - If an unexpected message is displayed during this test, follow the *User Response* for the message in "Tnnnn Messages" in topic 2.7.
3. Depending on the keyboard you are testing, you may hear one or several tones. If you are testing a 50-Key, Alphanumeric, or Matrix keyboard, messages will be displayed indicating the volume and pitch of the keyboard tones.

Note: The Enhanced A/N or ANPOS Keyboard does not have a tone test.

- If the tones do not operate as described on the display, service or exchange the keyboard. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*. To exchange, see "Keyboard Removal and Replacement" in topic 7.6.

4. Press **S2**.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard -
Esc = S1 and **Enter** = S2.

5. The lights flash ON and OFF one at a time.
 - If the lights do not operate as described, service or exchange the keyboard. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*. To exchange, see "Keyboard Removal and Replacement" in topic 7.6.

PICTURE 49

Figure 5-2. Manager's Keylock. This is the 50-key keyboard. ON and OFF are the same direction on all keyboards.

6. Press **S2** to start testing the keys.
7. The display fills with rectangular characters corresponding to the keys on the keyboard.
8. Press each key on the keyboard one at a time.

Note: Except for the 50-Key Keyboard, all key positions cannot be shown on the display at the same time. When a key is pressed for a position that is not displayed, the displayed pattern changes so that you can see the position of the pressed key.
9. The rectangular character on the display corresponding to the pressed key changes to an X.
 - If an X does not appear when a key is pressed, service or exchange the keyboard. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*. To exchange, see "Keyboard Removal and Replacement" in topic 7.6.
 - If an X appears that does not correspond to the key that was pressed, service or exchange the keyboard. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*. To exchange, see "Keyboard Removal and Replacement" in topic 7.6.
10. If the keyboard does not have a manager's keylock, continue at step 16.

11. Turn the manager's keylock to ON (counterclockwise). See Figure 5-2
12. Press any key on the keyboard.
13. The rectangular characters on the display corresponding to the manager's keylock and the key you pressed change to an X.
 - If X's corresponding to the manager's keylock and the key that was pressed do not appear, service or exchange the keyboard. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*. To exchange, see "Keyboard Removal and Replacement" in topic 7.6.
 - If an X appears that does not correspond to the manager's keylock or the key that was pressed, service or exchange the keyboard. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*. To exchange, see "Keyboard Removal and Replacement" in topic 7.6.
14. Turn the manager's keylock to OFF (clockwise).
15. The X on the display, corresponding to the manager's keylock, changes back to a rectangular character when you press a key.
 - If the X corresponding to the manager's keylock does not change back to a rectangular character when a key is pressed, service or exchange the keyboard. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*. To exchange, see "Keyboard Removal and Replacement" in topic 7.6.
16. Continue testing the keyboard until you are sure it is operating correctly.
17. To stop the test, press **S1**.
 - To test another device, see MENU-T6 in topic 5.4.
 - To exit the POS Device Tests and return to MENU-T1, press **S1**.
 - To return to MENU-M1, press **S1** again.

5.4.2 Testing the Alphanumeric, Operator, or Combined Keyboard/Display

The procedure on the following topic tests the Alphanumeric, Operator, or Combined Keyboard/Display connected to socket 4A, 4B, 9A, or 9B (5A or 5B for Combined Keyboard/Display).

PICTURE 50

Figure 5-3. Testing the Alphanumeric, Operator, or Combined Keyboard/Display. The back panel of the 4683 Model 002 looks the same as the Model A02 except the Model 002 does not have socket 9A.

Subtopics

5.4.2.1 Alphanumeric, Operator, or Combined Keyboard/Display Test Procedure

5.4.2.1 Alphanumeric, Operator, or Combined Keyboard/Display Test Procedure

To run this test, begin at "Preparing to Run Tests" in topic 5.2 and select ALPHANUMERIC, OPERATOR DISPLAY, OR COMBINED KEYBOARD/DISPLAY TEST from MENU-T6.

1. A pattern of vertical bars shift across the display from left to right. See Figure 5-4.
2. A pattern of horizontal bars shift down the display from top to bottom.

These two patterns will repeat until you stop the test.

3. Run the test until you are sure the display is operating correctly.
 - If an error symptom is observed during this test, follow the *Repair Action* for the symptom in "Alphanumeric, Operator, or Combined Keyboard/Display Symptoms (4683/4684)" in topic 3.3.1.
 - If an unexpected message is displayed during this test, follow the *User Response* for the message in "Tnnnn Messages" in topic 2.7.
4. To stop the test, press **S1**.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard -
Esc = S1 and **Enter** = S2.

- To test another device, see MENU-T6 in topic 5.4.
- To exit the POS Device Tests and return to MENU-T1, press **S1**.
- To return to MENU-M1, press **S1** again.

PICTURE 51

Figure 5-4. Display Test Patterns

5.4.3 *Testing the Shopper Display*

The procedure on the following topic tests the shopper display connected to 4684 system unit socket 4A, 4B, 9A or 9B.

PICTURE 52

Figure 5-5. Testing the Shopper Display. The back panel of the 4683 Model 002 looks the same as the Model A02 except the Model 002 does not have socket 9A.

Subtopics

5.4.3.1 Shopper Display Test Procedure

5.4.3.1 Shopper Display Test Procedure

To run this test, begin at "Preparing to Run Tests" in topic 5.2 and select SHOPPER DISPLAY TEST from MENU-T6.

- If an error symptom is observed during this test, follow the *Repair Action* for the symptom in "Shopper Display Symptoms (4683/4684)" in topic 3.3.23.
 - If an unexpected message is displayed during this test, follow the *User Response* for the message in "Tnnnn Messages" in topic 2.7.
1. A pattern of vertical bars is displayed. See Figure 5-6.
 2. A pattern of horizontal bars is displayed.
 3. A pattern of eight 8s and four commas are displayed.
 4. A pattern of eight 8s and three periods are displayed.
 5. The six guidance indicators come ON and go OFF, three at a time.
These five patterns will repeat until you stop the test.
 6. Run the test until you are sure the display is operating correctly.
 7. To stop the test, press **S1**.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard -
Esc = S1 and **Enter** = S2.

- To test another device, see MENU-T6 in topic 5.4.
- To exit the POS Device Tests and return to MENU-T1, press **S1**.
- To return to MENU-M1, press **S1** again.

PICTURE 53

Figure 5-6. Shopper Display Test Patterns

5.4.4 *Testing the Video Display*

The procedure on the following topic tests a video display connected to Feature Expansion Card A (socket 81 or 82) on the 4683 base unit or the video display connected to the 4684 system-unit-video-display socket. The 4683 Feature Expansion Card can be in location 2A or 2B.

PICTURE 54

Figure 5-7. Testing the Video Display. The back panel of the 4683 Model 002 looks the same as the Model A02 except the Model 002 does not have socket 9A.

Subtopics

5.4.4.1 Video Display Test Procedure

5.4.4.1 Video Display Test Procedure

Video Display Attached to Feature Expansion Card A

To run this test, begin at "Preparing to Run Tests" in topic 5.2 and select VIDEO DISPLAY TEST from MENU-T6.

1. The *display attribute* patterns are displayed.

The *display attributes* are normal, blank line, reverse video, underlining, blinking, and highlighting.

2. Press **S2**.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard -
Esc = S1 and **Enter** = S2.

3. Character test patterns using all 256 characters are displayed.

4. Press **S2**.

5. An **aU...** test pattern with one *display attribute* is displayed.

The **aU...** test pattern consists of an underscored lower case **a** and an uppercase **U**.

6. Press **S2** four (4) more times to get the same test pattern with each of the other *display attributes*.

7. Press **S2**.

8. A color test is displayed.

If you are testing a color display, the test will be in color.

9. Run the test until you are sure the video display is operating correctly.

If an error symptom is observed during this test, follow the *Repair Action* for the symptom in "Video Display Symptoms (4683 Only)" in topic 3.3.31.

If an unexpected message is displayed during this test, follow the *User Response* for the message in "Tnnnn Messages" in topic 2.7.

10. To stop the test, press **S1**.

To test another device, see MENU-T6 in topic 5.4.

To exit the POS Device Tests and return to MENU-T1, press **S1**.

To return to MENU-M1, press **S1** again.

Video Display Attached to the 4684 System Unit Video Display Socket

To run this test, begin at "Preparing to Run Tests" in topic 5.2 and select RUN SYSTEM UNIT TESTS from MENU-T1.

1. Select TEST SYSTEM UNIT from MENU-T2.

2. Select RUN TESTS ONE TIME from MENU-T3.

3. Select the Video Graphics Array Test from MENU-T4.

Note: When the Video Test Menu is displayed, **DO NOT** select item 7 (Sync Test). This is for service personnel only.

4. Follow the instructions that on the display.

If an error symptom is observed during this test, follow the *Repair Action* for the symptom in "Video Display Symptoms (4683 Only)" in topic 3.3.31.

If an unexpected message is displayed during this test, follow the *User Response* for the message in "Tnnnn Messages" in topic 2.7.

5.4.5 Testing the 4680 Printer Model 1 or 2

The procedure beginning on the following topic tests the Model 1 or 2 printer connected to socket 7.

PICTURE 55

Figure 5-8. Testing the Point of Sale Printer Model 1 or 2. The back panel of the 4683 Model 002 looks the same as the Model A02 except the Model 002 does not have socket 9A.

Subtopics

5.4.5.1 4680 Printer Model 1 or 2 Test Procedure

5.4.5.2 4680 Printer Model 1 or 2 Stand-Alone Test Procedure

5.4.5.1 4680 Printer Model 1 or 2 Test Procedure

To run this test, begin at "Preparing to Run Tests" in topic 5.2 and select 4680 PRINTER TEST from MENU-T6.

Note: The stand-alone test procedure for the Model 1 or 2 printer is in topic 5.4.5.2.

If an unexpected message is displayed during this test, follow the *User Response* for the message in "Tnnnn Messages" in topic 2.7.

1. When 4680 PRINTER TEST is selected from MENU-T6, an **IH...** pattern of 38 characters per line prints at the customer receipt station. See Figure 5-9.

Allow the test to run until you are sure the printing is correct at the customer receipt station.

If the printing is not correct, service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

2. Press **S2**.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard - **Esc** = S1 and **Enter** = S2.

3. An **IH...** pattern of 38 characters per line prints at the journal station. See Figure 5-9.

Allow the test to run until you are sure the printing is correct at the journal station.

If the printing is not correct, service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

4. Press **S2**.

5. Insert a document into the DI (document insert) station. See Figure 5-14 in topic 5.4.5.2.

6. Press the **I** button to close the DI station. See Figure 5-10 in topic 5.4.5.2.

7. Press **S2** to start printing on the document.

8. Seven lines of the **IH...** pattern will print.

PICTURE 56

Figure 5-9. 4684 Reference Diskette Test Pattern

9. Remove the document from the DI station and compare the printing with Figure 5-9.

If the printer does not operate as described or the printing does not compare, service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

10. Run the test until you are sure the point-of-sale printer is operating correctly.

11. Press **S1** to stop the test.

12. Open the printer cover.

13. When MENU-T6 is displayed, select 4680 PRINTER TEST again.

14. Message T7153 is displayed, indicating the cover is open.

If printing begins with the cover open, the printer cover interlock is failing. Service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

15. Close the cover and press **S1** to stop the test.

□ To test another device, see MENU-T6 in topic 5.4.

- To exit the POS Device Tests and return to MENU-T1, press **S1**.
- To return to MENU-M1, press **S1** again.

5.4.5.2 4680 Printer Model 1 or 2 Stand-Alone Test Procedure

PICTURE 57

Figure 5-10. Point of Sale Printer Model 1 or 2 Buttons

Note: The Reference Diskette test procedure for the Model 1 or 2 printer is in topic 5.4.5.1.

1. Ensure the point-of-sale terminal is powered-ON and the printer is receiving power.
2. Open the printer cover and ensure that the print head preload spring is holding the print head against the platen. See Figure 5-11.

PICTURE 58

Figure 5-11. Print Head Preload Spring

3. Ensure the following:
 - The paper is installed correctly.
 - The ribbon is in good condition.
 - The ribbon cartridge is seated correctly.
4. Ensure that the print head cable is connected to the printer card. See Figure 5-12.

PICTURE 59

Figure 5-12. Print Head Cable

PICTURE 60

Figure 5-13. Printer Stand-Alone Test Pattern

5. Press the **II** button to advance the paper at the customer receipt station. See Figure 5-10.

If the paper does not advance correctly, service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

6. Press the **III** button to advance the paper at the journal station.

If the paper does not advance correctly, service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

7. Press the **T** button to print an **IH...** pattern of 36 characters at the customer receipt station and the journal station. See Figure 5-13.

If the printer does not operate as described or the printing does not compare, service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

8. Insert a document into the DI (document insert) station. See Figure 5-14.

9. Press the **I** button to close the DI station on the inserted document. Test by pulling the document out from the bottom. You should feel some resistance.

If the DI station does not close on the document, service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

10. Press the **T** button to print an **IH...** pattern on the inserted document.

If the printing is not correct, service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

11. Remove the document from the document insert station. The stand-alone test is complete.

PICTURE 61

Figure 5-14. Inserting a Document into the Model 1 or 2 Printer

5.4.6 Testing the 4680 Printer Model 3

The procedure beginning on the following topic tests the Model 3 printer connected to socket 7.

PICTURE 62

PICTURE 63

Figure 5-15. Testing the Point of Sale Printer Model 3. The back panel of the 4683 Model 002 looks the same as the Model A02 except the Model 002 does not have socket 9A.

Subtopics

5.4.6.1 4680 Printer Model 3 Test Procedure

5.4.6.2 4680 Printer Model 3 Stand-Alone Test Procedure

5.4.6.1 4680 Printer Model 3 Test Procedure

To run this test, begin at "Preparing to Run Tests" in topic 5.2 and select 4680 PRINTER TEST from MENU-T6.

Note: The stand-alone test procedure for the Model 3 printer is in topic 5.4.6.2.

If an unexpected message is displayed during this test, follow the *User Response* for the message in "Tnnnn Messages" in topic 2.7.

1. When 4680 PRINTER TEST is selected from MENU-T6, an **IH...** pattern of 38 characters per line prints at the customer receipt station. See Figure 5-16.

Allow the test to run until you are sure the printing is correct at the customer receipt station.

If the printing is not correct, service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

2. Press **S2** to start printing the **IH...** pattern at the journal station.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard -
Esc = S1 and **Enter** = S2.

Allow the test to run until you are sure the printing is correct at the journal station.

If the printing is not correct, service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

3. Press **S2** and insert a document into the top or front of the printer. See Figure 5-19 in topic 5.4.6.2.

4. Press the ready button [3] to move the document into the printer. See Figure 5-17 in topic 5.4.6.2.

If the document cannot be inserted or does not move into the printer, service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

5. When the document is in place, press **S2** to start printing (T7130 displays). Wait at least ten seconds.

PICTURE 64

Figure 5-16. 4684 Reference Diskette Test Pattern

6. Press **S2** to stop printing (T7132 displays).
7. Press the ready button [3] to remove the document and compare the printing with Figure 5-16.

If the printer does not operate as described or the printing does not compare, service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

8. Press **S1** to stop the test and open the printer cover.
9. When MENU-T6 is displayed, select 4680 PRINTER TEST again.
10. Message T7153 is displayed, indicating the cover is open.

If printing begins with the cover open, the printer cover interlock is failing. Service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

11. Close the cover and press **S1** to stop the test.
12. Run the test until you are sure the point-of-sale printer is operating correctly.

- To test another device, see MENU-T6 in topic 5.4.
- To exit the POS Device tests and return to MENU-T1, press **S1**.
- To return to MENU-M1, press **S1** again.

5.4.6.2 4680 Printer Model 3 Stand-Alone Test Procedure

PICTURE 65

Figure 5-17. Point of Sale Printer Model 3 Buttons

Note: The Reference Diskette test procedure for the Model 3 printer is in topic 5.4.6.1.

1. Ensure the point-of-sale terminal is powered-ON and the printer is receiving power.
2. Open the printer cover and ensure the following before running the stand-alone test:
 - The paper is installed correctly in both stations.
 - There is no document inserted in the printer.
 - The ribbon is in good working condition and that it is seated correctly.
3. Close the printer cover while observing the indicator (green) light beside the ready button [3]. The light will come ON and then go OFF. See Figure 5-17.

If the light does not come ON or if it stays ON, service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

4. Open the printer cover and press the journal button [1] to advance paper at the journal station. See Figure 5-17.
 - If the paper does not advance correctly, service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
5. Press the customer receipt button [2] to advance paper at the customer receipt station. See Figure 5-17.

If the paper does not advance correctly, service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

6. Press and hold the ready button [3] and then press the journal button [1] to start printing at the journal station.

Fifty lines of 38 characters (**IH...**) print. Allow at least 10 lines to print before stopping the test. You can stop the test at any time by pressing the ready button [3].

7. Press the ready button [3] and compare the printing with Figure 5-18.

If the printing does not compare, service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

8. Press and hold the ready button [3] and then press the customer receipt button [2] to start printing at the customer receipt station.

Fifty lines of 38 characters (**IH...**) print. Allow at least 10 lines to print before stopping the test. You can stop the test at any time by pressing the ready button [3]. This will also cause the paper cutter to cut the paper.

PICTURE 66

Figure 5-18. Printer Stand-Alone Test Pattern

PICTURE 67

Figure 5-19. Inserting a Document into the Top of the Model 3 Printer

9. Press the ready button [3] and compare the printing with Figure 5-18.

If the printing does not compare, service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

10. Insert a document into the top of the printer. See Figure 5-19.

11. Press and hold the DI (document insert) **down** button [5] to move the document into the printer. See Figure 5-17.

If the document cannot be inserted or does not move, service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

12. When the document is in place, press and hold the ready button [3] and then press the DI **up** button [4] to start printing on the inserted document.

An **IH...** of 38 characters per line prints until the end of the document is reached (50 lines maximum). Allow several lines to print before stopping the test. You can stop the test at any point by pressing the ready button [3].

13. Press the ready button [3] and compare the printing on the inserted document with Figure 5-18.

If the printing does not compare, service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

PICTURE 68

Figure 5-20. Inserting a Document into the Front of the Model 3 Printer

14. To remove the document, press and hold the DI **up** button [4] and back it out of the printer.

15. After removing the document from the top of the printer, insert a document into the front of the printer. See Figure 5-20.

16. Press and hold the DI **up** button [4] to move the document into the printer.

If the document cannot be inserted or does not move, service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

17. When the document is in place, press and hold the ready button [3] and then press the DI **down** button [5] to start printing on the inserted document.

An **IH...** of 38 characters per line prints until the end of the document is reached (50 lines maximum). Allow several lines to print before stopping the test. You can stop the test at any point by pressing the ready button [3].

18. Press the ready button [3] and compare the printing with Figure 5-18. If the printer does not operate as described or the printing does not compare, service the printer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

19. To remove the document, press and hold the DI **down** button [5] and back it out of the printer. The stand-alone test is complete.

5.4.7 Testing the Magnetic Stripe Reader

The procedure on the following topic tests the single-track MSR connected to socket 6 on the point-of-sale keyboard, the dual-track MSR connected to socket 5A or 5B, or the low-profile dual-track MSR connected to the ANPOS keyboard or combined keyboard/display.

PICTURE 69

Figure 5-21. Testing the MSR. The back panel of the 4683 Model 002 looks the same as the Model A02 except the Model 002 does not have socket 9A.

Subtopics

5.4.7.1 MSR Test Procedure

5.4.7.1 MSR Test Procedure

To run this test, begin at "Preparing to Run Tests" in topic 5.2 and select **MAGNETIC STRIPE READER TEST** from **MENU-T6**.

1. Message T6101 is displayed.

Note: If you have a dual-track MSR, use test card IBM P/N 90X9640. If you have a single-track MSR, use test card IBM P/N 4055210 or IBM P/N 90X9640.

2. Read the MSR test card by sliding it through the slot in the MSR. See Figure 5-22.

- If an error symptom is observed during this test, follow the *Repair Action* for the symptom in "Magnetic Stripe Reader (MSR) Symptoms (4683/4684)" in topic 3.3.11.
- If an unexpected message is displayed during this test, follow the *User Response* for the message in "Tnnnn Messages" in topic 2.7.

3. Message T6102 indicates a successful read operation.

4. Read the test card several times until you are sure the MSR is operating correctly.

5. To stop the test, press **S1**.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard -
Esc = S1 and **Enter** = S2.

- To test another device, see MENU-T6 in topic 5.4.
- To exit the POS Device tests and return to MENU-T1, press **S1**.
- To return to MENU-M1, press **S1** again.

PICTURE 70

Figure 5-22. Reading the Test Card

5.4.8 *Testing the Point of Sale Scanner*

The procedure on the following topic tests the point of sale scanner connected to socket 17.

PICTURE 71

Figure 5-23. Testing the Point of Sale Scanner. The back panel of the 4683 Model 002 looks the same as the Model A02 except the Model 002 does not have socket 9A.

Subtopics

5.4.8.1 Point of Sale Scanner Test Procedure

5.4.8.1 Point of Sale Scanner Test Procedure

To run this test, begin at "Preparing to Run Tests" in topic 5.2 and select POINT OF SALE SCANNER TEST from MENU-T6.

1. This message is displayed:

T1701 READ A LABEL WITH SCANNER

2. Follow the instructions on the display.

- If an error symptom is observed during this test, follow the *Repair Action* for the symptom in "Point of Sale Scanner Symptoms (4683/4684)" in topic 3.3.19.
- If an unexpected message is displayed during this test, follow the *User Response* for the message in "Tnnnn Messages" in topic 2.7.

3. The green LED on the scanner comes on and the label data is printed or displayed.

4. Run the test until you are sure the scanner is operating correctly.

5. To stop the test, press **S1**.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard -
Esc = S1 and **Enter** = S2.

- To test another device, see MENU-T6 in topic 5.4.
- To exit the POS Device tests and return to MENU-T1, press **S1**.
- To return to MENU-M1, press **S1** again.

5.4.9 *Testing the IBM Hand-Held Bar Code Reader*

The procedure on the following topic tests the hand-held bar code reader connected to socket 9A or 9B.

PICTURE 72

Figure 5-24. Testing the IBM Hand-Held Bar Code Reader. The back panel of the 4683 Model 002 looks the same as the Model A02 except the Model 002 does not have socket 9A.

Subtopics

5.4.9.1 IBM Hand-Held Bar Code Reader Test Procedure

5.4.9.1 IBM Hand-Held Bar Code Reader Test Procedure

To run this test, begin at "Preparing to Run Tests" in topic 5.2 and select IBM HAND-HELD BAR CODE READER TEST from MENU-T6.

1. This message is displayed:

T9401 READ A LABEL WITH READER

2. Use the bar code reader to read all test labels on the test card that was supplied with it.
 - If an error symptom is observed during this test, follow the *Repair Action* for the symptom in "Hand-Held Bar Code Reader Symptoms (4683/4684)" in topic 3.3.10.
 - If an unexpected message is displayed during this test, follow the *User Response* for the message in "Tnnnn Messages" in topic 2.7.
3. The following events occur as each test label is read:
 - A beep sounds
 - The test label data is printed or displayed.
4. Message T9401 continues to be displayed indicating the bar code reader is waiting to read more labels.
5. Compare the printed data to the test label data to ensure that they match.
6. Run the test until you are sure the bar code reader is operating correctly.
7. To stop the test, press **S1**.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard -
Esc = S1 and **Enter** = S2.

- To test another device, see MENU-T6 in topic 5.4.
- To exit the POS Device tests and return to MENU-T1, press **S1**.
- To return to MENU-M1, press **S1** again.

5.4.10 *Testing the Cash Drawer*

The procedure on the following topic tests the cash drawer that is connected to socket 3A or 3B.

PICTURE 73

Figure 5-25. Testing the Cash Drawer. The back panel of the 4683 Model 002 looks the same as the Model A02 except the Model 002 does not have socket 9A.

Subtopics

5.4.10.1 Cash Drawer Test Procedure

5.4.10.1 Cash Drawer Test Procedure

To run this test, begin at "Preparing to Run Tests" in topic 5.2 and select CASH DRAWER TEST from MENU-T6.

Note: To indicate that you are authorized to run this test, you must open the cash drawer(s) with a key or activate the manager's keylock on the keyboard. See Figure 5-26 and Figure 5-27.

1. Follow the instructions on the display.

- If you have a cash drawer (A or B) that does not appear in the MENU, ensure that cable 3 for the missing cash drawer is connected correctly.

If it is connected correctly, service or exchange the cash drawer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*. To exchange, see "Cash Drawer Removal and Replacement" in topic 7.2.

- If an error symptom is observed during this test, follow the *Repair Action* for the symptom in "Cash Drawer Symptoms (4683/4684)" in topic 3.3.4.
- If an unexpected message is displayed during this test, follow the *User Response* for the message in "Tnnnn Messages" in topic 2.7.

PICTURE 74

Figure 5-26. Manager's Keylock. This is the 50-key keyboard. ON and OFF are the same direction on all keyboards.

PICTURE 75

Figure 5-27. Cash Drawer Keylock

2. Run the test until you are sure the cash drawer is operating correctly.
 3. Select QUIT from the MENU to stop the test.
 4. If you activated the manager's keylock to run this test, turn it clockwise to OFF.
- To test another device, see MENU-T6 in topic 5.4.
 - To exit the POS Device tests and return to MENU-T1, press **S1**.
 - To return to MENU-M1, press **S1** again.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard -
Esc = S1 and **Enter** = S2.

5.4.11 Testing Totals Retention

This procedure tests totals retention in the 4684 or 4683.

1. To run this test, begin at "Preparing to Run Tests" in topic 5.2 and select TOTALS RETENTION TEST from MENU-T6.
2. MENU-T6 is displayed when the test is complete and no errors were found.

- If an error symptom is observed during this test, follow the *Repair Action* for the symptom in "Totals Retention Symptoms (4683/4684)" in topic 3.3.30.
- If an unexpected message is displayed during this test, follow the *User Response* for the message in "Tnnnn Messages" in topic 2.7.
- To test another device, see MENU-T6 in topic 5.4.
- To exit the POS Device tests and return to MENU-T1, press **S1**.
- To return to MENU-M1, press **S1** again.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard -
Esc = S1 and **Enter** = S2.

5.4.12 Testing Socket 23 and 25 on Feature Expansion Cards in Location 2A and 2B

This procedure tests the circuitry for sockets 23 and 25 on 4683 Feature Expansion Cards in location 2A and 2B. These sockets support RS-232 and current loop devices.

1. To run this test, begin at "Preparing to Run Tests" in topic 5.2 and select CARDS 2A AND 2B, SOCKETS 23 AND 25 from MENU-T6.
2. MENU-T6 is displayed when the test is complete and no errors were found.

- If an error symptom is observed during this test, follow the *Repair Action* for the symptom in "Socket 23 or 25 Symptoms (4683 RS-232 or Current Loop Feature)" in topic 3.3.24.
- If an unexpected message is displayed during this test, follow the *User Response* for the message in "Tnnnn Messages" in topic 2.7.
- To test another device, see MENU-T6 in topic 5.4.
- To exit the POS Device tests and return to MENU-T1, press **S1**.
- To return to MENU-M1, press **S1** again.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard -
Esc = S1 and **Enter** = S2.

5.5 *Running System Unit Tests*

Subtopics

5.5.1 System Unit Test Procedure

5.5.2 4684 System Unit Device Ports and Slots

5.5.1 System Unit Test Procedure

To run these tests, begin at "Preparing to Run Tests" in topic 5.2.

1. Select START TESTS from MENU-M1.
2. Select RUN SYSTEM UNIT TESTS from MENU-T1.
3. Select TEST SYSTEM UNIT from MENU-T2.
4. Select RUN TESTS ONE TIME from MENU-T3.
5. Select the desired test from MENU-T4.

Note: If your 4684 has a device or option adapter (installed and configured) that does not appear in MENU-T4, service the 4684 system unit to exchange that device. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

- If an error is detected by the tests, use the information on the display to decide how to proceed with problem determination. In most cases, you should service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
- If an error symptom is observed during these tests, follow the *Repair Action* for the symptom in Chapter 3, "Symptoms."
- If an unexpected message is displayed during these tests, follow the *User Response* for the message in "Tnnnn Messages" in topic 2.7.

6. To exit the tests and return to MENU-T3, press S1.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard -
Esc = S1 and **Enter** = S2.

The following table shows some of the supported items that MENU-T4 will display. Your MENU-T4 will contain *only* the devices that are configured for your system.

Menu Item
TEST ALL DEVICES
SYSTEM BOARD
1024 Kb MEMORY
KEYBOARD PORT
* PRINTER PORT
1 DISKETTE DRIVE
* SYSTEM BOARD ASYNC PORT
1 FIXED DISK DRIVE
VIDEO GRAPHICS ARRAY
1 IBM 4684 DEVICE CHANNEL
MOUSE PORT
* Additional Option Adapters
Action:
Follow instructions on the display to run these tests.
* May require the use of a wrap plug.

5.5.2 4684 System Unit Device Ports and Slots

1. **4684 Device List for Feature Slots 1-8.**

These slots are all under the covers of the 4684 and cannot be accessed without removing the top cover. Some of the slots are imbedded into the system board and have no physical connector for a card or device.

□ Slots 1 and 2 are used to connect the following Option Adapters:

- Dual Asynchronous Adapter
- ISDN Interface Co-Processor/2
- Multiprotocol Adapter
- 4684 Store Loop Adapter/A
- Multiprotocol Communication Adapter
- PC Network Baseband Adapter/A
- Token Ring Network Adapter
- IBM Realtime Interface Co-Processor Multiport/2 or X.25/2
- 300/1200/2400 Internal Modem/A
- 2-8Mb 80286 Memory Expansion Adapter.

□ Slots 3 and 4 are not present on the 4684.

□ Slot 5 is used to connect the Feature Card and Memory Expansion Adapter to the system board. It can be used by this adapter only. When the adapter is installed, it provides connections for the slot 1 and 2 Option Adapters.

□ Slot 6

- **For 4684 Model 1xx and 200**

This slot is imbedded in the system board and used by the Baseband Network Adapter.

- **For 4684 Model 300**

This slot is used by the Baseband Network side card or the Token Ring Network side card.

□ Slot 7 is imbedded in the system board and used by the Device Channel Adapter only.

□ Slot 8 connects the Fixed Disk Adapter to the system board and is used by this adapter only.

2. **4684 Port List.**

The 4684 ports are associated with devices that may be either on the system board (memory) or external (keyboards, displays). The port number is related to the error code that is displayed when the device or function fails. For example, the keyboard is connected to port 3 and the keyboard error code is 3nn. See -- Heading 'MSGTBL' unknown --.

- Port 1: System board functions (internal)
- Port 2: Memory (internal)
- Port 3: System Unit Keyboard [1]
- Port 4: System Unit Printer [BB]
- Port 6: Diskette drive (internal)
- Port 11: System Unit Asynchronous Communications [CC]
- Port 24: System Unit Video Display [AA]
- Port 30: Baseband Network (sockets 1A and 1B)
- Port 86: Pointing device (mouse) [2]
- Port 166: Token Ring (socket 1B, Model 300)

PICTURE 76

Figure 5-28. IBM 4684 System Unit Back Panel

5.6 *Running Baseband Network Tests*

Subtopics

5.6.1 Flow Chart of Menus

5.6.2 Baseband Network Test Procedure

5.6.1 Flow Chart of Menus

PICTURE 77

Subtopics

- 5.6.1.1 Baseband Network Adapter Test
- 5.6.1.2 Transmit/Receive Verification Test
- 5.6.1.3 Display Network Utilization Test
- 5.6.1.4 Display Network Unit ID Number

5.6.1.1 Baseband Network Adapter Test

This test performs an internal test on the Baseband Network Adapter. A wrap plug and a terminator plug are required if the 4684 is not attached to a network.

5.6.1.2 *Transmit/Receive Verification Test*

This test verifies communication between two nodes within a network. The transmitting node sends and displays alphanumeric characters. The receiving node receives and displays these alphanumeric characters. This verifies that the communication link between these two nodes. Manual intervention is required to end this test.

The status of the adapter can be viewed after the Transmit/Receive Verification Test is stopped. See "Baseband Network Adapter Status" in topic 5.6.2.1.

5.6.1.3 *Display Network Utilization Test*

Use this test to diagnose network performance problems. It shows network usage at the time of the test (Average Use, Present Use, Highest Use, and Lowest Use).

No general statement can be made about the relationship between the percentage of utilization and performance. Higher network utilization lowers network performance, but many other factors can effect performance, including:

- The number of active nodes
- The type of software being used
- The quality of the installation
- The distances between nodes
- The types of transmissions.

5.6.1.4 *Display Network Unit ID Number*

This test displays the unique adapter network address. **Note:** It may be necessary to provide this ID to your network administrator.

5.6.2 Baseband Network Test Procedure

This procedure is designed to be used by customer or service personnel. It tests the Baseband Network circuitry within the 4684 system unit. Use it to verify that the Baseband Network is working correctly.

Note: These tests are available **only** on Reference Diskette version 2.02 or earlier.

To run these tests, begin at "Preparing to Run Tests" in topic 5.2.

1. Select START TESTS from MENU-M1.
 2. Select RUN BASEBAND NETWORK TESTS from MENU-T1.
 3. Select the desired test from MENU-L1.
 4. Follow the instructions on the display.
- If an error symptom is observed during these tests, follow the *Repair Action* for the symptom in Chapter 3, "Symptoms."
 - If an unexpected message is displayed during these tests, follow the *User Response* for the message in "Tnnnn Messages" in topic 2.7.

Note: For the TRANSMIT/RECEIVE VERIFICATION TEST, follow the same procedure to prepare both nodes (transmit and receive). The receiving node must be selected before the transmitting node.

Table 5-4. MENU-L1	
Menu Item	Action
BASEBAND NETWORK ADAPTER TEST	Follow instructions on the display.
TRANSMIT/RECEIVE VERIFICATION TEST	Follow instructions on the display.
DISPLAY NETWORK UTILIZATION TEST	Follow instructions on the display.
DISPLAY NETWORK UNIT ID NUMBER	Follow instructions on the display.
QUIT	Follow instructions on the display.

PICTURE 78

Figure 5-29. Testing the Baseband Network

Subtopics

5.6.2.1 Baseband Network Adapter Status

5.6.2.1 Baseband Network Adapter Status

The adapter status can be displayed only once. You will have to IPL using the Baseband Network Test Diskette and restart the Transmit/Receive each time you want to check the adapter status.

A description of the adapter status is described below:

Unit ID Number. The universally-administered address of the adapter.

Reporting Period in Minutes. The elapsed time since you started the PC Network Advanced Diagnostic Tests.

CRC Errors. The number of properly aligned frames received with a cyclic redundancy check (CRC) error.

Alignment Errors. The number of misaligned frames received with a CRC error. When excessive or missing bits occur during the reception of a frame, the frame is misaligned.

Collisions. When a frame from a transmitting adapter encounters any other signal in its path (another frame, noise, or another type of signal), the adapter stops transmitting and a collision is registered.

Retransmissions. If a preset time elapses, a retransmission is registered by the adapter. Also, a negative acknowledgment (NAK) frame can cause a retransmission to be registered by the adapter.

Unsuccessful Transmissions. The adapter registers an unsuccessful transmission if either of the following conditions occurs:

- Transmission stops because of loss of the control signal in the adapter.
- Transmission stops because the system is not supplying data for transmission.

Successful Transmissions. The number of frames successfully transmitted.

Successful Receptions. The number of frames successfully received.

Exhausted Resources. The number of frames discarded because the system could not accept frames as fast as the adapter received them.

5.7 Running Token-Ring Adapter Tests

To run this test, begin at "Preparing to Run Tests" in topic 5.2.

1. To retrieve Token-Ring configuration data, select START CONFIGURATION from MENU-M1.
2. Select VIEW ACTIVE CONFIGURATION from MENU-C1.
3. Select VIEW 4684 CONFIGURATION from MENU-C5.

4. Record the slot number and the network data rate for the Token-Ring Network Adapter.

If there is no data rate such as 4Mbps or 16Mbps for the Token-Ring Network Adapter, record the data rate at 4Mbps.

This procedure does not verify that the data rate of the adapter matches the data rate of the Token-Ring Network.

5. Return to MENU-M1.

Refer to the installation worksheet and make sure that the slot number and network data rate are correct. The adapter name (Token-Ring Network Adapter) should appear beside the correct slot number.

If the adapter name does not appear, or if the slot number and network data rate are not correct, make sure that all of the steps in the installation procedure were performed correctly. Then return to the beginning of this procedure.

If the adapter name and slot number are still not correct when they are displayed, or if you are unable to set the correct adapter data rate, service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

6. Select START TESTS from MENU-M1.
7. Select RUN SYSTEM UNIT TEST from MENU-T1.
8. Select TEST SYSTEM UNIT from MENU-T2.
9. Select RUN TESTS ONE TIME from MENU-T3.
10. Select the TOKEN-RING NETWORK ADAPTER TEST from MENU-T4 and follow the instructions on the display.

Note: The test will ask which type of cable is connected to the adapter. See Figure 5-30 to identify the correct cable.

11. In the spaces provided, record the parameters of the Token-Ring Network Adapter that are displayed during the test.

Slot number _____

Adapter Parameters:

 Primary or Alternate Adapter _____

 Adapter Data Rate _____

 ROM Address Range _____

 RAM Size and Address Range _____

 Interrupt Level _____

 Adapter address (1) _____

 Code level (2) _____

12. Ensure that the slot number and data rate are the same as the ones that were recorded earlier.
13. If the test returns a 166nn or 167nn error code, check the following before having the 4684 system unit serviced:

- Is the cable or wrap plug firmly connected to the adapter?
- Is the adapter firmly seated in the option slot?
- Have you correctly configured the adapter?

If you answered NO to any of the preceding questions, correct any problems and re-run the test starting at "Running Token-Ring Adapter Tests."

If all the above conditions have been met and the problem persists,

service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

14. If the test does not return an error code, but you are having problems with the adapter, make sure the data rate for the adapter matches the network data rate. If you still have problems, contact your network administrator.

PICTURE 79

Figure 5-30. IBM Token-Ring Network Cables

- (1) Adapter address is the address of the Media Access Control Service Access Point (MSAP).
- (2) Code level is the version of microcode on the adapter.

5.8 Running X.25 Interface Co-Processor/2 Adapter (ARTICx/2) Tests

To run these tests, begin at "Preparing to Run Tests" in topic 5.2.

1. Select START TESTS from MENU-M1.
2. Select RUN SYSTEM UNIT TESTS from MENU-T1.
3. Select TEST SYSTEM UNIT from MENU-T2.
4. Select RUN TESTS ONE TIME from MENU-T3.

Note: If RUN CONTINUOUSLY is selected and the 37 pin wrap plug is not connected to the adapter, error 4620 will display.

5. Select one REALTIME INTERFACE CO-PROCESSOR MULTIPOINT/2 ADAPTER or X.25 INTERFACE CO-PROCESSOR/2 ADAPTER from MENU-T4.
6. You are asked if you want to use a wrap plug to test the X.25 Adapter.

Note: To test the X.25 Adapter completely, a wrap plug should be used. See Table 5-5.

7. You are asked if you want to test the X.25 Adapter in slot x.

Answer YES or NO depending upon which X.25 adapter you want to test. Normally you will have only one X.25 Adapter.

8. If you are using a wrap plug, continue to the next step.

If you are **not** using a wrap plug, follow the instructions on the display. The test will proceed and the internal functions of the adapter will be tested.

9. You are asked if an IBM communications cable is connected to the X.25 Adapter.

- If an IBM communications cable is connected, you are asked to identify the cable and then you are instructed to connect wrap plug to the end of the cable.

To determine the type of cable, see Figure 5-31.

The IBM communication cables all have wrap plugs shipped with them.

- If a non-IBM communications cable is connected, you are instructed to connect the 37-pin wrap plug to the X.25 Adapter.

10. Follow the instructions on the display.

11. The test progress and results will be displayed.

Table 5-5. X.25 Interface Co-Processor/2 Test Wrap Plugs		
Wrap Plug	IBM Part Number	Reorder Part Number
37 pin adapter wrap (US)	07F3132	16F1884
37 pin adapter wrap (EMEA)	07F3138	07F3138
X.21 cable wrap (US)	07F3153	16F1890
X.21 cable wrap (EMEA)	07F3153	07F3153
V.24 cable wrap (US)	07F3163	16F1891
V.24 cable wrap (EMEA)	07F3163	07F3163
V.35 cable wrap (US)	07F3173	16F1861
V.35 cable wrap (EMEA)	07F3173	07F3173
V.35 cable wrap (FRANCE)	07F3177	07F3177

+-----+

PICTURE 80

Figure 5-31. X.25 Interface Co-Processor/2 Cables

6.0 Chapter 6. Problem Determination Procedures

You will be directed to this chapter by Chapter 3, "Symptoms," Chapter 4, "IBM 4680 Operating System Test Procedures," or Chapter 5, "IBM 4684 Reference Diskette Test Procedures" .

CAUTION:

For your safety, you must connect the power cord of any equipment to a correctly wired and grounded receptacle. An incorrectly wired receptacle can place a hazardous voltage on accessible metal parts of the equipment. If you are unsure of the receptacle wiring, have a qualified electrician check the receptacle prior to connecting any equipment to it or working on any equipment connected to it.

DANGER

```
+-----+
| During periods of lightning activity, do not connect or disconnect any |
| cables, or perform installation, maintenance, or reconfiguration.    |
+-----+
```

Subtopics

- 6.1 PDP 6010: Blank Display (Except Video)
- 6.2 PDP 6020: Blank Video Display
- 6.3 PDP 6030: Store Controller Communications Problem
- 6.4 PDP 6040: Store Controller Power-On Self Test Problem
- 6.5 PDP 6050: Store Loop Problem
- 6.6 PDP 6060: Messages 6310 Through 637F on a 4684
- 6.7 PDP 6070: Messages 6390 Through 63EF on a 4684
- 6.8 PDP 6080: U001 Message
- 6.9 PDP 6090: U002 Message
- 6.10 PDP 6100: U003 Message
- 6.11 PDP 6110: U004 Message
- 6.12 PDP 6120: U005 Message
- 6.13 PDP 6130: U006 Message
- 6.14 PDP 6140: U007 Message
- 6.15 PDP 6150: U008 Message
- 6.16 PDP 6160: W001 Message
- 6.17 PDP 6170: W003 Message
- 6.18 PDP 6180: W004 Message
- 6.19 PDP 6190: W005 Message
- 6.20 PDP 6200: W762 Message
- 6.21 PDP 6210: W764 Message
- 6.22 PDP 6220: W772 Message
- 6.23 PDP 6230: 4683 Application Problem
- 6.24 PDP 6240: 4683 Hang Condition
- 6.25 PDP 6250: 4683 Multiple Symptoms
- 6.26 PDP 6260: 4683 Unexpected IPL

6.1 PDP 6010: Blank Display (Except Video)

Symptom Explanation	Conditions That Could Cause This Symptom
There are no characters on the display.	<input type="checkbox"/> The display is failing.
<input type="checkbox"/> Alphanumeric Display	<input type="checkbox"/> The display cable is failing or disconnected.
<input type="checkbox"/> Operator Display	<input type="checkbox"/> One of the attached devices is failing and causing the power supply to switch OFF.
<input type="checkbox"/> Shopper Display	<input type="checkbox"/> One of the attached device cables is failing.
<input type="checkbox"/> Combined Keyboard/Display.	<input type="checkbox"/> One of the 4683 Feature Expansion cards is failing.
	<input type="checkbox"/> The 4683 base unit or 4684 system unit power cord is failing or disconnected.
	<input type="checkbox"/> The 4683 base unit or 4684 system unit is failing.

Table 6-1. Power Supply Shut Down

Remember to follow these steps when trying to find a device or Feature Expansion card causing a 4683 power supply to shut down.

The power supply in the 4683 base unit is designed to shut down (no dc outputs) if it detects a condition that may cause component damage. A defective or shut-down power supply presents a BLANK DISPLAY/TERMINAL DEAD symptom.

Shut down examples:

- A connected device or logic card shorts/grounds out a dc voltage
- Cooling fan fails causing power supply to overheat.

The power supply remains shut down until it is reset. The only way to reset the power supply is to:

1. Switch **POWER OFF**.
2. Disconnect the power cord at the base-unit-end.
3. Wait approximately five seconds.
4. Reconnect the power cord.
5. Switch power ON.

+---+
|001|
+---+

- If the blank display is a video display, go to "PDP 6020: Blank Video Display" in topic 6.2.

Is the blank display attached to a 4683?

Yes No

|
+---+
|002|
+---+

The blank display is attached to a 4684.

- Continue at Step 046.

PICTURE 81

Figure 6-1. Panel Behind the 4683-xx1 Side-Cover

|
+---+

|003|
+----+

Is the blank display attached to one of the following?

- A 4683-xx1
- A 4683-xx2 attached to a 4683-xx1.

Yes No

|
|
| +----+
| |004|
| +----+

The blank display is on a 4683-xx2 attached to a 4684.

- Continue at Step 027.

+----+
|005|
+----+

- Hold the 4683-xx1 dump switch pressed and switch **POWER OFF**. See Figure 6-1.

This **does not** cause a storage dump. It **does** disable storage retention and cause an IPL when power is switched ON again.

- Release the dump switch.

Use the WAIT light and the unlabeled light on the keyboard to determine the status of the 4683. See Figure 6-2.

When power is switched ON, the keyboard WAIT light comes ON and stays ON for at least two seconds. The unlabeled light comes on and goes OFF after 15 seconds.

- Because this could be a power supply shut-down problem, disconnect the power cord at the base-unit-end, wait approximately five seconds, and reconnect the power cord.

- Switch power ON while carefully observing the keyboard WAIT light.

Did the WAIT light come ON and stay ON for two seconds or longer?

Yes No

PICTURE 82

Figure 6-2. 50-Key Keyboard Lights. For other keyboards, see "Point of Sale Terminal Keyboards" in topic C.6.

|
| +----+
| |006|
| +----+

- Continue at Step 008.

+----+
|007|
+----+

- Switch **POWER OFF**.

- Examine the cable on the blank display for a damaged or loose connection. See "Cable Sockets and Devices" in topic C.7.

If the cable and connections are OK, follow this list to isolate and correct the cause of the problem.

1. Exchange the blank display. See Chapter 7, "Removal and Replacement Procedures."
2. Exchange the display cable.
3. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+
|008|
+----+

(From step 006)

- Switch **POWER OFF**.
- Ensure the 4683 power cord is connected to an ac receptacle and the 4683 base unit.
- Ensure ac power is present at the receptacle.

Is the ac power OK at the receptacle for the 4683 base unit?

Yes No

| |
| |
| +---+
| |009|
| +---+
| |

Report the ac power problem to the person responsible for repairing store power problems.

+---+
|010|
+---+

One of the attached point-of-sale devices may be causing a power supply shut-down problem.

To determine which device may be causing the problem, all devices will be disconnected and then reconnected one at a time.

- To make reconnection easier, label each disconnected cable with its socket location. See "Cable Sockets and Devices" in topic C.7.
- Disconnect all point-of-sale devices except:
 - Socket 1 (4683-xx1)
 - Socket 5A (keyboard)
 - Socket 5B (keyboard)
only if 5A is not used
 - Socket 11 (4683-xx2).
- Because this could be a power supply shut-down problem, disconnect the power cord at the base-unit-end, wait approximately five seconds, and reconnect the power cord.
- Switch power ON and carefully observe the keyboard WAIT light. See Figure 6-2.

Did the WAIT light come ON and stay ON for two seconds or longer?

Yes No

| |
| |
| +---+
| |011|
| +---+
| |

- Continue at Step 015.

+---+
|012|
+---+

(From step 014)

One of the devices or cables that was disconnected is causing the failure.

The devices will be reconnected, one at a time, to determine the failing device.

- Switch **POWER OFF**.
- Reconnect one of the disconnected devices.
- Switch power ON and carefully observe the keyboard WAIT light.

Did the WAIT light come ON and stay ON for two seconds or longer?

Yes No

| |
| |
| +---+
| |013|
| +---+
| |

The device that was last reconnected is failing.

- Switch **POWER OFF**.

- Examine the cable on the failing device for damage.

If the cable is OK, follow this list to isolate and correct the cause of the problem.

1. Exchange the failing device. See Chapter 7, "Removal and Replacement Procedures."

Note: If the 3587 Checkout Scanner Model 2 is the failing device, exchange only the scanner adapter. See "3687 Model 2 Scanner Adapter Removal and Replacement" in topic 7.27.

2. Exchange the device cable.
3. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

- Reconnect all point-of-sale devices.

- Because this was a power supply shut-down problem, disconnect the power cord at the base-unit-end, wait approximately five seconds, and reconnect the power cord before switching power ON again.

+----+
| 014 |
+----+

- Return to Step 012 and repeat the steps for each device that was disconnected until the failing device is found.
-

+----+
| 015 |
+----+

(From step 011)

Is a Feature Expansion card installed in the 4683 base unit?

Yes No

| |
| |
+----+
| | 016 |
+----+

- Continue at Step 024.

+----+
| 017 |
+----+

A Feature Expansion card may be causing a power supply shut-down problem.

- Switch **POWER OFF**.

- To make reinstallation easier, note the location of the Feature Expansion card(s).

- Remove the Feature Expansion card(s) from the base unit. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.

- Because this could be a power supply shut-down problem, disconnect the power cord at the base-unit-end, wait approximately five seconds, and reconnect the power cord.

- Switch power ON and carefully observe the keyboard WAIT light.

Did the WAIT light come ON and stay ON for two seconds or longer?

Yes No

| |
| |
+----+
| | 018 |
+----+

- Continue at Step 024.

+----+
| 019 |
+----+

A Feature Expansion card is causing the failure.

Did you remove two Feature Expansion cards?

Yes No

| |
| |
+----+
| | 020 |
+----+

- Switch **POWER OFF**.

Exchange the Feature Expansion card that was removed.

- Reconnect all point-of-sale devices.
- Because this was a power supply shut-down problem, disconnect the power cord at the base-unit-end, wait approximately five seconds, and reconnect the power cord before switching power ON again.

+----+
| 021 |
+----+

One of the two Feature Expansion cards is failing.

- Switch **POWER OFF**.
- Reinstall the Feature Expansion card that was in location 2A.
- Switch power ON and carefully observe the keyboard WAIT light.

Did the WAIT light come ON and stay ON for two seconds or longer?

Yes No

|
+----+
| 022 |
+----+

The Feature Expansion card in location 2A is failing.

- Switch **POWER OFF**.
 - Reinstall the Feature Expansion card that was in location 2B.
- Exchange the failing Feature Expansion card.
- Reconnect all point-of-sale devices.
 - Because this was a power supply shut-down problem, disconnect the power cord at the base-unit-end, wait approximately five seconds, and reconnect the power cord before switching power ON again.

+----+
| 023 |
+----+

The Feature Expansion card from location 2B is failing.

- Switch **POWER OFF**.
- Exchange the failing Feature Expansion card.
- Reconnect all point-of-sale devices.
 - Because this was a power supply shut-down problem, disconnect the power cord at the base-unit-end, wait approximately five seconds, and reconnect the power cord before switching power ON again.

+----+
| 024 |
+----+

(From steps 016 and 018)

The point-of-sale keyboard may be causing the problem.

- Switch **POWER OFF**.
- Reinstall any Feature Expansion cards that were removed.
- Reconnect all point-of-sale devices.
- Disconnect the keyboard cable from socket 5A or 5B. Note the location of the cable.
- Because this could be a power supply shut-down problem, disconnect the power cord at the base-unit-end, wait approximately five seconds, and reconnect the power cord.
- Switch power ON.

Is the display blank?

Yes No

|
|
+----+
| 025 |
+----+

- Switch **POWER OFF**.
- Examine the keyboard cable for damage.

If the cable is OK, follow this list to isolate and correct the cause of the problem.

1. Service or exchange the keyboard. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
2. Exchange the keyboard cable.
3. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+
| 026 |
+----+

Switch **POWER OFF** and service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+
| 027 |
+----+

(From step 004)

Blank Display on a 4683-xx2 Attached to a 4684

- Switch **POWER OFF** at the 4683-xx2.
- Ensure that displays with power switches are powered ON.
- Switch power ON and observe the attached display(s).

Are all attached displays blank?

Yes No

|
|
+----+
| 028 |
+----+

- Switch **POWER OFF**.
- Examine the cable on the blank display for a damaged or loose connection. See "Cable Sockets and Devices" in topic C.7.

If the cable and connections are OK, follow this list to isolate and correct the cause of the problem.

1. Exchange the blank display. See Chapter 7, "Removal and Replacement Procedures."
2. Exchange the display cable.
3. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+
| 029 |
+----+

One of the attached point-of-sale devices may be causing a power supply shut-down problem.

To determine which device may be causing the problem, all devices will be disconnected and then reconnected one at a time.

- Switch **POWER OFF** at the 4683 and at any attached devices that have their own power switch.
- To make reconnection easier, label each disconnected cable with its socket location. See "Cable Sockets and Devices" in topic C.7.
- Disconnect all devices attached to the 4683 **except** one display connected

to socket 4A, 4B, 9A or 9B.

- Switch power ON and observe the display.

Is the display still blank?

Yes No

```
|      |  
|      |  
| +---+ |  
| |030| |  
| +---+ |
```

One of the devices or cables that was disconnected is causing the failure.

- Continue at Step 043.

```
+---+  
|031|  
+---+
```

Is a Feature Expansion card installed in the 4683 base unit?

Yes No

```
|      |  
|      |  
| +---+ |  
| |032| |  
| +---+ |
```

- Continue at Step 035.

```
+---+  
|033|  
+---+
```

A Feature Expansion card may be causing a power supply shut-down problem.

- Switch **POWER OFF**.
- To make reinstallation easier, note the location of the Feature Expansion card(s).
- Remove the Feature Expansion card(s) from the base unit. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
- Switch power ON at the 4683 and observe the display.

Is the display still blank?

Yes No

```
|      |  
|      |  
| +---+ |  
| |034| |  
| +---+ |
```

A Feature Expansion card is causing the failure.

- Continue at Step 038.

```
+---+  
|035|  
+---+
```

(From step 032)

- Switch **POWER OFF**.
- Disconnect the display from the 4683.
- Reconnect the keyboard to the 4683.
- Switch power ON and observe the keyboard lights.

Are any keyboard lights ON?

Yes No

```
|      |  
|      |  
| +---+ |  
| |036| |  
| +---+ |
```

Switch **POWER OFF** and service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
+---+  
|037|  
+---+
```

The display that was last disconnected is failing.

- Switch **POWER OFF**.
- Examine the cable on the failing display for damage.

If the cable is OK, follow this list to isolate and correct the cause of the problem.

1. Exchange the failing display. See Chapter 7, "Removal and Replacement Procedures."
2. Exchange the display cable.

+----+
| 038 |
+----+
(From step 034)

Did you remove two Feature Expansion cards?

Yes No

| |
| +----+
| | 039 |
| +----+
|

- Switch **POWER OFF**.
- Exchange the Feature Expansion card that was removed.
- Reconnect all point-of-sale devices.

+----+
| 040 |
+----+

One of the two Feature Expansion cards is failing.

- Switch **POWER OFF**.
- Reinstall the Feature Expansion card that was in location 2A.
- Switch power ON.

Is the display blank?

Yes No

| |
| +----+
| | 041 |
| +----+
|

- The Feature Expansion card from location 2B is failing.
- Switch **POWER OFF**.
- Exchange the failing Feature Expansion card.
- Reconnect all point-of-sale devices.

+----+
| 042 |
+----+

The Feature Expansion card in location 2A is failing.

- Switch **POWER OFF**.
- Reinstall the Feature Expansion card that was in location 2B.
- Exchange the failing Feature Expansion card.
- Reconnect all point-of-sale devices.

+----+
| 043 |
+----+
(From steps 030 and 044)

The devices will be reconnected, one at a time, to determine the failing device.

- Switch **POWER OFF**.
- Reconnect one of the disconnected devices.
- Switch power ON at the 4683 and observe the display.

Is the display blank?

Yes No

```
|      |  
|      |  
| +---+ |  
| |044| |  
| +---+ |
```

- Return to Step 043 and reconnect another device.

```
+---+  
|045|  
+---+
```

The device that was last reconnected is failing.

- Switch **POWER OFF**.
- Examine the cable on the failing device for damage.

If the cable is OK, follow this list to isolate and correct the cause of the problem.

1. Exchange the failing device. See Chapter 7, "Removal and Replacement Procedures."
2. Exchange the device cable.

- Reconnect all point-of-sale devices.

```
+---+  
|046|  
+---+
```

(From step 002)

Blank Display Attached to a 4684

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

- Switch **POWER OFF** at the 4684.
- Ensure that displays with power switches are powered ON.
- Switch power ON and observe the attached display(s).

Are all attached displays blank?

Yes No

```
|      |  
|      |  
| +---+ |  
| |047| |  
| +---+ |
```

- Switch **POWER OFF**.
- Examine the cable on the blank display for a damaged or loose connection. See "Cable Sockets and Devices" in topic C.7.

If the cable and connections are OK, follow this list to isolate and correct the cause of the problem.

1. Exchange the blank display. See Chapter 7, "Removal and Replacement Procedures."
2. Exchange the display cable.
3. Service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
+---+  
|048|  
+---+
```

One of the attached point-of-sale devices may be causing a power supply shut-down problem.

To determine which device may be causing the problem, all devices will be

disconnected and then reconnected one at a time.

- Switch **POWER OFF** at the 4684 and at any attached devices that have their own power switch.
- To make reconnection easier, label each disconnected cable with its socket location. See "Cable Sockets and Devices" in topic C.7.
- Disconnect all devices attached to the 4684 **except** one display.
- Switch power ON at the display if it has a power switch.
- Switch power ON at the 4684 and observe the display.

Is the display still blank?

Yes No

```
|
| |
| +---+
| |049|
| +---+
|
```

One of the devices or cables that was disconnected is causing the failure.

- Continue at Step 056.

```
+---+
|050|
+---+
```

- Observe the green POWER GOOD light on the front of the 4684.

Is the POWER GOOD light ON?

Yes No

```
|
| |
| +---+
| |051|
| +---+
|
```

- Continue at Step 053.

```
+---+
|052|
+---+
```

- Switch **POWER OFF**.
- Examine the cable on the blank display for damage.

If the cable and connections are OK, follow this list to isolate and correct the cause of the problem.

1. Exchange the blank display. See Chapter 7, "Removal and Replacement Procedures."
2. Exchange the display cable.
3. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
+---+
|053|
+---+
```

(From step 051)

- Switch **POWER OFF**.
- Disconnect the display from the 4684.
- Switch power ON at the 4684 and observe the green POWER GOOD light.

Is the POWER GOOD light ON?

Yes No

```
|
| |
| +---+
| |054|
| +---+
|
```

Service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
+---+
```


| 055 |
+----+

The display that was last disconnected is failing.

- Switch **POWER OFF**.
- Examine the cable on the failing display for damage.

If the cable is OK, follow this list to isolate and correct the cause of the problem.

1. Exchange the failing display. See Chapter 7, "Removal and Replacement Procedures."
2. Exchange the display cable.

+----+
| 056 |
+----+

(From steps 049 and 057)

The devices will be reconnected, one at a time, to determine the failing device.

- Switch **POWER OFF**.
- Reconnect one of the disconnected devices.
- Switch power ON and observe the display.

Is the display blank?

Yes No

| |
| |
| +----+
| |057|
| +----+
| |

- Return to Step 056 and reconnect another device.

+----+
| 058 |
+----+

The device that was last reconnected is failing.

- Switch **POWER OFF**.
- Examine the cable on the failing device for damage.

If the cable is OK, follow this list to isolate and correct the cause of the problem.

1. Exchange the failing device. See Chapter 7, "Removal and Replacement Procedures."
2. Exchange the device cable.

6.2 PDP 6020: Blank Video Display

Symptom Explanation	Conditions That Could Cause This Symptom
There are no characters on the display.	<input type="checkbox"/> The brightness control is turned down too far.
	<input type="checkbox"/> The video display is failing.
	<input type="checkbox"/> The video display cable is failing or disconnected.
	<input type="checkbox"/> One of the attached devices is failing and causing the power supply to switch OFF.
	<input type="checkbox"/> One of the attached device cables is failing.
	<input type="checkbox"/> One of the option adapters is failing.
	<input type="checkbox"/> One of the 4683 Feature Expansion cards is failing.
	<input type="checkbox"/> The 4683 base unit or 4684 system unit power cord is failing or disconnected.
	<input type="checkbox"/> The 4683 base unit or 4684 system unit is failing.

Table 6-2. Power Supply Shut Down

Remember to follow these steps when trying to find a device or Feature Expansion card causing a 4683 power supply to shut down.

The power supply in the 4683 base unit is designed to shut down (no dc outputs) if it detects a condition that may cause component damage. A defective or shut-down power supply presents a BLANK DISPLAY/TERMINAL DEAD symptom.

Shut down examples:

- A connected device or logic card shorts/grounds out a dc voltage
- Cooling fan fails causing power supply to overheat.

The power supply remains shut down until it is reset. The only way to reset the power supply is to:

1. Switch **POWER OFF**.
2. Disconnect the power cord at the base-unit-end.
3. Wait approximately five seconds.
4. Reconnect the power cord.
5. Switch power **ON** again.

+---+
|001|
+---+

- If the blank display is **not** a video display, go to "PDP 6010: Blank Display (Except Video)" in topic 6.1.

Is the blank video display attached to a 4683?

Yes No

|
+---+
|002|
+---+

The blank video display is attached to a 4684.

- Continue at Step 033.

Figure 6-3. Panel Behind the 4683-xx1 Side-Cover

```
|
+----+
|003|
+----+
```

- Turn the brightness control to maximum brightness on the blank display.
- Hold the 4683-xx1 dump switch pressed and switch **POWER OFF**. See Figure 6-3.

This **does not** cause a storage dump. It **does** disable storage retention and cause an IPL when power is switched ON again.

- Release the dump switch.
- Because this could be a power supply shut-down problem, disconnect the power cord at the base-unit-end, wait approximately five seconds, and reconnect the power cord.
- Switch power ON again.

Is a **Unnn** message displayed on the display that was blank?

Yes No

```
|
|
| +----+
| |004|
| +----+
|
| - Continue at Step 006.
```

PICTURE 84

Figure 6-4. 50-Key Keyboard Lights. For other keyboards, see "Point of Sale Terminal Keyboards" in topic C.6.

```
|
+----+
|005|
+----+
```

- Return the brightness control to a normal setting.

The failure symptom has changed.

Follow the *User Response* for the message in Chapter 2, "Messages" or in the *IBM 4680 Store System: Messages Guide*.

- or -

Follow the *Repair Action* for the symptom in Chapter 3, "Symptoms."

```
+----+
|006|
+----+
```

(From step 004)

- Switch **POWER OFF**.

Use the WAIT light and the unlabeled light on the keyboard to determine the status of the 4683. See Figure 6-4.

When power is switched ON, the keyboard WAIT light comes ON and stays ON for at least two seconds. The unlabeled light comes on and goes OFF after 15 seconds.

- Because this could be a power supply shut-down problem, disconnect the power cord at the base-unit-end, wait approximately five seconds, and reconnect the power cord.
- Switch power ON while carefully observing the keyboard WAIT light.

Did the **WAIT** light come ON and stay ON for two seconds or longer?

Yes No

```
|
| +----+
```

```
| 007|  
+----+  
|  
- Continue at Step 016.
```

```
+----+  
|008|  
+----+
```

- Wait 15 seconds after power is switched ON and observe the unlabeled light on the keyboard.

Is the unlabeled light OFF?

Yes No

```
| |  
| |  
+----+  
|009|  
+----+
```

- Unplug the video display power cord.
- Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.
 1. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
 2. Exchange the Feature Expansion card for the video display. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.

```
+----+  
|010|  
+----+
```

Is this a 5-inch Monochrome display?

Yes No

```
| |  
| |  
+----+  
|011|  
+----+
```

- Continue at Step 013.

```
+----+  
|012|  
+----+
```

- Switch **POWER OFF**.
- Examine the cable on the blank video display for a damaged or loose connection. See "Cable Sockets and Devices" in topic C.7.

If the cable and connections are OK, follow this list to isolate and correct the cause of the problem.

1. Exchange the video display. See "5-Inch Monochrome Display Removal and Replacement (4683 Only)" in topic 7.24.
2. Exchange the Feature Expansion card for the video display. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
3. Exchange the video display cable.

```
+----+  
|013|  
+----+
```

(From step 011)

- Ensure the video display power cord is connected to an ac receptacle.
- Ensure ac power is present at the receptacle.
- Ensure the display power switch is ON.

Is the ac power OK at the receptacle for the video display?

Yes No

```
| |  
| |  
+----+  
|014|  
+----+
```

|
| Report the ac power problem to the person responsible for repairing
| store power problems.
|

+----+
|015|
+----+

- Unplug the video display power cord.
- Switch **POWER OFF**.
- Examine the cable on the blank video display for a damaged or loose connection. See "Cable Sockets and Devices" in topic C.7.

If the cable and connections are OK, follow this list to isolate and correct the cause of the problem.

1. Exchange the video display. See "Video Display (Except 5-Inch) Removal and Replacement" in topic 7.23.
2. Exchange the Feature Expansion card for the video display. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
3. Exchange the video display cable.

+----+
|016|
+----+
(From step 007)

- Switch **POWER OFF**.
- Ensure the 4683 power cord is connected to an ac receptacle and the 4683 base unit.
- Ensure ac power is present at the receptacle.

Is the ac power OK at the receptacle for the 4683 base unit?

Yes No

|
| |
| +----+
| |017|
| +----+
|

| Report the ac power problem to the person responsible for repairing
| store power problems.
|

+----+
|018|
+----+

One of the attached point-of-sale devices may be causing a power supply shut-down problem.

To determine which device may be causing the problem, all devices will be disconnected and then reconnected one at a time.

- To make reconnecting easier, label each disconnected cable with its socket location. See "Cable Sockets and Devices" in topic C.7.
- Disconnect all point-of-sale devices except:
 - Socket 1 (4683-xx1)
 - Socket 5A (keyboard)
 - Socket 5B (keyboard)
only if 5A is not used
 - Socket 11 (4683-xx2).
- Because this could be a power supply shut-down problem, disconnect the power cord at the base-unit-end, wait approximately five seconds, and reconnect the power cord.
- Switch power ON and carefully observe the keyboard WAIT light. See Figure 6-4.

Did the WAIT light come ON and stay ON for two seconds or longer?

Yes No

|
| |
| +----+
| |019|
| +----+
|

- Continue at Step 023.

+----+
| 020 |
+----+
(From step 022)

One of the devices or cables that was disconnected is causing the failure.

The devices will be reconnected, one at a time, to determine the failing device.

- Switch **POWER OFF**.
- Reconnect one of the disconnected devices.
- Switch power ON and carefully observe the keyboard WAIT light.

Did the WAIT light come ON and stay ON for two seconds or longer?

Yes No

|
+----+
| 021 |
+----+

The device that was reconnected is failing.

- Switch **POWER OFF**.
- Examine the cable on the failing device for a damaged.

If the cable is OK, follow this list to isolate and correct the cause of the problem.

1. Exchange the failing device. See Chapter 7, "Removal and Replacement Procedures."

Note: If the 3587 Checkout Scanner Model 2 is the failing device, exchange only the scanner adapter. See "3687 Model 2 Scanner Adapter Removal and Replacement" in topic 7.27.

2. Exchange the device cable.
 3. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
- Reconnect all point-of-sale devices.
 - Because this was a power supply shut-down problem, disconnect the power cord at the base-unit-end, wait approximately five seconds, and reconnect the power cord before switching power ON again.

+----+
| 022 |
+----+

Return to Step 020 and repeat the steps for each device that was disconnected until the failing device is found.

+----+
| 023 |
+----+
(From step 019)

A Feature Expansion card may be causing a power supply shut-down problem.

- Switch **POWER OFF**.
- To make reinstallation easier, note the location of the Feature Expansion card(s).
- Remove the Feature Expansion card(s) from the base unit. See "Removing a Feature Expansion Card" in topic 7.28.5.1.
- Because this could be a power supply shut-down problem, disconnect the power cord at the base-unit-end, wait approximately five seconds, and reconnect the power cord.
- Switch power ON and carefully observe the keyboard WAIT light.

Did the WAIT light come ON and stay ON for two seconds or longer?

Yes No

|
+---+
|024|
+---+

- Continue at Step 030.

+---+
|025|
+---+

A Feature Expansion card is causing the failure.

Did you remove two Feature Expansion cards?

Yes No

|
+---+
|026|
+---+

- Switch **POWER OFF**.

Exchange the Feature Expansion card that was removed.

- Reconnect all point-of-sale devices.

- Because this was a power supply shut-down problem, disconnect the power cord at the base-unit-end, wait approximately five seconds, and reconnect the power cord before switching power ON again.

+---+
|027|
+---+

One of the Feature Expansion cards is failing.

- Switch **POWER OFF**.

- Reinstall the Feature Expansion card that was in location 2A.

- Switch power ON and carefully observe the keyboard WAIT light.

Did the WAIT light come ON and stay ON for two seconds or longer?

Yes No

|
+---+
|028|
+---+

The Feature Expansion card in location 2A is failing.

- Switch **POWER OFF**.

- Reinstall the Feature Expansion card that was in location 2B.

Exchange the failing Feature Expansion card.

- Reconnect all point-of-sale devices.

- Because this was a power supply shut-down problem, disconnect the power cord at the base-unit-end, wait approximately five seconds, and reconnect the power cord before switching power ON again.

+---+
|029|
+---+

The Feature Expansion card from location 2B is failing.

- Switch **POWER OFF**.

Exchange the failing Feature Expansion card.

- Reconnect all point-of-sale devices.

- Because this was a power supply shut-down problem, disconnect the power cord at the base-unit-end, wait approximately five seconds, and reconnect the power cord before switching power ON again.

+---+
|030|
+---+

(From step 024)

The point-of-sale keyboard may be causing the problem.

- Switch **POWER OFF**.
- Reinstall all Feature Expansion cards that were removed.
- Reconnect all point-of-sale devices.
- Disconnect the keyboard cable from socket 5A or 5B. Note the location of the cable.
- Because this could be a power supply shut-down problem, disconnect the power cord at the base-unit-end, wait approximately five seconds, and reconnect the power cord.
- Switch power ON.

Do any characters appear on the display?

Yes No

```
| |
| +---+
| |031|
| +---+
```

Switch **POWER OFF** and service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
+---+
|032|
+---+
```

- Switch **POWER OFF**.
- Examine the keyboard cable for damage.

If the cable is OK, follow this list to isolate and correct the cause of the problem.

1. Service or exchange the keyboard. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
2. Exchange the keyboard cable.
3. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
+---+
|033|
+---+
```

(From step 002)

Blank Video Display Attached to a 4684

Is there more than one display attached to this 4684?

Yes No

```
| |
| +---+
| |034|
| +---+
```

- Continue at Step 038.

```
+---+
|035|
+---+
```

Are all displays blank?

Yes No

```
| |
| +---+
| |036|
| +---+
```

- Continue at Step 038.

```
+---+
|037|
+---+
```


- Continue at Step 045.

+----+

| 038 |

+----+

(From steps 034 and 036)

Is U001 displayed on any other attached display?

Yes No

| |

| +----+

| | 039 |

| +----+

| |

| - Continue at Step 041.

|

+----+

| 040 |

+----+

Follow "PDP 6080: U001 Message" in topic 6.8.

+----+

| 041 |

+----+

(From step 039)

- Ensure that the video display cable is attached to the 4684.

- Ensure the video display power cord is connected to an ac receptacle.

- Ensure ac power is present at the receptacle.

- Ensure the display power switch is ON.

Is another video display available to be connected to this 4684?

Yes No

| |

| +----+

| | 042 |

| +----+

| |

| - Continue at Step 045.

|

+----+

| 043 |

+----+

- Switch **POWER OFF** at the 4684.

- Switch **POWER OFF** at the video display.

- Disconnect the blank video display and connect the replacement display in its place.

- Switch power ON at the replacement display and the 4684.

- Wait a few seconds.

Is the replacement display also blank?

Yes No

| |

| +----+

| | 044 |

| +----+

| |

| - Exchange the video display that was disconnected.

|

+----+

| 045 |

+----+

(From steps 037 and 042)

One of the attached point-of-sale devices may be causing a power supply shut-down problem.

To determine which device may be causing the problem, all devices will be disconnected and then reconnected one at a time.

- To make reconnection easier, label each disconnected cable with its socket location. See "Cable Sockets and Devices" in topic C.7.

- Switch **POWER OFF**.
- Disconnect all cables from the 4684 **except** the video display that is blank.
- Switch power ON and wait a few seconds.

Did the video display a message?

Yes No

|
+----+
|046|
+----+

- Switch **POWER OFF**.
 - Examine the cable on the blank video display for damage.
- If the cable is OK, follow this list to isolate and correct the cause of the problem.
1. Exchange the blank video display. See Chapter 7, "Removal and Replacement Procedures."
 2. Exchange the display cable.
 3. Service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
- Reconnect all point-of-sale devices.

+----+
|047|
+----+

(From step 049)

One of the devices or cables that was disconnected is causing the failure.

The devices will be reconnected, one at a time, to determine the failing device.

- Switch **POWER OFF**.
- Reconnect one of the disconnected devices.
- Switch power ON and wait for 30 seconds.

Did the video display a message?

Yes No

|
+----+
|048|
+----+

- The device that was last reconnected is failing.
- Examine the cable on the failing device for damage.
- If the cable is OK, follow this list to isolate and correct the cause of the problem.
1. Exchange the failing device. See Chapter 7, "Removal and Replacement Procedures."
 2. Exchange the device cable.
 3. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+
|049|
+----+

- Return to Step 047 and repeat the steps for each device that was disconnected until the failing device is found.
-

6.3 PDP 6030: Store Controller Communications Problem

Symptom Explanation	Conditions That Could Cause This Symptom
A symptom or failure occurred that indicates a communications problem.	<input type="checkbox"/> The telephone line is failing. <input type="checkbox"/> The modem is failing. <input type="checkbox"/> The communications adapter in the store controller is failing. <input type="checkbox"/> The store controller is failing. <input type="checkbox"/> A software problem occurred.

+---+
| 001 |
+---+

Warning: This procedure stops store controller operations.

- Check the phone line for correct operation.

Is the phone line operating correctly?

Yes No

| |
| |
| +---+
| | 002 |
| +---+
| |

Have the phone line serviced.

+---+
| 003 |
+---+

- Check the modem for correct operation.

Is the modem operating correctly?

Yes No

| |
| |
| +---+
| | 004 |
| +---+
| |

Have the modem serviced.

+---+
| 005 |
+---+

- Use the documentation for the modem to verify the modem settings.

Are the modem settings correct?

Yes No

| |
| |
| +---+
| | 006 |
| +---+
| |

Correct the modem settings.

+---+
| 007 |
+---+

- Switch **POWER OFF** at the store controller.

- Wait five seconds and switch power ON again.

- Look for power-on self test messages.

Did a message display?

Yes No

| |
| |
| +---+
| | 008 |
| +---+
| |

- Continue at Step 010.

+---+

| 009 |
+----+

Follow the *User Response* for the message under "Power-On Self Test Messages (Personal Computer AT, PS/2, or 4684)" in topic 2.3.

+----+
| 010 |
+----+

(From step 008)

- Continue problem determination using the maintenance documentation for the communications adapter.

Was a problem found while using the maintenance documentation for the communications adapter?

Yes No

| |
| |
| +----+
| | 011 |
| +----+
| |

- Continue at Step 013.

+----+
| 012 |
+----+

- Correct the problem and then reload the store controller application program.

+----+
| 013 |
+----+

(From step 011) .

- Continue problem determination using the maintenance documentation for the store controller.

Was a problem found?

Yes No

| |
| |
| +----+
| | 014 |
| +----+
| |

- Reload the store controller application program.

If the problem occurs again:

1. Fill in a copy of the "Problem Data Collection Form" in topic B.7.

- Use as primary keyword, MSG followed by the message number associated with the problem (Example: MSGW001).
- Use as additional keywords, data that appears in the message (RC=, FN=, CMD=, DUMP, etc.).

2. Report the problem to the store programmer and provide the preceding information.

+----+
| 015 |
+----+

- Correct the problem and then reload the store controller application program.

6.4 PDP 6040: Store Controller Power-On Self Test Problem

Symptom Explanation	Conditions That Could Cause This Symptom
A symptom or failure occurred that indicates a problem in the store controller.	<input type="checkbox"/> An adapter in the store controller is failing.
	<input type="checkbox"/> The store controller is failing.
	<input type="checkbox"/> A software problem occurred.

+---+
| 001 |
+---+

Warning: This procedure stops store controller operations.

- Switch **POWER OFF** at the store controller.
- Wait five seconds and switch power ON again.
- Look for power-on self test messages.

Did a message display?

Yes No

| |
| +---+ |
| | 002 | |
| +---+ |

- Continue at Step 004.

+---+
| 003 |
+---+

Follow the *User Response* for the message under "Power-On Self Test Messages (Personal Computer AT, PS/2, or 4684)" in topic 2.3.

+---+
| 004 |
+---+

(From step 002)

- Continue problem determination using the maintenance documentation for the Store Loop Adapter.

Warning: Power must be switched **OFF** at the store controller when it is being connected to the store loop.

Was a problem found?

Yes No

| |
| +---+ |
| | 005 | |
| +---+ |

- Continue at Step 007.

+---+
| 006 |
+---+

- Correct the problem and then reload the store controller application program.

+---+
| 007 |
+---+

(From step 005)

- Continue problem determination using the maintenance documentation for the store controller.

Was a problem found?

Yes No

| |
| +---+ |
| | 008 | |
| +---+ |

- Reload the store controller application program.

If the problem occurs again:

1. Fill in a copy of the "Problem Data Collection Form" in topic B.7.
 - Use the keyword(s) you recorded earlier.
 - Also, use additional keyword W507.
2. Follow the procedure for "Requesting a Store Controller Storage Dump" in topic B.1. **Note:** Message W507 is displayed at the store controller.
3. Report the problem to the store programmer and provide the preceding information.

+---+
|009|
+---+

Correct the problem and then reload the store controller application program.

6.5 PDP 6050: Store Loop Problem

Symptom Explanation	Conditions That Could Cause This Symptom
A symptom or failure occurred that indicates a store loop problem.	<input type="checkbox"/> The store loop is open up-loop from the beaconing 4683-xx1.
	<input type="checkbox"/> The beaconing 4683-xx1 base unit is failing.
	<input type="checkbox"/> The beaconing 4683-xx1 store loop cable is failing.
	<input type="checkbox"/> A 4683-xx1 other than the one beaconing is failing.
	<input type="checkbox"/> The primary store controller is failing.
	<input type="checkbox"/> The backup store controller is failing.

+----+
|001|
+----+

1. Obtain the filled-in "Terminal Identification Chart" from the book *IBM 4680 Store System: Preparing Your Site*.

-- or --

Obtain a store loop layout chart containing:

- The physical location of store controller(s) and point-of-sale terminals
- The order of store controller(s) and point-of-sale terminals on the store loop
- The terminal numbers.

2. Go to the 4683 that has the terminal number displayed in message W007 or W760. See the store loop layout chart.

If the terminal number in the message is 000, this indicates the backup store controller is beaconing.

3. Use the message or symptom found at the 4683 or backup store controller to resolve the problem.

Follow the *User Response* for the message in Chapter 2, "Messages" or in the *IBM 4680 Store System: Messages Guide*.

- or -

Follow the *Repair Action* for the symptom in Chapter 3, "Symptoms."

6.6 PDP 6060: Messages 6310 Through 637F on a 4684

Symptom Explanation	Conditions That Could Cause This Symptom
During power-on self tests, several of the point-of-sale devices attached to the device channel appear to fail.	<input type="checkbox"/> The 4684 system unit is failing.
	<input type="checkbox"/> One of the point-of-sale devices is failing.
	<input type="checkbox"/> One of the point-of-sale device cables is failing.

+----+
|001|
+----+

(From step 005)

- Switch **POWER OFF** at the 4684.
- Disconnect one of the point-of-sale devices from the 4684. See "Cable Sockets and Devices" in topic C.7.

Note: Do not disconnect the display showing the 63nn error(s).

- Insert the Backup Reference Diskette into the 4684.

When power is switched ON, only one error should display. That error should be associated with the device that was disconnected. See Table 6-3.

- Switch power ON at the 4684 and wait for the 63nn error(s) to display.

Did only one 63nn error display?

Yes No

| |
+----+
|002|
+----+

- Continue at Step 004.

+----+
|003|
+----+

The device that was last disconnected is failing.

- Switch **POWER OFF**.
- Examine the device cable for damage.

If the cable is OK, follow this list to isolate and correct the cause of the problem.

1. Exchange the failing device. See Chapter 7, "Removal and Replacement Procedures."
2. Exchange the device cable.
3. Service the 4684 system unit to exchange the system board. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+
|004|
+----+

(From step 002)

- Switch **POWER OFF**.
- Reconnect the device that was disconnected.

Have all devices been disconnected and then reconnected?

Yes No

| |
+----+
|005|
+----+

- Return to Step 001 and disconnect another device.


```
|
+---+
|006|
+---+
```

Service the 4684 system unit to exchange the system board. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
+-----+
| Table 6-3. Device error numbers
+-----+
| 6310 4684 50-Key Keyboard or the keyboard on the Combined
| Keyboard/Display (5A)
| 6311 4684 50-Key Keyboard or the keyboard on the Combined
| Keyboard/Display (5B)
| 6312 4684 Alphanumeric Keyboard (5A)
| 6313 4684 Alphanumeric Keyboard (5B)
| 6316 4684 Matrix Keyboard (5A)
| 6317 4684 Matrix Keyboard (5B)
| 631A 4684 ANPOS Keyboard (5A)
| 631B 4684 ANPOS Keyboard (5B)
| 6320 4684 Alphanumeric Display (4A)
| 6321 4684 Alphanumeric Display (4B, 9A, or 9B)
| 6322 4684 Operator Display (4A) or the display on the Combined
| Keyboard/Display (5A)
| 6323 4684 Operator Display (4B, 9A, or 9B) or the display on the
| Combined Keyboard/Display (5B)
| 6326 4684 Shopper Display (4A)
| 6327 4684 Shopper Display (4B, 9A, or 9B)
| 6330 4684 Point of Sale Printer Model 1 or 2 (7)
| 6334 4684 Point of Sale Printer Model 3 (7)
| 6336 4684 Fiscal Point of Sale Printer Model 2A (7)
| 6338 4684 Fiscal Point of Sale Printer Model 3A (7)
| 6340 4684 Keyboard or Single-Track MSR (5A)
| 6341 4684 Keyboard or Single-Track MSR (5B)
| 6346 4684 Dual-Track MSR or Low-Profile Dual-Track MSR (5A)
| 6347 4684 Dual-Track MSR or Low-Profile Dual-Track MSR (5B)
| 634A 4684 Point of Sale Scanner (17)
| 634B 4684 IBM Bar Code Reader
| 6350 4684 Totals Retention (System Board)
| 6354 4684 Cash Drawer (3A or 3B)
| 6360
| through 4684 External Device
| 6377
+-----+
```

6.7 PDP 6070: Messages 6390 Through 63EF on a 4684

Symptom Explanation	Conditions That Could Cause This Symptom
During power-on self tests, several of the point-of-sale devices attached to the 4683 device channel appear to fail.	<input type="checkbox"/> The 4683 is powered off or not connected.
	<input type="checkbox"/> One of the point-of-sale devices or Feature Expansion cards is failing on the 4683.
	<input type="checkbox"/> One of the point-of-sale device cables is failing on the 4683.
	<input type="checkbox"/> The 4683 base card is failing.
	<input type="checkbox"/> The 4683 power supply is failing.

+---+
|001|
+---+

(From step 010)

These messages will display at the 4684 if the 4683 is configured, but not powered ON or not connected to the 4684.

- Ensure that the 4683 was powered ON and connected to the 4684 when the 4684 system unit was powered ON.

Was the 4683 powered ON and connected?

Yes No

| |
| +---+
| |002|
| +---+

Connect the 4683 to the 4684 using cable 11, switch the 4683 power ON, and IPL the 4684.

+---+
|003|
+---+

Is the 4683 display blank?

Yes No

| |
| +---+
| |004|
| +---+

- Continue at Step 006.

+---+
|005|
+---+

Switch **POWER OFF** at the 4683 and follow this list to isolate and correct the cause of the problem.

1. Service the 4683 base unit to exchange the power supply.
2. Service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+---+
|006|
+---+

(From step 004)

- Switch **POWER OFF** at the 4683.
- Switch **POWER OFF** at the 4684.
- Disconnect one of the point-of-sale devices or Feature Expansion cards attached to the 4683.
- Switch power ON at the 4683.

When power is switched ON, only one error should display. That error

should be associated with the device or Feature Expansion card that was disconnected. See Table 6-4.

- Insert the Backup Reference Diskette into the 4684.
- Switch power ON at the 4684 and wait for the 63nn error(s) to display.

Did only one 63nn error display?

Yes No

```
|
| |
| +---+
| |007|
| +---+
|
```

- Continue at Step 009.

```
+---+
|008|
+---+
```

The device or Feature Expansion Card that was last disconnected is failing.

Follow this list to isolate and correct the cause of the problem.

1. Exchange the failing device or Feature Expansion card. See Chapter 7, "Removal and Replacement Procedures" in topic 7.0.
2. Exchange the device cable.
3. Service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
+---+
|009|
+---+
```

(From step 007)

- Switch **POWER OFF** at the 4683.
- Reconnect the device or Feature Expansion card that was disconnected.

Have all devices and Feature Expansion cards been disconnected and then reconnected?

Yes No

```
|
| |
| +---+
| |010|
| +---+
|
```

- Return to Step 001 and disconnect another device

```
+---+
|011|
+---+
```

Service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

Table 6-4. Device error numbers

6390	4683 50-key Keyboard or the keyboard on the Combined Keyboard/Display (5A)
6391	4683 50-key Keyboard or the keyboard on the Combined Keyboard/Display (5B)
6392	4683 Alphanumeric Keyboard (5A)
6393	4683 Alphanumeric Keyboard (5B)
6396	4683 Matrix Keyboard (5A)
6397	4683 Matrix Keyboard (5B)
639A	4683 ANPOS Keyboard (5A)
639B	4683 ANPOS Keyboard (5B)
63A0	4683 Alphanumeric Display (4A)
63A1	4683 Alphanumeric Display (4B, 9A, or 9B)
63A2	4683 Operator Display (4A) or the display on the Combined Keyboard/Display (5A)
63A3	4683 Operator Display (4B, 9A, or 9B) or the display on the Combined Keyboard/Display (5B)
63A6	4683 Shopper Display (4A)

63A7	4683	Shopper Display (4B, 9A, or 9B)
63A8	4683	Video Display (Location 2A)
63A9	4683	Video Display (Location 2B)
63B0	4683	Point of Sale Printer Model 1 or 2 (7)
63B4	4683	Point of Sale Printer Model 3 (7)
63B6	4683	Fiscal Point of Sale Printer Model 2A (7)
63B8	4683	Fiscal Point of Sale Printer Model 3A (7)
63C0	4683	Keyboard or Single-Track MSR (5A)
63C1	4683	Keyboard or Single-Track MSR (5B)
63C6	4683	Dual-Track MSR or Low-Profile Dual-Track MSR (5A)
63C7	4683	Dual-Track MSR or Low-Profile Dual-Track MSR (5B)
63CA	4683	Point of Sale Scanner (17)
63CB	4683	IBM Bar Code Reader
63D0	4683	Totals Retention (Base Card)
63D4	4683	Cash Drawer (3A or 3B)
63E4	4683	Feature Expansion Card, Location 2A, Socket 25
63E5	4683	Feature Expansion Card, Location 2B, Socket 25
63E8	4683	Feature Expansion Card, Location 2A, Socket 23
63E9	4683	Feature Expansion Card, Location 2B, Socket 23

6.8 PDP 6080: U001 Message

Symptom Explanation	Conditions That Could Cause This Symptom
The display showing U001 has completed its power-ON self tests and it is waiting to receive communications from the 4683 base unit or 4684 system unit.	<input type="checkbox"/> The 4683 base card is failing.
	<input type="checkbox"/> The 4683 base unit is failing.
	<input type="checkbox"/> The 4684 system unit is failing.
	<input type="checkbox"/> One of the 4683 Feature Expansion cards is failing.
	<input type="checkbox"/> One of the attached devices is failing.
	<input type="checkbox"/> One of the attached device cables is failing.

PICTURE 85

Figure 6-5. 50-Key Keyboard Lights. For other keyboards, see "Point of Sale Terminal Keyboards" in topic C.6.

```
+---+
|001|
+---+
```

Is U001 displayed at a 4683?

Yes No

```
|
|
| +---+
| |002|
| +---+
```

U001 is displayed at a 4684.

- Continue at Step 058.

```
+---+
|003|
+---+
```

Is U001 displayed at one of the following?

- A 4683-xx1
- A 4683-xx2 attached to a 4683-xx1.

Yes No

```
|
|
| +---+
| |004|
| +---+
```

U001 is displayed at a 4683-xx2 attached to a 4684.

- Continue at Step 031.

```
+---+
|005|
+---+
```

System Display -- When multiple displays are attached to a 4683 one must be configured as the system display. When only one display is attached, it is the system display. System messages (Wnnn), test messages (Tnnnn), and other messages of this type appear only on the system display.

Is U001 displayed on the system display?

Yes No

```
|
|
| +---+
| |006|
| +---+
```

Run the test for the display that is displaying U001. See Chapter 4, "IBM 4680 Operating System Test Procedures" or Chapter 5, "IBM 4684 Reference Diskette Test Procedures."

```
+---+
|007|
```

+----+

- Switch **POWER OFF**.

Use the WAIT light and the unlabeled light on the keyboard to determine the status of the 4683. See Figure 6-5.

When power is switched ON, the keyboard WAIT light comes ON and stays ON for at least two seconds. The unlabeled light comes on and goes OFF after 15 seconds.

- Switch power ON while carefully observing the keyboard WAIT light.

Did the WAIT light come ON and stay ON for two seconds or longer?

Yes No

|
|
| +----+
| |008|
| +----+
|

Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Service or exchange the keyboard. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
2. Exchange the keyboard cable.

+----+

|009|

+----+

- Wait 15 seconds after power is switched ON and observe the unlabeled light on the keyboard. See Figure 6-5.

Is the unlabeled light OFF?

Yes No

|
|
| +----+
| |010|
| +----+
|

- Continue at Step 014.

+----+

|011|

+----+

Repair action depends on the type of display that is showing U001.

Is U001 displayed on a video display?

Yes No

|
|
| +----+
| |012|
| +----+
|

Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange the display showing U001. See Chapter 7, "Removal and Replacement Procedures."
2. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+

|013|

+----+

Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange the Feature Expansion card for the video display showing U001. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
2. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
+----+
|014|
+----+
(From step 010)
```

One of the attached point-of-sale devices may be causing U001 to display.

To determine which device may be causing the problem, all devices will be disconnected and then reconnected one at a time.

- Switch **POWER OFF**.

- To make reconnecting easier, note the location of each of the device cables. See "Cable Sockets and Devices" in topic C.7.

- Disconnect all point-of-sale devices except:

- Socket 1 (4683-xx1)
- Socket 5A (keyboard)
- Socket 5B (keyboard)
 only if 5A is not used
- Socket 11 (4683-xx2).

- Switch power ON, wait 15 seconds, and observe the unlabeled light on the keyboard.

Is the unlabeled light OFF?

Yes No

```
|
|
| +----+
| |015|
| +----+
```

- Continue at Step 019.

PICTURE 86

Figure 6-6. Panel Behind the 4683-xx1 Side-Cover

```
|
|
| +----+
| |016|
| +----+
(From step 018)
```

One of the devices or cables that was disconnected is failing.

- Hold the 4683-xx1 dump switch pressed and switch **POWER OFF**. See Figure 6-6.

This **does not** cause a storage dump. It **does** disable storage retention and cause an IPL when power is switched ON again.

- Reconnect one of the disconnected devices.

- Switch power ON, wait 15 seconds, and observe the unlabeled light on the keyboard.

Is the unlabeled light OFF?

Yes No

```
|
|
| +----+
| |017|
| +----+
```

The device that was reconnected is failing.

- Switch **POWER OFF**.

- Examine the cable on the failing device for a damaged or loose connection.

If the cable and connections are OK, follow this list to isolate and correct the cause of the problem.

1. Exchange the device.

Note: If the 3687 Checkout Scanner Model 2 is the failing device, exchange only the scanner adapter. See "3687 Model 2 Scanner Adapter Removal and Replacement" in topic 7.27.

2. Exchange the device cable.

3. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

- After the problem is corrected, reconnect all point-of-sale devices.

+----+
| 018 |
+----+

- Return to Step 016 and repeat the steps for each device that was disconnected until the failing device is found.

+----+
| 019 |
+----+

(From step 015)

Is a Feature Expansion card installed in the 4683 base unit?

Yes No

| |
| +----+
| | 020 |
| +----+

- Continue at Step 028.

+----+
| 021 |
+----+

A Feature Expansion card may be causing U001 to display.

The Feature Expansion cards will be removed to determine if they are causing the problem.

- Switch **POWER OFF**.

- To make reinstallation easier, note the location of the Feature Expansion card(s).

- Remove the Feature Expansion card(s) from the base unit. See "Removing a Feature Expansion Card" in topic 7.28.5.1.

- Switch power ON, wait 15 seconds, and observe the unlabeled light on the keyboard.

Is the unlabeled light OFF?

Yes No

| |
| +----+
| | 022 |
| +----+

- Continue at Step 028.

+----+
| 023 |
+----+

Did you remove two Feature Expansion cards?

Yes No

| |
| +----+
| | 024 |
| +----+

- Switch **POWER OFF**.

Exchange the Feature Expansion card that was removed.

- After the problem is corrected, reconnect all point-of-sale devices.

+----+
| 025 |
+----+

One of the Feature Expansion cards is failing.

- Switch **POWER OFF**.

- Reinstall the Feature Expansion card that was in location 2A.
- Switch power ON, wait 15 seconds, and observe the unlabeled light on the keyboard.

Is the unlabeled light OFF?

Yes No

```
|      |  
|      |  
| +---+ |  
| |026| |  
| +---+ |
```

The Feature Expansion card in location 2A is failing.

- Switch **POWER OFF**.
 - Reinstall the Feature Expansion card that was in location 2B.
- Exchange the failing Feature Expansion card.
- After the problem is corrected, reconnect all point-of-sale devices.

```
+---+  
|027|  
+---+
```

The Feature Expansion card from location 2B is failing.

- Switch **POWER OFF**.
- Exchange the failing Feature Expansion card.
- After the problem is corrected, reconnect all point-of-sale devices.

```
+---+  
|028|  
+---+
```

(From steps 020 and 022)

The point-of-sale keyboard may be causing the problem.

- Switch **POWER OFF**.
- Reinstall any Feature Expansion cards that were removed.
- Reconnect all point-of-sale devices.
- Disconnect the keyboard cable from socket 5A or 5B. Note the location of the cable.
- Switch power ON.

Did the 4683 IPL stop with U001 displayed?

Yes No

```
|      |  
|      |  
| +---+ |  
| |029| |  
| +---+ |
```

- Switch **POWER OFF**.
 - Examine the keyboard cable for a damaged or loose connection.
- If the cable and connections are OK, follow this list to isolate and correct the cause of the problem.

1. Service or exchange the keyboard. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
2. Exchange the keyboard cable.
3. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
+---+  
|030|  
+---+
```

- Switch **POWER OFF**.

Service the 4683 base unit. For service information, see the *IBM*

4683/4684 Point of Sale Terminal: Maintenance Manual.

+----+
| 031 |
+----+
(From step 004)

U001 Displayed at a 4683-xx2 Attached to a 4684

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

- Note which displays are displaying U001.

Is U001 displayed in all displays attached to the 4683-xx2?

Yes No

| |
| +----+ |
| | 032 | |
| +----+ |
| | |
| - Continue at Step 034. |
| |

+----+
| 033 |
+----+

- Continue at Step 039.

+----+
| 034 |
+----+
(From step 032)

Does this 4683-xx2 have a shopper display?

Yes No

| |
| +----+ |
| | 035 | |
| +----+ |
| | |
| - Continue at Step 039. |
| |

+----+
| 036 |
+----+

Is the shopper display the only display with U001 displayed all the time?

Yes No

| |
| +----+ |
| | 037 | |
| +----+ |
| | |
| - Continue at Step 039. |
| |

+----+
| 038 |
+----+

Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange the shopper display. See "Shopper Display Removal and Replacement" in topic 7.20.
2. Service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+
| 039 |
+----+
(From steps 033, 035, and 037)

One of the attached point-of-sale devices may be causing U001 to display.

- Note which display is displaying U001.

To determine which device may be causing the problem, all devices will be

disconnected and then reconnected one at a time.

- Switch **POWER OFF**.
- To make reconnecting easier, note the location of each of the device cables. See "Cable Sockets and Devices" in topic C.7.
- Disconnect all point-of-sale devices **except** the display showing U001.

If more than one display has U001 displayed, leave one of the following displays connected:

- The alphanumeric display
- The operator display
- The combined keyboard/display.

- Switch power ON, wait 30 seconds, and observe the display.

Did the display message proceed beyond U001?

Yes No

```
|
|
+----+
|040|
+----+
```

- Continue at Step 044.

```
+----+
|041|
+----+
(From step 043)
```

One of the devices or cables that was disconnected is failing.

- Switch **POWER OFF**.
- Reconnect one of the disconnected devices.
- Switch power ON, wait 30 seconds, and observe the display.

Did the display message proceed beyond U001?

Yes No

```
|
|
+----+
|042|
+----+
```

The device that was reconnected is failing.

- Switch **POWER OFF**.
- Examine the cable on the failing device for a damaged or loose connection.

If the cable and connections are OK, follow this list to isolate and correct the cause of the problem.

1. Exchange the device. See Chapter 7, "Removal and Replacement Procedures" in topic 7.0.

Note: If the 3687 Checkout Scanner Model 2 is the failing device, exchange only the scanner adapter. See "3687 Model 2 Scanner Adapter Removal and Replacement" in topic 7.27.

2. Exchange the device cable.
3. Service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

- After the problem is corrected, reconnect all point-of-sale devices.

```
+----+
|043|
+----+
```

- Return to Step 041 and repeat the steps for each device that was disconnected until the failing device is found.

```
+----+
|044|
+----+
```

(From step 040)

Is a Feature Expansion card installed in the 4683 base unit?

Yes No

```
| |
| |
| +---+
| |045|
| +---+
```

- Continue at Step 053.

```
+---+
|046|
+---+
```

A Feature Expansion card may be causing U001 to display.

The Feature Expansion cards will be disconnected to determine if they are causing the problem.

- Switch **POWER OFF**.
- To make reinstallation easier, note the location of the Feature Expansion card(s).
- Remove the Feature Expansion card(s) from the base unit. See "Removing a Feature Expansion Card" in topic 7.28.5.1.
- Switch power ON, wait 30 seconds, and observe the display.

Did the display message proceed beyond U001?

Yes No

```
| |
| |
| +---+
| |047|
| +---+
```

- Continue at Step 053.

```
+---+
|048|
+---+
```

Did you remove two Feature Expansion cards?

Yes No

```
| |
| |
| +---+
| |049|
| +---+
```

- Switch **POWER OFF**.
- Exchange the Feature Expansion card that was removed.
- After the problem is corrected, reconnect all point-of-sale devices.

```
+---+
|050|
+---+
```

One of the Feature Expansion cards is failing.

- Switch **POWER OFF**.
- Reinstall the Feature Expansion card that was in location 2A.
- Switch power ON, wait 30 seconds, and observe the display.

Did the display message proceed beyond U001?

Yes No

```
| |
| |
| +---+
| |051|
| +---+
```

- The Feature Expansion card in location 2A is failing.
- Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.
- 1. Exchange the failing Feature Expansion card.
- 2. Service the 4683 base unit to exchange the base card. For

service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

- After the problem is corrected, reinstall the Feature Expansion card that was in location 2B and reconnect all point-of-sale devices.

+----+
| 052 |
+----+

The Feature Expansion card from location 2B is failing.

Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange the failing Feature Expansion card.
2. Service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

- After the problem is corrected, reconnect all point-of-sale devices.

+----+
| 053 |
+----+

(From steps 045 and 047)

Is another display available to be connected to this 4683?

Yes No

| |
+----+
| 054 |
+----+

Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
2. Exchange the display.

+----+
| 055 |
+----+

- Switch **POWER OFF**.

- Disconnect the current display and install the replacement display.

- Switch power ON, wait 30 seconds, and observe the display.

Did the display message proceed beyond U001?

Yes No

| |
+----+
| 056 |
+----+

- Switch **POWER OFF**.

Service the 4683 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+
| 057 |
+----+

- Switch **POWER OFF**.

Exchange the display that was disconnected.

+----+
| 058 |
+----+

(From step 002)

U001 Displayed at a 4684

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

- Note which displays are displaying U001.

Is U001 displayed in all displays (except video) attached to the 4684?

Yes No

```
|      |  
|      |  
| +---+ |  
| |059| |  
| +---+ |
```

- Continue at Step 061.

```
+---+  
|060|  
+---+
```

- Continue at Step 066.

```
+---+  
|061|  
+---+
```

(From step 059)

Does this 4684 have a shopper display?

Yes No

```
|      |  
|      |  
| +---+ |  
| |062| |  
| +---+ |
```

- Continue at Step 066.

```
+---+  
|063|  
+---+
```

Is the shopper display the only display with U001 displayed all the time?

Yes No

```
|      |  
|      |  
| +---+ |  
| |064| |  
| +---+ |
```

- Continue at Step 066.

```
+---+  
|065|  
+---+
```

Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange the shopper display. See "Shopper Display Removal and Replacement" in topic 7.20.
2. Service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
+---+  
|066|  
+---+
```

(From steps 060, 062, and 064)

One of the attached devices may be causing U001 to display.

To determine which device may be causing the problem, all devices will be disconnected and then reconnected one at a time.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

- Switch **POWER OFF**.

- To make reconnecting easier, note the location of each of the device cables. See "Cable Sockets and Devices" in topic C.7.

- Disconnect all devices **except** the display showing U001.

If more than one display has U001 displayed, leave one of the following displays connected:

- The alphanumeric display
- The operator display
- The combined keyboard/display.

- Switch power ON, wait 30 seconds, and observe the display.

Did the display message proceed beyond U001?

Yes No

```
| |
| |
| +---+
| |067|
| +---+
```

- Continue at Step 071.

```
+---+
|068|
+---+
```

(From step 070)

One of the devices or cables that was disconnected is failing.

- Switch **POWER OFF**.

- Reconnect one of the disconnected devices.

- Switch power ON, wait 30 seconds, and observe the display.

Did the display message proceed beyond U001?

Yes No

```
| |
| |
| +---+
| |069|
| +---+
```

The device that was reconnected is failing.

- Switch **POWER OFF**.

- Examine the cable on the failing device for a damaged or loose connection.

If the cable and connections are OK, follow this list to isolate and correct the cause of the problem.

1. Exchange the device. See Chapter 7, "Removal and Replacement Procedures" in topic 7.0.

Note: If the 3687 Checkout Scanner Model 2 is the failing device, exchange only the scanner adapter. See "3687 Model 2 Scanner Adapter Removal and Replacement" in topic 7.27.

2. Exchange the device cable.

3. Service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

- After the problem is corrected, reconnect all devices.

```
+---+
|070|
+---+
```

- Return to Step 068 and repeat the steps for each device that was disconnected until the failing device is found.

```
+---+
|071|
+---+
```

(From step 067)

Is another display available to be connected to this 4684?

Yes No

```
| |
| |
| +---+
| |072|
| +---+
```

Switch **POWER OFF** and follow this list to isolate and correct the

cause of the problem.

1. Exchange the display.
2. Service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+---+
|073|
+---+

- Switch **POWER OFF**.
- Disconnect the current display and install the replacement display.
- Switch power ON, wait 30 seconds, and observe the display.

Did the display message proceed beyond U001?

Yes No

|
+---+
|074|
+---+

- Switch **POWER OFF**.

Service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+---+
|075|
+---+

- Switch **POWER OFF**.

Exchange the display that was disconnected.

6.9 PDP 6090: U002 Message

Symptom Explanation	Conditions That Could Cause This Symptom
The 4683-xx2 has completed its power-on self tests and it is waiting to receive communications from its partner 4683-xx1 or 4684.	<input type="checkbox"/> The 4683-xx2 base unit is failing.
	<input type="checkbox"/> Cable 11 is failing on the 4683-xx2.
	<input type="checkbox"/> Cable 11 is failing on the partner 4683-xx1.
	<input type="checkbox"/> The partner 4683-xx1 base unit is failing.
	<input type="checkbox"/> The partner 4684 system unit is failing.

+---+
|001|
+---+

Is U002 displayed at a 4683-xx2 attached to a 4683-xx1?

Yes No

| |
| +---+ |
| |002| |
| +---+ |

U002 is displayed at a 4683-xx2 attached to a 4684.

- Continue at Step 011.

+---+
|003|
+---+

U002 appears on the 4683-xx2 display if its partner 4683-xx1 is not switched ON.

Is power switched ON at its partner 4683-xx1?

Yes No

| |
| +---+ |
| |004| |
| +---+ |

- The 4683-xx2 is operating correctly.

Switch power ON at its partner 4683-xx1.

+---+
|005|
+---+

U002 appears on the 4683-xx2 display if U001 is displayed at its partner 4683-xx1.

Is U001 displayed at its partner 4683-xx1?

Yes No

| |
| +---+ |
| |006| |
| +---+ |

- Continue at Step 008.

+---+
|007|
+---+

The 4683-xx2 is operating correctly.

Go to its partner 4683-xx1 and follow "PDP 6080: U001 Message" in topic 6.8.

+---+
|008|
+---+

(From step 006)

U002 appears on the 4683-xx2 display if its partner 4683-xx1 is not

working correctly.

Is its partner 4683-xx1 working correctly?

Yes No

```
| |
| |
| +---+
| |009|
| +---+
```

The 4683-xx2 is operating correctly.

Go to its partner 4683-xx1 and start problem determination again using Chapter 1, "Start Here."

```
+---+
|010|
+---+
```

- Switch **POWER OFF** at the 4683-xx2.
- Switch **POWER OFF** at its partner 4683-xx1.
- Examine the following cables for a damaged or loose connection.
 - Cable and socket 11 on the 4683-xx2. See "Cable Sockets and Devices" in topic C.7.
 - Cable and socket 11 on its partner 4683-xx1.

If the cables, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.

1. Service the 4683-xx2 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
2. Service its partner 4683-xx1 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
3. Exchange the cable connected to socket 11 on the 4683-xx2 base unit.
4. Exchange the cable connected to socket 11 on its partner 4683-xx1 base unit.

```
+---+
|011|
+---+
(From step 002) .
```

U002 is displayed at a 4683-xx2 attached to a 4684.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

- Switch **POWER OFF**, wait 5 seconds, and switch power ON.
- Wait for the 4684 to complete its IPL.

Did the 4684 complete its IPL?

Yes No

```
| |
| |
| +---+
| |012|
| +---+
```

- Continue problem determination using the 4684 message or symptom.

Follow the *User Response* for the message in Chapter 2, "Messages" or in the *IBM 4680 Store System: Messages Guide*.

- or -

Follow the *Repair Action* for the symptom in Chapter 3, "Symptoms."

```
+---+
|013|
+---+
```

Did the 4683-xx2 IPL stop with U002 displayed?

Yes No

```
| |
| |
| +---+
| |014|
```

+----+

The 4683-xx2 is operating correctly now.

+----+

|015|

+----+

- Switch **POWER OFF** at the 4684.
- Switch **POWER OFF** at the 4683-xx2.
- Examine the following cables for a damaged or loose connection.
 - Cable and socket 11 on the 4683-xx2. See "Cable Sockets and Devices" in topic C.7.
 - Cable and socket 11 on its partner 4683-xx1.

If the cables, sockets, and connections are OK, follow this list to isolate and correct the cause of the problem.

1. Service the 4683-xx2 base unit to exchange the base card. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
2. Exchange the cable connected to socket 11 on the 4683-xx2 base unit.
3. Exchange the cable connected to socket 11 on the 4684.
4. Service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

6.10 PDP 6100: U003 Message

Symptom Explanation	Conditions That Could Cause This Symptom
4683 -- The 4683-xx1 has completed its power-ON self tests and it is waiting to receive communications from the store loop. Partner 4683-xx2s display the same message. The 4683-xx1 is not yet receiving store loop polls.	<input type="checkbox"/> The store loop is open up-loop from the 4683-xx1 displaying U003.
	<input type="checkbox"/> A 4683-xx1 is failing up-loop.
	<input type="checkbox"/> The 4683-xx1 store loop cable is failing.
	<input type="checkbox"/> The 4683-xx1 base unit is failing.
4684 -- The 4684 has completed its power-ON self tests and communications have been established on the device channel. A partner 4683-xx2 displays the same message.	<input type="checkbox"/> The 4684 system unit is failing.
	<input type="checkbox"/> One of the devices attached to the 4684 is failing.
	<input type="checkbox"/> One of the device cables attached to the 4684 is failing.
	<input type="checkbox"/> The primary store controller is failing.
	<input type="checkbox"/> The backup store controller is failing.
	<input type="checkbox"/> The distance exceeds 4000 feet (1220 meters) between powered-ON 4683-xx1s on the store loop.

PICTURE 87

NOTES:

- This illustration represents a typical store loop, using the IBM Loop Wiring Concentrator. Your store loop may not be wired like this, but the position of your 4683s on the loop and their relationship to the store controller will be similar.
- The 4683-P can also be a 4683-001 or 4683-A01. The 4683-002 can also be a 4683-A02.
- The terminal numbers are shown in numeric order, but they can be put in any order on your store loop.
- The store controller transmits data to the first 4683 down-loop on the store loop. This 4683 receives the data and passes it to the next 4683 down-loop. This continues with each 4683 receiving data from the 4683 immediately up-loop from its position, and passing it on to the next 4683 down-loop. The last 4683 down-loop passes the data back to the store controller.

Figure 6-7. Store Loop with an Open Condition

PICTURE 88

Figure 6-8. Store Controller Store Loop Adapter and Store Loop Receptacle

```
+----+
|001|
+----+
```

To display the terminal number, press **S1**, type **7**, and press **S2**.

To display messages at a point-of-sale terminal (when the keyboard OFFLINE light is ON), press **S1**, type **2**, and press **S2**.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = **S1** and **Enter** = **S2**.

To display a system message at the store controller, sign on at the store controller, press **System Request** and then press the **M** key.

Is U003 displayed at one of the following?

- A 4683-xx1**
- A 4683-xx2 attached to a 4683-xx1.**

```
Yes  No
|    |
|    +----+
```

| 002 |
+---+

U003 is displayed at one of the following.

- A 4684
- A 4683-xx2 attached to a 4684.

- Continue at Step 081.

+---+
| 003 |
+---+

- Before starting store loop problem determination, obtain the filled-in "Terminal Identification Chart" from the book *IBM 4680 Store System: Preparing Your Site*.

-- or --

Obtain a store loop layout chart containing:

- The physical location of store controller(s) and point-of-sale terminals
- The order of store controller(s) and point-of-sale terminals on the store loop
- The terminal numbers.

- Ensure the store loop cable is plugged into socket 1 on the 4683-xx1 displaying U003 and that the other end of the cable is plugged into the store loop receptacle. See Figure 6-8 and Figure 6-9.

Is there a backup store controller connected to this store loop?

Yes No

| |
+---+
| 004 |
+---+

- Continue at Step 013.

+---+
| 005 |
+---+

- At the backup store controller, display the Backup Store Loop status. See "Requesting Store Controller Status" in topic B.6.

Is the Backup Store Loop status "Providing Backup"?

Yes No

| |
+---+
| 006 |
+---+

- Continue at Step 010.

+---+
| 007 |
+---+

- At the primary store controller, display the Store Loop Control status.

The primary store controller is the controller that has been designated to control the store loop. It is supported by the backup store controller.

Is the Store Loop Control status "Controlling Loop"?

Yes No

| |
+---+
| 008 |
+---+

- Disconnect the primary store controller from the store loop by unplugging its store loop cable from the store loop receptacle.

- **Do not reconnect this store controller until the problem has been resolved.**

- Continue at Step 013.

+---+
| 009 |
+---+

Both store controllers are trying to control the store loop. This

condition is caused by attaching an active store controller to the store loop when another active store controller is on the store loop.

- Disable the backup store controller. See "Requesting Store Controller Status" in topic B.6.
- Wait 15 seconds and enable the backup store controller.

Return to normal store operation.

PICTURE 89

Figure 6-9. 4683-xx1 Store Loop Cable 1 and Shorting Plug 1B

+---+

|010|

+---+

(From step 006)

- Disconnect the backup store controller from the store loop by unplugging its store loop cable from the store loop receptacle.
- **Do not reconnect this store controller until the problem has been resolved.**
- Wait 15 seconds and observe the keyboard lights on the 4683 displaying U003.

Did the OFFLINE light go OFF?

Yes No

| |

| |

| +---+ |

| |011| |

| +---+ |

| |

| |

| |

| +---+ |

| |012| |

| +---+ |

| |

| |

| |

| |

| |

| |

| +---+ |

| |013| |

| +---+ |

| |

| |

| |

| |

| |

| |

| |

| |

| |

| |

| |

| |

| |

| |

| |

| |

| |

| |

| |

| |

| |

| |

| |

| +---+ |

| |015| |

| +---+ |

| |

| |

| |

| |

| |

| |

| |

| |

| |

Did message W760 display at the store controller?

Yes No

```
|
| |
| +---+
| |016|
| +---+
```

- Continue at Step 019.

```
+---+
|017|
+---+
```

- Use the store loop layout chart to determine if the terminal number of this 4683 is the same as the terminal number in message W760.

Is the terminal number the same?

Yes No

```
|
| |
| +---+
| |018|
| +---+
```

Follow "PDP 6050: Store Loop Problem" in topic 6.5.

```
+---+
|019|
+---+
```

(From step 016)

The store controller transmits data down-loop to the first 4683-xx1 and to all the following 4683s on the store loop. Each 4683 receives its data from the 4683 or store controller up-loop from its position on the store loop.

Is this the first powered-ON 4683-xx1 down-loop from the active store controller?

Yes No

```
|
| |
| +---+
| |020|
| +---+
```

- Continue at Step 040.

```
+---+
|021|
+---+
```

- Disconnect this 4683-xx1 from the store loop by unplugging its store loop cable from the store loop receptacle. See Figure 6-8.

- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

```
|
| |
| +---+
| |022|
| +---+
```

- Reconnect the 4683-xx1 to the store loop and continue at Step 068.

```
+---+
|023|
+---+
```

- Continue at Step 052.

```
+---+
|024|
+---+
```

(From step 014)

- Return to the 4683 displaying U003. If it is a 4683-xx2, go to its partner 4683-xx1. A 4683-xx2 displays the status of its partner 4683-xx1.

A 4683-xx1 is considered active if it has a terminal number, is powered-ON, and attached to the store loop.

Are there other active 4683-xx1s attached to the store loop?

Yes No

```
| |
| +---+
| |025|
| +---+
```

- Continue at Step 029.

```
+---+
|026|
+---+
```

Is this 4683 the only 4683-xx1 that is not working correctly?

Yes No

```
| |
| +---+
| |027|
| +---+
```

- Return to the active store controller and continue at Step 032.

```
+---+
|028|
+---+
```

- Disconnect this 4683-xx1 from the store loop by unplugging its store loop cable from the store loop receptacle. See Figure 6-8.

- Continue at Step 052.

```
+---+
|029|
+---+
```

(From step 025)

- Unplug the store loop cable from socket 1 on the 4683-xx1. See Figure 6-9.

- Wait five seconds and reconnect the cable.

- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did the active store controller display message W760, W761, or W764?

Yes No

```
| |
| +---+
| |030|
| +---+
```

- Continue at Step 032.

```
+---+
|031|
+---+
```

- Return to the 4683-xx1 and switch **POWER OFF**.

Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
+---+
|032|
+---+
```

(From steps 027 and 030)

Is the store loop cable on the active store controller plugged into the store loop receptacle?

Yes No

```
| |
| +---+
| |033|
| +---+
```

Correct the problem by connecting the store controller cable to the store loop receptacle.

```
+---+
|034|
+---+
```


Is power switched ON at the active store controller?

Yes No

```
|
| |
| +---+
| |035|
| +---+
```

| - Switch power ON and continue at Step 037.

```
+---+
|036|
+---+
```

- Return to the 4683-xx1 and switch **POWER OFF**.

- Switch power ON again to IPL the 4683 and continue at Step 037.

```
+---+
|037|
+---+
```

(From steps 035 and 036)

Did the 4683 IPL correctly?

Yes No

```
|
| |
| +---+
| |038|
| +---+
```

| The failure symptom has changed.

| Follow the *User Response* for the message in Chapter 2, "Messages" or
| in the *IBM 4680 Store System: Messages Guide*.

| - or -

| Follow the *Repair Action* for the symptom in Chapter 3, "Symptoms."

```
+---+
|039|
+---+
```

- Record keywords CONTROLLER and INCORROUT.

At the active store controller, follow "PDP 6040: Store Controller
Power-On Self Test Problem" in topic 6.4.

```
+---+
|040|
+---+
```

(From step 020)

- Look for 4683-xx1s up-loop from this 4683 with U003 displayed. See the
store loop layout chart.

Are there any 4683-xx1s up-loop from this 4683 with U003 displayed?

Yes No

```
|
| |
| +---+
| |041|
| +---+
```

| - Continue at Step 047.

```
+---+
|042|
+---+
```

- Return to the active store controller and check each 4683-xx1 down-loop
until you find one displaying U003.

Is this the first powered-ON 4683-xx1 down-loop from the active store
controller?

Yes No

```
|
| |
| +---+
| |043|
| +---+
```

| - Continue at Step 047.

+---+
| 044 |
+---+

- Disconnect this 4683-xx1 from the store loop by unplugging its store loop cable from the store loop receptacle. See Figure 6-8.
- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

| |
| +---+
| | 045 |
| +---+
| |

- Reconnect the 4683-xx1 to the store loop and continue at Step 068.

+---+
| 046 |
+---+

- Continue at Step 052.
-

+---+
| 047 |
+---+

(From steps 041 and 043)

- Disconnect this 4683-xx1 from the store loop by unplugging its store loop cable from the store loop receptacle. See Figure 6-8.
- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

| |
| +---+
| | 048 |
| +---+
| |

- Reconnect the 4683-xx1 to the store loop and continue at Step 050.

+---+
| 049 |
+---+

- Continue at Step 052.
-

+---+
| 050 |
+---+

(From step 048)

- Go to the next powered-ON 4683-xx1 up-loop from this 4683. See the store loop layout chart.
- Disconnect this 4683-xx1 from the store loop by unplugging its store loop cable from the store loop receptacle.
- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

| |
| +---+
| | 051 |
| +---+
| |

- Reconnect the 4683-xx1 to the store loop and continue at Step 059.

+---+
| 052 |
+---+

(From steps 023, 028, 046, and 049)

Is the store loop cable plugged into socket 1 on this 4683-xx1 base unit?

Yes No

```
|
|
| +---+
| |053|
| +---+
```

Correct the problem by plugging the cable into socket 1.

```
+---+
|054|
+---+
```

- Unplug the store loop cable from socket 1 on this 4683-xx1 base unit.
- Attach shorting plug 1B to the 4683-end of the cable. See Figure 6-9.
- Plug the other end of the cable into the store loop receptacle.
- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did the active store controller display message W760 or W764?

Yes No

```
|
|
| +---+
| |055|
| +---+
```

- Return to the 4683-xx1 and switch **POWER OFF**.

Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
+---+
|056|
+---+
```

- Return to the 4683-xx1 and examine its store loop receptacle for damage.

Is the store loop receptacle OK?

Yes No

```
|
|
| +---+
| |057|
| +---+
```

Report the problem to the person responsible for repairing store loop wiring.

```
+---+
|058|
+---+
```

Correct the problem by exchanging the store loop cable attached to the 4683-xx1.

```
+---+
|059|
+---+
```

(From step 051)

The problem is in the store loop segment between the two powered-ON 4683-xx1 point-of-sale terminals.

Are there any powered-OFF 4683-xx1s attached to the store loop segment between the two powered-ON 4683s?

Yes No

```
|
|
| +---+
| |060|
| +---+
```

The problem is in the store loop wiring **or** in store loop receptacles for the 4683-xx1s.

Report the problem to the person responsible for repairing store loop wiring.

```
+---+
|061|
+---+
```

- One at a time, disconnect each powered-OFF 4683-xx1 from the store loop segment by unplugging its store loop cable from the store loop

receptacle.

- After each 4683 is disconnected, return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

|
| +---+
| |062|
| +---+

| If all powered-OFF 4683s have **not** been disconnected, continue
| disconnecting them and displaying the system message at the active
| store controller.

| - or -

| If all powered-OFF 4683s have been disconnected, the problem is in
| the store loop wiring **or** the store loop receptacles for the
| 4683-xx1s.

- Reconnect all 4683s and report the problem to the person
responsible for repairing store loop wiring.

+---+
|063|
+---+

- Unplug the store loop cable from socket 1 on the 4683-xx1 that you just disconnected from the store loop.
- Attach shorting plug 1B to the 4683-end of the cable. See Figure 6-9.
- Plug the other end of the cable into the store loop receptacle.
- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did the active store controller display message W760 or W764 again?

Yes No

|
| +---+
| |064|
| +---+

- Return to the 4683-xx1 and switch **POWER OFF**.

| Service the 4683 base unit. For service information, see the *IBM*
| *4683/4684 Point of Sale Terminal: Maintenance Manual*.

+---+
|065|
+---+

- Return to the 4683-xx1 and examine its store loop receptacle for damage.

Is the store loop receptacle OK?

Yes No

|
| +---+
| |066|
| +---+

| Report the problem to the person responsible for repairing store loop
| wiring.

+---+
|067|
+---+

Correct the problem by exchanging the store loop cable attached to the
4683-xx1.

+---+
|068|
+---+

(From steps 022 and 045)

Is the store loop cable plugged into the store loop adapter on the active
store controller? See Figure 6-8.

Yes No

```
|
|
| +---+
| |069|
| +---+
```

Correct the problem by plugging the cable into the store loop adapter.

```
+---+
|070|
+---+
```

- Disconnect the active store controller from the store loop by unplugging its store loop cable from the store loop receptacle.
- Display the system message at the active store controller by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

```
|
|
| +---+
| |071|
| +---+
```

The problem is in the active store controller, the store loop adapter, or the store loop adapter cable.

- Record keywords CONTROLLER and INCORROUT.

At the active store controller, follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

```
+---+
|072|
+---+
```

- Reconnect the active store controller to the store loop.

Are there any powered-OFF 4683-xx1s connected to the store loop segment between the 4683 displaying U003 and the active store controller?

Yes No

```
|
|
| +---+
| |073|
| +---+
```

The problem is in the store loop wiring between the active store controller and the 4683-xx1 or in the store loop receptacle for the store controller or 4683-xx1.

Report the problem to the person responsible for repairing store loop wiring.

```
+---+
|074|
+---+
```

- One at a time, disconnect each powered-OFF 4683-xx1 from the store loop segment by unplugging its store loop cable from the store loop receptacle.
- After each 4683 is disconnected, return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

```
|
|
| +---+
| |075|
| +---+
```

If all powered-OFF 4683s have **not** been disconnected, continue disconnecting them and displaying the system message at the active store controller.

- or -

If all powered-OFF 4683s have been disconnected, the problem is in the store loop wiring between the active store controller and the 4683-xx1 or in the store loop receptacle for the store controller or 4683-xx1.

- Reconnect all 4683s and report the problem to the person responsible for repairing store loop wiring.

+----+
|076|
+----+

- Unplug the store loop cable from socket 1 on the 4683-xx1 that you just disconnected from the store loop.
- Attach shorting plug 1B to the 4683-end of the cable. See Figure 6-9.
- Plug the other end of the cable into the store loop receptacle.
- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did the active store controller display message W760 or W764 again?

Yes No

|
+----+
|077|
+----+

- Return to the 4683-xx1 and switch **POWER OFF**.

Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+
|078|
+----+

- Return to the 4683-xx1 and examine its store loop receptacle for damage.

Is the store loop receptacle OK?

Yes No

|
+----+
|079|
+----+

Report the problem to the person responsible for repairing store loop wiring.

+----+
|080|
+----+

Correct the problem by exchanging the store loop cable attached to the 4683.

+----+
|081|
+----+

(From steps 002 and 084)

U003 is displayed at one of the following.

- A 4684
- A 4683-xx2 attached to a 4684.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

- Switch **POWER OFF**.
- Insert the Backup Reference Diskette.
- Disconnect one of the attached point-of-sale devices. **Do not** disconnect the display that was displaying U003. See "Cable Sockets and Devices" in topic C.7.

When power is switched ON, only one error should display. That error should be associated with the device that was disconnected. See Table 6-5.

- Switch power ON, wait 30 seconds, and observe the display.

Did the 4684 IPL stop with U003 displayed?

Yes No

|
+----+

| 082 |
+---+

The device that was disconnected is failing.

Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Exchange the device. See Chapter 7, "Removal and Replacement Procedures" in topic 7.0.
2. Exchange the device cable.
3. Service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+---+
| 083 |
+---+

- Switch **POWER OFF**.

- Reconnect the device that was disconnected.

Have all devices been disconnected?

Yes No

| |
+---+
| 084 |
+---+

- Return to Step 081 and repeat the steps.

+---+
| 085 |
+---+

Service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

-----+
| Table 6-5. Device error numbers
+-----+

6310	4684 50-key Keyboard or the keyboard on the Combined Keyboard/Display (5A)
6311	4684 50-key Keyboard or the keyboard on the Combined Keyboard/Display (5B)
6312	4684 Alphanumeric Keyboard (5A)
6313	4684 Alphanumeric Keyboard (5B)
6316	4684 Matrix Keyboard (5A)
6317	4684 Matrix Keyboard (5B)
631A	4684 ANPOS Keyboard (5A)
631B	4684 ANPOS Keyboard (5B)
6320	4684 Alphanumeric Display (4A)
6321	4684 Alphanumeric Display (4B, 9A, or 9B)
6322	4684 Operator Display (4A) or the display on the Combined Keyboard/Display (5A)
6323	4684 Operator Display (4B, 9A, or 9B) or the display on the Combined Keyboard/Display (5B)
6326	4684 Shopper Display (4A)
6327	4684 Shopper Display (4B, 9A, or 9B)
6330	4684 Point of Sale Printer Model 1 or 2 (7)
6334	4684 Point of Sale Printer Model 3 (7)
6336	4684 Fiscal Point of Sale Printer Model 2A (7)
6338	4684 Fiscal Point of Sale Printer Model 3A (7)
6340	4684 Keyboard or Single-Track MSR (5A)
6341	4684 Keyboard or Single-Track MSR (5B)
6346	4684 Dual-Track MSR or Low-Profile Dual-Track MSR (5A)
6347	4684 Dual-Track MSR or Low-Profile Dual-Track MSR (5B)
634A	4684 Point of Sale Scanner (17)
634B	4684 IBM Bar Code Reader
6350	4684 Totals Retention (System Board)
6354	4684 Cash Drawer (3A or 3B)
6360	
through	4684 External Device
6377	

-----+

6.11 PDP 6110: U004 Message

Symptom Explanation	Conditions That Could Cause This Symptom
<p>4683 -- The 4683-xx1 has completed its power-ON self tests and it has started to communicate over the store loop with the store controller. It has received store loop polls from the store controller. It has not yet received a response to messages sent to the store controller. A partner 4683-xx2 also displays U004.</p> <p>When the optional feature "Terminal Program Load" is being used, this message indicates:</p> <ul style="list-style-type: none"> <input type="checkbox"/> This 4683 Master Terminal has not received a load request from any other 4683. -- or -- <input type="checkbox"/> This 4683 has not received a response to a load request it sent to the 4683 Master Terminal. 	<ul style="list-style-type: none"> <input type="checkbox"/> The store loop is open down-loop from the 4683 displaying U004. <input type="checkbox"/> A 4683-xx1 is failing down-loop. <input type="checkbox"/> The 4683-xx1 store loop cable is failing. <input type="checkbox"/> The 4683-xx1 base unit is failing. <input type="checkbox"/> The 4684 system unit is failing. <input type="checkbox"/> The 4684 system application is failing. <input type="checkbox"/> The 4684 system application diskette is failing. <input type="checkbox"/> The primary store controller is failing. <input type="checkbox"/> The backup store controller is failing. <input type="checkbox"/> The distance exceeds 4000 feet (1220 meters) between powered-ON 4683-xx1s on the store loop. <input type="checkbox"/> If terminal program load is being used, and this condition exists for more than ten minutes, terminal program load is not operating correctly. Report the problem to the store programmer.
<p>4684 -- The 4684 has completed its power-ON self tests and the terminal load has started. A partner 4683-xx2 also displays U004.</p>	

PICTURE 90

NOTES:

- This illustration represents a typical store loop, using the IBM Loop Wiring Concentrator. Your store may not be wired like this, but the position of your 4683s on the loop and their relationship to the controller will be similar.
- The 4683-P can also be a 4683-001 or 4683-A01. The 4683-002 can also be a 4683-A02.
- The terminal numbers are shown in numeric order, but they can be put in any order on your store loop.
- The store controller transmits data to the first 4683 down-loop on the store loop. This 4683 receives the data and passes it to the next 4683 down-loop. This continues with each 4683 receiving data from the 4683 immediately up-loop from its position, and passing it on to the next 4683 down-loop. The last 4683 down-loop passes the data back to the store controller.

Figure 6-10. Store Loop with an Open Condition

PICTURE 91

Figure 6-11. Store Controller Store Loop Adapter and Store Loop Receptacle

```
+---+
|001|
+---+
```

To display the terminal number, press **S1**, type **7**, and press **S2**.

To display messages at a point-of-sale terminal (when the keyboard OFFLINE light is ON), press **S1**, type **2**, and press **S2**.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = **S1** and **Enter** = **S2**.

To display a system message at the store controller, sign on at the store controller, press **System Request** and then press the **M** key.

Is U004 displayed at one of the following?

- A 4683-xx1
- A 4683-xx2 attached to a 4683-xx1.

Yes No

```
| |
| |
| +---+
| |002|
| +---+
```

U004 is displayed at one of the following.

- A 4684
- A 4683-xx2 attached to a 4684.

- Continue at Step 046.

```
+---+
|003|
+---+
```

- Before starting store loop problem determination, obtain the filled-in "Terminal Identification Chart" from the book *IBM 4680 Store System: Preparing Your Site*.

-- or --

Obtain a store loop layout chart containing:

- The physical location of store controller(s) and point-of-sale terminals
- The order of store controller(s) and point-of-sale terminals on the store loop
- The terminal numbers.

Is there a backup store controller connected to this store loop?

Yes No

```
| |
| |
| +---+
| |004|
| +---+
```

- Continue at Step 013.

```
+---+
|005|
+---+
```

- At the backup store controller, display the Backup Store Loop status. See "Requesting Store Controller Status" in topic B.6.

Is the Backup Store Loop status "Providing Backup"?

Yes No

```
| |
| |
| +---+
| |006|
| +---+
```

- Continue at Step 010.

```
+---+
|007|
+---+
```

- At the primary store controller, display the Store Loop Control status.

The primary store controller is the controller that has been designated to control the store loop. It is supported by the backup store controller.

Is the Store Loop Control status "Controlling Loop"?

Yes No

```
| |
| |
| +---+
| |008|
```

```
+----+
|
| - Disconnect the primary store controller from the store loop by
|   unplugging its store loop cable from the store loop receptacle.
|
| Do not reconnect this store controller until the problem has been
| resolved.
|
| - Continue at Step 013.
|
+----+
|009|
+----+
```

Both store controllers are trying to control the store loop. This condition is caused by attaching an active store controller to the store loop when another active store controller is on the store loop.

- Disable the backup store controller. See "Requesting Store Controller Status" in topic B.6.

- Wait 15 seconds and enable the backup store controller.

Return to normal store operation.

PICTURE 92

Figure 6-12. 4683-xx1 Store Loop Cable 1 and Shorting Plug 1B

```
+----+
|010|
+----+
(From step 006)
```

- Disconnect the backup store controller from the store loop by unplugging its store loop cable from the store loop receptacle. See Figure 6-11.

Do not reconnect this store controller until the problem has been resolved.

- Wait 15 seconds and observe the keyboard lights on the 4683-xx1 displaying U004.

Did the OFFLINE light go OFF?

Yes No

```
|
|
| +----+
| |011|
| +----+
|
```

- Continue at Step 013.

```
+----+
|012|
+----+
```

- Record keywords CONTROLLER and INCORROUT.

At the backup store controller, follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

```
+----+
|013|
+----+
(From steps 004, 008, and 011)
```

- Display the system message at the active store controller by pressing **System Request** and then pressing the **M** key.

A store controller is active when it is:

The only store controller on the store loop
-- or --
The primary store controller and its status is "Controlling Loop"
-- or --
The backup store controller and its status is "Providing Backup".

Did the active store controller display message W760 or W764?

Yes No

```
|
|
```

+----+
| 014 |
+----+

- Continue at Step 043.

+----+
| 015 |
+----+

Did message W760 display?

Yes No

+----+
| 016 |
+----+

- Continue at Step 018.

+----+
| 017 |
+----+

Follow "PDP 6050: Store Loop Problem" in topic 6.5.

+----+
| 018 |
+----+

(From step 016)

- Return to the 4683 displaying U004. If it is a 4683-xx2, go to its partner 4683-xx1. A 4683-xx2 displays the status of its partner 4683-xx1. See the store loop layout chart.

A 4683 is considered active if it has a terminal number, is powered-ON, and attached to the store loop.

Is this the last active 4683-xx1 attached to the store loop?

Yes No

+----+
| 019 |
+----+

- Go to the last active 4683-xx1 attached to the store loop. See the store loop layout chart.

- Continue at Step 020.

+----+
| 020 |
+----+

(From step 019)

- Disconnect this 4683-xx1 from the store loop by unplugging its store loop cable from the store loop receptacle.

- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

+----+
| 021 |
+----+

- Reconnect the 4683-xx1 to the store loop and continue at Step 029.

+----+
| 022 |
+----+

Is the store loop cable plugged into socket 1 on this 4683-xx1 base unit?

Yes No

+----+
| 023 |
+----+

Correct the problem by plugging the cable into socket 1.

+----+
| 024 |
+----+

- Unplug the store loop cable from socket 1 on this 4683-xx1 base unit.
- Attach shorting plug 1B to the 4683-end of the cable. See Figure 6-12.
- Plug the other end of the cable into the store loop receptacle.
- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did the active store controller display message W760 or W764?

Yes No

| |
| |
| +----+
| | 025 |
| +----+

- Return to the 4683-xx1 and switch **POWER OFF**.

Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+
| 026 |
+----+

- Return to the 4683-xx1 and examine its store loop receptacle for damage.

Is the store loop receptacle OK?

Yes No

| |
| |
| +----+
| | 027 |
| +----+

Report the problem to the person responsible for repairing store loop wiring.

+----+
| 028 |
+----+

Correct the problem by exchanging the store loop cable attached to the 4683-xx1.

+----+
| 029 |
+----+

(From step 021)

Are there any powered-OFF 4683-xx1s attached to the store loop segment between the 4683 that you just reconnected to the store loop and the active store controller?

Yes No

| |
| |
| +----+
| | 030 |
| +----+

- Continue at Step 038.

+----+
| 031 |
+----+

- One at a time, disconnect each powered-OFF 4683-xx1 from the store loop segment by unplugging its store loop cable from the store loop receptacle.

- After each 4683 is disconnected, return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

| |
| |
| +----+
| | 032 |
| +----+

If all powered-OFF 4683s have **not** been disconnected, continue disconnecting them and displaying the system message at the active store controller.

- or -

If all powered-OFF 4683s have been disconnected, reconnect all of them and continue at Step 038.

+----+
|033|
+----+

- Unplug the store loop cable from socket 1 on the 4683-xx1 that you just disconnected from the store loop.
- Attach shorting plug 1B to the 4683-end of the cable. See Figure 6-12.
- Plug the other end of the cable into the store loop receptacle.
- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did the active store controller display message W760 or W764?

Yes No

|
+----+
|034|
+----+

- Return to the 4683-xx1 and switch **POWER OFF**.

Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+
|035|
+----+

- Return to the 4683-xx1 and examine its store loop receptacle for damage.

Is the store loop receptacle OK?

Yes No

|
+----+
|036|
+----+

Report the problem to the person responsible for repairing store loop wiring.

+----+
|037|
+----+

Correct the problem by exchanging the store loop cable attached to the 4683.

+----+
|038|
+----+

(From steps 030 and 032)

Is the store loop cable plugged into the store loop adapter on the active store controller? See Figure 6-11.

Yes No

|
+----+
|039|
+----+

Correct the problem by plugging the cable into the store loop adapter.

+----+
|040|
+----+

- Disconnect the active store controller from the store loop by unplugging its store loop cable from the store loop receptacle.
- Display the system message at the active store controller by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

|
|
+----+
| 041 |
+----+

The problem is in the active store controller, the store loop adapter, or the store loop adapter cable.

- Record keywords CONTROLLER and INCORROUT.

At the active store controller, follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

+----+
| 042 |
+----+

- Reconnect the active store controller to the store loop.

The problem is in the store loop wiring between the active store controller and the last active 4683-xx1 or in the store loop receptacle for the store controller or 4683-xx1.

Report the problem to the person responsible for repairing store loop wiring.

+----+
| 043 |
+----+

(From step 014)

- Return to the 4683 displaying U004. If it is a 4683-xx2, go to its partner 4683-xx1. A 4683-xx2 displays the status of its partner 4683-xx1. See the store loop layout chart.

- Switch **POWER OFF**.

- Wait five seconds and switch power ON again.

- Wait at least two minutes for the 4683 to become operational.

Is U004 still displayed?

Yes No

|
|
+----+
| 044 |
+----+

The failure symptom has changed.

Follow the *User Response* for the message in Chapter 2, "Messages" or in the *IBM 4680 Store System: Messages Guide*.

- or -

Follow the *Repair Action* for the symptom in Chapter 3, "Symptoms."

+----+
| 045 |
+----+

- Record keywords CONTROLLER and INCORROUT.

At the primary store controller, follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

+----+
| 046 |
+----+

(From step 002)

U004 is displayed at one of the following.

- A 4684
- A 4683-xx2 attached to a 4684.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

- Switch **POWER OFF**.
- Insert the Backup Reference Diskette.
- Switch power On.

Did the 4684 IPL stop with U004 displayed?

Yes No

```
|      |
|      |
| +---+ |
| |047| |
| +---+ |
```

- Continue at Step 049.

```
+---+
|048|
+---+
```

- Switch **POWER OFF**.

Service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
+---+
|049|
+---+
```

(From step 047)

Do you use the diskette drive to IPL the 4684 with the system application?

Yes No

```
|      |
|      |
| +---+ |
| |050| |
| +---+ |
```

The system application on the fixed disk drive is failing.

Report the U004 message to the store programmer.

```
+---+
|051|
+---+
```

- IPL the 4684 using a different system application diskette.

Did the 4684 IPL stop with U004 displayed?

Yes No

```
|      |
|      |
| +---+ |
| |052| |
| +---+ |
```

The system application diskette that was being used is failing.

Exchange the system application diskette.

```
+---+
|053|
+---+
```

The system application is failing.

Report the U004 message to the store programmer.

6.12 PDP 6120: U005 Message

Symptom Explanation	Conditions That Could Cause This Symptom
<p>The 4683-xx1 has completed its power-ON self tests and it has sent a message to the store controller to request an IPL. The first load block has been received. A partner 4683-xx2 also displays U005.</p> <p>When the optional feature "Terminal Program Load" is being used, this message indicates:</p> <ul style="list-style-type: none"> <input type="checkbox"/> This 4683 Master Terminal has received a load request from another 4683 and it is transferring its storage across the store loop. -- or -- <input type="checkbox"/> This 4683 has received a response to a load request it sent to the 4683 Master Terminal and it is receiving a storage load. 	<ul style="list-style-type: none"> <input type="checkbox"/> The store controller is failing. <input type="checkbox"/> The store loop is failing. <input type="checkbox"/> If terminal program load is being used, and this condition exists for more than ten minutes, terminal program load is not operating correctly. Report the problem to the store programmer.

+---+
 |001|
 +---+

- Switch **POWER OFF** at the 4683-xx1.
- Wait five seconds and switch power ON again.

Did the 4683 IPL correctly?

Yes No

| |
 +---+
 |002|
 +---+

- Continue at Step 004.

+---+
 |003|
 +---+

The 4683 is operating correctly now.

+---+
 |004|
 +---+

(From step 002)

Did the 4683 IPL stop with U005 displayed again?

Yes No

| |
 +---+
 |005|
 +---+

The failure symptom has changed.

Follow the *User Response* for the message in Chapter 2, "Messages" or in the *IBM 4680 Store System: Messages Guide*.

- or -

Follow the *Repair Action* for the symptom in Chapter 3, "Symptoms."

|
+---+
|006|
+---+

The 4683-xx1 hardware is operating correctly.

The software can also cause this problem.

1. Fill in a copy of the "Problem Data Collection Form" in topic B.7.
2. Use primary keyword MSGU005 and additional keywords CONTROLLER and INCORROUT.
3. Report the problem to the store programmer and provide the preceding information.

6.13 PDP 6130: U006 Message

Symptom Explanation	Conditions That Could Cause This Symptom
4683 -- The 4683-xx1 has completed its IPL process and the terminal operating system load is complete. The terminal operating system has control and optional drivers are being installed. A partner 4683-xx2 also displays U006.	<input type="checkbox"/> The store controller is failing.
	<input type="checkbox"/> The terminal number is incorrect.
	<input type="checkbox"/> A 4683 Feature Expansion card is in the wrong location.
	<input type="checkbox"/> The alphanumeric, operator, or shopper display is plugged into the wrong socket.
4684 -- The 4684 has completed its power-ON self tests and the terminal operating system load has established communications on the device channel. A partner 4683-xx2 also displays U006.	<input type="checkbox"/> The 4683-xx1 has the wrong partner 4683-xx2 attached.
	<input type="checkbox"/> The 4684 has the wrong partner 4683-xx2 attached.
	<input type="checkbox"/> The 4683-xx1 base unit is failing.
	<input type="checkbox"/> The 4684 system unit is failing.
	<input type="checkbox"/> The partner 4683-xx2 base unit is failing.
	<input type="checkbox"/> The partner 4683-xx2 keyboard is failing.
	<input type="checkbox"/> The partner 4683-xx2 alphanumeric or operator display is failing.

+---+
| 001 |
+---+

Is U006 displayed at one of the following?

- A 4683-xx1
- A 4683-xx2 attached to a 4683-xx1.

Yes No

|
+---+
| 002 |
+---+

U006 is displayed at one of the following.

- A 4684
- A 4683-xx2 attached to a 4684.

- Continue at Step 032.

+---+
| 003 |
+---+

System Display -- When multiple displays are attached to a point-of-sale terminal, one must be configured as the system display. When only one display is attached, it is the system display. System messages (Wnnn), test messages (Tnnnn), and other messages of this type appear only on the system display.

- Switch **POWER OFF**.

- Wait five seconds and switch power ON again.

Is U006 still displayed?

Yes No

|
+---+
| 004 |
+---+

The failure symptom has changed.

Follow the *User Response* for the message in Chapter 2, "Messages" or in the *IBM 4680 Store System: Messages Guide*.

- or -

Follow the *Repair Action* for the symptom in Chapter 3, "Symptoms."

+----+
|005|
+----+

Is U006 displayed on the system display?

Yes No

|
|
+----+
|006|
+----+

- Continue at the test procedure for the display that is displaying U006.

+----+
|007|
+----+

Is this a 4683-xx2?

Yes No

|
|
+----+
|008|
+----+

- Continue at Step 011.

+----+
|009|
+----+

Is its partner 4683-xx1 displaying U006 also?

Yes No

|
|
+----+
|010|
+----+

- Continue at Step 019.

+----+
|011|
+----+

(From step 008)

- See "Displaying Point of Sale Terminal Configuration Using STC" in topic A.7.2 and ensure the attached devices match the devices defined by the configuration for the 4683-xx1. Return here when displaying configuration is complete.

Do the attached devices match the devices defined by the configuration?

Yes No

|
|
+----+
|012|
+----+

- Switch **POWER OFF** at the 4683-xx1.

Replug the devices to match the configuration.

- or -

Go to the *IBM 4680 Store System: User's Guide* and change the configuration to match the attached devices.

+----+
|013|
+----+

- Switch **POWER OFF**.

- Wait five seconds and switch power ON again.

- Wait for message W008 to display.

Did message W008 appear in the system display?

Yes No

|
|

+---+
| 014 |
+---+

- Continue at Step 016.

+---+
| 015 |
+---+

The 4683-xx1 is operating correctly now.

+---+
| 016 |
+---+
(From step 014)

Did the 4683-xx1 IPL stop with U006 displayed again?

Yes No

|
+---+
| 017 |
+---+

The failure symptom has changed.

Follow the *User Response* for the message in Chapter 2, "Messages" **or**
in the *IBM 4680 Store System: Messages Guide*.

- or -

Follow the *Repair Action* for the symptom in Chapter 3, "Symptoms."

+---+
| 018 |
+---+

Switch **POWER OFF** and follow this list to isolate and correct the cause of
the problem.

1. Service or exchange the keyboard. For service information, see the
IBM 4683/4684 Point of Sale Terminal: Maintenance Manual.
2. Service the 4683-xx1 base unit. For service information, see the *IBM*
4683/4684 Point of Sale Terminal: Maintenance Manual.
3. The software can also cause this problem.
 - a. Fill in a copy of the "Problem Data Collection Form" in topic B.7.
Use primary keyword MSGU006 and additional keywords 4683-1 and
IPL.
 - b. While U006 is displayed, request a storage dump. See "Requesting
a 4683 Storage Dump" in topic B.2.
 - c. Report the problem to the store programmer and provide the
preceding information.

+---+
| 019 |
+---+

(From step 010)

- See "Displaying Point of Sale Terminal Configuration Using STC" in
topic A.7.2 and ensure the attached devices match the devices defined by
the configuration for the 4683-xx2. Return here when display
configuration is complete.

Do the attached devices match the devices defined by the configuration?

Yes No

|
+---+
| 020 |
+---+

- Switch **POWER OFF** at the 4683-xx2.

Replug the devices to match the configuration.

- or -

Go to the *IBM 4680 Store System: User's Guide* and change the configuration to match the attached devices.

+----+
| 021 |
+----+

- Switch **POWER OFF**.
- Wait five seconds and switch power ON again.
- Wait for message W008 to display.

Did message W008 appear in the system display?

Yes No

| |
| |
+----+
| 022 |
+----+

- Continue at Step 024.

+----+
| 023 |
+----+

The 4683-xx2 is operating correctly now.

+----+
| 024 |
+----+

(From step 022)

Did the 4683-xx2 IPL stop with U006 displayed again?

Yes No

| |
| |
+----+
| 025 |
+----+

The failure symptom has changed.

Follow the *User Response* for the message in Chapter 2, "Messages" or in the *IBM 4680 Store System: Messages Guide*.

- or -

Follow the *Repair Action* for the symptom in Chapter 3, "Symptoms."

+----+
| 026 |
+----+

- Switch **POWER OFF** at the 4683-xx2.
- Disconnect the keyboard cable from socket 5A or 5B. Note the location of the cable.
- Switch power ON again.

Did the 4683-xx2 IPL correctly?

Yes No

| |
| |
+----+
| 027 |
+----+

- Switch **POWER OFF** at the 4683-xx2.
- Reconnect the keyboard cable to the base unit and continue at Step 029.

+----+
| 028 |
+----+

Switch **POWER OFF** and service or exchange the keyboard. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*. To exchange, see "Keyboard Removal and Replacement" in topic 7.6.

+----+
| 029 |

+----+
(From step 027)

Is there another 4683-xx2 that also fails with U006 displayed?

Yes No

|
|
+----+
| 030 |
+----+

Follow this list to isolate and correct the cause of the problem.

1. Service the 4683-xx2 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
2. Exchange the point-of-sale display. See Chapter 7, "Removal and Replacement Procedures."
3. The software can also cause this problem.
 - a. Fill in a copy of the "Problem Data Collection Form" in topic B.7. Use primary keyword MSGU006 and additional keywords 4683-1 and IPL.
 - b. Switch power ON at the 4683-xx2.
 - c. While U006 is displayed, request a storage dump. See "Requesting a 4683 Storage Dump" in topic B.2.
 - d. Report the problem to the store programmer and provide the preceding information.

+----+
| 031 |
+----+

The 4683-xx2 hardware is operating correctly.

The software can also cause this problem.

1. Fill in a copy of the "Problem Data Collection Form" in topic B.7. Use primary keyword MSGU006 and additional keywords 4683-1 and IPL.
2. Switch power ON at the 4683-xx2.
3. While U006 is displayed, request a storage dump. See "Requesting a 4683 Storage Dump" in topic B.2.
4. Report the problem to the store programmer and provide the preceding information.

+----+
| 032 |
+----+

(From step 002)

U006 is displayed at one of the following.

- A 4684
- A 4683-xx2 attached to a 4684.

WARNING: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

- Switch **POWER OFF**.
- Insert the Backup Reference Diskette.
- Switch power On.

Did the 4684 IPL stop with U006 displayed?

Yes No

|
|
+----+
| 033 |
+----+

- Continue at Step 035.

+----+
| 034 |

+---+

- Switch **POWER OFF**.

Service the 4684 system unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+---+

| 035 |

+---+

(From step 033)

- Select **START TESTS** from Menu-M1 and run tests to determine the cause of the U006 message.

Did the tests indicate a problem by displaying a message or symptom?

Yes No

| |

+---+

| 036 |

+---+

- Continue problem determination using the message or symptom displayed by the tests.

Follow the *User Response* for the message in Chapter 2, "Messages" or in the *IBM 4680 Store System: Messages Guide*.

- or -

Follow the *Repair Action* for the symptom in Chapter 3, "Symptoms."

+---+

| 037 |

+---+

Report the U006 message to the store programmer.

6.14 PDP 6140: U007 Message

Symptom Explanation	Conditions That Could Cause This Symptom
4683 -- The 4683-xx1 IPL process has loaded terminal message records and I/O data translation tables into storage. Point-of-sale terminal I/O driver programs are being loaded into storage. The display optional driver is installed. The remaining optional drivers are being installed.	<input type="checkbox"/> The store controller is failing. <input type="checkbox"/> The Terminal Operating System is failing. <input type="checkbox"/> The 4684 has a configuration error or conflict.
4684 -- Communications on the 4684 device channel have been completed and the 4684 is waiting for the terminal operating system to load.	

+---+
|001|
+---+

Is U007 displayed at one of the following?

- A 4683-xx1
- A 4683-xx2 attached to a 4683-xx1.

Yes No

|
+---+
|002|
+---+

U007 is displayed at one of the following.

- A 4684
- A 4683-xx2 attached to a 4684.

- Continue at Step 009.

+---+
|003|
+---+

System Display -- When multiple displays are attached to a point-of-sale terminal, one must be configured as the system display. When only one display is attached, it is the system display. System messages (Wnnn), test messages (Tnnnn), and other messages of this type appear only on the system display.

U007 remains on a display until the system sends data to the display. On a 4683 with multiple displays, U007 can remain on some displays after the system display has displayed other messages.

- Switch **POWER OFF** at the 4683-xx1.
- Wait five seconds and switch power ON again.

Did the 4683 IPL correctly?

Yes No

|
+---+
|004|
+---+

- Continue at Step 006.

+---+
|005|
+---+

The 4683-xx1 is operating correctly now.

+----+
|006|
+----+
(From step 004)

Did the 4683 IPL stop with U007 displayed again?

Yes No

|
|
| +----+
| |007|
| +----+

The failure symptom has changed.

Follow the *User Response* for the message in Chapter 2, "Messages" or in the *IBM 4680 Store System: Messages Guide*.

- or -

Follow the *Repair Action* for the symptom in Chapter 3, "Symptoms."

+----+
|008|
+----+

The 4683-xx1 hardware is operating correctly.

The software can also cause this problem.

1. Fill in a copy of the "Problem Data Collection Form" in topic B.7.
2. Use primary keywords MSGU007 and HANG and additional keywords 4683-1 and IPL.
3. While U007 is displayed, request a storage dump. See "Requesting a 4683 Storage Dump" in topic B.2.
4. Report the problem to the store programmer and provide the preceding information.

+----+
|009|
+----+

(From step 002)

U007 is displayed at one of the following.

- A 4684
- A 4683-xx2 attached to a 4684.

WARNING: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

You may have a configuration error or conflict. For example, the 4684 is configured with a video as the primary display and the video display is no longer connected or it is failing.

Is a video display attached to or available for the 4684?

Yes No

|
|
| +----+
| |010|
| +----+

- Continue at Step 014.

+----+
|011|
+----+

WARNING: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

- Switch **POWER OFF** and follow this list.

1. If required, connect the video display to the 4684.
2. Insert the Backup Reference Diskette.
3. Switch power ON and select START CONFIGURATION at Menu-M1.

4. Delete the video display from this 4684s configuration.
5. Select ACTIVATE NEW CONFIGURATION at Menu-C2.
6. Follow instructions on the screen.
7. Switch **POWER OFF**.
8. Remove the Backup Reference Diskette.
9. Switch power ON.

Did the 4684 IPL stop with U007 displayed?

Yes No

```
| |
| +---+
| |012|
| +---+
```

The point-of-sale terminal is operating correctly now.

```
+---+
|013|
+---+
```

Report the problem to the store programmer.

```
+---+
|014|
+---+
```

(From step 010)

WARNING: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

- Switch **POWER OFF** and follow this list.

1. Disconnect all of the attached point-of-sale devices **except** the display that was showing U007 and the keyboard. See "Cable Sockets and Devices" in topic C.7.
2. Switch power ON and observe the display.
3. When the 4684 stops with a 63nn error message displayed, press and hold the dump switch on the back panel of the 4684. See "Cable Sockets and Devices" in topic C.7.
4. Switch **POWER OFF** and release the dump switch.
5. Reconnect the disconnected point-of-sale devices.
6. Switch power ON and select START CONFIGURATION at Menu-M1.
7. Select CREATE/CHANGE CONFIGURATION at Menu-C1.

All point-of-sale devices that are attached and powered-ON are automatically configured.

8. Select ACTIVATE NEW CONFIGURATION at Menu-C2.
9. Follow instructions on the screen.
10. Switch **POWER OFF**.
11. Remove the Backup Reference Diskette.
12. Switch power ON.

Did the 4684 IPL stop with U007 displayed?

Yes No

```
| |
| +---+
| |015|
| +---+
```

The point-of-sale terminal is operating correctly now.

```
+---+
|016|
+---+
```

Report the problem to the store programmer.

6.15 PDP 6150: U008 Message

Symptom Explanation	Conditions That Could Cause This Symptom
The 4683-xx1 is dumping the contents of storage to a disk file in the store controller. The 4683 IPLs automatically after the dump is complete.	<input type="checkbox"/> The 4683-xx1 application program is failing.
	<input type="checkbox"/> The 4683-xx1 terminal program is failing.
	<input type="checkbox"/> The 4683-xx1 dump switch was pressed.
	<input type="checkbox"/> The 4683-xx1 base unit is failing.

+---+
|001|
+---+

Note: This message can stay on the 4683 display for ten minutes.

- Wait for the 4683-xx1 to complete the dump and IPL. For information about the IPL procedure, see "TEST 4120: Power-On Self Test (4683 Only)" in topic 4.12.

Did the 4683 IPL correctly?

Yes No

| |
+---+
|002|
+---+

- Continue at Step 008.

+---+
|003|
+---+

The 4683 sends a System Event Record to the store controller that indicates the reason the 4683 dump and IPL occurred.

- Scan system events in the System Log, at the store controller. See "Requesting a System Log Report" in topic B.4.

- Find the System Event Record logged by this 4683 and containing source number 084.

Is message W052 in the System Event Record?

Yes No

| |
+---+
|004|
+---+

- Continue at Step 015.

+---+
|005|
+---+

Was the 4683-xx1 dump switch pressed?

Yes No

| |
+---+
|006|
+---+

- Switch **POWER OFF** at the 4683-xx1.

Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+---+
|007|
+---+

- Continue at Step 015.

+---+
|008|
+---+

(From step 002)

Is U008 displayed?

Yes No

|
+---+
|009|
+---+

The failure symptom has changed.

Follow the *User Response* for the message in Chapter 2, "Messages" or in the *IBM 4680 Store System: Messages Guide*.

- or -

Follow the *Repair Action* for the symptom in Chapter 3, "Symptoms."

+---+
|010|
+---+

- Switch **POWER OFF** at the 4683-xx1.

- Wait five seconds and switch power ON again.

Did the 4683 IPL correctly?

Yes No

|
+---+
|011|
+---+

- Continue at Step 013.

+---+
|012|
+---+

- Continue at Step 015.

+---+
|013|
+---+

(From step 011)

Did U008 display again?

Yes No

|
+---+
|014|
+---+

The failure symptom has changed.

Follow the *User Response* for the message in Chapter 2, "Messages" or in the *IBM 4680 Store System: Messages Guide*.

- or -

Follow the *Repair Action* for the symptom in Chapter 3, "Symptoms."

+---+
|015|
+---+

(From steps 004, 007, and 012)

The 4683 hardware is operating correctly.

- The software can also cause a 4683 storage dump to take place.

1. Fill in a copy of the "Problem Data Collection Form" in topic B.7.
2. Use primary keywords MSGU008 and HANG and additional keywords 4683-1 and DUMP.
3. Report the problem to the store programmer and provide the preceding information.

6.16 PDP 6160: W001 Message

Symptom Explanation	Conditions That Could Cause This Symptom
The 4683 is not receiving store loop communications.	<input type="checkbox"/> The store loop is open up-loop from the 4683 displaying message W001. <input type="checkbox"/> A 4683-xx1 is failing up-loop.
The 4683 is not beaconding because it does not have a terminal number.	<input type="checkbox"/> The 4683-xx1 store loop cable is failing. <input type="checkbox"/> The 4683 base unit is failing.
The 4683 keyboard OFFLINE light is ON.	<input type="checkbox"/> The primary store controller is failing. <input type="checkbox"/> The backup store controller is failing. <input type="checkbox"/> The distance exceeds 4000 feet (1220 meters) between powered-ON 4683-xx1s on the store loop.

PICTURE 93

NOTES:

- This illustration represents a typical store loop, using the IBM Loop Wiring Concentrator. Your store may not be wired like this, but the position of your 4683s on the loop and their relationship to the controller will be similar.
- The 4683-P can also be a 4683-001 or 4683-A01. The 4683-002 can also be a 4683-A02.
- The terminal numbers are shown in numeric order, but they can be put in any order on your store loop.
- The store controller transmits data to the first 4683 down-loop on the store loop. This 4683 receives the data and passes it to the next 4683 down-loop. This continues with each 4683 receiving data from the 4683 immediately up-loop from its position, and passing it on to the next 4683 down-loop. The last 4683 down-loop passes the data back to the store controller.

Figure 6-13. Store Loop with an Open Condition

PICTURE 94

Figure 6-14. Store Controller Store Loop Adapter and Store Loop Receptacle

```
+----+
|001|
+----+
```

To display the terminal number, press **S1**, type **7**, and press **S2**.

To display messages at a point-of-sale terminal (when the keyboard OFFLINE light is ON), press **S1**, type **2**, and press **S2**.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = **S1** and **Enter** = **S2**.

To display a system message at the store controller, sign on at the store controller, press **System Request** and then press the **M** key.

```
+-----+
| WARNING
| Switching POWER OFF at a 4684 will affect operations at all
| point-of-sale terminals attached to it.
+-----+
```

- Before starting store loop problem determination, obtain the filled-in "Terminal Identification Chart" from the book *IBM 4680 Store System: Preparing Your Site*.

-- or --

Obtain a store loop layout chart containing:

- The physical location of store controller(s) and point-of-sale

terminals

- The order of store controller(s) and point-of-sale terminals on the store loop
- The terminal numbers.

- Ensure the store loop cable is plugged into socket 1 on the 4683-xx1 displaying message W001 and that the other end of the cable is plugged into the store loop receptacle. See Figure 6-14 and Figure 6-15.

Is there a backup store controller connected to this store loop?

Yes No

```
| |
| |
| +---+
| |002|
| +---+
```

- Continue at Step 011.

+---+

|003|

+---+

- At the backup store controller, display the Backup Store Loop status. See "Requesting Store Controller Status" in topic B.6.

Is the Backup Store Loop status "Providing Backup"?

Yes No

```
| |
| |
| +---+
| |004|
| +---+
```

- Continue at Step 008.

+---+

|005|

+---+

- At the primary store controller, display the Store Loop Control status.

The primary store controller is the controller that has been designated to control the store loop. It is supported by the backup store controller.

Is the Store Loop Control status "Controlling Loop"?

Yes No

```
| |
| |
| +---+
| |006|
| +---+
```

- Disconnect the primary store controller from the store loop by unplugging its store loop cable from the store loop receptacle. See Figure 6-14.

Do not reconnect this store controller until the problem has been resolved.

- Continue at Step 011.

+---+

|007|

+---+

Both store controllers are trying to control the store loop. This condition is caused by attaching an active store controller to the store loop when another active store controller is on the store loop.

- Disable the backup store controller. See "Requesting Store Controller Status" in topic B.6.

- Wait 15 seconds and enable the backup store controller.

Return to normal store operation.

+---+

|008|

+---+

(From step 004)

- Disconnect the backup store controller from the store loop by unplugging its store loop cable from the store loop receptacle. See Figure 6-14.

Do not reconnect this store controller until the problem has been

resolved.

- Wait 15 seconds and observe the keyboard lights on the 4683 displaying message W001.

Did the OFFLINE light go OFF?

Yes No

```
| |
| +---+
| |009|
| +---+
```

- Continue at Step 011.

```
+---+
|010|
+---+
```

- Record keywords CONTROLLER and INCORROUT.

At the backup store controller, follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

```
+---+
|011|
+---+
```

(From steps 002, 006, and 009)

- Display the system message at the active store controller by pressing **System Request** and then pressing the **M** key.

A store controller is active when it is:

The only store controller on the store loop
-- or --
The primary store controller and its status is "Controlling Loop"
-- or --
The backup store controller and its status is "Providing Backup".

Did the active store controller display message W760 or W764?

Yes No

```
| |
| +---+
| |012|
| +---+
```

- Continue at Step 018.

```
+---+
|013|
+---+
```

- Note the information in the message and return to the 4683 displaying message W001.

- If it is a 4683-xx2, go to its partner 4683-xx1. A 4683-xx2 displays the status of its partner 4683-xx1. See the store loop layout chart.

The store controller transmits data down-loop to the first 4683-xx1 and to all the following 4683s on the store loop. Each 4683 receives its data from the 4683 or store controller up-loop from its position on the store loop.

Is this the first powered-ON 4683-xx1 down-loop from the active store controller?

Yes No

```
| |
| +---+
| |014|
| +---+
```

- Continue at Step 023.

```
+---+
|015|
+---+
```

- Disconnect this 4683-xx1 from the store loop by unplugging its store loop cable from the store loop receptacle. See Figure 6-14.

- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

| |
| +---+
| |016|
| +---+

- Reconnect the 4683-xx1 to the store loop and continue at Step 051.

+---+
|017|
+---+

- Continue at Step 035.

+---+
|018|
+---+

(From step 012)

Is the store loop cable plugged into the store loop adapter on the active store controller? See Figure 6-14.

Yes No

| |
| +---+
| |019|
| +---+

Correct the problem by plugging the cable into the store loop adapter.

+---+
|020|
+---+

- Return to the 4683-xx1 displaying message W001.

On this 4683, is the store loop cable plugged into socket 1 and into the store loop receptacle?

Yes No

| |
| +---+
| |021|
| +---+

Correct the problem by plugging the cable into socket 1 and into the store loop receptacle.

+---+
|022|
+---+

- Record keywords CONTROLLER and INCORROUT.

At the active store controller, follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

+---+
|023|
+---+

(From step 014)

- Look for 4683-xx1s up-loop from this 4683 with message W001 displayed. See the store loop layout chart.

Are there any 4683-xx1s up-loop from this 4683 with message W001 displayed?

Yes No

| |
| +---+
| |024|
| +---+

- Continue at Step 030.

+---+
|025|
+---+

- Return to the active store controller and check each 4683-xx1 down-loop until you find one displaying message W001.

Is this the first powered-ON 4683-xx1 down-loop from the active store controller?

Yes No

```
|
| +---+
| |026|
| +---+
```

- Continue at Step 030.

```
+---+
|027|
+---+
```

- Disconnect this 4683-xx1 from the store loop by unplugging its store loop cable from the store loop receptacle. See Figure 6-14.

- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

```
|
| +---+
| |028|
| +---+
```

- Reconnect the 4683-xx1 to the store loop and continue at Step 051.

```
+---+
|029|
+---+
```

- Continue at Step 035.

PICTURE 95

Figure 6-15. 4683-xx1 Store Loop Cable 1 and Shorting Plug 1B

```
+---+
|030|
+---+
```

(From steps 024 and 026)

- Disconnect this 4683-xx1 from the store loop by unplugging its store loop cable from the store loop receptacle. See Figure 6-14.

- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

```
|
| +---+
| |031|
| +---+
```

- Reconnect the 4683-xx1 to the store loop and continue at Step 033.

```
+---+
|032|
+---+
```

- Continue at Step 035.

```
+---+
|033|
+---+
```

(From step 031)

- Go to the next powered-ON 4683-xx1 up-loop from this 4683. See the store loop layout chart.

- Disconnect this 4683 from the store loop by unplugging its store loop cable from the store loop receptacle.

- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

|
+----+
| 034 |
+----+

- Reconnect the 4683-xx1 to the store loop and continue at Step 042.

+----+

| 035 |

+----+

(From steps 017, 029, and 032)

Is the store loop cable plugged into socket 1 on this 4683-xx1 base unit?

Yes No

|
+----+
| 036 |
+----+

Correct the problem by plugging the cable into socket 1.

+----+

| 037 |

+----+

- Unplug the store loop cable from socket 1 on this 4683-xx1 base unit.
- Attach shorting plug 1B to the 4683-end of the cable. See Figure 6-15.
- Plug the other end of the cable into the store loop receptacle.
- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did the active store controller display message W760 or W764?

Yes No

|
+----+
| 038 |
+----+

- Return to the 4683-xx1 and switch **POWER OFF**.

Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+

| 039 |

+----+

- Return to the 4683-xx1 and examine its store loop receptacle for damage.

Is the store loop receptacle OK?

Yes No

|
+----+
| 040 |
+----+

Report the problem to the person responsible for repairing store loop wiring.

+----+

| 041 |

+----+

Correct the problem by exchanging the store loop cable attached to the 4683.

+----+

| 042 |

+----+

(From step 034)

The problem is in the store loop segment between the two powered-ON 4683-xx1s.

Are there any powered-OFF 4683-xx1s connected to the store loop segment between the two powered-ON 4683s?

Yes No

|
|

+---+
|043|
+---+

The problem is in the store loop wiring **or** the store loop receptacles for the 4683-xx1s.

Report the problem to the person responsible for repairing store loop wiring.

+---+
|044|
+---+

- One at a time, disconnect each powered-OFF 4683-xx1 from the store loop segment by unplugging its store loop cable from the store loop receptacle.
- After each 4683 is disconnected, return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

|
+---+
|045|
+---+

If all powered-OFF 4683s have **not** been disconnected, continue disconnecting them and displaying the system message at the active store controller.

- or -

If all powered-OFF 4683s have been disconnected, the problem is in the store loop wiring **or** the store loop receptacles for the 4683-xx1s.

- Reconnect all 4683s and report the problem to the person responsible for repairing store loop wiring.

+---+
|046|
+---+

- Unplug the store loop cable from socket 1 on the 4683-xx1 that you just disconnected from the store loop.
- Attach shorting plug 1B to the 4683-end of the cable. See Figure 6-15.
- Plug the other end of the cable into the store loop receptacle.
- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did the active store controller display message W760 or W764?

Yes No

|
+---+
|047|
+---+

- Return to the 4683-xx1 and switch **POWER OFF**.

Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+---+
|048|
+---+

- Return to the 4683-xx1 and examine its store loop receptacle for damage.

Is the store loop receptacle OK?

Yes No

|
+---+
|049|
+---+

Report the problem to the person responsible for repairing store loop wiring.

+----+
|050|
+----+

Correct the problem by exchanging the store loop cable attached to the 4683.

+----+
|051|
+----+

(From steps 016 and 028)

Is the store loop cable plugged into the store loop adapter on the active store controller? See Figure 6-14.

Yes No

|
|
| +----+
| |052|
| +----+

Correct the problem by plugging the cable into the store loop adapter.

+----+
|053|
+----+

- Disconnect the active store controller from the store loop by unplugging its store loop cable from the store loop receptacle.

- Display the system message at the active store controller by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

|
|
| +----+
| |054|
| +----+

The problem is in the active store controller, the store loop adapter, or the store loop adapter cable.

- Record keywords CONTROLLER and INCORROUT.

At the active store controller, follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

+----+
|055|
+----+

- Reconnect the active store controller to the store loop.

Are there any powered-OFF 4683-xx1s connected to the store loop segment between the 4683 displaying message W001 and the active store controller?

Yes No

|
|
| +----+
| |056|
| +----+

The problem is in the store loop wiring between the active store controller and the 4683-xx1 or in the store loop receptacle for the store controller or 4683-xx1.

Report the problem to the person responsible for repairing store loop wiring.

+----+
|057|
+----+

- One at a time, disconnect each powered-OFF 4683-xx1 from the store loop segment by unplugging its store loop cable from the store loop receptacle.

- After each 4683 is disconnected, return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

|
+----+
| 058 |
+----+

If all powered-OFF 4683s have **not** been disconnected, continue disconnecting them and displaying the system message at the active store controller.

- or -

If all powered-OFF 4683s have been disconnected, the problem is in the store loop wiring between the active store controller and the 4683-xx1 **or** in the store loop receptacle for the store controller or 4683-xx1.

- Reconnect all 4683s and report the problem to the person responsible for repairing store loop wiring.

+----+
| 059 |
+----+

- Unplug the store loop cable from socket 1 on the 4683-xx1 that you just disconnected from the store loop.

- Attach shorting plug 1B to the 4683-end of the cable. See Figure 6-15.

- Plug the other end of the cable into the store loop receptacle.

- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did the active store controller display message W760 or W764?

Yes No

|
+----+
| 060 |
+----+

- Return to the 4683-xx1 and switch **POWER OFF**.

Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+
| 061 |
+----+

- Return to the 4683-xx1 and examine its store loop receptacle for damage.

Is the store loop receptacle OK?

Yes No

|
+----+
| 062 |
+----+

Report the problem to the person responsible for repairing store loop wiring.

+----+
| 063 |
+----+

Correct the problem by exchanging the store loop cable attached to the 4683.

6.17 PDP 6170: W003 Message

Symptom Explanation	Conditions That Could Cause This Symptom
The 4683-xx1 is not receiving store loop communications.	<input type="checkbox"/> The store controller is powered-OFF.
It beacons and then received its own beacon.	<input type="checkbox"/> The store controller is disconnected from the store loop.
Its store loop adapter test was run automatically and it detected no problems.	<input type="checkbox"/> The store controller store loop cable is failing.
Its keyboard OFFLINE light is ON.	<input type="checkbox"/> The store controller is failing.
The 4683-xx1s are now signaling that the store controller is not communicating on the loop (message W003).	<input type="checkbox"/> The 4683-xx1 is disconnected from the store loop.
The store loop appears to be OK.	<input type="checkbox"/> The 4683-xx1 store loop cable is failing.
	<input type="checkbox"/> The 4683-xx1 base unit is failing.

PICTURE 96

NOTES:

- This illustration represents a typical store loop, using the IBM Loop Wiring Concentrator. Your store may not be wired like this, but the position of your 4683s on the loop and their relationship to the controller will be similar.
- The 4683-P can also be a 4683-001 or 4683-A01. The 4683-002 can also be a 4683-A02.
- The terminal numbers are shown in numeric order, but they can be put in any order on your store loop.
- The store controller transmits data to the first 4683 down-loop on the store loop. This 4683 receives the data and passes it to the next 4683 down-loop. This continues with each 4683 receiving data from the 4683 immediately up-loop from its position, and passing it on to the next 4683 down-loop. The last 4683 down-loop passes the data back to the store controller.

Figure 6-16. Store Loop with the Primary Store Controller Offline

PICTURE 97

Figure 6-17. Store Controller Store Loop Adapter and Store Loop Receptacle

```
+---+
|001|
+---+
```

To display the terminal number, press **S1**, type **7**, and press **S2**.

To display messages at a point-of-sale terminal (when the keyboard OFFLINE light is ON), press **S1**, type **2**, and press **S2**.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = **S1** and **Enter** = **S2**.

To display a system message at the store controller, sign on at the store controller, press **System Request** and then press the **M** key.

```
+-----+
| WARNING |
| Switching POWER OFF at a 4684 will affect operations at all |
| point-of-sale terminals attached to it. |
+-----+
```

- Before starting store loop problem determination, obtain the filled-in "Terminal Identification Chart" from the book *IBM 4680 Store System: Preparing Your Site*.

-- or --

Obtain a store loop layout chart containing:

- The physical location of store controller(s) and point-of-sale terminals
- The order of store controller(s) and point-of-sale terminals on the store loop
- The terminal numbers.

- If the 4683 displaying message W003 is a 4683-xx2, go to its partner 4683-xx1.

- Ensure the store loop cable is plugged into socket 1 on the 4683-xx1 displaying message W003 and that the other end of the cable is plugged into the store loop receptacle. See Figure 6-17 and Figure 6-18.

On this 4683, is the store loop cable plugged into socket 1 and into the store loop receptacle?

Yes No

| |
| |
| +---+
| |002|
| +---+
| |

Correct the problem by plugging the cable into socket 1 and the store loop receptacle.

+---+
|003|
+---+

Is this the only powered-ON 4683-xx1 connected to the store loop?

Yes No

| |
| |
| +---+
| |004|
| +---+
| |

- Continue at Step 008.

+---+
|005|
+---+

- Unplug the store loop cable from socket 1 on this 4683-xx1 base unit.
- Attach shorting plug 1B to the 4683-end of the cable. See Figure 6-18.
- At the 4683, press **S1**, type **2**, and press **S2** to display the OFFLINE message.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.

Did message W003 change to message W005?

Yes No

| |
| |
| +---+
| |006|
| +---+
| |

- Switch **POWER OFF** at the 4683-xx1.

Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+---+
|007|
+---+

- Remove shorting plug 1B from the end of the cable.
- Plug the store loop cable back into socket 1.
- Continue at Step 012.

+---+
|008|
+---+

(From step 004)

Is the keyboard OFFLINE light ON at any other 4683-xx1?

Yes No

```
| |
| +---+
| |009|
| +---+
```

The 4683 displaying message W003 is failing.

- Switch **POWER OFF** at the 4683.

Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

PICTURE 98

Figure 6-18. 4683-xx1 Store Loop Cable 1 and Shorting Plug 1B

```
| |
| +---+
| |010|
| +---+
```

- At the other 4683(s), press **S1**, type **2**, and press **S2** to display the OFFLINE message(s).

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.

Did message W003 display?

Yes No

```
| |
| +---+
| |011|
| +---+
```

The 4683 displaying message W003 is failing.

- Switch **POWER OFF** at the 4683.

Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

```
+---+
|012|
+---+
```

(From step 007)

Is there a backup store controller connected to this store loop?

Yes No

```
| |
| +---+
| |013|
| +---+
```

- Continue at Step 025.

```
+---+
|014|
+---+
```

- At the backup store controller, display the Backup Store Loop status. See "Requesting Store Controller Status" in topic B.6.

Is the Backup Store Loop status "Providing Backup"?

Yes No

```
| |
| +---+
| |015|
| +---+
```

- Continue at Step 019.

```
+---+
|016|
+---+
```

- At the primary store controller, display the Store Loop Control status.

The primary store controller is the controller that has been designated to control the store loop. It is supported by the backup store controller.

Is the Store Loop Control status "Controlling Loop"?

Yes No

| |
+----+
| 017 |
+----+

- Disconnect the primary store controller from the store loop by unplugging its store loop cable from the store loop receptacle.

Do not reconnect this store controller until the problem has been resolved.

- Continue at Step 025.

+----+
| 018 |
+----+

Both store controllers are trying to control the store loop. This condition is caused by attaching an active store controller to the store loop when another active store controller is on the store loop.

- Disable the backup store controller. See "Requesting Store Controller Status" in topic B.6.

- Wait 15 seconds and enable the backup store controller.

Return to normal store operation.

+----+
| 019 |
+----+

(From step 015)

- Display the system message at the backup store controller by pressing **System Request** and then pressing the **M** key.

Did message W771 display?

Yes No

| |
+----+
| 020 |
+----+

- Continue at Step 022.

+----+
| 021 |
+----+

- Follow the *User Response* in message W771 on topic 2.9.

+----+
| 022 |
+----+

(From step 020)

Is the store loop cable on the backup store controller plugged into the store loop receptacle?

Yes No

| |
+----+
| 023 |
+----+

Correct the problem by plugging the cable into the store loop receptacle.

+----+
| 024 |
+----+

- Record keywords CONTROLLER and INCORROUT.

At the backup store controller, follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

+----+
| 025 |
+----+

(From steps 013 and 017)

A store controller is active when it is:

The only store controller on the store loop
-- or --
The primary store controller and its status is "Controlling Loop"
-- or --
The backup store controller and its status is "Providing Backup".

Is the store loop cable plugged into the store loop adapter on the active store controller? See Figure 6-17.

Yes No

| |
| +---+
| |026|
| +---+
|

Correct the problem by plugging the cable into the store loop adapter.

+---+
|027|
+---+

Is the active store controller powered-ON and loaded with the store controller program?

Yes No

| |
| +---+
| |028|
| +---+
|

- Continue at Step 030.

+---+
|029|
+---+

- Continue at Step 032.

+---+
|030|
+---+

(From step 028)

- Switch **POWER OFF** at the active store controller.
- Switch power ON and load the store controller program.

Did the active store controller load the store controller program successfully?

Yes No

| |
| +---+
| |031|
| +---+
|

The failure symptom has changed.

Follow the *User Response* for the message in Chapter 2, "Messages" or in the *IBM 4680 Store System: Messages Guide*.

- or -

Follow the *Repair Action* for the symptom in Chapter 3, "Symptoms."

+---+
|032|
+---+

(From step 029)

- Record keywords **CONTROLLER** and **INCORROUT**.

At the active store controller, follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

6.18 PDP 6180: W004 Message

Symptom Explanation	Conditions That Could Cause This Symptom
The 4683 is receiving store loop communications from the store controller, but no responses are being received for messages that the 4683 has sent to the store controller.	<input type="checkbox"/> The store loop is open down-loop from the 4683 displaying message W004.
	<input type="checkbox"/> A 4683-xx1 is failing down-loop.
	<input type="checkbox"/> The 4683-xx1 store loop cable is failing.
	<input type="checkbox"/> The 4683 base unit is failing.
	<input type="checkbox"/> The primary store controller is failing.
The 4683 keyboard OFFLINE light is ON.	<input type="checkbox"/> The backup store controller is failing.
The store controller can be communicating with other 4683s on the store loop.	<input type="checkbox"/> The distance exceeds 4000 feet (1220 meters) between powered-ON 4683-xx1s on the store loop.

PICTURE 99

NOTES:

- This illustration represents a typical store loop, using the IBM Loop Wiring Concentrator. Your store may not be wired like this, but the position of your 4683s on the loop and their relationship to the controller will be similar.
- The 4683-P can also be a 4683-001 or 4683-A01. The 4683-002 can also be a 4683-A02.
- The terminal numbers are shown in numeric order, but they can be put in any order on your store loop.
- The store controller transmits data to the first 4683 down-loop on the store loop. This 4683 receives the data and passes it to the next 4683 down-loop. This continues with each 4683 receiving data from the 4683 immediately up-loop from its position, and passing it on to the next 4683 down-loop. The last 4683 down-loop passes the data back to the store controller.

Figure 6-19. Store Loop with an Open Condition

PICTURE 100

Figure 6-20. Store Controller Store Loop Adapter and Store Loop Receptacle

```
+----+
|001|
+----+
```

To display the terminal number, press **S1**, type **7**, and press **S2**.

To display messages at a point-of-sale terminal (when the keyboard OFFLINE light is ON), press **S1**, type **2**, and press **S2**.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = **S1** and **Enter** = **S2**.

To display a system message at the store controller, sign on at the store controller, press **System Request** and then press the **M** key.

```
+-----+
| WARNING
| Switching POWER OFF at a 4684 will affect operations at all
| point-of-sale terminals attached to it.
+-----+
```

- Before starting store loop problem determination, obtain the filled-in "Terminal Identification Chart" from the book *IBM 4680 Store System: Preparing Your Site*.

-- or --

Obtain a store loop layout chart containing:

- The physical location of store controller(s) and point-of-sale

terminals

- The order of store controller(s) and point-of-sale terminals on the store loop
- The terminal numbers.

Is there a backup store controller connected to this store loop?

Yes No

```
|
| |
| +---+
| |002|
| +---+
```

- Continue at Step 011.

```
+---+
|003|
+---+
```

- At the backup store controller, display the Backup Store Loop status. See "Requesting Store Controller Status" in topic B.6.

Is the Backup Store Loop status "Providing Backup"?

Yes No

```
|
| |
| +---+
| |004|
| +---+
```

- Continue at Step 008.

```
+---+
|005|
+---+
```

- At the primary store controller, display the Store Loop Control status.

The primary store controller is the controller that has been designated to control the store loop. It is supported by the backup store controller.

Is the Store Loop Control status "Controlling Loop"?

Yes No

```
|
| |
| +---+
| |006|
| +---+
```

- Disconnect the primary store controller from the store loop by unplugging its store loop cable from the store loop receptacle. See Figure 6-20.

Do not reconnect this store controller until the problem has been resolved.

- Continue at Step 011.

```
+---+
|007|
+---+
```

Both store controllers are trying to control the store loop. This condition is caused by attaching an active store controller to the store loop when another active store controller is on the store loop.

- Disable the backup store controller. See "Requesting Store Controller Status" in topic B.6.

- Wait 15 seconds and enable the backup store controller.

Return to normal store operation.

```
+---+
|008|
+---+
```

(From step 004)

- Disconnect the backup store controller from the store loop by unplugging its store loop cable from the store loop receptacle. See Figure 6-20.

Do not reconnect this store controller until the problem has been resolved.

- Wait 15 seconds and observe the keyboard lights on the 4683 displaying message W004.

Did the OFFLINE light go OFF?

Yes No

```
|
| +---+
| |009|
| +---+
```

| - Continue at Step 011.

PICTURE 101

Figure 6-21. 4683-xx1 Store Loop Cable 1 and Shorting Plug 1B

```
|
+---+
|010|
+---+
```

- Record keywords CONTROLLER and INCORROUT.

At the backup store controller, follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

```
+---+
|011|
+---+
```

(From steps 002, 006, and 009)

- Display the system message at the active store controller by pressing **System Request** and then pressing the **M** key.

A store controller is active when it is:

- The only store controller on the store loop
- or --
- The primary store controller and its status is "Controlling Loop"
- or --
- The backup store controller and its status is "Providing Backup".

Did the active store controller display message W760 or W764?

Yes No

```
|
| +---+
| |012|
| +---+
```

| - Continue at Step 041.

```
+---+
|013|
+---+
```

Did message W760 display?

Yes No

```
|
| +---+
| |014|
| +---+
```

| - Continue at Step 016.

```
+---+
|015|
+---+
```

Follow "PDP 6050: Store Loop Problem" in topic 6.5.

```
+---+
|016|
+---+
```

(From step 014)

- Return to the 4683 displaying message W004. If it is a 4683-xx2, go to its partner 4683-xx1. A 4683-xx2 displays the status of its partner 4683-xx1. See the store loop layout chart.

A 4683 is considered active if it has a terminal number, is powered-ON, and attached to the store loop.

Is this the last active 4683-xx1 on the store loop?

Yes No

|
+----+
| 017 |
+----+

- Go to the last active 4683-xx1 on the store loop. See the store loop layout chart.
- Continue at Step 018.

+----+
| 018 |
+----+

(From step 017)

- Disconnect this 4683-xx1 from the store loop by unplugging its store loop cable from the store loop receptacle.
- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

|
+----+
| 019 |
+----+

- Reconnect the 4683-xx1 to the store loop and continue at Step 027.

+----+
| 020 |
+----+

Is the store loop cable plugged into socket 1 on this 4683-xx1 base unit?
See Figure 6-21.

Yes No

|
+----+
| 021 |
+----+

Correct the problem by plugging the cable into socket 1.

+----+
| 022 |
+----+

- Unplug the store loop cable from socket 1 on this 4683-xx1 base unit.
- Attach shorting plug 1B to the 4683-end of the cable. See Figure 6-21.
- Plug the other end of the cable into the store loop receptacle.
- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did the active store controller display message W760 or W764?

Yes No

|
+----+
| 023 |
+----+

- Return to the 4683-xx1 and switch **POWER OFF**.

Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+
| 024 |
+----+

- Return to the 4683-xx1 and examine its store loop receptacle for damage.

Is the store loop receptacle OK?

Yes No

|
+----+
| 025 |
+----+

Report the problem to the person responsible for repairing store loop wiring.

+----+
| 026 |
+----+

Correct the problem by exchanging the store loop cable attached to the 4683.

+----+
| 027 |
+----+

(From step 019)

Are there any powered-OFF 4683-xxls connected to the store loop segment between the 4683 that you just reconnected and the active store controller?

Yes No

|
|
+----+
| 028 |
+----+

- Continue at Step 036.

+----+
| 029 |
+----+

- One at a time, disconnect each powered-OFF 4683-xxl from the store loop segment by unplugging its store loop cable from the store loop receptacle.

- After each 4683 is disconnected, return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

|
|
+----+
| 030 |
+----+

If all powered-OFF 4683s have **not** been disconnected, continue disconnecting them and displaying the system message at the active store controller.

- or -

If all powered-OFF 4683s have been disconnected, reconnect all of them and continue at Step 036.

+----+
| 031 |
+----+

- Unplug the store loop cable from socket 1 on the 4683-xxl that you just disconnected from the store loop.

- Attach shorting plug 1B to the 4683-end of the cable. See Figure 6-21.

- Plug the other end of the cable into the store loop receptacle.

- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did the active store controller display message W760 or W764?

Yes No

|
|
+----+
| 032 |
+----+

- Return to the 4683-xxl and switch **POWER OFF**.

Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+
| 033 |
+----+

- Return to the 4683-xx1 and examine its store loop receptacle for damage.

Is the store loop receptacle OK?

Yes No

| |
| +---+
| |034|
| +---+
|

Report the problem to the person responsible for repairing store loop wiring.

+---+

|035|

+---+

Correct the problem by exchanging the store loop cable attached to the 4683.

+---+

|036|

+---+

(From steps 028 and 030)

Is the store loop cable plugged into the store loop adapter on the active store controller? See Figure 6-20.

Yes No

| |
| +---+
| |037|
| +---+
|

Correct the problem by plugging the cable into the store loop adapter.

+---+

|038|

+---+

- Disconnect the active store controller from the store loop by unplugging its store loop cable from the store loop receptacle.

- Display the system message at the active store controller by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

| |
| +---+
| |039|
| +---+
|

The problem is in the active store controller, the store loop adapter, or the store loop adapter cable.

- Record keywords CONTROLLER and INCORROUT.

At the active store controller, follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

+---+

|040|

+---+

- Reconnect the active store controller to the store loop.

The problem is in the store loop wiring between the active store controller and the last active 4683-xx1 or in the store loop receptacle for the store controller or 4683-xx1.

Report the problem to the person responsible for repairing store loop wiring.

+---+

|041|

+---+

(From step 012)

- Return to the 4683 displaying message W004. If it is a 4683-xx2, go to its partner 4683-xx1. A 4683-xx2 displays the status of its partner 4683-xx1. See the store loop layout chart.

- Switch **POWER OFF** at the 4683-xx1.
- Wait five seconds and switch power ON again.
- Wait at least two minutes for the 4683 to become operational.

Is the keyboard OFFLINE light still ON?

Yes No

```
|
| |
| +---+
| |042|
| +---+
```

The 4683 is operating correctly now.

- If the problem returns, record keywords CONTROLLER and INCORROUT.

At the active store controller, follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

```
+---+
|043|
+---+
```

- At the 4683, press **S1**, type **2**, and press **S2** to display the OFFLINE message.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.

Is message W004 still displayed?

Yes No

```
|
| |
| +---+
| |044|
| +---+
```

The failure symptom has changed.

Follow the *User Response* for the message in Chapter 2, "Messages" or in the *IBM 4680 Store System: Messages Guide*.

- or -

Follow the *Repair Action* for the symptom in Chapter 3, "Symptoms."

```
+---+
|045|
+---+
```

- Record keywords CONTROLLER and INCORROUT.

At the active store controller, follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

6.19 PDP 6190: W005 Message

Symptom Explanation	Conditions That Could Cause This Symptom
The 4683-xx1 is not receiving store loop communications.	<input type="checkbox"/> The store loop is open up-loop from the 4683 displaying message W005.
The 4683-xx1 store loop adapter test was run automatically and it detected no problems.	<input type="checkbox"/> A 4683-xx1 is failing up-loop.
It is sending beacons but not receiving beacons.	<input type="checkbox"/> The 4683-xx1 store loop cable is failing.
	<input type="checkbox"/> The 4683 base unit is failing.
The 4683 keyboard OFFLINE light is ON.	<input type="checkbox"/> The primary store controller is failing.
	<input type="checkbox"/> The backup store controller is failing.
	<input type="checkbox"/> The distance exceeds 4000 feet (1220 meters) between powered-ON 4683-xx1s on the store loop.

PICTURE 102

NOTES:

- This illustration represents a typical store loop, using the IBM Loop Wiring Concentrator. Your store may not be wired like this, but the position of your 4683s on the loop and their relationship to the controller will be similar.
- The 4683-P can also be a 4683-001 or 4683-A01. The 4683-002 can also be a 4683-A02.
- The terminal numbers are shown in numeric order, but they can be put in any order on your store loop.
- The store controller transmits data to the first 4683 down-loop on the store loop. This 4683 receives the data and passes it to the next 4683 down-loop. This continues with each 4683 receiving data from the 4683 immediately up-loop from its position, and passing it on to the next 4683 down-loop. The last 4683 down-loop passes the data back to the store controller.

Figure 6-22. Store Loop with an Open Condition

PICTURE 103

Figure 6-23. Store Controller Store Loop Adapter and Store Loop Receptacle

```
+----+
|001|
+----+
```

To display the terminal number, press **S1**, type **7**, and press **S2**.

To display messages at a point-of-sale terminal (when the keyboard OFFLINE light is ON), press **S1**, type **2**, and press **S2**.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = **S1** and **Enter** = **S2**.

To display a system message at the store controller, sign on at the store controller, press **System Request** and then press the **M** key.

```
+-----+
| WARNING
| Switching POWER OFF at a 4684 will affect operations at all
| point-of-sale terminals attached to it.
+-----+
```

- Before starting store loop problem determination, obtain the filled-in "Terminal Identification Chart" from the book *IBM 4680 Store System: Preparing Your Site*.

-- or --

Obtain a store loop layout chart containing:

- The physical location of store controller(s) and point-of-sale

terminals

- The order of store controller(s) and point-of-sale terminals on the store loop
- The terminal numbers.

- Ensure the store loop cable is plugged into socket 1 on the 4683-xx1 displaying message W005 and that the other end of the cable is plugged into the store loop receptacle. See Figure 6-23 and Figure 6-24.

Is there a backup store controller connected to this store loop?

Yes No

```
| |
| |
| +---+
| |002|
| +---+
```

- Continue at Step 011.

```
+---+
|003|
+---+
```

- At the backup store controller, display the Backup Store Loop status. See "Requesting Store Controller Status" in topic B.6.

Is the Backup Store Loop status "Providing Backup"?

Yes No

```
| |
| |
| +---+
| |004|
| +---+
```

- Continue at Step 008.

```
+---+
|005|
+---+
```

- At the primary store controller, display the Store Loop Control status.

The primary store controller is the controller that has been designated to control the store loop. It is supported by the backup store controller.

Is the Store Loop Control status "Controlling Loop"?

Yes No

```
| |
| |
| +---+
| |006|
| +---+
```

- Disconnect the primary store controller from the store loop by unplugging its store loop cable from the store loop receptacle.

Do not reconnect this store controller until the problem has been resolved.

- Continue at Step 011.

```
+---+
|007|
+---+
```

Both store controllers are trying to control the store loop. This condition is caused by attaching an active store controller to the store loop when another active store controller is on the store loop.

- Disable the backup store controller. See "Requesting Store Controller Status" in topic B.6.

- Wait 15 seconds and enable the backup store controller.

Return to normal store operation.

```
+---+
|008|
+---+
```

(From step 004)

- Disconnect the backup store controller from the store loop by unplugging its store loop cable from the store loop receptacle. See Figure 6-23.

Do not reconnect this store controller until the problem has been resolved.

- Wait 15 seconds and observe the keyboard lights on the 4683 that was displaying message W005.

Did the OFFLINE light go OFF?

Yes No

```
| |
| |
| +---+
| |009|
| +---+
```

| - Continue at Step 011.

PICTURE 104

Figure 6-24. 4683-xx1 Store Loop Cable 1 and Shorting Plug 1B

```
| |
| +---+
| |010|
| +---+
```

- Record keywords CONTROLLER and INCORROUT.

At the backup store controller, follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

```
+---+
|011|
+---+
```

(From steps 002, 006, and 009)

- Display the system message at the active store controller by pressing **System Request** and then pressing the **M** key.

A store controller is active when it is:

The only store controller on the store loop
-- or --
The primary store controller and its status is "Controlling Loop"
-- or --
The backup store controller and its status is "Providing Backup".

Did the active store controller display message W760 or W764?

Yes No

```
| |
| |
| +---+
| |012|
| +---+
```

| - Continue at Step 018.

```
+---+
|013|
+---+
```

- Note the information in the message and return to the 4683 displaying message W005.

- If it is a 4683-xx2, go to its partner 4683-xx1. A 4683-xx2 displays the status of its partner 4683-xx1. See the store loop layout chart.

The store controller transmits data down-loop to the first 4683-xx1 and to all the following 4683s on the store loop. Each 4683 receives its data from the 4683 or store controller up-loop from its position on the store loop.

Is this the first powered-ON 4683-xx1 down-loop from the active store controller?

Yes No

```
| |
| |
| +---+
| |014|
| +---+
```

| - Continue at Step 023.

```
+---+
|015|
+---+
```

- Disconnect this 4683-xx1 from the store loop by unplugging its store

loop cable from the store loop receptacle. See Figure 6-23.

- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

```
|      |  
|      |  
| +---+ |  
| |016| |  
| +---+ |
```

- Reconnect the 4683-xx1 to the store loop and continue at Step 052.

```
+---+  
|017|  
+---+
```

- Continue at Step 036.

```
+---+  
|018|  
+---+
```

(From step 012)

Is the store loop cable plugged into the store loop adapter on the active store controller? See Figure 6-23.

Yes No

```
|      |  
|      |  
| +---+ |  
| |019| |  
| +---+ |
```

Correct the problem by plugging the cable into the store loop adapter.

```
+---+  
|020|  
+---+
```

- Return to the 4683-xx1 displaying message W005.

On this 4683, is the store loop cable plugged into socket 1 and into the store loop receptacle?

Yes No

```
|      |  
|      |  
| +---+ |  
| |021| |  
| +---+ |
```

Correct the problem by plugging the cable into socket 1 and the store loop receptacle.

```
+---+  
|022|  
+---+
```

- Record keywords CONTROLLER and INCORROUT.

At the active store controller, follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

```
+---+  
|023|  
+---+
```

(From steps 014, 025, and 030)

- Go to the next powered-ON 4683-xx1 up-loop from this 4683. See the store loop layout chart.

Is U003 displayed?

Yes No

```
|      |  
|      |  
| +---+ |  
| |024| |  
| +---+ |
```

- Continue at Step 026.

```
+---+  
|025|  
+---+
```

Return to Step 023 and continue up-loop from this 4683.

+----+

| 026 |

+----+

(From step 024)

Is the keyboard OFFLINE light ON?

Yes No

| |

| |

| +----+

| | 027 |

| +----+

| |

| - Continue at Step 031.

|

+----+

| 028 |

+----+

- At the 4683, press **S1**, type **2**, and press **S2** to display the OFFLINE message.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.

Did message W001 display?

Yes No

| |

| |

| +----+

| | 029 |

| +----+

| |

| - Continue at Step 031.

|

+----+

| 030 |

+----+

Return to Step 023 and continue up-loop from this 4683.

+----+

| 031 |

+----+

(From steps 027 and 029)

- Disconnect this 4683-xx1 from the store loop by unplugging its store loop cable from the store loop receptacle.

- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

| |

| |

| +----+

| | 032 |

| +----+

| |

| - Reconnect the 4683-xx1 to the store loop and continue at Step 034.

|

+----+

| 033 |

+----+

- Continue at Step 036.

+----+

| 034 |

+----+

(From step 032)

- Go to the next powered-ON 4683-xx1 down-loop from this 4683. See the store loop layout chart.

- Disconnect this 4683-xx1 from the store loop by unplugging its store loop cable from the store loop receptacle.

- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

|
+----+
| 035 |
+----+

- Reconnect the 4683-xx1 to the store loop and continue at Step 043.

+----+
| 036 |
+----+

(From steps 017 and 033)

Is the store loop cable plugged into socket 1 on this 4683-xx1 base unit?

Yes No

|
+----+
| 037 |
+----+

Correct the problem by plugging the cable into socket 1.

+----+
| 038 |
+----+

- Unplug the store loop cable from socket 1 on this 4683-xx1 base unit.
- Attach shorting plug 1B to the 4683-end of the cable. See Figure 6-24.
- Plug the other end of the cable into the store loop receptacle.
- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did the active store controller display message W760 or W764?

Yes No

|
+----+
| 039 |
+----+

- Return to the 4683 and switch **POWER OFF**.

Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+
| 040 |
+----+

- Return to the 4683-xx1 and examine its store loop receptacle for damage.

Is the store loop receptacle OK?

Yes No

|
+----+
| 041 |
+----+

Report the problem to the person responsible for repairing store loop wiring.

+----+
| 042 |
+----+

Correct the problem by exchanging the store loop cable attached to the 4683.

+----+
| 043 |
+----+

(From step 035)

Are there any powered-OFF 4683s connected to the store loop segment between the two powered-ON 4683s?

Yes No

|
+----+

| 044 |
+---+

The problem is in the store loop wiring **or** the store loop receptacles for the 4683-xxls.

Report the problem to the person responsible for repairing store loop wiring.

+---+
| 045 |
+---+

- One at a time, disconnect each powered-OFF 4683-xxl from the store loop segment by unplugging its store loop cable from the store loop receptacle.
- After each 4683 is disconnected, return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

|
+---+
| 046 |
+---+

If all powered-OFF 4683s have **not** been disconnected, continue disconnecting them and displaying the system message at the active store controller.

- or -

If all powered-OFF 4683s have been disconnected, the problem is in the store loop wiring **or** the store loop receptacles for the 4683-xxls.

- Reconnect all 4683s and report the problem to the person responsible for repairing store loop wiring.

+---+
| 047 |
+---+

- Unplug the store loop cable from socket 1 on the 4683-xxl that you just disconnected from the store loop.
- Attach shorting plug 1B to the 4683-end of the cable. See Figure 6-24.
- Plug the other end of the cable into the store loop receptacle.
- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did the active store controller display message W760 or W764?

Yes No

|
+---+
| 048 |
+---+

- Return to the 4683-xxl and switch **POWER OFF**.

Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+---+
| 049 |
+---+

- Return to the 4683-xxl and examine its store loop receptacle for damage.

Is the store loop receptacle OK?

Yes No

|
+---+
| 050 |
+---+

Report the problem to the person responsible for repairing store loop wiring.

+---+

|051|
+----+

Correct the problem by exchanging the store loop cable attached to the 4683.

+----+
|052|
+----+

(From step 016)

Is the store loop cable plugged into the store loop adapter on the active store controller? See Figure 6-23.

Yes No

| |
| |
| +----+
| |053|
| +----+

Correct the problem by plugging the cable into the store loop adapter.

+----+
|054|
+----+

- Disconnect the active store controller from the store loop by unplugging its store loop cable from the store loop receptacle.
- Display the system message at the active store controller by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

| |
| +----+
| |055|
| +----+

The problem is in the active store controller, the store loop adapter, or the store loop adapter cable.

- Record keywords **CONTROLLER** and **INCORROUT**.

At the active store controller, follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

+----+
|056|
+----+

- Reconnect the active store controller to the store loop.

Are there any powered-OFF 4683-xx1s connected to the store loop segment between the 4683 displaying message W005 and the active store controller?

Yes No

| |
| +----+
| |057|
| +----+

- The problem is in the store loop wiring between the active store controller and the 4683-xx1 **or** in the store loop receptacle for the store controller or 4683-xx1.

Report the problem to the person responsible for repairing store loop wiring.

+----+
|058|
+----+

- One at a time, disconnect each powered-OFF 4683-xx1 from the store loop segment by unplugging its store loop cable from the store loop receptacle.
- After each 4683 is disconnected, return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

| |

+---+
|059|
+---+

If all powered-OFF 4683s have **not** been disconnected, continue disconnecting them and displaying the system message at the active store controller.

- or -

If all powered-OFF 4683s have been disconnected, the problem is in the store loop wiring between the active store controller and the 4683-xx1 **or** in the store loop receptacle for the store controller or 4683-xx1.

- Reconnect all 4683s and report the problem to the person responsible for repairing store loop wiring.

+---+
|060|
+---+

- Unplug the store loop cable from socket 1 on the 4683-xx1-xx1 that you just disconnected from the store loop.
- Attach shorting plug 1B to the 4683-end of the cable. See Figure 6-24.
- Plug the other end of the cable into the store loop receptacle.
- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did the active store controller display message W760 or W764?

Yes No

|
+---+
|061|
+---+

- Return to the 4683-xx1 and switch **POWER OFF**.

Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+---+
|062|
+---+

- Return to the 4683-xx1 and examine its store loop receptacle for damage.

Is the store loop receptacle OK?

Yes No

|
+---+
|063|
+---+

Report the problem to the person responsible for repairing store loop wiring.

+---+
|064|
+---+

Correct the problem by exchanging the store loop cable attached to the 4683.

6.20 PDP 6200: W762 Message

Symptom Explanation	Conditions That Could Cause This Symptom
The terminal number in this W762 message does not respond to messages sent to it by the store controller.	<input type="checkbox"/> The 4683 may be powered-OFF (terminal number displayed in message W762).
	<input type="checkbox"/> The 4683 may be offline (terminal number displayed in message W762).
The active store controller is receiving end-of-polls.	<input type="checkbox"/> The 4683 is failing (terminal number displayed in message W762).
The active store controller is not receiving beacons.	<input type="checkbox"/> The primary store controller is failing.
	<input type="checkbox"/> The backup store controller is failing.
The store loop appears to be OK.	<input type="checkbox"/> The distance exceeds 4000 feet (1220 meters) between powered-ON 4683-xx1s on the store loop.

PICTURE 105

NOTES:

- This illustration represents a typical store loop, using the IBM Loop Wiring Concentrator. Your store may not be wired like this, but the position of your 4683s on the loop and their relationship to the controller will be similar.
- The 4683-P can also be a 4683-001 or 4683-A01. The 4683-002 can also be a 4683-A02.
- The store controller transmits data to the first 4683 down-loop on the store loop. This 4683 receives the data and passes it to the next 4683 down-loop. This continues with each 4683 receiving data from the 4683 immediately up-loop from its position, and passing it on to the next 4683 down-loop. The last 4683 down-loop passes the data back to the store controller.

Figure 6-25. Store Loop with a Failing Point-of-Sale Terminal

```

+----+
|001|
+----+

```

To display the terminal number, press **S1**, type **7**, and press **S2**.

To display messages at a point-of-sale terminal (when the keyboard OFFLINE light is ON), press **S1**, type **2**, and press **S2**.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = **S1** and **Enter** = **S2**.

To display a system message at the store controller, sign on at the store controller, press **System Request** and then press the **M** key.

```

+-----+
| WARNING |
| Switching POWER OFF at a 4684 will affect operations at all |
| point-of-sale terminals attached to it. |
+-----+

```

- Before starting store loop problem determination, obtain the filled-in "Terminal Identification Chart" from the book *IBM 4680 Store System: Preparing Your Site*.

-- or --

Obtain a store loop layout chart containing:

- The physical location of store controller(s) and point-of-sale terminals
- The order of store controller(s) and point-of-sale terminals on the store loop
- The terminal numbers.

Is there a backup store controller connected to this store loop?

Yes No
| |

```
| +---+  
| |002|  
| +---+  
|  
| - Continue at Step 011.  
|
```

```
+---+  
|003|  
+---+
```

- At the backup store controller, display the Backup Store Loop status.
See "Requesting Store Controller Status" in topic B.6.

Is the Backup Store Loop status "Providing Backup"?

Yes No

```
| |  
| |  
| +---+  
| |004|  
| +---+  
|  
| - Continue at Step 008.  
|
```

```
+---+  
|005|  
+---+
```

- At the primary store controller, display the Store Loop Control status.

The primary store controller is the controller that has been designated to control the store loop. It is supported by the backup store controller.

Is the Store Loop Control status "Controlling Loop"?

Yes No

```
| |  
| |  
| +---+  
| |006|  
| +---+  
|  
| - Disconnect the primary store controller from the store loop by  
| unplugging its store loop cable from the store loop receptacle.  
| See Figure 6-26.  
|  
| Do not reconnect this store controller until the problem has been  
| resolved.  
|  
| - Continue at Step 011.  
|
```

```
+---+  
|007|  
+---+
```

Both store controllers are trying to control the store loop. This condition is caused by attaching an active store controller to the store loop when another active store controller is on the store loop.

- Disable the backup store controller. See "Requesting Store Controller Status" in topic B.6.

- Wait 15 seconds and enable the backup store controller.

Return to normal store operation.

PICTURE 106

Figure 6-26. Typical Store Loop Receptacles

```
+---+  
|008|  
+---+  
(From step 004)
```

- Disconnect the backup store controller from the store loop by unplugging its store loop cable from the store loop receptacle. See Figure 6-26.

Do not reconnect this store controller until the problem has been resolved.

- Wait 15 seconds and observe the keyboard lights on the 4683 that was displaying message W762.

Did the OFFLINE light go OFF?

Yes No

```
| |
| +---+
| |009|
| +---+
```

- Continue at Step 011.

```
+---+
|010|
+---+
```

- Record keywords CONTROLLER and INCORROUT.

At the backup store controller, follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

```
+---+
|011|
+---+
```

(From steps 002, 006, and 009)

- Display the system message at the active store controller by pressing **System Request** and then pressing the **M** key.

A store controller is active when it is:

```
The only store controller on the store loop
-- or --
The primary store controller and its status is "Controlling Loop"
-- or --
The backup store controller and its status is "Providing Backup".
```

Did the active store controller display message W760 or W764?

Yes No

```
| |
| +---+
| |012|
| +---+
```

- Continue at Step 015.

```
+---+
|013|
+---+
```

Did message W761 display also?

Yes No

```
| |
| +---+
| |014|
| +---+
```

For message W760, follow "PDP 6050: Store Loop Problem" in topic 6.5.

- or -

For message W764, follow "PDP 6210: W764 Message" in topic 6.21.

```
+---+
|015|
+---+
```

(From step 012)

- Go to the 4683 that has the terminal number displayed in message W762. If it is a 4683-xx2, go to its partner 4683-xx1. A 4683-xx2 displays the status of its partner 4683-xx1. See the store loop layout chart.

- Switch **POWER OFF** at the 4683-xx1.

- Wait five seconds and switch power ON again.

Did the 4683 IPL correctly?

Yes No

```
| |
| +---+
| |016|
| +---+
```

The failure symptom has changed.

| Follow the *User Response* for the message in Chapter 2, "Messages" or
| in the *IBM 4680 Store System: Messages Guide*.

| - or -

| Follow the *Repair Action* for the symptom in Chapter 3, "Symptoms."

+----+
| 017 |
+----+

- Wait at least two minutes for the 4683 to become operational.
- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did the active store controller display message W762 again?

Yes No

| |
| |
| +----+
| | 018 |
| +----+

| The 4683 is operating correctly now.

- If the problem returns, record keywords **CONTROLLER** and **INCORROUT**.

| At the active store controller, follow "PDP 6040: Store Controller
| Power-On Self Test Problem" in topic 6.4.

+----+
| 019 |
+----+

- Record keywords **CONTROLLER** and **INCORROUT**.

At the active store controller, follow "PDP 6040: Store Controller
Power-On Self Test Problem" in topic 6.4.

6.21 PDP 6210: W764 Message

Symptom Explanation	Conditions That Could Cause This Symptom
The active store controller is transmitting store loop polls but it is not receiving end-of-polls or beacons.	<input type="checkbox"/> The store loop is open down-loop from the last active 4683-xx1.
	<input type="checkbox"/> An inactive 4683-xx1 is failing down-loop from the last active 4683-xx1.
	<input type="checkbox"/> The store loop cable is failing on the last active 4683-xx1.
	<input type="checkbox"/> The base unit is failing on the last active 4683-xx1.
	<input type="checkbox"/> The store loop cable is failing on the active store controller.
	<input type="checkbox"/> The active store controller is failing.
	<input type="checkbox"/> The distance exceeds 4000 feet (1220 meters) between the last active 4683-xx1 and the active store controller.

PICTURE 107

NOTES:

- This illustration represents a typical store loop, using the IBM Loop Wiring Concentrator. Your store may not be wired like this, but the position of your 4683s on the loop and their relationship to the controller will be similar.
- The 4683-P can also be a 4683-001 or 4683-A01. The 4683-002 can also be a 4683-A02.
- The terminal numbers are shown in numeric order, but they can be put in any order on your store loop.
- The store controller transmits data to the first 4683 down-loop on the store loop. This 4683 receives the data and passes it to the next 4683 down-loop. This continues with each 4683 receiving data from the 4683 immediately up-loop from its position, and passing it on to the next 4683 down-loop. The last 4683 down-loop passes the data back to the store controller.

Figure 6-27. Store Loop with an Open Condition

PICTURE 108

Figure 6-28. Store Controller Store Loop Adapter and Store Loop Receptacle

```
+----+
|001|
+----+
```

To display the terminal number, press **S1**, type **7**, and press **S2**.

To display messages at a point-of-sale terminal (when the keyboard OFFLINE light is ON), press **S1**, type **2**, and press **S2**.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = **S1** and **Enter** = **S2**.

To display a system message at the store controller, sign on at the store controller, press **System Request** and then press the **M** key.

```
+-----+
| WARNING |
| Switching POWER OFF at a 4684 will affect operations at all |
| point-of-sale terminals attached to it. |
+-----+
```

- Before starting store loop problem determination, obtain the filled-in "Terminal Identification Chart" from the book *IBM 4680 Store System: Preparing Your Site*.

-- or --

Obtain a store loop layout chart containing:

- The physical location of store controller(s) and point-of-sale terminals
- The order of store controller(s) and point-of-sale terminals on the store loop
- The terminal numbers.

Is there a backup store controller connected to this store loop?

Yes No

```
|      |  
|      |  
| +---+ |  
| |002| |  
| +---+ |
```

- Continue at Step 011.

```
+---+  
|003|  
+---+
```

- At the backup store controller, display the Backup Store Loop status.
See "Requesting Store Controller Status" in topic B.6.

Is the Backup Store Loop status "Providing Backup"?

Yes No

```
|      |  
|      |  
| +---+ |  
| |004| |  
| +---+ |
```

- Continue at Step 008.

```
+---+  
|005|  
+---+
```

- At the primary store controller, display the Store Loop Control status.

The primary store controller is the controller that has been designated to control the store loop. It is supported by the backup store controller.

Is the Store Loop Control status "Controlling Loop"?

Yes No

```
|      |  
|      |  
| +---+ |  
| |006| |  
| +---+ |
```

- Disconnect the primary store controller from the store loop by unplugging its store loop cable from the store loop receptacle. See Figure 6-28.

Do not reconnect this store controller until the problem has been resolved.

- Continue at Step 011.

```
+---+  
|007|  
+---+
```

Both store controllers are trying to control the store loop. This condition is caused by attaching an active store controller to the store loop when another active store controller is on the store loop.

- Disable the backup store controller. See "Requesting Store Controller Status" in topic B.6.

- Wait 15 seconds and enable the backup store controller.

Return to normal store operation.

```
+---+  
|008|  
+---+
```

(From step 004)

- Disconnect the backup store controller from the store loop by unplugging its store loop cable from the store loop receptacle. See Figure 6-28.

Do not reconnect this store controller until the problem has been

resolved.

- Wait 15 seconds and display the system message at the primary store controller by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

```
| |
| |
| +---+
| |009|
| +---+
```

- Continue at Step 011.

```
+---+
```

```
|010|
```

```
+---+
```

- Record keywords **CONTROLLER** and **INCORROUT**.

At the backup store controller, follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

PICTURE 109

Figure 6-29. 4683-xx1 Store Loop Cable 1 and Shorting Plug 1B

```
+---+
```

```
|011|
```

```
+---+
```

(From steps 002, 006, and 009)

Are there any 4683-xx1s connected to the store loop?

Yes No

```
| |
| |
| +---+
| |012|
| +---+
```

- Continue at Step 035.

```
+---+
```

```
|013|
```

```
+---+
```

- Go to the *last* active 4683-xx1 on the store loop. See the store loop layout chart.

A 4683 is considered active if it has a terminal number, is powered-ON, and attached to the store loop.

- Disconnect this 4683 from the store loop by unplugging its store loop cable from the store loop receptacle. See Figure 6-28.
- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

```
| |
| |
| +---+
| |014|
| +---+
```

(From steps 026 and 029)

- Reconnect the 4683-xx1 to the store loop and continue at Step 022.

```
+---+
```

```
|015|
```

```
+---+
```

Is the store loop cable plugged into socket 1 on this 4683-xx1 base unit?

Yes No

```
| |
| |
| +---+
| |016|
| +---+
```

Correct the problem by plugging the cable into socket 1.

+----+
| 017 |
+----+

- Unplug the store loop cable from socket 1 on this 4683-xx1 base unit.
- Attach shorting plug 1B to the 4683-end of the cable. See Figure 6-29.
- Plug the other end of the cable into the store loop receptacle.
- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did the active store controller display message W760 or W764?

Yes No

| |
| |
| +----+
| | 018 |
| +----+

- Return to the 4683-xx1 and switch **POWER OFF**.

Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+
| 019 |
+----+

- Return to the 4683-xx1 and examine its store loop receptacle for damage.

Is the store loop receptacle OK?

Yes No

| |
| |
| +----+
| | 020 |
| +----+

Report the problem to the person responsible for repairing store loop wiring.

+----+
| 021 |
+----+

Correct the problem by exchanging the store loop cable attached to the 4683.

+----+
| 022 |
+----+

(From step 014)

Is the store loop cable plugged into the store loop adapter on the active store controller? See Figure 6-28.

Yes No

| |
| |
| +----+
| | 023 |
| +----+

Correct the problem by plugging the cable into the store loop adapter.

+----+
| 024 |
+----+

- Disconnect the active store controller from the store loop by unplugging its store loop cable from the store loop receptacle.
- Display the system message at the active store controller by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

| |
| |
| +----+
| | 025 |
| +----+

The problem is in the active store controller, the store loop adapter, or the store loop adapter cable.

- Record keywords CONTROLLER and INCORROUT.

At the active store controller, follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

+----+
| 026 |
+----+

- Reconnect the active store controller to the store loop.

Are there any powered-OFF 4683-xx1s connected to the store loop segment between the 4683 that you reconnected in Step 014 and the active store controller?

Yes No

|
+----+
| 027 |
+----+

The problem is in the store loop wiring between the active store controller and the last active 4683-xx1 **or** in the store loop receptacle for the store controller or 4683-xx1.

Report the problem to the person responsible for repairing store loop wiring.

+----+
| 028 |
+----+

- One at a time, disconnect each powered-OFF 4683-xx1 from the store loop segment by unplugging its store loop cable from the store loop receptacle.
- After each 4683 is disconnected, return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

|
+----+
| 029 |
+----+

If all powered-OFF 4683s have **not** been disconnected, continue disconnecting them and displaying the system message at the active store controller.

- or -

If all powered-OFF 4683s have been disconnected, the problem is in the store loop wiring between the active store controller and the 4683-xx1 that you reconnected in Step 014 **or** in the store loop receptacle for the store controller or 4683-xx1.

- Reconnect all 4683s and report the problem to the person responsible for repairing store loop wiring.

+----+
| 030 |
+----+

- Unplug the store loop cable from socket 1 on the 4683-xx1 that you just disconnected from the store loop.
- Attach shorting plug 1B to the 4683-end of the cable. See Figure 6-29.
- Plug the other end of the cable into the store loop receptacle.
- Return to the active store controller and display the system message by pressing **System Request** and then pressing the **M** key.

Did the active store controller display message W760 or W764?

Yes No

|
+----+
| 031 |
+----+

- Return to the 4683-xx1 and switch **POWER OFF**.

Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+
| 032 |
+----+

- Return to the 4683-xx1 and examine its store loop receptacle for damage.

Is the store loop receptacle OK?

Yes No

| |
| +----+
| | 033 |
| +----+

Report the problem to the person responsible for repairing store loop wiring.

+----+
| 034 |
+----+

Correct the problem by exchanging the store loop cable attached to the 4683.

+----+
| 035 |
+----+
(From step 012)

Is the store loop cable plugged into the store loop adapter on the active store controller? See Figure 6-28.

Yes No

| |
| +----+
| | 036 |
| +----+

Correct the problem by plugging the store loop cable into the store loop adapter.

+----+
| 037 |
+----+

- Disconnect the active store controller from the store loop by unplugging its store loop cable from the store loop receptacle.

- Display the system message at the active store controller by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

| |
| +----+
| | 038 |
| +----+

The problem is in the active store controller, the store loop adapter, or the store loop adapter cable.

- Record keywords **CONTROLLER** and **INCORROUT**.

At the active store controller, follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

+----+
| 039 |
+----+

- Reconnect the active store controller to the store loop.

The problem is in the store loop wiring **or** the store loop receptacles for the 4683-xx1s.

Report the problem to the person responsible for repairing store loop wiring.

Symptom Explanation	Conditions That Could Cause This Symptom
The backup store controller is not receiving store loop communications.	<input type="checkbox"/> The store loop is open up-loop from the store controller. <input type="checkbox"/> A 4683-xx1 is failing up-loop.
The backup store controller is sending beacons but it is not receiving beacons.	<input type="checkbox"/> The backup store controller is failing. <input type="checkbox"/> The primary store controller is failing. <input type="checkbox"/> The distance exceeds 4000 feet (1220 meters) between powered-ON 4683-xx1s on the store loop.

PICTURE 110

NOTES:

- This illustration represents a typical store loop, using the IBM Loop Wiring Concentrator. Your store may not be wired like this, but the position of your 4683s on the loop and their relationship to the controller will be similar.
- The 4683-P can also be a 4683-001 or 4683-A01. The 4683-002 can also be a 4683-A02.
- The terminal numbers are shown in numeric order, but they can be put in any order on your store loop.
- The store controller transmits data to the first 4683 down-loop on the store loop. This 4683 receives the data and passes it to the next 4683 down-loop. This continues with each 4683 receiving data from the 4683 immediately up-loop from its position, and passing it on to the next 4683 down-loop. The last 4683 down-loop passes the data back to the store controller.

Figure 6-30. Store Loop with an Open Condition

```
+---+
|001|
+---+
```

To display the terminal number, press **S1**, type **7**, and press **S2**.

To display messages at a point-of-sale terminal (when the keyboard OFFLINE light is ON), press **S1**, type **2**, and press **S2**.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = **S1** and **Enter** = **S2**.

To display a system message at the store controller, sign on at the store controller, press **System Request** and then press the **M** key.

```
+-----+
| WARNING |
| Switching POWER OFF at a 4684 will affect operations at all |
| point-of-sale terminals attached to it. |
+-----+
```

- Before starting store loop problem determination, obtain the filled-in "Terminal Identification Chart" from the book *IBM 4680 Store System: Preparing Your Site*.

-- or --

Obtain a store loop layout chart containing:

- The physical location of store controller(s) and point-of-sale terminals
- The order of store controller(s) and point-of-sale terminals on the store loop
- The terminal numbers.

- Display the system message at the primary store controller by pressing **System Request** and then pressing the **M** key.

The primary store controller is the controller that has been designated to control the store loop. It is supported by the backup store controller.

Did any current message display?

Yes No

|
+----+
| 002 |
+----+

- Continue at Step 010.

+----+
| 003 |
+----+

Did message W760 display?

Yes No

|
+----+
| 004 |
+----+

The failure symptom has changed.

Follow the *User Response* for the message in Chapter 2, "Messages" or in the *IBM 4680 Store System: Messages Guide*.

- or -

Follow the *Repair Action* for the symptom in Chapter 3, "Symptoms."

+----+
| 005 |
+----+

Is the terminal number 000 in the W760 message?

Yes No

|
+----+
| 006 |
+----+

Follow "PDP 6050: Store Loop Problem" in topic 6.5.

+----+
| 007 |
+----+

- Disconnect the backup store controller from the store loop by unplugging its store loop cable from the store loop receptacle. See Figure 6-31.

- Display the system message at the primary store controller by pressing **System Request** and then pressing the **M** key.

Did message W761 display?

Yes No

|
+----+
| 008 |
+----+

For message W760, follow "PDP 6050: Store Loop Problem" in topic 6.5.

- or -

For message W764, follow "PDP 6210: W764 Message" in topic 6.21.

+----+
| 009 |
+----+

The backup store controller is failing.

- Record keywords CONTROLLER and INCORROUT.

At the backup store controller, follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

PICTURE 111

Figure 6-31. Typical Store Loop Receptacles

+----+

|010|

+---+

(From step 002)

- Disconnect the backup store controller from the store loop by unplugging its store loop cable from the store loop receptacle. See Figure 6-31.
- Display the system message at the backup store controller by pressing **System Request** and then pressing the **M** key.

Did message W774 display?

Yes No

|

+---+

|011|

+---+

The backup store controller is failing.

- Record keywords CONTROLLER and INCORROUT.

At the backup store controller, follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

+---+

|012|

+---+

The primary store controller is failing.

- Record keywords CONTROLLER and INCORROUT.

At the primary store controller, follow "PDP 6040: Store Controller Power-On Self Test Problem" in topic 6.4.

6.23 PDP 6230: 4683 Application Problem

Symptom Explanation	Conditions That Could Cause This Symptom
The point-of-sale terminal displayed an application or user program message and the recovery procedure for that message was not successful.	<input type="checkbox"/> One of the point-of-sale devices is failing. <input type="checkbox"/> The 4683 base unit is failing.
You have observed failure symptoms on more than one device but you cannot determine which device is failing.	

PICTURE 112

Figure 6-32. Panel Behind the 4683-xx1 Side-Cover

```
+---+
|001|
+---+
```

This procedure applies ONLY to a 4683 running the 4680 Operating System.

- Hold the 4683-xx1 dump switch pressed and switch **POWER OFF**. See Figure 6-32.

This **does not** cause a storage dump. It **does** disable storage retention and cause an IPL when power is switched ON again.

- Release the dump switch.
- If a partner 4683-xx2. is attached, switch its **POWER OFF**.
- Wait five seconds and switch power ON again.
- If a partner 4683-xx2. is attached, switch its power ON.
- Wait up to five minutes for message W008 to display.

Did the 4683 IPL stop with a Unnn message displayed?

Yes No

```
|
|
| +---+
| |002|
| +---+
```

- Continue at Step 004.

```
+---+
|003|
+---+
```

Follow the *User Response* for the message under "Unnn Messages" in topic 2.8.

```
+---+
|004|
+---+
```

(From step 002)

Did message W008 display?

Yes No

```
|
|
| +---+
| |005|
| +---+
```

- Continue at Step 007.

```
+---+
|006|
+---+
```

- Continue at Step 011.

+----+
|007|
+----+
(From step 005)

Can you read the message on the display?

Yes No

|
|
+----+
|008|
+----+

Follow the *Repair Action* for the display symptom in Chapter 3, "Symptoms."

+----+
|009|
+----+

Is an application message (Annn through Snnn) displayed?

Yes No

|
|
+----+
|010|
+----+

Follow the *User Response* for the message in Chapter 2, "Messages" or in the *IBM 4680 Store System: Messages Guide*.

+----+
|011|
+----+

(From step 006)

- While observing the display, press **S1**, type **92**, and press **S2**.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.

Did "92" appear on the display as it was keyed in?

Yes No

|
|
+----+
|012|
+----+

The keyboard may be failing.

Run "TEST 4090: Point of Sale Keyboard (4683/4684)" in topic 4.9.

+----+
|013|
+----+

The Terminal Verification Tests are loaded. Message W008 displays, followed by T0012, and then T0016.

Did each of the messages display?

Yes No

|
|
+----+
|014|
+----+

Go to Chapter 1, "Start Here" and start problem determination again.

+----+
|015|
+----+

Follow "TEST 4230: Point of Sale Terminal Verification (4683/4684)" in topic 4.23.

6.24 PDP 6240: 4683 Hang Condition

Symptom Explanation	Conditions That Could Cause This Symptom
The 4683-xx1 has stopped and is in a hang condition.	□ A 4683-xx1 hang condition can result from a variety of causes. Resetting the 4683-xx1 will correct this condition in most cases. This problem determination procedure takes you through the reset procedure.

PICTURE 113

Figure 6-33. Panel Behind the 4683-xx1 Side-Cover

```
+----+
|001|
+----+
```

This procedure applies ONLY to a 4683 running the 4680 Operating System.

- Switch **POWER OFF** and then ON at the 4683-xx1.

Does the hang condition still exist?

Yes No

```
|
|
| +----+
| |002|
| +----+
```

The 4683-xx1 is operating correctly now.

```
+----+
|003|
+----+
```

Requesting a terminal storage dump (pressing and releasing the 4683-xx1 dump switch) will affect overall store system performance. Check with store personnel to determine if a terminal storage dump can be requested at this time.

Can a terminal storage dump be requested?

Yes No

```
|
|
| +----+
| |004|
| +----+
```

1. Hold 4683-xx1 dump switch pressed and switch **POWER OFF**. See Figure 6-33.

This **does not** cause a storage dump. It **does** disable storage retention and cause an IPL when power is switched ON again.

2. Release the dump switch.

3. Disconnect the battery pack and the power cord to remove all power. dc power is still present at the power supply connectors when the power switch is in the off position.

4. Reconnect the power cord and the battery pack.

5. Switch power ON.

6. Wait until the IPL is completed.

- Continue at Step 006.

```
+----+
|005|
+----+
```

1. Press and release the dump switch.
2. Wait until the storage dump is completed.
3. Notify the store programmer that a storage dump has been created.

- Continue at Step 006.

+---+

|006|

+---+

(From steps 004 and 005)

Does the hang condition still exist?

Yes No

|

+---+

|007|

+---+

The 4683-xx1 is operating correctly now.

+---+

|008|

+---+

1. Hold the 4683-xx1 dump switch pressed and switch **POWER OFF**.
2. Release the dump switch.
3. Disconnect the power cord and the battery pack to remove all power.
4. Reconnect the power cord and the battery pack.
5. Switch power ON.
6. This time when U005 is displayed, press and release the dump switch to load Set Terminal Characteristics (STC).
7. When message Z001 is displayed, enter the terminal number. See message Z001 on topic 2.12.
8. Follow instructions on the screen until the terminal program load is completed.
9. Verify that the point-of-sale terminal is operating correctly by running the "TEST 4230: Point of Sale Terminal Verification (4683/4684)" in topic 4.23.

Does the hang condition still exist?

Yes No

|

+---+

|009|

+---+

The 4683-xx1 is operating correctly now.

+---+

|010|

+---+

Is there another message or symptom present at the 4683-xx1?

Yes No

|

+---+

|011|

+---+

Follow "PDP 6250: 4683 Multiple Symptoms" in topic 6.25 to determine if the point-of-sale devices or Feature Expansion cards are the cause of the hang condition.

+---+

|012|

+---+

Follow the *User Response* for the message in Chapter 2, "Messages" or in the *IBM 4680 Store System: Messages Guide*.

- or -

Follow the *Repair Action* for the symptom in Chapter 3, "Symptoms."

6.25 PDP 6250: 4683 Multiple Symptoms

Symptom Explanation	Conditions That Could Cause This Symptom
Messages on the system display indicate that more than one point-of-sale device is failing or there may be multiple symptoms that are not associated with just one device.	<input type="checkbox"/> One of the point-of-sale devices is failing.
	<input type="checkbox"/> One of the point-of-sale device cables is failing.
	<input type="checkbox"/> One of the 4683 Feature Expansion cards is failing.
	<input type="checkbox"/> The 4683 base unit is failing.

PICTURE 114

Figure 6-34. Panel Behind the 4683-xx1 Side-Cover

```
+----+
|001|
+----+
```

This procedure applies ONLY to a 4683 running the 4680 Operating System.

System Display -- When multiple displays are attached to a point-of-sale terminal, one must be configured as the system display. When only one display is attached, it is the system display. System messages (Wnnn), test messages (Tnnnn), and other messages of this type appear only on the system display.

One of the attached point-of-sale devices or Feature Expansion cards may be causing system display messages.

To determine which device may be causing the problem, all devices will be disconnected and then reconnected one at a time.

- Hold the 4683-xx1 dump switch pressed and switch **POWER OFF**. See Figure 6-34.

This **does not** cause a storage dump. It **does** disable storage retention and cause an IPL when power is switched ON again.

- Release the dump switch.

- If a partner 4683-xx2. is attached, switch its **POWER OFF**.

Is a Feature Expansion card installed?

Yes No

```
|
|
| +----+
| |002|
| +----+
```

- Continue at Step 006.

```
+----+
|003|
+----+
```

- To make reinstallation easier, note the location of the Feature Expansion cards and the cables connected to them.

Is the system display a video display?

Yes No

```
|
|
| +----+
| |004|
| +----+
```

- Remove the Feature Expansion card(s) from the base unit. See "Removing a Feature Expansion Card" in topic 7.28.5.1.

- Continue at Step 006.

```
+----+
|005|
+----+
```

- Leave the Feature Expansion card for the system display installed and remove the other Feature Expansion card from the base unit.

- Continue at Step 006.

+----+

|006|

+----+

(From steps 002, 004, and 005)

- To make reconnecting easier, note the location of each of the device cables. See "Cable Sockets and Devices" in topic C.7.

- Disconnect all point-of-sale devices except:

- System Display
- Socket 1 (4683-xx1)
- Socket 11 (4683-xx2).

- Switch power ON.

- If a partner 4683-xx2. is attached, switch its power ON.

- Wait up to five minutes for message W318 to display.

Is message W318 displayed?

Yes No

|

+----+

|007|

+----+

- Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. If the video display is the system display, exchange the Feature Expansion card for the video display. See "4683 Feature Expansion Card Removal and Replacement" in topic 7.28.5.
2. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+----+

|008|

+----+

- Hold the 4683-xx1 dump switch pressed and switch **POWER OFF**.

This **does not** cause a storage dump. It **does** disable storage retention and cause an IPL when power is switched ON again.

- Release the dump switch.

- If a partner 4683-xx2. is attached, switch its **POWER OFF**.

- Reconnect the keyboard cable to the socket that it was disconnected from (5A or 5B).

- Switch power ON.

- If a partner 4683-xx2. is attached, switch its power ON.

- Wait up to five minutes for message W008 to display.

Did message W008 display?

Yes No

|

+----+

|009|

+----+

- Switch **POWER OFF** and follow this list to isolate and correct the cause of the problem.

1. Service or exchange the keyboard. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
2. Exchange the keyboard cable.

```
+----+  
|010|  
+----+  
(From step 016)
```

A point-of-sale device, a device cable, or a Feature Expansion card that was disconnected is failing.

- Hold the 4683-xx1 dump switch pressed and switch **POWER OFF**.
- Release the dump switch.
- If a partner 4683-xx2. is attached, switch its **POWER OFF**.

Was a Feature Expansion card removed?

```
Yes  No  
|    |  
|    |  
|    +----+  
|    |011|  
|    +----+  
|    |  
|    - Continue at Step 017.  
|
```

```
+----+  
|012|  
+----+
```

- Reinstall Feature Expansion card 2A or 2B.
- Switch power ON.
- If a partner 4683-xx2. is attached, switch its power ON.
- Wait up to five minutes for message W008 to display.

Did message W008 display?

```
Yes  No  
|    |  
|    +----+  
|    |013|  
|    +----+  
|    |  
|    The Feature Expansion card that was just reinstalled is failing.  
|    Switch POWER OFF and exchange the failing Feature Expansion card.  
|
```

```
+----+  
|014|  
+----+
```

Was more than one Feature Expansion card removed?

```
Yes  No  
|    |  
|    +----+  
|    |015|  
|    +----+  
|    |  
|    - Continue at Step 017.  
|
```

```
+----+  
|016|  
+----+
```

Return to Step 010 and repeat the steps for the other Feature Expansion card.

```
+----+  
|017|  
+----+  
(From steps 011, 015, and 019)
```

One of the devices or cables that was disconnected is failing.

- Hold the 4683-xx1 dump switch pressed and switch **POWER OFF**. See Figure 6-34.
- Release the dump switch.
- If a partner 4683-xx2. is attached, switch its **POWER OFF**.
- Reconnect one of the disconnected devices.
- Switch power ON.

- If a partner 4683-xx2. is attached, switch its power ON.

Did message W008 display?

Yes No

|
+---+
|018|
+---+

The device that was reconnected is failing.

- Switch **POWER OFF**.
- If a partner 4683-xx2. is attached, switch its **POWER OFF**.
- Examine the cable on the failing device for a damaged or loose connection.

If the cable and connections are OK, follow this list to isolate and correct the cause of the problem.

1. Exchange the device.

Note: If the 3587 Checkout Scanner Model 2 is the failing device, exchange only the scanner adapter. See "3687 Model 2 Scanner Adapter Removal and Replacement" in topic 7.27.

2. Exchange the device cable.
3. Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+---+
|019|
+---+

Return to Step 017 and repeat the steps for each device that was disconnected until the failing device is found.

6.26 PDP 6260: 4683 Unexpected IPL

Symptom Explanation	Conditions That Could Cause This Symptom
The 4683-xx1 did an IPL for an unknown reason.	<input type="checkbox"/> The 4683-xx1 dump switch was pressed.
	<input type="checkbox"/> The 4683-xx1 storage retention battery is failing.
	<input type="checkbox"/> The 4683-xx1 base unit is failing.

PICTURE 115

Figure 6-35. Panel Behind the 4683-xx1 Side-Cover

```
+----+
|001|
+----+
```

This procedure applies ONLY to a 4683 running the 4680 Operating System.

Was the 4683-xx1 base unit switched OFF and then ON again?

Yes No

```
|
|
| +----+
| |002|
| +----+
```

- Continue at Step 004.

```
+----+
|003|
+----+
```

- Continue at Step 006.

```
+----+
|004|
+----+
```

(From step 002)

Did a power failure occur in the store?

Yes No

```
|
|
| +----+
| |005|
| +----+
```

- Continue at Step 009.

```
+----+
|006|
+----+
```

(From step 003)

- Remove the 4683-xx1 side cover (battery access). See Figure 6-35.

Is the battery pack connected to the battery cable socket?

Yes No

```
|
|
| +----+
| |007|
| +----+
```

Connect the battery to the battery cable socket.

```
+----+
|008|
+----+
```

The Storage Retention function may be failing.

Run "TEST 4180: Storage Retention (4683-xx1 Only)" in topic 4.18.

```
+----+
|009|
```

+---+
(From step 005)

The 4683 sends a System Event Record to the store controller that indicates the reason the IPL occurred.

- Scan system events in the System Log, at the store controller. See "Requesting a System Log Report" in topic B.4.
- Find the System Event Record logged by this 4683 and containing source number 084.

The System Event Record will also have an event number.

Is event number 004 in the System Event Record?

Yes No

|
| +---+
| |010|
| +---+
|

- Continue at Step 012.

+---+
|011|
+---+

The point-of-sale terminal hardware is operating correctly now. However, a temporary hardware error did occur.

If this failure occurs more than once in a 30-day period, service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+---+
|012|
+---+

(From step 010)

Is event number 031 in the System Event Record?

Yes No

|
| +---+
| |013|
| +---+
|

The point-of-sale terminal hardware is operating correctly now.

+---+
|014|
+---+

Was the 4683-xx1 dump switch pressed?

Yes No

|
| +---+
| |015|
| +---+
|

- Switch **POWER OFF**.

Service the 4683 base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

+---+
|016|
+---+

The point-of-sale terminal hardware is operating correctly now.

7.0 Chapter 7. Removal and Replacement Procedures

CAUTION:

For your safety, you must connect the power cord of any equipment to a correctly wired and grounded receptacle. An incorrectly wired receptacle can place a hazardous voltage on accessible metal parts of the equipment. If you are unsure of the receptacle wiring, have a qualified electrician check the receptacle prior to connecting any equipment to it or working on any equipment connected to it.

DANGER

```
+-----+
| During periods of lightning activity do not connect or disconnect any |
| cables, or perform installation, maintenance, or reconfiguration.    |
+-----+
```

Subtopics

- 7.1 Alphanumeric Display Removal and Replacement
- 7.2 Cash Drawer Removal and Replacement
- 7.3 Checkout Scanner Removal and Replacement
- 7.4 Coin Dispenser Removal and Replacement (4683 Only)
- 7.5 Hand-Held Bar Code Reader Removal and Replacement
- 7.6 Keyboard Removal and Replacement
- 7.7 Keylock Insert Removal and Replacement
- 7.8 Keylock Blank Insert Removal and Replacement
- 7.9 Magnetic Stripe Reader (Single-Track) Removal and Replacement
- 7.10 Magnetic Stripe Reader (Dual-Track) Removal and Replacement
- 7.11 Magnetic Stripe Reader (Low-Profile Dual-Track) Removal and Replacement
- 7.12 Magnetic Wand Removal and Replacement (4683 Only)
- 7.13 Operator Display Removal and Replacement
- 7.14 Optical Character Reader Removal and Replacement (4683 Only)
- 7.15 Point of Sale Printer Model 1 or 2 Removal and Replacement
- 7.16 Point of Sale Printer Model 3 Removal and Replacement
- 7.17 Proprinter (TM) Removal and Replacement
- 7.18 Remote Alarm Removal and Replacement
- 7.19 Scale Removal and Replacement (4683 Only)
- 7.20 Shopper Display Removal and Replacement
- 7.21 Socket 23 or 25 Device (RS-232 or Current Loop) Removal and Replacement (4683 Only)
- 7.22 Security Base Removal and Replacement
- 7.23 Video Display (Except 5-Inch) Removal and Replacement
- 7.24 5-Inch Monochrome Display Removal and Replacement (4683 Only)
- 7.25 1520 Hand-Held Scanner Model A01 Removal and Replacement (4683 Only)
- 7.26 1520 Hand-Held Scanner Model A02 Removal and Replacement
- 7.27 3687 Model 2 Scanner Adapter Removal and Replacement
- 7.28 IBM 4683 Base Unit Removal and Replacement
- 7.29 IBM 4684 System Unit Removal and Replacement
- 7.30 IBM 4683 Base Unit Cable Sockets and Devices
- 7.31 IBM 4684 System Unit Cable Sockets and Devices

7.1 Alphanumeric Display Removal and Replacement

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Subtopics

7.1.1 Removing the Alphanumeric Display

7.1.2 Replacing the Alphanumeric Display

7.1.1 Removing the Alphanumeric Display

1. Switch **POWER OFF** at the point-of-sale terminal.
2. If you are **not** removing the display cable, continue at Step 6.
3. Remove the thumbscrews that attach the display post to the base unit or system unit. See Figure 7-1 in topic 7.1.2.
4. Remove the base unit or system unit back cover. See Figure 7-35 in topic 7.28.3.2 or Figure 7-43 in topic 7.29.3.2.
5. Unplug the alphanumeric display cable from socket 4. To make reconnecting easier, note the socket number (4A or 4B).
6. Spread the arms of the yoke slightly to release the display.
7. Lift the display out of the yoke.
8. Unplug the display cable from the display socket.

Retain the following items for future use:

- The display cable
- The display post and yoke assembly
- The two plastic screws that secure the post to the base unit or system unit.

If applicable, use a copy of the "Problem Data Collection Form" in topic B.7 as a guide to report any alphanumeric display problem.

Reference	Topic
Cable Socket Locations on a 4683	7.30
Cable Socket Locations on a 4684	7.31

7.1.2 Replacing the Alphanumeric Display

1. Switch **POWER OFF** at the point-of-sale terminal.
2. If the display is already mounted in the yoke and post, continue at Step 7.
3. Run the cable up through the post as shown in Figure 7-1.
4. Plug the display cable into the display socket.
5. Spread the arms of the yoke slightly and align the display between the arms. See Figure 7-1.
6. Slide the display into the yoke until the pivot points on the display fit through the holes in the arms.
7. If the display post is already mounted on the system unit or base unit, continue at Step 11.
8. Fasten the display post to the system unit or base unit using the two thumbscrews.
9. Ensure that the cable is routed out through the slot in the back of the post and that it is not pinched.
10. Tighten the screws with your fingers.
11. Remove the base unit or system unit back cover. See Figure 7-35 in topic 7.28.3.2 **or** Figure 7-43 in topic 7.29.3.2.
12. Plug the alphanumeric display cable into socket 4A or 4B (the socket number is defined by configuration) and reinstall the back cover.
13. Switch power ON and verify the display is operating correctly. See "TEST 4010: Alphanumeric, Operator, or Combined Keyboard/Display (4683/4684)" in topic 4.1 **or** "Running POS (Point of Sale) Device Tests" in topic 5.4.

PICTURE 116

Figure 7-1. Alphanumeric Display

7.2 Cash Drawer Removal and Replacement

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Subtopics

7.2.1 Removing the Cash Drawer

7.2.2 Replacing the Cash Drawer

7.2.1 Removing the Cash Drawer

1. Open the cash drawer and remove the till.
2. Switch **POWER OFF** at the point-of-sale terminal.
3. If applicable, remove the devices from the top of the system or base unit before removing it from the top of the cash drawer.
4. If you are **not** removing the cash drawer cable, continue at Step 7.
5. Remove the base unit or system unit back cover. See Figure 7-35 in topic 7.28.3.2 **or** Figure 7-43 in topic 7.29.3.2.
6. Unplug the cash drawer cable from socket 3. To make reconnecting easier, note the socket number (3A or 3B).
7. Remove the cash drawer back cover.
8. Unplug the cash drawer cable from the cash drawer.

Retain the following items for future use:

- The cash drawer cable
- The cash drawer till and its components
- The keylock insert and keys **or** the blank lock insert. See "Keylock Insert Removal and Replacement" in topic 7.7 **or** "Keylock Blank Insert Removal and Replacement" in topic 7.8.

If applicable, use a copy of the "Problem Data Collection Form" in topic B.7 as a guide to report any cash drawer problem.

Reference	Topic
Cable Socket Locations on a 4683	7.30
Cable Socket Locations on a 4684	7.31

7.2.2 Replacing the Cash Drawer

1. Install the keylock insert or the blank lock insert. See "Keylock Insert Removal and Replacement" in topic 7.7 **or** "Keylock Blank Insert Removal and Replacement" in topic 7.8.
2. Switch **POWER OFF** at the point-of-sale terminal.
3. If you are **not** replacing the cash drawer cable, continue at Step 6.
4. Remove the base unit or system unit back cover. See Figure 7-35 in topic 7.28.3.2 **or** Figure 7-43 in topic 7.29.3.2.
5. Plug the cash drawer cable into socket 3A or 3B (the socket number is defined by configuration) and reinstall the back cover.

Cash drawer A cable into socket 3A.
Cash drawer B cable into socket 3B.

6. Remove the cash drawer back cover. See Figure 7-2.
7. Plug the cash drawer cable into the cash drawer socket and reinstall the back cover.
8. Position the cash drawer on the point-of-sale terminal.
9. Switch power ON and verify the cash drawer is operating correctly. See "TEST 4020: Cash Drawer (4683/4684)" in topic 4.2 **or** "Running POS (Point of Sale) Device Tests" in topic 5.4.

PICTURE 117

Figure 7-2. Cash Drawer

7.3 Checkout Scanner Removal and Replacement

Subtopics

7.3.1 Removing the 3687 Scanner

7.3.2 Replacing the 3687 Scanner

7.3.1 Removing the 3687 Scanner

This procedure is for the 3687 Checkout Scanner Model 2 ONLY. If the scanner is not a 3687 Model 2, use the maintenance documentation for the scanner.

"Replacing the 3687 Scanner" is in topic 7.3.2.

CAUTION:

The IBM 3687 Checkout Scanner Model 2 weighs approximately 19.5 kg (43 lb). To ensure safety in lifting, you may want to get help to move, install, or remove the scanner.

1. Switch **POWER OFF** at the point-of-sale terminal.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

2. Switch **POWER OFF** at the scanner and at the power switch on the checkstand and then unplug the scanner power cord from the power receptacle.

Note: Checkout scanners in World Trade countries can have a baffle plate (air deflector) that must be removed from the machine before the scanner is lifted from the checkstand. See Figure 7-3.

3. If the scanner does **not** have a baffle plate (baffle plate), continue at Step 7.
4. Unlatch the baffle plate by pressing the baffle plate lever down. See Figure 7-3.
5. Hold the lever down and swing the bottom of the baffle plate out and away from the scanner.
6. To avoid damage to the baffle plate tabs, be sure the tabs clear the top plate when you are removing the baffle plate.

PICTURE 118

Figure 7-3. Baffle Plate (Air Deflector)

7. Turn the two screws in the scanner top plate counterclockwise far enough to attach the lifting handle (IBM P/N 6317877). See Figure 7-4.

Note: Do not force the screws up after they stop turning easily.

8. Place the ends of the handle over the screw heads and pull in until the handle snaps into place.
9. Lift the scanner out of the checkstand by lifting up on the handle.
10. Go to "Removing the Scanner Adapter" in topic 7.27.1 and remove the scanner adapter from the scanner.

If applicable, use a copy of the "Problem Data Collection Form" in topic B.7 as a guide to report any scanner problem.

PICTURE 119

Figure 7-4. 3687 Checkout Scanner Model 2

7.3.2 Replacing the 3687 Scanner

This procedure is for the 3687 Checkout Scanner Model 2 ONLY. If the scanner is not a 3687 Model 2, use the maintenance documentation for the scanner.

"Removing the 3687 Scanner" is in topic 7.3.1.

1. Before putting the scanner into the checkstand, go to "Replacing the Scanner Adapter" in topic 7.27.2 and attach the scanner adapter to the scanner.
2. Switch **POWER OFF** at the point-of-sale terminal.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

3. Switch **POWER OFF** at the scanner and at the power switch on the checkstand and then unplug the scanner power cord from the power receptacle.
4. Turn the two screws in the scanner top plate counterclockwise far enough to attach the lifting handle (IBM P/N 6317877). See Figure 7-5.

CAUTION:

The IBM 3687 Checkout Scanner Model 2 weighs approximately 19.5 kg (43 lb). To ensure safety in lifting, you may want to get help to move, install, or remove the scanner.

5. Place the scanner beside the opening in the checkstand.

Note: Before you set the scanner down into the opening:

- Ensure that the adapter cable and the power cord are connected to the scanner and that they do not interfere with setting the scanner into place.
- Ensure that there is no foreign material in the checkstand opening.

6. Lower the scanner into the opening.
7. Remove the lifting handle and tighten the two screws in the top cover with your fingers.

PICTURE 120

Figure 7-5. 3687 Checkout Scanner Model 2

Note: Checkout scanners in World Trade countries can have a baffle plate (air deflector) that must be put on the scanner after the scanner is placed in the checkstand. See Figure 7-6.

8. If the scanner **does not** have an baffle plate (baffle plate), continue at Step 12.
9. Insert the two tabs on the baffle plate into the outer slots of the vent grill and under the top plate.
10. Push the baffle plate in toward the scanner until the baffle plate lever locks into place.
11. Plug the scanner power cord into the power receptacle.
12. Switch power ON at the scanner and at the power switch on the checkstand.
13. Switch power ON at the point-of-sale terminal and verify the scanner is operating correctly. See "TEST 4110: Point of Sale Scanner (4683/4684)" in topic 4.11 or "Running POS (Point of Sale) Device Tests" in topic 5.4.

PICTURE 121

Figure 7-6. Baffle Plate (Air Deflector)

7.4 Coin Dispenser Removal and Replacement (4683 Only)

Subtopics

7.4.1 Removing the Coin Dispenser

7.4.2 Replacing the Coin Dispenser

7.4.1 Removing the Coin Dispenser

1. Switch **POWER OFF** at the point-of-sale terminal.
2. Unplug the coin dispenser power cord from the power receptacle.
3. If you are **not** removing the coin dispenser cable, continue at Step 6.
4. Remove the 4683 base unit back cover. See Figure 7-35 in topic 7.28.3.2.
5. Unplug the coin dispenser cable from socket 29.

Note: Socket 29 is located on Feature Expansion cards B, C, and D. The Feature Expansion card can be installed in location 2A or 2B. See Figure 7-7 in topic 7.4.2 and "IBM 4683 Base Unit Cable Sockets and Devices" in topic 7.30.

6. Unplug the coin dispenser cable from the coin dispenser. See the maintenance documentation for the coin dispenser.

If applicable, use a copy of the "Problem Data Collection Form" in topic B.7 as a guide to report any coin dispenser problem.

7.4.2 Replacing the Coin Dispenser

1. Switch **POWER OFF** at the point-of-sale terminal.
2. If you are **not** replacing the coin dispenser cable, continue at Step 5.
3. Remove the 4683 base unit back cover. See Figure 7-35 in topic 7.28.3.2.
4. Plug the coin dispenser cable into socket 29 and reinstall the back cover.

Note: Socket 29 is located on Feature Expansion cards B, C, and D. The Feature Expansion card can be installed in location 2A or 2B. See Figure 7-7 and "IBM 4683 Base Unit Cable Sockets and Devices" in topic 7.30.

5. Plug the coin dispenser cable into the coin dispenser socket. See the maintenance documentation for the coin dispenser.
6. Plug the coin dispenser power cord into the power receptacle.
7. Switch power ON and verify the coin dispenser is operating correctly. See "TEST 4030: Coin Dispenser (4683 Only)" in topic 4.3.

PICTURE 122

Figure 7-7. Coin Dispenser

7.5 Hand-Held Bar Code Reader Removal and Replacement

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Subtopics

7.5.1 Removing the Bar Code Reader

7.5.2 Replacing the Bar Code Reader

7.5.1 Removing the Bar Code Reader

1. Switch **POWER OFF** at the point-of-sale terminal.
2. Remove the base unit or system unit back cover. See Figure 7-35 in topic 7.28.3.2 or Figure 7-43 in topic 7.29.3.2.
3. Unplug the bar code reader cable from socket 9B. See Figure 7-8 in topic 7.5.2.

If applicable, use a copy of the "Problem Data Collection Form" in topic B.7 as a guide to report any hand-held bar code reader problem.

Reference	Topic
Cable Socket Locations on a 4683	7.30
Cable Socket Locations on a 4684	7.31

PICTURE 123

7.5.2 Replacing the Bar Code Reader

1. Switch **POWER OFF** at the point-of-sale terminal.
2. Remove the base unit or system unit back cover. See Figure 7-35 in topic 7.28.3.2 **or** Figure 7-43 in topic 7.29.3.2.
3. Plug the bar code reader cable into socket 9B and reinstall the back cover. See Figure 7-8.
4. Switch power ON and verify the bar code reader is operating correctly. See "TEST 4050: Hand-Held Bar Code Reader (4683/4684)" in topic 4.5 **or** "Running POS (Point of Sale) Device Tests" in topic 5.4.

PICTURE 124

Figure 7-8. Hand-Held Bar Code Reader Model 1 and Model 2

7.6 Keyboard Removal and Replacement

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Subtopics

7.6.1 Removing the Keyboard

7.6.2 Replacing the Keyboard

7.6.1 Removing the Keyboard

1. Switch **POWER OFF** at the point-of-sale terminal.
2. If you are **not** removing the keyboard cable, continue at Step 5.
3. Remove the base unit or system unit back cover. See Figure 7-35 in topic 7.28.3.2 **or** Figure 7-43 in topic 7.29.3.2.

4. Unplug the keyboard cable. To make reconnecting easier, note the socket number.

Point of Sale Keyboard - socket 5A or 5B

System Unit Keyboard

(Enhanced A/N or ANPOS) - socket for the system unit keyboard

5. Unplug the keyboard cable from the keyboard socket. See Figure 7-9 in topic 7.6.2.

Retain the following items for future use:

- The keyboard cable
- The MSR
- Special keybuttons, keytops, lens covers, shields, labels, or decals
- The keylock insert and keys **or** the blank lock insert. See "Keylock Insert Removal and Replacement" in topic 7.7 **or** "Keylock Blank Insert Removal and Replacement" in topic 7.8.

If applicable, use a copy of the "Problem Data Collection Form" in topic B.7 as a guide to report any keyboard problem.

7.6.2 Replacing the Keyboard

1. Reinstall the following items:

- The MSR
- The keylock insert and keys **or** the blank lock insert. See "Keylock Insert Removal and Replacement" in topic 7.7 **or** "Keylock Blank Insert Removal and Replacement" in topic 7.8.

2. Switch **POWER OFF** at the point-of-sale terminal.

3. If you are **not** replacing the keyboard cable, continue at Step 6.

4. Remove the base unit or system unit back cover. See Figure 7-35 in topic 7.28.3.2 **or** Figure 7-43 in topic 7.29.3.2.

5. Plug in the keyboard cable (the socket number is defined by configuration) and reinstall the back cover.

Point of Sale Keyboard - socket 5A or 5B

System Unit Keyboard

(Enhanced A/N or ANPOS) - socket for the system unit keyboard

6. Plug the keyboard cable into the keyboard socket. See Figure 7-9.

7. Switch power ON and verify the keyboard is operating correctly. See "TEST 4090: Point of Sale Keyboard (4683/4684)" in topic 4.9 **or** "Running POS (Point of Sale) Device Tests" in topic 5.4.

Reference	Topic
Cable Socket Locations on a 4683	7.30
Cable Socket Locations on a 4684	7.31
Single-Track Magnetic Stripe Reader Removal and Replacement	7.9
Dual-Track Magnetic Stripe Reader Removal and Replacement	7.10
Low-Profile Magnetic Stripe Reader Removal and Replacement	7.11

PICTURE 125

Figure 7-9. Point of Sale Keyboard. The rear of the 50-key keyboard is shown to illustrate the keyboard socket.

7.7 *Keylock Insert Removal and Replacement*

Subtopics

7.7.1 Removing the Keylock Insert

7.7.2 Replacing the Keylock Insert

7.7.1 Removing the Keylock Insert

"Replacing the Keylock Insert" is in topic 7.7.2.

1. Unlock the keylock before proceeding.
2. Insert the lock installation-removal key into the lock insert. See Figure 7-10.

The installation-removal key is shipped with the store controller.

3. Pull the lock insert out of the cylinder. You may have to move the installation-removal tool from side-to-side to get the insert free of the cylinder.

PICTURE 126

Figure 7-10. Keylock Insert

7.7.2 Replacing the Keylock Insert

"Removing the Keylock Insert" is in topic 7.7.1.

1. Insert the lock cylinder adjustment key into the keylock cylinder [A]. See Figure 7-11.

The lock cylinder adjustment key is shipped with the store controller.

2. Turn the adjustment key until you can feel it go into the slot in the bottom of the cylinder [B].
3. Turn the adjustment key until the arrow is pointing as shown for the device [C].
4. Remove the adjustment key from the lock cylinder.

PICTURE 127

Figure 7-11. Keylock Insert

5. Insert the lock installation-removal key into the lock insert [D]. See Figure 7-12.
6. Put the lock insert into the cylinder [E]. The lock installation-removal key must be pointing the same way as the arrow was on the adjustment key.
7. Push the lock insert into the cylinder until the top ring of the insert is even with the face of the cylinder.
8. Hold the lock insert in place and remove the installation-removal key [F].
9. Insert the key for this keylock and check for proper operation.

PICTURE 128

Figure 7-12. Keylock Insert

7.8 Keylock Blank Insert Removal and Replacement

Subtopics

7.8.1 Removing the Blank Lock Insert

7.8.2 Replacing the Blank Lock Insert

7.8.1 *Removing the Blank Lock Insert*

"Replacing the Blank Lock Insert" is in topic 7.8.2.

1. Put the insert key into the locking screw of the blank lock insert.
See Figure 7-13.
2. Turn the insert key counterclockwise until it stops to unscrew the locking screw.

The blank lock insert key is shipped with the store controller.

3. Remove the blank insert from the lock cylinder.

PICTURE 129

Figure 7-13. Blank Lock Insert

7.8.2 Replacing the Blank Lock Insert

"Removing the Blank Lock Insert" is in topic 7.8.1.

1. Insert the lock cylinder adjustment key into the keylock cylinder [A]. See Figure 7-14.

The lock cylinder adjustment key is shipped with the store controller.

2. Turn the adjustment key until you can feel it go into the slot in the bottom of the cylinder [B].
3. Turn the adjustment key until the arrow is pointing as shown for the device [C].
4. Before removing the adjustment key from the lock cylinder, note the direction of the arrow on the key. You line up the lug on the blank lock insert in this same direction later in these steps.
5. Remove the adjustment key from the lock cylinder.
6. Line up the lug on the end of the blank lock insert in the same direction as the arrow on the adjustment key was pointing [D].
7. Push the blank lock insert into the lock cylinder until it is even with the top of the lock cylinder.
8. Insert the insert key into the locking screw in the blank lock insert [E].
9. Turn the insert key clockwise to turn the locking screw down until it reaches the bottom of the hole.

Note: Do not overtighten the locking screw.

10. Remove the insert key.

PICTURE 130

Figure 7-14. Blank Lock Insert

7.9 Magnetic Stripe Reader (Single-Track) Removal and Replacement

Note: This procedure is for the single-track magnetic stripe reader (MSR) attached to the 50-key keyboard or the alphanumeric keyboard.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Subtopics

- 7.9.1 Removing the Single-Track MSR
- 7.9.2 Replacing the Single-Track MSR

7.9.1 *Removing the Single-Track MSR*

1. Switch **POWER OFF** at the point-of-sale terminal.
2. Unplug the keyboard cable from keyboard socket 5.
3. Unplug the MSR cable from keyboard socket 6.
4. Pull the center tab of the MSR away from the back of the keyboard and hold it there. See Figure 7-15 in topic 7.9.2.
5. Slide the MSR toward the center of the keyboard and lift it off.

If applicable, use a copy of the "Problem Data Collection Form" in topic B.7 as a guide to report any MSR problem.

7.9.2 Replacing the Single-Track MSR

1. Switch **POWER OFF** at the point-of-sale terminal.
2. Position the MSR on the center of the keyboard as shown in Figure 7-15.
3. Slide the MSR over the rail until it locks into place.
4. Plug the MSR cable into keyboard socket 6.
5. Plug the keyboard cable into keyboard socket 5.
6. Switch power ON and verify the MSR is operating correctly. See "TEST 4060: Magnetic Stripe Reader (4683/4684 MSR)" in topic 4.6 **or** "Running POS (Point of Sale) Device Tests" in topic 5.4.

PICTURE 131

Figure 7-15. Single-Track MSR

7.10 *Magnetic Stripe Reader (Dual-Track) Removal and Replacement*

Note: This procedure is for the dual-track magnetic stripe reader (MSR) connected to socket 5B and attached to the 50-key keyboard or the alphanumeric keyboard.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Subtopics

- 7.10.1 Removing the Dual-Track MSR
- 7.10.2 Replacing the Dual-Track MSR

7.10.1 Removing the Dual-Track MSR

1. Switch **POWER OFF** at the point-of-sale terminal.
2. If you are **not** removing the Dual-Track MSR cable, continue at Step 4.
3. Do one of the following:
 - If the **Y** cable is present, unplug the Dual-Track MSR cable from it.

The **Y** cable allows the Dual-Track MSR and the 1520 Model A02 to be attached to socket 5B at the same time.
 - If the **Y** cable is **not** present, remove the base unit or system unit back cover and unplug the Dual-Track MSR cable from socket 5B. See Figure 7-35 in topic 7.28.3.2 **or** Figure 7-43 in topic 7.29.3.2.
4. Unplug the cable from the Dual-Track MSR socket.
5. Pull the center tab of the Dual-Track MSR away from the back of the keyboard and hold it there. See Figure 7-16 in topic 7.10.2.
6. Slide the Dual-Track MSR toward the center of the keyboard and lift it off.

If applicable, use a copy of the "Problem Data Collection Form" in topic B.7 as a guide to report any MSR problem.

Reference	Topic
Cable Socket Locations on a 4683	7.30
Cable Socket Locations on a 4684	7.31

7.10.2 Replacing the Dual-Track MSR

1. Switch **POWER OFF** at the point-of-sale terminal.
2. If you are **not** replacing the Dual-Track MSR cable, continue at Step 4.
3. Do one of the following:
 - If the **Y** cable is present, plug the Dual-Track MSR cable into it.

The **Y** cable allows the Dual-Track MSR and the 1520 Model A02 to be attached to socket 5B at the same time.
 - If the **Y** cable is **not** present, remove the base unit or system unit back cover, plug the Dual-Track MSR cable into socket 5B, and reinstall the back cover. See Figure 7-35 in topic 7.28.3.2 **or** Figure 7-43 in topic 7.29.3.2.
4. Position the Dual-Track MSR on the center of the keyboard as shown in Figure 7-16.
5. Slide the MSR over the rail until it locks into place.
6. Plug the cable into the Dual-Track MSR socket.
7. Switch power ON and verify the MSR is operating correctly. See "TEST 4060: Magnetic Stripe Reader (4683/4684 MSR)" in topic 4.6 **or** "Running POS (Point of Sale) Device Tests" in topic 5.4.

PICTURE 132

Figure 7-16. Dual-Track MSR

7.11 Magnetic Stripe Reader (Low-Profile Dual-Track) Removal and Replacement

Note: This procedure is for the low-profile dual-track magnetic stripe reader (MSR) attached to the ANPOS keyboard or the combined keyboard/display.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Subtopics

- 7.11.1 Removing the Low-Profile MSR
- 7.11.2 Replacing the Low-Profile MSR

7.11.1 Removing the Low-Profile MSR

1. Switch **POWER OFF** at the point-of-sale terminal.
2. Remove the keyboard from the point-of-sale terminal. See "Removing the Keyboard" in topic 7.6.1.
3. Press and hold the MSR latch [1] on the bottom of the keyboard and then lift the end of the MSR [2] nearest the center of the keyboard as shown. See Figure 7-17 in topic 7.11.2.
4. Continue lifting until the MSR is removed from the keyboard.

If applicable, use a copy of the "Problem Data Collection Form" in topic B.7 as a guide to report any MSR problem.

7.11.2 Replacing the Low-Profile MSR

1. Switch **POWER OFF** at the point-of-sale terminal.
2. Slide the MSR into the back of the keyboard as shown until it locks into place. See Figure 7-17.
3. Attach the keyboard to the point-of-sale terminal. See "Replacing the Keyboard" in topic 7.6.2.
4. Switch power ON and verify the MSR is operating correctly. See "TEST 4060: Magnetic Stripe Reader (4683/4684 MSR)" in topic 4.6 **or** "Running POS (Point of Sale) Device Tests" in topic 5.4.

PICTURE 133

Figure 7-17. Low-Profile Dual-Track MSR

7.12 Magnetic Wand Removal and Replacement (4683 Only)

Subtopics

7.12.1 Removing the Magnetic Wand

7.12.2 Replacing the Magnetic Wand

7.12.1 Removing the Magnetic Wand

1. Switch **POWER OFF** at the point-of-sale terminal.
2. Remove the 4683 base unit back cover. See Figure 7-35 in topic 7.28.3.2.
3. Unplug the magnetic wand cable from socket 26.

Note: Socket 26 is located on Feature Expansion card D. The Feature Expansion card can be installed in location 2A or 2B. See Figure 7-18 in topic 7.12.2 and "IBM 4683 Base Unit Cable Sockets and Devices" in topic 7.30.

If applicable, use a copy of the "Problem Data Collection Form" in topic B.7 as a guide to report any magnetic wand problem.

7.12.2 Replacing the Magnetic Wand

1. Switch **POWER OFF** at the point-of-sale terminal.
2. Remove the 4683 base unit back cover. See Figure 7-35 in topic 7.28.3.2.
3. Plug the magnetic wand cable into socket 26 and reinstall the back cover.

Note: Socket 26 is located on Feature Expansion card D. The Feature Expansion card can be installed in location 2A or 2B. See Figure 7-18 and "IBM 4683 Base Unit Cable Sockets and Devices" in topic 7.30.

4. Switch power ON and verify the magnetic wand is operating correctly. See "TEST 4070: Magnetic Wand (4683 Only)" in topic 4.7.

PICTURE 134

Figure 7-18. Magnetic Wand

7.13 *Operator Display Removal and Replacement*

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Subtopics

7.13.1 Removing the Operator Display

7.13.2 Replacing the Operator Display

7.13.1 Removing the Operator Display

1. Switch **POWER OFF** at the point-of-sale terminal.
2. Remove the base unit or system unit back cover. See Figure 7-35 in topic 7.28.3.2 or Figure 7-43 in topic 7.29.3.2.
3. Unplug the operator display cable from socket 4. To make reconnecting easier, note the socket number (4A or 4B).
4. If the display is on the tray base, continue at Step 6.
5. Remove the keyboard mount from the keyboard. It is similar to the MSR mount. See Figure 7-15 in topic 7.9.2.
6. Remove the display from the tray base or keyboard mount. See Figure 7-19 in topic 7.13.2.
 - a. Move the latches away from the sides of the display.
 - b. Lift the display out of the keyboard mount or tray base.

Retain the display keyboard mount or tray base for future use.

If applicable, use a copy of the "Problem Data Collection Form" in topic B.7 as a guide to report any operator display problem.

Reference	Topic
Cable Socket Locations on a 4683	7.30
Cable Socket Locations on a 4684	7.31

7.13.2 Replacing the Operator Display

1. Attach the operator display to the tray base or keyboard mount by aligning the display and pressing straight down. See Figure 7-19.
2. Rotate the display forward.
3. Switch **POWER OFF** at the point-of-sale terminal.
4. Remove the base unit or system unit back cover. See Figure 7-35 in topic 7.28.3.2 **or** Figure 7-43 in topic 7.29.3.2.
5. Plug the operator display cable into socket 4A or 4B (the socket number is defined by configuration) and reinstall the back cover.
6. Position the display on the point-of-sale terminal.

If the display is on the keyboard mount, see Figure 7-15 in topic 7.9.2. The keyboard mount is similar to the MSR mount.

7. Switch power ON and verify the display is operating correctly. See "TEST 4010: Alphanumeric, Operator, or Combined Keyboard/Display (4683/4684)" in topic 4.1 **or** "Running POS (Point of Sale) Device Tests" in topic 5.4.

PICTURE 135

Figure 7-19. Operator Display

7.14 Optical Character Reader Removal and Replacement (4683 Only)

Subtopics

- 7.14.1 Removing the Optical Character Reader
- 7.14.2 Replacing the Optical Character Reader

7.14.1 Removing the Optical Character Reader

1. Switch **POWER OFF** at the point-of-sale terminal.
2. Unplug the OCR power cord from the power receptacle.
3. If you are **not** removing the OCR device cable, continue at Step 6.
4. Remove the 4683 base unit back cover. See Figure 7-35 in topic 7.28.3.2.
5. Unplug the OCR device cable from socket 21.

Note: Socket 21 is located on Feature Expansion cards B, C, and D. The Feature Expansion card can be installed in location 2A or 2B. See Figure 7-20 in topic 7.14.2 and "IBM 4683 Base Unit Cable Sockets and Devices" in topic 7.30.

6. Unplug the OCR cable from the OCR device. See the maintenance documentation for the OCR Device.

If applicable, use a copy of the "Problem Data Collection Form" in topic B.7 as a guide to report any OCR problem.

7.14.2 Replacing the Optical Character Reader

1. Switch **POWER OFF** at the point-of-sale terminal.
2. If you are **not** replacing the OCR device cable, continue at Step 5.
3. Remove the 4683 base unit back cover. See Figure 7-35 in topic 7.28.3.2.
4. Plug the OCR device cable into socket 21 and reinstall the back cover.

Note: Socket 21 is located on Feature Expansion cards B, C, and D. The Feature Expansion card can be installed in location 2A or 2B. See Figure 7-20 and "IBM 4683 Base Unit Cable Sockets and Devices" in topic 7.30.
5. Plug the OCR cable into the OCR device socket. See the maintenance documentation for the OCR Device.
6. Plug the OCR power cord into the power receptacle.
7. Switch power ON and verify the OCR is operating correctly. See "TEST 4080: Optical Character Reader (4683 Only)" in topic 4.8.

PICTURE 136

Figure 7-20. Optical Character Reader (OCR)

7.15 Point of Sale Printer Model 1 or 2 Removal and Replacement

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Subtopics

7.15.1 Removing the Printer Model 1 or 2

7.15.2 Replacing the Printer Model 1 or 2

7.15.3 Customer Receipt Paper Replacement (Model 1 or 2)

7.15.4 Journal Station Paper Replacement (Model 1 or 2)

7.15.5 Print Head Removal and Replacement (Model 1 or 2)

7.15.6 Printer Ribbon Cartridge Removal and Replacement (Model 1 or 2)

7.15.1 Removing the Printer Model 1 or 2

1. Switch **POWER OFF** at the point-of-sale terminal.
2. If you are **not** removing the printer cable, continue at Step 5.
3. Remove the base unit or system unit back cover. See Figure 7-35 in topic 7.28.3.2 **or** Figure 7-43 in topic 7.29.3.2.
4. Unplug the printer cable from socket 7.
5. Unplug the printer cable from the printer. See Figure 7-21 in topic 7.15.2.

Retain the following items for future use:

- Both rolls of paper
- The print head
- The printer cable
- The ribbon cartridge
- The keylock insert and keys **or** the blank lock insert. See "Keylock Insert Removal and Replacement" in topic 7.7 **or** "Keylock Blank Insert Removal and Replacement" in topic 7.8.

If applicable, use a copy of the "Problem Data Collection Form" in topic B.7 as a guide to report any printer problem.

7.15.2 Replacing the Printer Model 1 or 2

1. If applicable, reinstall the following:
 - Both rolls of paper
 - The print head
 - The ribbon cartridge
 - The keylock insert and keys **or** the blank lock insert. See "Keylock Insert Removal and Replacement" in topic 7.7 **or** "Keylock Blank Insert Removal and Replacement" in topic 7.8.
2. Switch **POWER OFF** at the point-of-sale terminal.
3. If you are **not** replacing the printer cable, continue at Step 6.
4. Remove the base unit or system unit back cover. See Figure 7-35 in topic 7.28.3.2 **or** Figure 7-43 in topic 7.29.3.2.
5. Plug the printer cable into socket 7 and reinstall the back cover.
6. Plug the printer cable into the printer socket. See Figure 7-21.
7. Switch power ON and verify the printer is operating correctly. See "TEST 4100: Point of Sale Printer (4683/4684)" in topic 4.10 **or** "Running POS (Point of Sale) Device Tests" in topic 5.4.

Reference	Topic
Cable Socket Locations on a 4683	7.30
Cable Socket Locations on a 4684	7.31
Print Head Removal and Replacement (Model 1 or 2)	7.15.5
Printer Ribbon Cartridge Removal and Replacement (Model 1 or 2)	7.15.6

PICTURE 137

Figure 7-21. Point of Sale Printer Model 1 or 2

7.15.3 Customer Receipt Paper Replacement (Model 1 or 2)

1. Open the printer cover, remove the remaining paper and parts of the old paper roll, and discard them.

Note: Do not pull the paper backward through the customer receipt station.

2. Get a new roll of paper, release the paper-end from the roll, and pull out several inches of paper to work with as shown.

PICTURE 138

3. Put the paper roll into the customer receipt station.
4. Fold back the leading edge of the paper as shown.

PICTURE 139

5. Insert the folded edge of the paper over the blue roller and into the space behind the tear bar.
6. Center the paper in the opening and push it down until it stops.

PICTURE 140

7. Press and hold customer receipt advance button **II** until the paper feeds up behind the tear bar.

PICTURE 141

8. Run the printer test to ensure paper is loaded correctly.
 - a. Ensure both stations have paper loaded.
 - b. Press the test button **T** to start the test.
 - c. When the test ends, tear off the customer receipt paper against the tear bar. Closing the printer cover without tearing off the receipt can cause paper jams.

7.15.4 Journal Station Paper Replacement (Model 1 or 2)

1. Open the printer cover and gently push the print head to the left wall of the printer.
2. Tear the journal paper between the platen and the take-up spool.
3. Hold the take-up spool flange (black wheel) to keep it from rotating and pull the roll of paper off the spool. Rotate the paper toward the back of the printer as you remove it.

PICTURE 142

4. Remove the remaining paper and parts of the old paper roll and discard them.

Note: Do not pull the paper backward through the journal station.

5. Get a new roll of paper, release the paper-end from the roll, pull out several inches of paper to work with, and fold the end of the paper as shown.

PICTURE 143

6. Put the paper roll into the journal station.
7. Insert the folded edge of the paper between the printer wall and the small roller just behind the wall.
8. Center the paper in the opening.

PICTURE 144

9. Hold the paper against the back of the wall and push it down until it appears in the front of the station.

PICTURE 145

10. Pull the paper straight up and fold back the leading edge as shown.

PICTURE 146

11. Position the paper over the top of the take-up spool and slip the folded edge of the paper under the retainer (shown in the dotted lines).
12. Rotate the spool toward the back of the printer to take the slack out of the paper.
13. Push the paper against the take-up spool flange (black wheel) to keep it even on the spool.

PICTURE 147

14. Press and hold journal station advance button **III** to ensure the paper feeds onto the take-up spool correctly.
15. Run the printer test to ensure paper is loaded correctly.
 - a. Ensure both stations have paper loaded.
 - b. Press the test button **T** to start the test.
 - c. When the test ends, tear off the customer receipt paper against the tear bar. Closing the printer cover without tearing off the receipt can cause paper jams.

7.15.5 Print Head Removal and Replacement (Model 1 or 2)

Subtopics

7.15.5.1 Removing the Print Head (Model 1 or 2)

7.15.5.2 Replacing the Print Head (Model 1 or 2)

7.15.5.1 Removing the Print Head (Model 1 or 2)

"Replacing the Print Head (Model 1 or 2)" is in topic 7.15.5.2.

1. Switch **POWER OFF** at the point-of-sale terminal.
2. Open the printer cover.
3. Pull the print head preload spring toward the front of the printer and out of the notch on the side of the print head.
4. Move the spring to the right and release it. The large arrow shows the movement of the preload spring.

PICTURE 148

5. The print head moves toward the front of the printer.
6. Remove the ribbon cartridge. See "Removing the Ribbon Cartridge (Model 1 or 2)" in topic 7.15.6.1.
7. Unplug the print head cable connector from the printer card connector.

PICTURE 149

8. Release the print head latch, lift the right side of the print head, move it to the left, and lift it out of the printer.

PICTURE 150

7.15.5.2 Replacing the Print Head (Model 1 or 2)

"Removing the Print Head (Model 1 or 2)" is in topic 7.15.5.1.

1. Switch **POWER OFF** at the point-of-sale terminal.
2. Open the printer cover.
3. Put the slender shaft on the left side of the print head into the slots on the left side of the carriage.
4. Hold the print head toward the front of the printer.
5. Lower the right side of the print head until the print head latch locks into place over the slender shaft on the right.

PICTURE 151

6. Plug the print head cable connector into the printer card connector.

PICTURE 152

7. Reinstall the ribbon cartridge. See "Replacing the Ribbon Cartridge (Model 1 or 2)" in topic 7.15.6.2.
8. Push the print head toward the back of the printer and hold it there.
9. Pull the print head preload spring toward the front of the printer.
10. Move the spring to the left and release it into the notch on the right side of the print head. The large arrow shows the movement of the preload spring.

PICTURE 153

11. Switch power ON and run the printer test to ensure the print head is operating correctly.
 - a. Ensure both stations have paper loaded.
 - b. Press the test button **T** to start the test.
 - c. When the test ends, tear off the customer receipt paper against the tear bar. Closing the printer cover without tearing off the receipt can cause paper jams.

7.15.6 Printer Ribbon Cartridge Removal and Replacement (Model 1 or 2)

Subtopics

7.15.6.1 Removing the Ribbon Cartridge (Model 1 or 2)

7.15.6.2 Replacing the Ribbon Cartridge (Model 1 or 2)

7.15.6.1 Removing the Ribbon Cartridge (Model 1 or 2)

"Replacing the Ribbon Cartridge (Model 1 or 2)" is in topic 7.15.6.2.

1. Open the printer cover.
2. Hold the print head against the ribbon and pull the preload spring toward the front of the printer and out of the notch on the side of the print head.
3. Move the spring to the right and release it. The large arrow shows the movement of the preload spring.

PICTURE 154

4. The print head moves toward the front of the printer.
5. Hold the print head away from the ribbon so it does not interfere with the ribbon cartridge removal.
6. Remove the old ribbon cartridge by grasping it on each side and pulling up firmly until it is free.

PICTURE 155

7.15.6.2 Replacing the Ribbon Cartridge (Model 1 or 2)

Note: Use ribbon cartridge IBM P/N 4483015 or equivalent. Failure to do so can affect print head life and print quality. Replacing the ribbon cartridge is the user's responsibility.

"Removing the Ribbon Cartridge (Model 1 or 2)" is in topic 7.15.6.1.

1. Open the printer cover and rotate the ribbon feed knob clockwise to take up any slack in the ribbon. The knob is located on the top right side of the ribbon cartridge.

PICTURE 156

2. Line up the groove in the front center of the ribbon cartridge with the projection on the inside of the printer.

PICTURE 157

3. Press both ends of the ribbon cartridge straight down while rotating the ribbon feed knob clockwise until the cartridge snaps into place.

PICTURE 158

4. Ensure that the ribbon is between the print head and the two ribbon guides as shown.

PICTURE 159

5. Pull the print head preload spring toward the front of the printer.
6. Move the spring to the left and release it into the notch on the right side of the print head. The large arrow shows the movement of the preload spring.

PICTURE 160

7. Ensure that the print head is properly latched in place. The printer does not function correctly if the print head is not properly seated.
8. Run the printer test to ensure the ribbon is working correctly.
 - a. Ensure both stations have paper loaded.
 - b. Press the test button **T** to start the test.
 - c. When the test ends, tear off the customer receipt paper against the tear bar. Closing the printer cover without tearing off the receipt can cause paper jams.

7.16 Point of Sale Printer Model 3 Removal and Replacement

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Subtopics

7.16.1 Removing the Printer Model 3

7.16.2 Replacing the Printer Model 3

7.16.3 Customer Receipt Paper Replacement (Model 3)

7.16.4 Journal Station Paper Replacement (Model 3)

7.16.5 Printer Ribbon Cartridge Removal and Replacement (Model 3)

7.16.1 Removing the Printer Model 3

1. Switch **POWER OFF** at the point-of-sale terminal.
2. If you are **not** removing the printer cable, continue at Step 5.
3. Remove the base unit or system unit back cover. See Figure 7-35 in topic 7.28.3.2 **or** Figure 7-43 in topic 7.29.3.2.
4. Unplug the printer cable from socket 7.
5. Unplug the printer cable from the printer. See Figure 7-22 in topic 7.16.2.

Retain the following items for future use:

- Both rolls of paper
- The printer cable
- The ribbon cartridge
- The keylock insert and keys **or** the blank lock insert. See "Keylock Insert Removal and Replacement" in topic 7.7 **or** "Keylock Blank Insert Removal and Replacement" in topic 7.8.

If applicable, use a copy of the "Problem Data Collection Form" in topic B.7 as a guide to report any printer problem.

7.16.2 Replacing the Printer Model 3

1. If applicable, reinstall the following:
 - Both rolls of paper
 - The ribbon cartridge
 - The keylock insert and keys **or** the blank lock insert. See "Keylock Insert Removal and Replacement" in topic 7.7 **or** "Keylock Blank Insert Removal and Replacement" in topic 7.8.
2. Switch **POWER OFF** at the point-of-sale terminal.
3. If you are **not** replacing the printer cable, continue at Step 6.
4. Remove the base unit or system unit back cover. See Figure 7-35 in topic 7.28.3.2 **or** Figure 7-43 in topic 7.29.3.2.
5. Plug the printer cable into socket 7 and reinstall the back cover.
6. Plug the printer cable into the printer socket. See Figure 7-22.
7. Switch power ON and verify the printer is operating correctly. See "TEST 4100: Point of Sale Printer (4683/4684)" in topic 4.10 **or** "Running POS (Point of Sale) Device Tests" in topic 5.4.

Reference	Topic
Cable Socket Locations on a 4683	7.30
Cable Socket Locations on a 4684	7.31
Printer Ribbon Cartridge Removal and Replacement (Model 3)	7.16.5

PICTURE 161

Figure 7-22. Point of Sale Printer Model 3

7.16.3 Customer Receipt Paper Replacement (Model 3)

1. Open the printer cover, remove the remaining paper and parts of the old paper roll, and discard them.

Note: Do not pull the paper backward through the customer receipt station.

2. Get a new roll of paper, release the paper-end from the roll, and pull out several inches of paper to work with as shown.

PICTURE 162

3. Put the paper roll into the customer receipt station holder.

PICTURE 163

4. Insert the edge of the paper between the rolls at the top of the customer receipt station. Ensure the paper is centered in the opening.

PICTURE 164

5. Push the paper down until it stops.

The printer cover has been removed to accommodate this view from the rear of the printer showing the correct placement of paper in the customer receipt station.

PICTURE 165

6. Move the customer receipt lever toward you.

PICTURE 166

7. Press and hold the customer receipt button [2] as shown until the paper feeds through rollers and arrives at the paper cutter.

PICTURE 167

8. Move the customer receipt lever away from you.

PICTURE 168

9. Press the customer receipt button [2] again until several inches of paper have advanced through the paper cutter.

PICTURE 169

10. Run the printer test to ensure the paper is loaded correctly.

- To start the test, press and hold button [3] and then press button [2]
- To stop the test, press button [3].

PICTURE 170

11. Tear off the receipt paper (if necessary) and close the printer cover.

PICTURE 171

7.16.4 Journal Station Paper Replacement (Model 3)

1. Open the printer cover and the journal station cover. The journal cover will have to be unlocked if it has a keylock.

PICTURE 172

2. Tear the journal paper between the platen and the take-up spool.
3. Lift the spool out of the printer and remove the paper from it.
4. Remove the remaining paper and parts of the old paper roll and discard them.

Note: Do not pull the paper backward through the journal station.

PICTURE 173

5. Get a new roll of paper, release the paper-end from the roll, and pull out several inches of paper to work with as shown.

PICTURE 174

6. Put the paper roll into the journal station holder.

PICTURE 175

7. Insert the edge of the paper between the rolls at the top of the journal station. Be sure the paper is centered in the opening.

PICTURE 176

8. Push the paper downward until it stops.

The printer cover has been removed to accommodate this view from the rear of the printer showing the correct placement of paper in the journal station.

PICTURE 177

9. Move the journal station lever toward you.

PICTURE 178

10. Press and hold the journal station button [1] as shown until the paper feeds through rollers and appears at the front of the journal station.

PICTURE 179

11. Move the journal station lever away from you.

PICTURE 180

12. Press the journal station button [1] again until several inches of paper advance.

PICTURE 181

13. Attach the paper to the journal station take-up spool.

PICTURE 182

14. Wind the paper around the journal station take-up spool two turns in the direction shown.

PICTURE 183

15. Ensure that the journal station signature ledge [1] is upright, and

put the spool back into the journal station.

PICTURE 184

16. Run the printer test to ensure the paper is loaded correctly.

- To start the test, press and hold button [3] and then press button [1]
- To stop the test, press button [3].

PICTURE 185

17. Lock the journal station (if required) and close the printer cover.

PICTURE 186

7.16.5 *Printer Ribbon Cartridge Removal and Replacement (Model 3)*

Note: Use printer ribbon cartridge IBM P/N 1040888 (black), IBM P/N 1040875 (purple), IBM P/N 1040900 (black Auto-Inking*), or equivalent. Failure to do so may affect print head life and print quality.

Subtopics

7.16.5.1 Removing the Ribbon (Model 3)

7.16.5.2 Replacing the Ribbon (Model 3)

7.16.5.1 Removing the Ribbon (Model 3)

"Replacing the Ribbon Cartridge (Model 3)" is in topic 7.16.5.2.

1. Open the printer cover.
2. Unlatch the printer ribbon holder from the print head by squeezing the tabs on either side of the print head.

PICTURE 187

3. Lift the ribbon holder up as shown.

PICTURE 188

4. Release the ribbon cartridge by lifting up on the arms.

PICTURE 189

5. Lift up on the body and remove the ribbon cartridge from the printer.

PICTURE 190

7.16.5.2 Replacing the Ribbon (Model 3)

Note: Use printer ribbon cartridge IBM P/N 1040888 (black), IBM P/N 1040875 (purple), IBM P/N 1040900 (black Auto-Inking*), or equivalent. Failure to do so can affect print head life and print quality. Replacing the ribbon cartridge is the user's responsibility.

"Removing the Ribbon Cartridge (Model 3)" is in topic 7.16.5.2.

1. Open the printer cover.
2. Release the ribbon holder from the ribbon cartridge by squeezing the ribbon holder tabs and lifting the ribbon holder up as shown.

PICTURE 191

3. Put the ribbon cartridge into the printer and press down on the body of the cartridge until it clicks into place.

PICTURE 192

4. Put the ribbon holder onto the print head and press down until it clicks into place.

PICTURE 193

5. Press down on the arms of the ribbon cartridge until they click into place.

6. Turn the ribbon feed knob clockwise to take up any slack in the ribbon. The knob is located on the right side of the ribbon cartridge.

PICTURE 194

7.17 Proprinter (TM) Removal and Replacement

This procedure applies to the system unit printer; not the point-of-sale printer.

Subtopics

7.17.1 Removing the Proprinter

7.17.2 Replacing the Proprinter

7.17.1 Removing the Proprinter

1. Switch **POWER OFF** at the 4684.
2. Switch **POWER OFF** at the Proprinter and unplug its power cord from the power receptacle.
3. If you are not removing the printer cable, continue at Step 6.
4. Remove the 4684 back cover. See Figure 7-43 in topic 7.29.3.2.
5. Unplug the printer cable from the *system unit printer socket*. See Figure 7-23 in topic 7.17.2.
6. Unplug the printer cable from the socket in the printer.
7. Remove the paper from the printer.

7.17.2 Replacing the Proprinter

1. Switch **POWER OFF** at the 4684.
2. If you are *not* replacing the printer cable, continue at Step 5.
3. Remove the 4684 back cover. See Figure 7-43 in topic 7.29.3.2.
4. Plug the printer cable into the *system unit printer socket* and replace the rear cover. See Figure 7-23.
5. Plug the printer cable into the socket in the printer.
6. Plug the printer power cord into the power receptacle.
7. Put paper in the printer.
8. Switch ON power at the 4684 and the Proprinter, and verify the printer is operating correctly. See "Running POS (Point of Sale) Device Tests" in topic 5.4.

PICTURE 195

Figure 7-23. Proprinter (System Unit Printer Connection)

7.18 Remote Alarm Removal and Replacement

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Subtopics

7.18.1 Removing the Remote Alarm

7.18.2 Replacing the Remote Alarm

7.18.1 Removing the Remote Alarm

1. Switch **POWER OFF** at the point-of-sale terminal.
2. Remove the base unit or system unit back cover. See Figure 7-35 in topic 7.28.3.2 or Figure 7-43 in topic 7.29.3.2.
3. Unplug the remote alarm cable from socket 3B.

If applicable, use a copy of the "Problem Data Collection Form" in topic B.7 as a guide to report any remote alarm problem.

7.18.2 Replacing the Remote Alarm

1. Switch **POWER OFF** at the point-of-sale terminal.
2. Remove the base unit or system unit back cover. See Figure 7-35 in topic 7.28.3.2 or Figure 7-43 in topic 7.29.3.2.
3. Plug the remote alarm cable into socket 3B and reinstall the back cover.
4. Switch power ON and verify the remote alarm is operating correctly. See "TEST 4130: Remote Alarm (4683/4684)" in topic 4.13.

Reference	Topic
Cable Socket Locations on a 4683	7.30
Cable Socket Locations on a 4684	7.31

7.19 Scale Removal and Replacement (4683 Only)

Subtopics

- 7.19.1 Removing the Scale
- 7.19.2 Replacing the Scale

7.19.1 Removing the Scale

1. Switch **POWER OFF** at the point-of-sale terminal.
2. Unplug the scale power cord from the receptacle.
3. If you are **not** removing the scale cable, continue at Step 6.
4. Remove the 4683 base unit back cover. See Figure 7-35 in topic 7.28.3.2.
5. Unplug the scale cable from socket 21.

Note: Socket 21 is located on Feature Expansion cards B and C. The Feature Expansion card can be installed in location 2A or 2B. See Figure 7-24 in topic 7.19.2 and "IBM 4683 Base Unit Cable Sockets and Devices" in topic 7.30.

6. Unplug the scale cable from the scale. See the maintenance documentation for the scale.

If applicable, use a copy of the "Problem Data Collection Form" in topic B.7 as a guide to report any scale problem.

7.19.2 Replacing the Scale

1. Switch **POWER OFF** at the point-of-sale terminal.
2. If you are **not** replacing the scale cable, continue at Step 5.
3. Remove the 4683 base unit back cover. See Figure 7-35 in topic 7.28.3.2.
4. Plug the scale cable into socket 21 and reinstall the back cover.

Note: Socket 21 is located on Feature Expansion cards B and C. The Feature Expansion card can be installed in location 2A or 2B. See Figure 7-24 and "IBM 4683 Base Unit Cable Sockets and Devices" in topic 7.30.

5. Plug the scale cable into the scale socket. See the maintenance documentation for the scale.
6. Plug the scale power cord into the power receptacle.
7. Switch power ON and verify the scale is operating correctly. See "TEST 4140: Scale (4683 Only)" in topic 4.14.

PICTURE 196

Figure 7-24. Scale

7.20 *Shopper Display Removal and Replacement*

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Subtopics

- 7.20.1 Removing the Shopper Display
- 7.20.2 Replacing the Shopper Display

7.20.1 Removing the Shopper Display

1. Switch **POWER OFF** at the point-of-sale terminal.
2. If you are **not** removing the display cable, continue at Step 6.
3. Remove the thumbscrews that attach the display post or arm to the base unit. See Figure 7-25 in topic 7.20.2.
4. Remove the base unit or system unit back cover. See Figure 7-35 in topic 7.28.3.2 or Figure 7-43 in topic 7.29.3.2.
5. Unplug the shopper display cable from socket 4. To make reconnecting easier, note the socket number (4A or 4B).
6. Spread the arms of the yoke slightly to release the display. The yoke is similar to the alphanumeric display yoke. See Figure 7-1 in topic 7.1.2.
7. Lift the display out of the yoke.
8. Unplug the display cable from the display socket.

Retain the following items for future use:

- The display cable
- The display post or arm, and yoke assembly
- The two plastic screws that secure the display post or arm to the base unit or system unit.

If applicable, use a copy of the "Problem Data Collection Form" in topic B.7 as a guide to report any shopper display problem.

Reference	Topic
Cable Socket Locations on a 4683	7.30
Cable Socket Locations on a 4684	7.31

7.20.2 Replacing the Shopper Display

1. Switch **POWER OFF** at the point-of-sale terminal.
2. If the display is already mounted in the yoke and post OR yoke and arm, continue at Step 8.
3. If you are attaching the arm mount, press the cable into the two notches on the underside of the arm. See Figure 7-25.
4. Run the cable up through the post or arm as shown in Figure 7-25.
5. Plug the display cable into the display socket.
6. Spread the arms of the yoke slightly and align the display between the arms. The yoke is similar to the alphanumeric display yoke. See Figure 7-1 in topic 7.1.2.
7. Slide the display into the yoke until the pivot points on the display fit through the holes in the arms.
8. If the display post or arm is already mounted on the system unit or base unit, continue at Step 12.
9. Fasten the display post or arm to the system unit or base unit using the two thumbscrews.
10. Ensure that the cable is routed out through the slot in the back of the post or arm and that it is not pinched.
11. Tighten the screws with your fingers.
12. Remove the base unit or system unit back cover. See Figure 7-35 in topic 7.28.3.2 **or** Figure 7-43 in topic 7.29.3.2.
13. Plug the shopper display cable into socket 4A or 4B (the socket number is defined by configuration) and reinstall the back cover.
14. Switch power ON and verify the scale is operating correctly. See "TEST 4150: Shopper Display (4683/4684)" in topic 4.15 **or** "Running POS (Point of Sale) Device Tests" in topic 5.4.

PICTURE 197

Figure 7-25. Shopper Display

7.21 Socket 23 or 25 Device (RS-232 or Current Loop) Removal and Replacement (4683 Only)

Note: These are asynchronous communications devices.

Subtopics

- 7.21.1 Removing the Socket 23 or 25 Device
- 7.21.2 Replacing the Socket 23 or 25 Device

7.21.1 Removing the Socket 23 or 25 Device

1. Switch **POWER OFF** at the point-of-sale terminal.
2. Unplug the device power cord from the power receptacle.
3. If you are **not** removing the device cable, continue at Step 6.
4. Remove the 4683 base unit back cover. See Figure 7-35 in topic 7.28.3.2.
5. Unplug the device cable from socket 23 or 25 (the socket number is defined by configuration and the type of device).

Note: Sockets 23 and 25 are located on Feature Expansion cards C, D, and E. The Feature Expansion card can be installed in location 2A or 2B. See Figure 7-26 in topic 7.21.2 and "IBM 4683 Base Unit Cable Sockets and Devices" in topic 7.30.

6. Unplug the device cable from the socket on the device. See the maintenance documentation for the device.

If applicable, use a copy of the "Problem Data Collection Form" in topic B.7 as a guide to report any RS-232 or current loop device problem.

7.21.2 Replacing the Socket 23 or 25 Device

1. Switch **POWER OFF** at the point-of-sale terminal.
2. If you are **not** replacing the device cable, continue at Step 5.
3. Remove the 4683 base unit back cover. See Figure 7-35 in topic 7.28.3.2.
4. Plug the device cable into socket 23 or 25 (the socket number is defined by configuration and the type of device) and reinstall the back cover.

Note: Sockets 23 and 25 are located on Feature Expansion cards C, D, and E. The Feature Expansion card can be installed in location 2A or 2B. See Figure 7-26 and "IBM 4683 Base Unit Cable Sockets and Devices" in topic 7.30.

5. Plug the device cable into the device. See the maintenance documentation for the device.
6. Plug the device power cord into the power receptacle.
7. Switch power ON and verify communications are operating correctly. See "TEST 4160: Socket 23 or 25 Device (4683 RS-232 or Current Loop)" in topic 4.16 **or** "Running POS (Point of Sale) Device Tests" in topic 5.4.

PICTURE 198

Figure 7-26. Socket 23 or 25 Device (RS-232 or Current Loop)

7.22 *Security Base Removal and Replacement*

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Subtopics

7.22.1 Removing the Security Base

7.22.2 Replacing the Security Base

7.22.1 *Removing the Security Base*

1. Switch **POWER OFF** at the point-of-sale terminal.
2. Carefully tilt the security base up.
3. Remove the security screws that attach the devices to the base. See Figure 7-27 in topic 7.22.2.
4. Remove the devices from the security base.

7.22.2 Replacing the Security Base

1. Position each device over the security base.
2. Press the security screw on the device down into the latch hole in the security base. See Figure 7-27.

The following devices may be attached to the security base:

- Displays
- Keyboards
- Printer.

PICTURE 199

Figure 7-27. Security Base

7.23 Video Display (Except 5-Inch) Removal and Replacement

Subtopics

7.23.1 Removing the Video Display

7.23.2 Replacing the Video Display

7.23.1 Removing the Video Display

1. Switch **POWER OFF** at the point-of-sale terminal.
2. Switch **POWER OFF** at the display and unplug the display power cord from the power receptacle.
3. If you are not removing the display cable, continue at Step 6.
4. Remove the base unit or system unit back cover. See Figure 7-35 in topic 7.28.3.2 or Figure 7-43 in topic 7.29.3.2.
5. Unplug the video display cable. See Figure 7-28 in topic 7.23.2.

4683 Video Display - socket 81 or 82

4684 System Unit Video Display -
socket for the system unit video display.

6. Release the display from the pedestal or security base by pressing the latch arms [1] toward each other. See Figure 7-28 in topic 7.23.2.
7. Lift the display up and off the mount.

Retain the following items for future use:

- The pedestal mount
- The extension cable.

If applicable, use a copy of the "Problem Data Collection Form" in topic B.7 as a guide to report any video display problem.

7.23.2 Replacing the Video Display

1. Switch **POWER OFF** at the point-of-sale terminal.
2. Switch **POWER OFF** at the display and unplug the display power cord from the power receptacle.
3. Position the display over the pedestal mount as shown in Figure 7-28.
4. Fit the pedestal latches into the four holes in the bottom of the display and push down until the latch arms [1] lock into place.
5. Remove the base unit or system unit back cover. See Figure 7-35 in topic 7.28.3.2 or Figure 7-43 in topic 7.29.3.2.
6. Plug the video display cable into its socket and reinstall the back cover. See Figure 7-28.

4683 Video Display - socket 81 or 82

4684 System Unit Video Display -
socket for the system unit video display.

7. Plug the display power cord into the power receptacle and switch the display power ON.
8. Switch power ON and verify the video display is operating correctly. See "TEST 4200: Video Display (4683 Only)" in topic 4.20 or "Running POS (Point of Sale) Device Tests" in topic 5.4.

Reference	Topic
Cable Socket Locations on a 4683	7.30
Cable Socket Locations on a 4684	7.31

PICTURE 200

Figure 7-28. Video Display

7.24 5-Inch Monochrome Display Removal and Replacement (4683 Only)

Subtopics

7.24.1 Removing the 5-inch Display

7.24.2 Replacing the 5-inch Display

7.24.1 Removing the 5-inch Display

1. Switch **POWER OFF** at the point-of-sale terminal.
2. If the video display extension cable is present, continue at Step 5.
3. Remove the 4683 base unit back cover. See Figure 7-35 in topic 7.28.3.2 **or** Figure 7-43 in topic 7.29.3.2.
4. Unplug the video display cable from socket 81.

Note: Socket 81 is located on Feature Expansion card A. The Feature Expansion card can be installed in location 2A or 2B. See Figure 7-29 in topic 7.24.2 and "IBM 4683 Base Unit Cable Sockets and Devices" in topic 7.30.

5. Unplug the video display from the video display extension cable as shown in Figure 7-29 in topic 7.24.2.

If applicable, use a copy of the "Problem Data Collection Form" in topic B.7 as a guide to report any video display problem.

7.24.2 Replacing the 5-inch Display

1. Switch **POWER OFF** at the point-of-sale terminal.
2. If the video display extension cable is present, continue at Step 5.
3. Remove the 4683 base unit back cover. See Figure 7-35 in topic 7.28.3.2 **or** Figure 7-43 in topic 7.29.3.2.

4. Plug the video display cable into socket 81 and reinstall the back cover.

Note: Socket 81 is located on Feature Expansion card A. The Feature Expansion card can be installed in location 2A or 2B. See Figure 7-29 and "IBM 4683 Base Unit Cable Sockets and Devices" in topic 7.30.

5. Plug the video display into the video display extension cable as shown in Figure 7-29.
6. Switch power ON and verify the video display is operating correctly. See "TEST 4200: Video Display (4683 Only)" in topic 4.20.

PICTURE 201

Figure 7-29. 5-Inch Monochrome Display

7.25 1520 Hand-Held Scanner Model A01 Removal and Replacement (4683 Only)

Subtopics

7.25.1 Removing the 1520 Model A01

7.25.2 Replacing the 1520 Model A01

7.25.1 Removing the 1520 Model A01

1. Switch **POWER OFF** at the point-of-sale terminal.
2. Unplug the scanner power cord from the power receptacle. See Figure 7-30 in topic 7.25.2.
3. If you are **not** removing the scanner cable, continue at Step 6.
4. Remove the 4683 base unit back cover. See Figure 7-35 in topic 7.28.3.2 **or** Figure 7-43 in topic 7.29.3.2.
5. Unplug the scanner cable from socket 21.

Note: Socket 21 is located on Feature Expansion cards B, C, and D. The Feature Expansion card can be installed in location 2A or 2B. See Figure 7-30 in topic 7.25.2 and "IBM 4683 Base Unit Cable Sockets and Devices" in topic 7.30.

6. Unplug the scanner cable from the scanner control unit socket.

Retain the 3.8 m (12 ft) distributed device cable for future use.

If applicable, use a copy of the "Problem Data Collection Form" in topic B.7 as a guide to report any 1520 Hand-held Scanner problem.

7.25.2 Replacing the 1520 Model A01

1. Switch **POWER OFF** at the point-of-sale terminal.
2. If you are **not** replacing the scanner cable, continue at Step 5.
3. Remove the 4683 base unit back cover. See Figure 7-35 in topic 7.28.3.2 **or** Figure 7-43 in topic 7.29.3.2.
4. Plug the scanner cable into socket 21 and reinstall the back cover.

Note: Socket 21 is located on Feature Expansion cards B, C, and D. The Feature Expansion card can be installed in location 2A or 2B. See Figure 7-30 and "IBM 4683 Base Unit Cable Sockets and Devices" in topic 7.30.

5. Plug the scanner cable into the scanner control unit socket.
6. Plug the scanner power cord into the power receptacle.
7. Switch power ON and verify the hand-held scanner is operating correctly. See "TEST 4210: 1520 Hand-Held Scanner Model A01 (4683 Only)" in topic 4.21.

PICTURE 202

Figure 7-30. 1520 Hand-Held Scanner Model A01

7.26 1520 Hand-Held Scanner Model A02 Removal and Replacement

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Subtopics

7.26.1 Removing the 1520 Model A02

7.26.2 Replacing the 1520 Model A02

7.26.1 Removing the 1520 Model A02

1. Switch **POWER OFF** at the point-of-sale terminal.
2. Unplug the scanner power cord from the power receptacle. See Figure 7-31 in topic 7.26.2.
3. If you are **not** removing the scanner cable, continue at Step 6.
4. Remove the base unit or system unit back cover. See Figure 7-35 in topic 7.28.3.2 **or** Figure 7-43 in topic 7.29.3.2.
5. Unplug the scanner cable from socket 5B, or if present, the **Y** cable. See Figure 7-31 in topic 7.26.2 and "IBM 4683 Base Unit Cable Sockets and Devices" in topic 7.30.

The **Y** cable allows the Dual-Track MSR and the 1520 Model A02 to be attached to socket 5B at the same time.

6. Unplug the scanner cable from the scanner control unit socket.

Retain the 3.8 m (12 ft) distributed device cable for future use.

If applicable, use a copy of the "Problem Data Collection Form" in topic B.7 as a guide to report any 1520 Hand-held Scanner problem.

7.26.2 Replacing the 1520 Model A02

1. Switch **POWER OFF** at the point-of-sale terminal.
2. If you are **not** replacing the scanner cable, continue at Step 5.
3. Remove the base unit or system unit back cover. See Figure 7-35 in topic 7.28.3.2 **or** Figure 7-43 in topic 7.29.3.2.
4. Plug the scanner cable into socket 5B or if present into the **Y** cable and reinstall the back cover. See Figure 7-31 and "IBM 4683 Base Unit Cable Sockets and Devices" in topic 7.30.

The **Y** cable allows the Dual-Track MSR and the 1520 Model A02 to be attached to socket 5B at the same time.

5. Plug the scanner cable into the scanner control unit socket.
6. Plug the scanner power cord into the power receptacle.
7. Switch power ON and verify the hand-held scanner is operating correctly. See "TEST 4220: 1520 Hand-Held Scanner Model A02 (4683/4684)" in topic 4.22.

PICTURE 203

Figure 7-31. 1520 Hand-Held Scanner Model A02

7.27 3687 Model 2 Scanner Adapter Removal and Replacement

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

Subtopics

7.27.1 Removing the Scanner Adapter

7.27.2 Replacing the Scanner Adapter

7.27.1 Removing the Scanner Adapter

1. Switch **POWER OFF** at the point-of-sale terminal.
2. Switch **POWER OFF** at the scanner and unplug the scanner power cord from the power receptacle.
3. If required, remove the scanner from the checkstand. See "Removing the 3687 Scanner" in topic 7.3.1.
4. Remove cable 17 from the cable channel in the scanner. See Figure 7-32 in topic 7.27.2.
5. Remove the scanner adapter from the recessed area in the scanner.
6. Remove the rubber retainer that fastens the scanner adapter to the scanner cable connector.
7. Disconnect the scanner adapter from cable 17 and the scanner cable connector.
8. Remove the base unit or system unit back cover. See Figure 7-35 in topic 7.28.3.2 or Figure 7-43 in topic 7.29.3.2.
9. Disconnect cable 17 from socket 17.

Retain the 4.6 m (15 ft) Scanner Adapter Cable number 17 for future use.

If applicable, use a copy of the "Problem Data Collection Form" in topic B.7 as a guide to report any IBM 3687-2 Scanner Adapter problem.

7.27.2 Replacing the Scanner Adapter

1. Switch **POWER OFF** at the point-of-sale terminal.
2. Switch **POWER OFF** at the scanner and unplug the scanner power cord from the power receptacle.
3. Remove the base unit or system unit back cover. See Figure 7-35 in topic 7.28.3.2 or Figure 7-43 in topic 7.29.3.2.
4. Connect cable 17 to socket 17 and reinstall the back cover.
5. Connect the scanner adapter to cable 17 and the scanner cable connector. See Figure 7-32.
6. Install the rubber retainer that fastens the scanner adapter to the scanner cable connector.
7. Put the scanner adapter into the recessed area in the scanner.
8. Put the cable 17 into the cable channel in the scanner.
9. Plug the scanner power cord into the power receptacle.
10. Switch power ON at the scanner and at the power switch on the checkstand.
11. Switch power ON at the point-of-sale terminal and verify the scanner adapter is operating correctly. See "TEST 4110: Point of Sale Scanner (4683/4684)" in topic 4.11.
12. To put the scanner back into the checkstand, see "Replacing the 3687 Scanner" in topic 7.3.2.

Reference	Topic
Cable Socket Locations on a 4683	7.30
Cable Socket Locations on a 4684	7.31

PICTURE 204

Figure 7-32. 3687 Model 2 Scanner Adapter

7.28 IBM 4683 Base Unit Removal and Replacement

Subtopics

- 7.28.1 Removing the 4683 Base Unit
- 7.28.2 Replacing the 4683 Base Unit
- 7.28.3 4683 Base Unit Back Cover Removal and Replacement
- 7.28.4 4683 Battery Pack Removal and Replacement
- 7.28.5 4683 Feature Expansion Card Removal and Replacement
- 7.28.6 4683 Power Cord Removal and Replacement

7.28.1 Removing the 4683 Base Unit

"Replacing the 4683 Base Unit" is in topic 7.28.2.

Note: With some applications, information is stored in totals retention storage. If applicable, use the store procedures to retrieve this information.

1. Switch **POWER OFF** at the 4683 base unit.
2. Unplug the base unit power cord from the power receptacle.
3. If this is a 4683-xx2, continue at Step 5.

It is a 4683-xx2 if it does not have store loop cable socket 1 on the base unit.

4. Unplug the store loop cable from the store loop receptacle. If there is a locking clip on the cable connector, you must remove it before unplugging the cable. See Figure 7-33.

Note: You can unplug the store loop cable at the base unit rather than at the store loop receptacle.

If you unplug the store loop cable at the base unit, the cable connector must have a shorting clip **or** you must quickly attach shorting plug 1B (IBM P/N 6313948) to the connector to prevent an **open** store loop condition. See Figure 7-33.

5. Remove the base unit back cover. See Figure 7-35 in topic 7.28.3.2.
6. To make reconnecting easier, note the location of the cables that are attached to the base unit.
7. Unplug all the cables from the base unit.
8. Remove the thumbscrews that attach the alphanumeric or operator display post or arm to the base unit. Remove the display.
9. Remove all remaining devices from the base unit and reinstall the back cover.
10. Record the serial number of the base unit and remove it from the point-of-sale terminal.

Retain the following items for future use:

- All cables
- The power cord
- The battery pack (applies to 4683-xx1 only)
- The Feature Expansion cards, if any are present. (You must install a filler plate to cover the opening created by the removal of any Feature Expansion card.)

If applicable, use a copy of the "Problem Data Collection Form" in topic B.7 as a guide to report any base unit problem.

Reference	Topic
Battery Pack Removal	7.28.4 1
Cable Socket Locations on a 4683	7.30
Cable Socket Locations on a 4684	7.31
Feature Expansion Card Removal	7.28.5 1
Power Cord Removal	7.28.6 1

PICTURE 205

Figure 7-33. Removing the 4683 Base Unit

7.28.2 Replacing the 4683 Base Unit

"Removing the 4683 Base Unit" is in topic 7.28.1.

1. Switch **POWER OFF** at the point-of-sale terminal.
2. Remove the base unit back cover. See Figure 7-35 in topic 7.28.3.2.
3. Reinstall the following items:
 - The power cord
 - The battery pack (applies to 4683-xx1 only)
 - The blank filler plates
 - The Feature Expansion cards.
4. Place the alphanumeric or operator display in position on the base unit and pass the display cable through the cable slot on the base unit.
5. Fasten the display to the base unit using the thumbscrews. See Figure 7-34.
6. Position all remaining devices on the base unit.
7. If this is a 4683-xx2, ensure that cable 11 is connected to socket 11 in the partner point-of-sale terminal and continue at Step 10.

It is a 4683-xx2 if it does *not* have store loop cable socket 1 on the base unit. See "IBM 4683 Base Unit Cable Sockets and Devices" in topic 7.30.

8. Plug the store loop cable into socket 1.

Note: If shorting plug 1B is attached to the cable, remove it and quickly plug the cable into socket 1 to prevent an open store loop condition. See Figure 7-34.
9. Plug the store loop cable into the store loop receptacle and install the locking clip.
10. Plug all other cables into the base unit and reinstall the back cover.
11. Plug the base unit power cord into a power receptacle and switch power ON.

Using the 4680 Operating System:

1. When U005 is displayed, press the dump switch on the 4683-xx1 to force Set Terminal Characteristics (STC) to load. For the location of the dump switch, see Figure 4-7 in topic 4.4.
2. When the Z001 message is displayed, enter the terminal number. For the procedure, see Z001 in "Znnn Messages" in topic 2.12.
3. When the 4683 IPL is complete, verify that the base unit is operating correctly by running "TEST 4230: Point of Sale Terminal Verification (4683/4684)" in topic 4.23.
4. When the terminal verification tests have run successfully, follow "VPD 8010: Entering Vital Product Data" in topic F.2 to update vital product data.

Using the 4684 Reference Diskette:

1. Select RUN VERIFICATION TESTS from MENU-M1.
2. Follow instructions on the display to verify that the base unit is operating correctly.
3. After the "Verification Tests" have run successfully, select RUN UTILITIES from MENU-M1.
4. Select SET/PRINT VITAL PRODUCT DATA from MENU-U1 and follow instructions on the display to update vital product data.

Reference	Topic
Battery Pack Replacement	7.28.4.2

Cable Socket Locations on a 4683	7.30
Cable Socket Locations on a 4684	7.31
Feature Expansion Card Replacement	7.28.5 2
Power Cord Replacement	7.28.6 2

PICTURE 206

Figure 7-34. Replacing the 4683 Base Unit

7.28.3 4683 Base Unit Back Cover Removal and Replacement

Subtopics

- 7.28.3.1 Removing the 4683 Base Unit Back Cover
- 7.28.3.2 Replacing the 4683 Base Unit Back Cover

7.28.3.1 Removing the 4683 Base Unit Back Cover

Pull straight up on the back cover and remove it.

7.28.3.2 *Replacing the 4683 Base Unit Back Cover*

Put the back cover into place and push straight down.

PICTURE 207

Figure 7-35. 4683 Base Unit Back Cover

7.28.4 4683 Battery Pack Removal and Replacement

Note: The battery pack is composed of nickel cadmium batteries. Dispose of defective battery packs according to local government regulations. To fully charge the battery for 4683 storage retention, power must be supplied to the 4683 through the power cord for approximately 16 hours. The battery charges enough to run the "Terminal Storage Retention Test" if power is supplied for approximately 3 hours.

Subtopics

7.28.4.1 Removing the Battery Pack

7.28.4.2 Replacing the Battery Pack

7.28.4.1 *Removing the Battery Pack*

1. DO NOT switch power off at the 4683 base unit.
2. Remove the base unit side cover (battery access). See Figure 7-36 in topic 7.28.4.2.
3. Unplug the battery cable from the socket.
4. Remove the battery pack.

7.28.4.2 *Replacing the Battery Pack*

1. Remove the base unit side cover (battery access). See Figure 7-36.
2. Place the battery pack into the opening in the base unit.
3. Plug the battery cable into the socket.
4. Reinstall the base unit side cover (battery access).

PICTURE 208

Figure 7-36. 4683 Battery Pack

7.28.5 4683 Feature Expansion Card Removal and Replacement

Subtopics

7.28.5.1 Removing a Feature Expansion Card

7.28.5.2 Replacing a Feature Expansion Card

7.28.5.1 Removing a Feature Expansion Card

1. Press and hold the dump switch, then switch **POWER OFF** at the 4683 base unit. For the location of the dump switch, see Figure 4-7 in topic 4.4.
2. Unplug from the power receptacle, the base unit power cord and the power cord of any device attached to the Feature Expansion card.
3. Remove the base unit back cover. See Figure 7-35 in topic 7.28.3.2.
4. To make reconnecting easier, note the location of the cables that are attached to Feature Expansion card. See "IBM 4683 Base Unit Cable Sockets and Devices" in topic 7.30.

Note: If you exchange a card, you must put its replacement in the same location.

5. Unplug the cables from the card.
6. Release the card by pressing in on the latches and turning them counterclockwise. See Figure 7-37 in topic 7.28.5.2.
7. Pull the card straight out.

7.28.5.2 Replacing a Feature Expansion Card

1. Press and hold the dump switch, then switch **POWER OFF** at the 4683 base unit.
2. Unplug from the power receptacle, the base unit power cord and the power cord of any device attached to the Feature Expansion card.
3. Remove the base unit back cover. See Figure 7-35 in topic 7.28.3.2.
4. Remove the filler panel in location 2A or 2B. See Figure 7-37.
5. Insert the Feature Expansion card and push it all the way in. For exchanges, the replacement must go in the same location.
6. Press in on the latches and turn them clockwise to fasten the card.
7. Plug the cables into the Feature Expansion card and reinstall the base unit back cover. See "IBM 4683 Base Unit Cable Sockets and Devices" in topic 7.30.
8. Plug the base unit power cord into a power receptacle, and switch power ON.

Using the 4680 Operating System:

When the 4683 IPL is complete, verify that the feature expansion card is operating correctly by running the tests for the devices attached the feature expansion card. See Chapter 4, "IBM 4680 Operating System Test Procedures" in topic 4.0.

Using the 4684 Reference Diskette:

1. Select START TESTS from MENU-M1.
2. Select RUN POS DEVICE TESTS from MENU-T1.
3. Select the tests from MENU-T6 for the devices attached to the feature expansion card.

PICTURE 209

Figure 7-37. 4683 Feature Expansion Card

7.28.6 4683 Power Cord Removal and Replacement

Subtopics

7.28.6.1 Removing the 4683 Power Cord

7.28.6.2 Replacing the 4683 Power Cord

7.28.6.1 *Removing the 4683 Power Cord*

1. Switch **POWER OFF** at the 4683 base unit.
2. Unplug the base unit power cord from the power receptacle.
3. Remove all devices from the top of the base unit.
4. Remove the base unit side cover (battery access). See Figure 7-38 in topic 7.28.6.2.
5. Set the base unit on its left side.
6. Unplug the power cord from the base unit and pull it through the hole below the side cover.

7.28.6.2 Replacing the 4683 Power Cord

1. Set the base unit on its left side.
2. Place the power cord in through the hole below the side cover and plug it into the socket. See Figure 7-38.
3. Place the power cord in the channel as shown and route it toward the back of the base unit.
4. Replace the base unit side cover.
5. Put the base unit in operating position.
6. Plug the power cord into a power receptacle.
7. Place the devices in position on the base unit.

PICTURE 210

Figure 7-38. 4683 Power Cord

7.29 IBM 4684 System Unit Removal and Replacement

Subtopics

- 7.29.1 Removing the 4684 System Unit
- 7.29.2 Replacing the 4684 System Unit
- 7.29.3 4684 System Unit Back Cover Removal and Replacement
- 7.29.4 4684 Power Cord Removal and Replacement

7.29.1 Removing the 4684 System Unit

"Replacing the 4684 System Unit" is in topic 7.29.2.

Note: With some applications, information is stored in totals retention storage. Use the store procedures to retrieve this information.

1. Use the store procedures to stop any application programs that are running.
2. Switch **POWER OFF** at the 4684.
3. Do the following to protect the fixed disk:
 - a. Insert the Reference Diskette into the diskette drive.
 - b. Switch power ON at the 4684.
 - c. When message M0001 PRESS THE 1 KEY displays (alphanumeric display only), press the 1 key on the primary keyboard.
 - d. When MENU-M1 displays, select START UTILITIES.
 - e. When MENU-U1 displays, select MOVE THE 4684.
 - f. Follow instructions on the display.
4. Switch **POWER OFF** at the 4684.
5. Unplug the system unit power cord from the power receptacle.
6. Unplug the power cord of any device attached to the system unit.
7. Remove the system unit back cover. See Figure 7-43 in topic 7.29.3.2.
8. To make reconnecting easier, note the location of the cables that are attached to the system unit. See "IBM 4684 System Unit Cable Sockets and Devices" in topic 7.31.
9. If this 4684 **does not** have a Store Loop Adapter, continue at Step 11.
10. Unplug the store loop cable from the store loop receptacle. If there is a locking clip on the cable connector, you must remove it before unplugging the cable. See Figure 7-33 in topic 7.28.1.

Note: You can unplug the store loop cable at the system unit rather than at the store loop receptacle.

If you unplug the store loop cable at the system unit, the cable connector must have a shorting clip **or** you must quickly attach shorting plug 1B (IBM P/N 6313948) to the connector to prevent an **open** store loop condition. See Figure 7-33 in topic 7.28.1.

11. Unplug all cables from the system unit.

Note: To prevent the baseband network from opening, connect the network cables together using the 4684 Baseband Network Cable Adapter.

If this is the end-terminal in the network, install the 4684 Baseband Connector adapter and the Baseband Network Terminator or wrap plug to the network cable. See Figure 7-40.

12. Remove the thumbscrews that attach the alphanumeric or operator display post or arm to the system unit and remove the display. See Figure 7-39.
13. Remove all remaining devices from the system unit and reinstall the back cover.
14. Remove the system unit from the point-of-sale terminal.

PICTURE 211

Figure 7-39. Removing the 4684 System Unit

PICTURE 212

Figure 7-40. Connecting Network Cables. Using the 4684 Baseband Connector Adapter (top).
Using the Baseband Network Terminator or Wrap Plug (bottom).

7.29.2 Replacing the 4684 System Unit

"Removing the 4684 System Unit" is in topic 7.29.1.

1. Switch **POWER OFF** at the 4684.
2. Remove the system unit back cover. See Figure 7-43 in topic 7.29.3.2.
3. Place the alphanumeric or operator display in position on the system unit and pass the display cable through the cable slot on the system unit.
4. Fasten the display to the system unit using the thumbscrews. See Figure 7-41.
5. Position all remaining devices on the system unit.
6. If this 4684 **does not** have a Store Loop Adapter, continue at Step 9.
7. Plug the store loop cable into the Store Loop Adapter.

Note: If shorting plug 1B is attached to the cable, remove it and quickly plug the cable into the Store Loop Adapter to prevent an open store loop condition. See Figure 7-34 in topic 7.28.2.

8. Plug the store loop cable into the store loop receptacle and install the locking clip.
9. Plug all cables into the system unit and reinstall the back cover. See "IBM 4684 System Unit Cable Sockets and Devices" in topic 7.31.
10. Plug the system unit power cord into a power receptacle.
11. Insert the Reference Diskette into the diskette drive.
12. Switch power ON at the 4684.
13. When MENU-M1 displays, select RUN VERIFICATION TESTS.
14. Follow instructions on the display to verify that the system unit is operating correctly.
15. When the VERIFICATION TESTS have run successfully, return to MENU-M1 and select RUN UTILITIES.
16. When MENU-U1 displays, select SET/PRINT VITAL PRODUCT DATA and follow instructions on the display to update vital product data.

Warning: The system unit on the store controller (Personal Computer AT, PS/2, or 4684) requires at least 10.2 cm (4 in.) of clearance between the exhaust fan and adjacent walls or partitions. Failure to provide this clearance can cause the exhaust fan to stall, resulting in the system unit overheating and possible damage to the fixed disk.

PICTURE 213

Figure 7-41. Replacing the 4684 System Unit

PICTURE 214

Figure 7-42. Connecting Network Cables. Using the 4684 Baseband Connector Adapter (top).
Using the Baseband Network Terminator or Wrap Plug (bottom).

7.29.3 4684 System Unit Back Cover Removal and Replacement

Subtopics

- 7.29.3.1 Removing the 4684 System Unit Back Cover
- 7.29.3.2 Replacing the 4684 System Unit Back Cover

7.29.3.1 Removing the 4684 System Unit Back Cover

Pull straight up on the back cover and remove it.

7.29.3.2 Replacing the 4684 System Unit Back Cover

Put the back cover into place and push straight down.

Note: Some option adapters that have external cables may interfere with the placement of the back cover.

PICTURE 215

Figure 7-43. 4684 System Unit Back Cover

7.29.4 4684 Power Cord Removal and Replacement

Subtopics

7.29.4.1 Removing the 4684 Power Cord

7.29.4.2 Replacing the 4684 Power Cord

7.29.4.1 *Removing the 4684 Power Cord*

1. Switch **POWER OFF** at the 4684 system unit.
2. Unplug the 4684 system unit power cord from the power receptacle.
3. Remove all devices from the top of the system unit.
4. Position the system unit bottom side up. See Figure 7-44 in topic 7.29.4.2.
5. Unplug the power cord from the system unit.

7.29.4.2 Replacing the 4684 Power Cord

1. Position the 4684 system unit bottom side up.
2. Plug the power cord into the system unit power socket. See Figure 7-44.
3. Place the power cord in the groove in the bottom of the system unit as shown and route it toward the back.
4. Put the system unit in operating position.
5. Plug the power cord into a power receptacle.
6. Place the devices in position on the system unit.

PICTURE 216

Figure 7-44. 4684 System Unit Power Cord

7.30 IBM 4683 Base Unit Cable Sockets and Devices

The following table and figure show the 4683 cable sockets and the devices that attach to them.

Use this information to find the cable socket for a 4683 device.

Table 7-1. IBM 4683 Base Unit Cable Sockets and Devices		
Socket Number	Device Name	Cable Number
1	Store Loop (4683-xx1 Only)	1
3A	Cash Drawer A	3
3B	Cash Drawer B or Remote Alarm	3
4A	Alphanumeric, Operator, or Shopper Display	4
4B	Alphanumeric, Operator, or Shopper Display	4
5A	50-Key Keyboard, Alphanumeric Keyboard, ANPOS Keyboard, Combined Keyboard/Display, or Matrix Keyboard	5
5B	50-Key Keyboard, Alphanumeric Keyboard, ANPOS Keyboard, Combined Keyboard/Display, Matrix Keyboard, Dual-Track MSR, or 1520 Hand-Held Scanner Model A02	5
6	Single-Track Magnetic Stripe Reader (MSR) Note: Socket 6 is located on the 50-key keyboard.	None
7	Printer	7
9A	Reserved	-
9B	Hand-Held Bar Code Reader	-
11	4683-xx2 TO 4683-xx1 or 4684	11
17	Checkout Scanner or Scanner/Scale	17
21	1520 Hand-Held Scanner Model A01, Optical Character Reader (OCR), or Scale	21
22	Reserved	-
23	RS-232 Device	23
25	RS-232 or Current Loop Device	25
26	Magnetic Wand	26
29	Coin Dispenser	29
81	Video Display	81
82	Video Display	82

- The Feature Expansion cards can be installed in location 2A (left) or 2B (right).
- A blank filler plate is installed to cover the opening when no card is installed.
- If you exchange a card, you must put its replacement in the same location.
- All models of the 4683 can have one or two Feature Expansion cards.

PICTURE 217

Figure 7-45. 4683 Base Unit Back Panels and Feature Expansion Cards. The back panels of the 4683-001 and 4683-A01 look the same as the 4683-P. The back panel of the 4683-A02 looks the same as the 4683-002 except the 4683-A02 has socket 9A.

7.31 IBM 4684 System Unit Cable Sockets and Devices

The following table and figure show the 4684 cable sockets and the devices that attach to them.

Use this information to find the cable socket for a 4684 device.

Table 7-2. IBM 4684 System Unit Cable Sockets and Devices		
Socket Number	Device Name	Cable Number
1A	Baseband Network	-
1B	Baseband Network or Token-Ring	-
3A	Cash Drawer A or Remote Alarm A	3
3B	Cash Drawer B or Remote Alarm B	3
4A or 4B	Alphanumeric, Operator, or Shopper Display	4
5A	50-Key Keyboard, Alphanumeric Keyboard, ANPOS Keyboard, Combined Keyboard/Display, Matrix Keyboard, or Dual-Track MSR	5
5B	50-Key Keyboard, Alphanumeric Keyboard, ANPOS Keyboard, Combined Keyboard/Display, Matrix Keyboard, Dual-Track MSR, or 1520 Hand-Held Scanner Model A02	5
6	Single-Track Magnetic Stripe Reader (MSR) Note: Socket 6 is located on the 50-key keyboard.	None
7	Point of Sale Printer	7
9A	Reserved	-
9B	Hand-Held Bar Code Reader	-
11	4683-xx2 Point of Sale Terminal	11
17	Checkout Scanner or Scanner/Scale	17
[1]	System Unit Keyboard	-
[2]	Pointing Device (Mouse)	-
[AA]	System Unit Video Display	-
[BB]	System Unit Printer	-
[CC]	System Unit Asynchronous Communications	-
[DD]	Dump Switch	-

PICTURE 218

Figure 7-46. 4684 System Unit Back Panel

A.0 Appendix A. Reference Information

Subtopics

- A.1 General Description of the IBM 4683 Point of Sale Terminal
- A.2 General Description of the IBM 4684 Point of Sale Terminal
- A.3 IBM 4680 Store System Example
- A.4 Local Area Network (LAN)
- A.5 Store Controller
- A.6 Store Loop
- A.7 Point of Sale Terminal

A.1 General Description of the IBM 4683 Point of Sale Terminal

The following IBM 4683 Point of Sale Terminal models are available. The models are similar in appearance and can attach the same type of I/O devices. The basic terminal consists of a base unit, a keyboard, and a display. For a view of the 4683, see Appendix C, "Locations."

4683-P11

The 4683-P11 has 1 megabyte of memory and is functionally equivalent to the 4683-001. It can be programmed to perform the user's point-of-sale functions. To perform all available point-of-sale functions, the 4683-P11 must be connected to a store loop and it must be communicating with a store controller on the store loop. After the 4683-P11 has received a program load from the store controller, some point-of-sale functions can be performed without communication with the store controller. The 4683-P11 base card has pluggable memory modules that allow you to increase the base card memory by replacing the existing modules with larger capacity modules.

4683-P21

The 4683-P21 has 2 megabytes of memory and is functionally equivalent to the 4683-A01. Except for the additional memory, the 4683-P21 is the same as the 4683-P11. See the 4683-P11 description.

4683-P41

The 4683-P41 has 4 megabytes of memory. Except for the additional memory, the 4683-P41 is the same as the 4683-P11. See the 4683-P11 description.

4683-001

The 4683-001 has 1 megabyte of memory and is functionally equivalent to the 4683-P11. See the 4683-P11 description. The memory on this model is fixed and cannot be changed.

4683-A01

The 4683-A01 has 2 megabytes of memory and is functionally equivalent to the 4683-P21. See the 4683-P21 description. The memory on this model is fixed and cannot be changed.

4683-002

To perform the user's point-of-sale functions, each 4683-002 must be connected to a 4683-xx1 or a 4684 that is running the IBM 4680 Operating System, the RIPSS (Retail Industry Program Support Services) Operating System, or an independently developed Operating System.

4683-A02

The 4683-A02 is functionally equivalent to the 4683-002. Other than the addition of socket 9A, it is the same as the 4683-002.

Note: In a 4680 Store System, a 4683-xx2 relies on a 4683-xx1 or 4684 for all of its processing and storage capability.

Subtopics

A.1.1 IBM 4683 Input Voltages

A.1.1 IBM 4683 Input Voltages

The two input voltage options for the 4683 are:

- Low voltage: 100 to 125 V ac RMS (nominal), single phase, 50 or 60 Hz
- High voltage: 200 to 240 V ac RMS (nominal), single phase, 50 or 60 Hz.

A.2 General Description of the IBM 4684 Point of Sale Terminal

The following IBM 4684 Point of Sale Terminal models are available. The models are similar in appearance and can attach the same type of I/O devices. All models can be programmed to perform the user's point-of-sale functions. Models 110, 130 and 160 are distributed by World Trade only. For a view of the 4684, see Appendix C, "Locations."

Model 110

- System Board **without** Baseband Network
- 1.44 Mb Diskette Drive.

Model 111

- System Board **with** Baseband Network
- 1.44 Mb Diskette Drive.

Model 130

- System Board **without** Baseband Network
- 30 Mb Fixed Disk
- 1.44 Mb Diskette Drive.

Model 131

- System Board **with** Baseband Network
- 30 Mb Fixed Disk
- 1.44 Mb Diskette Drive.

Model 160

- System Board **without** Baseband Network
- 60 Mb Fixed Disk
- 1.44 Mb Diskette Drive.

Model 161

- System Board **with** Baseband Network
- 60 Mb Fixed Disk
- 1.44 Mb Diskette Drive.

Model 200

- System Board with 80286 Processor
- Up to 8 Mb System Board Memory
- Up to 160 Mb Fixed Disk
- 1.44 Mb Diskette Drive.

Model 300

- System Board with 80386SX Processor
- System Board Side Card Attachment for Baseband Network or Token-Ring Adapter
- Up to 8 Mb System Board Memory
- Up to 160 Mb Fixed Disk
- 1.44 Mb Diskette Drive.

Subtopics

A.2.1 IBM 4684 Input Voltages

A.2.1 IBM 4684 Input Voltages

The two input voltage options for the 4684 are:

- Low voltage: 100 to 125 V ac RMS (nominal), single phase, 50 or 60 Hz
- High voltage: 200 to 240 V ac RMS (nominal), single phase, 50 or 60 Hz.

A.3 IBM 4680 Store System Example

The IBM 4680 Store System includes a store controller and point-of-sale terminals. The 4683-xx1s are connected to the store controller through the store loop. The 4683-xx2s are directly connected to a 4683-xx1 or 4684.

PICTURE 219

Figure A-1. Typical IBM 4680 Store System. In this figure, the 4683-P can also be a 4683-001 or 4683-A01. The 4683-002 can also be a 4683-A02.

A.4 Local Area Network (LAN)

Use this section to find additional information about the Local Area Network (LAN).

The LAN includes:

- The IBM PC Network
- The IBM Multiple Controller Feature
- The IBM PC Network Adapter in the store controller
-- or --
The IBM Token Ring Adapter in the store controller.

Subtopics

A.4.1 File Server Store Controller on the LAN

A.4.2 Master Store Controller on the LAN

A.4.1 File Server Store Controller on the LAN

If the File Server becomes permanently disabled, there is a possibility that data can be lost. Examples of the data that can be lost are:

- Any information in the spool file of the failing File Server that has not been copied to the alternate File Server.
- Any information in the I/O buffers of the failing File Server.

When the configured File Server is brought back up after being down, the following steps should be taken:

Note: If one store controller is both the Master and the File Server, steps 1 and 2 of "Master Store Controller on the LAN" in topic A.4.2 should be done before starting here. If this is the case, you may not have to be concerned with stopping and starting background applications.

1. If the Alternate File Server has been activated as Acting File Server:
 - a. Stop any background applications that should be running **only** on the File Server.
 - b. Deactivate the Alternate (Acting) File Server.

2. Activate the Configured File Server as Acting File Server.

Between the deactivation and activation of the File Server there is a time when there is no File Server. During this time no updates can be made to application mirrored files.

3. Start any necessary background applications on the Acting File Server.

Note: If "Auto Resume" was selected during configuration, the following step is not needed. Store loop control resumes automatically after IPL.

4. Resume store loop control at the File Server if the File Server has primary store loop responsibilities.

When the File Server resumes control of the store loop, for a short period of time the 4683s on the store loop are offline to the primary and backup store controllers. During this time file reads from the 4683s (such as price lookup) cannot be performed.

A.4.2 Master Store Controller on the LAN

If the Master Store Controller becomes permanently disabled, there is a possibility that data can be lost. Examples of the data that can be lost are:

- Any information in the spool file of the failing Master Store Controller that has not been copied to the alternate Master Store Controller.
- Any information in the I/O buffers of the failing Master Store Controller.

When the configured Master Store Controller is brought back up after being down, the following steps should be taken:

1. If the Alternate Master Store Controller has been activated as Acting Master, deactivate the Alternate (Acting) Master.
2. Activate the Configured Master as Acting Master Store Controller.

Between the deactivation and activation of the Master Store Controller there is a time when there is no Master. During this time no updates can be made to compound files or system mirrored files.

Note: If "Auto Resume" was selected during configuration, the following step is not needed. Store loop control resumes automatically after IPL.

3. Resume store loop control at the Master Store Controller if the Master has primary store loop responsibilities.

When the Master Store Controller resumes control of the store loop, for a short period of time the 4683s on the store loop is offline to the primary and backup store controllers. During this time file-reads from the 4683s (such as price lookup) cannot be performed.

A.5 Store Controller

Use this section to find additional information about the store controller.

Subtopics

A.5.1 Backup Store Controller

A.5.2 Backup Configurations

A.5.3 Using the Supplemental Diskette to Recover from a PLD

A.5.4 Displaying a Store Controller Message

A.5.5 Message Description

A.5.6 Message General Format

A.5.1 Backup Store Controller

The IBM 4680 Store System provides the capability for a backup store controller to take control of the store loop if the assigned primary store controller cannot function or is not available. The backup store controller monitors the activity on the store loop while performing its other assigned duties.

The backup store controller has two modes of operation that can be set from the keyboard:

1. **Allowed:** The backup store controller takes over the store loop if a backup request is received from a 4683.
2. **Prevented:** The backup store controller does NOT take over the store loop if a backup request is received from a 4683.

While the backup store controller is controlling the store loop, it can display any of the store loop messages that you would normally see at the primary store controller, such as W760, W761, W762, W763, and W764.

The following are messages that can be displayed ONLY at the backup store controller:

Message W770

A backup request was received from a 4683 on the store loop because the primary store controller is not functioning. The backup store controller status was **allowed**. Therefore, it is now in control of the store loop.

Message W771

A backup request was received from a 4683 on the store loop because the primary store controller is not functioning. The backup store controller status was **prevented**. Therefore, it did not take control of the store loop.

Message W772

The backup store controller, while monitoring the activity on the store loop, is not receiving end-of-poll characters or beacons from 4683s on the store loop. It is sending beacons down-loop to the primary store controller.

Message W773

The backup store controller was in control of the store loop and the primary store controller requested control of the store loop. The backup store controller always honors this request.

Message W774

The backup store controller, while monitoring the activity on the store loop, is not receiving polls or beacons from 4683s up-loop. It is beaconing and receiving its own beacon. This means there is no active primary store controller and there are no 4683s on the store loop.

Figure A-2 is a diagram of 4683s and two store controllers connected to a store loop to provide store controller backup.

PICTURE 220

NOTES:

- This illustration represents a typical store loop, using the IBM Loop Wiring Concentrator. Your store loop may not be wired like this, but the position of your 4683s on the loop and their relationship to the store controller will be similar.
- The 4683-P can also be a 4683-001 or 4683-A01. The 4683-002 can also be a 4683-A02.
- The store controller transmits data to the first 4683 down-loop on the store loop. This 4683 receives the data and passes it to the next 4683 down-loop. This continues with each 4683 receiving data from the 4683 immediately up-loop from its position, and passing it on to the next 4683 down-loop. The last 4683 down-loop passes the data back to the store controller.

Figure A-2. Store Loop with Backup Store Controller

PICTURE 221

Figure A-3. Examples of Configurations for Store Controller Backup

A.5.2 Backup Configurations

There are several options in connecting the store controllers and the store loops, depending on requirements. Figure A-3 in topic A.5.1 shows four possible configurations. The four examples are:

- Two store controllers, with one having primary responsibility for a store loop and one serving in a backup capacity.
- Two store controllers, each one operating its own store loop and giving backup support for the other.
- Three store controllers, one has no primary responsibility for a store loop, but it gives backup support for the other two store controllers.
- Three or more store controllers, arranged so that each one controls its own store loop and gives backup support for one other.

A.5.3 Using the Supplemental Diskette to Recover from a PLD

A loss of electrical power is referred to as a PLD (power line disturbance). Although the IBM 4680 Operating System can recover from most PLDs, PLDs can occur when the operating system is performing certain fixed disk functions that are not recoverable. For example, the store controller cannot recover when a PLD occurs while the IBM 4680 Operating System is writing to:

- The disk files
- The subdirectories
- The FAT (file allocation table) sectors that are mandatory for IPL.

When the store controller fails to recover from a PLD, use the following procedure:

1. Switch **POWER OFF** at the store controller.
2. While you are waiting (about 20 seconds), insert the Supplemental Diskette into diskette drive A.
3. Switch power ON at the store controller.
4. Wait for the Supplemental Diskette to complete loading. Loading is complete when the SYSTEM MAIN MENU displays.
5. At this point, the fixed disk has been corrected for sectors that were not complete as a result of the PLD. Remove the Supplemental Diskette and IPL from the fixed disk.
6. The store controller should now load as it did prior to the PLD. If the store controller does not IPL, it may be necessary to recover the IBM 4680 Operating System from the previously prepared backup diskettes or tape (from streaming tape drive). If any messages or codes are displayed as a result of the IPL failure, find messages in Chapter 2, "Messages" **or** symptoms in Chapter 3, "Symptoms" **or** see the *IBM 4680 Store System: Messages Guide*.
7. After fixing the problem, return the Supplemental Diskette to its secure storage location.

A.5.4 *Displaying a Store Controller Message*

When SYSTEM MESSAGE AVAILABLE appears in the lower right of the store controller display screen, there is a message available that has not been displayed.

You can use the following procedure at any time to see the ten most recent messages in the system message file. You can view all of the messages in the file by using the function keys described on the screen.

To display a system message at the store controller:

1. Sign on to the store controller using the store procedures.
2. Press **System Request**, then type **M**.
3. The system messages are displayed on the screen.
If a new message is received while you are looking at this screen, the new message is not displayed until you press one of the function keys.
4. Press **QUIT** to return to the screen that was displayed when you pressed **System Request**.
5. Find the message in Chapter 2, "Messages" **or** in the *IBM 4680 Store System: Messages Guide*.

A.5.5 Message Description

Subtopics

A.5.5.1 IBM 4680 BASIC Language Messages

A.5.5.2 IBM 4680 Operating System Messages (Command Mode)

A.5.5.1 IBM 4680 BASIC Language Messages

The IBM 4680 BASIC Language can issue error messages while it is compiling and link-editing. The following kinds of messages can be displayed:

- Compiler error messages
- Link86 error messages
- Runtime error messages
- Lib86 error messages
- Stack error messages.

See the *IBM 4680 BASIC: Language Reference* for these messages.

A.5.5.2 IBM 4680 Operating System Messages (Command Mode)

The IBM 4680 Operating System has functions other than those that support the sales environment. Access to these additional functions is through the Command Mode. You can select Command Mode from the SYSTEM MAIN MENU. While in this mode it is possible to receive error messages. These error messages are also called SHELL messages.

The HELPLVL parameter for the DEFINE command lets you specify how much online information is displayed with the error message. If you are a beginning user, you can set the help level so the message contains detailed information to resolve the condition. If you are a more experienced user, you can set the help level to provide a briefer message.

Examples of the levels of help for a message are:

Help Level	Description Level
1	Displays the Command Mode function, the error source module, and the return code.
2	Identifies the command and type of error in one sentence. An example of a level 2 error message is: "COPY: Write error"
3	Expands on the level 2 message and includes more specific information. An example of a level 3 error message is: "COPY: An error occurred writing report.txt on A."
4	Expands on the level 3 message and often suggests a possible solution. An example of a level 3 error message is: "COPY: An error occurred writing report.txt on A. Disk A is full. You can erase unnecessary files to free up space".

See the *IBM 4680 Store System: User's Guide* for selecting the level of help for error messages that occur in Command Mode.

A.5.6 Message General Format

This is the general format for messages displayed at the store controller.

```
mm/dd hh:mm cc ttt s annn xxxxxxxx...xxxxxxx
                Bx/Sxxx/Exxx xxxx...xxxx
```

Description:

mm/dd Month and Day the Message Was Logged

hh:mm Time of Day that the Message Was Logged

cc The Store Controller Identifier (ID) Capital alphabetic, in the range of CC to ZZ, assigned by the controller load definition screen at configuration.

ttt Terminal Number In decimal, from 000 to 999, if applicable.

s Message Severity Indicator In decimal, from 1 to 5.

Severity	Impact	Type of Error or Event
1	System	Affects multiple point-of-sale terminals or the entire system.
2	Unit	Affects a single physical unit such as a point-of-sale terminal or an input/output device.
3	Function	Affects the normal operation of a programming function.
4	Statistical	Indicates a statistical event/error has been detected or a sub-part of a programming function was affected.
5	Events	Indicates an expected occurrence such as an initial program load (IPL).

annn The Message Identifier

Annn - IBM 4680 General Sales Application
 Bnnn - IBM 4680 Supermarket Application
 Cnnn - IBM 4680 Chain Drug Sales Application
 Hnnn - IBM 4680 Store Management Application
 Tnnnn - Hardware Tests
 Unnn - IPL
 Wnnn - IBM 4680 Operating System
 Xnnn - Debug
 Ynnn - System Utilities
 Znnn - Set Terminal Characteristics

xxx... Message Text

Bx System Log Section Indicator

B1 - Store controller hardware errors
 B2 - Point-of-sale terminal hardware errors
 B3 - Point-of-sale terminal events
 B4 - Store controller events
 B5 - System events
 B6 - Application events

Sxxx The Source Code of the Originator of the Message

S002 - IPL Command Processor
 S004 - File Services
 S006 - X.25 Driver
 S008 - Store Controller First Store Loop Adapter
 S009 - Store Controller Second Store Loop Adapter
 S010 - Host ASYNC Driver
 S011 - Host BSC Driver
 S012 - Common Communications
 S013 - Communications & Systems Management
 S014 - Host Command Processor (HCP)
 S015 - SDLC Driver
 S016 - SNA Driver
 S017 - Shared I/O Access Method
 S020 - DDA
 S021 - Token-Ring / PC Network

S022 - LAN (Local Area Network)
S022 - PC Network Transporter
S024 - System Menu Initialization
S026 - SSRT Terminal
S027 - SSRT Utilities
S030 - Store Controller IPL
S031 - Store Controller Partial Dump
S032 - Dump Formatter
S033 - Trace Formatter
S034 - System Log Scan
S035 - Performance Report
S036 - Start Trace/Performance
S037 - Problem Analysis Diskette
S038 - Report Module Level
S039 - Apply Software Maintenance
S040 - Input Sequence Table Utility
S041 - System Configuration Utility
S042 - Print Configuration Utility
S043 - Keyed File Utility
S044 - Display Alter Utility
S045 - Control File Build Utility
S046 - File Distribution Utility
S047 - Store Controller RAM Disk
S048 - Remote Command Processor (RCP)
S049 - Audible Alarm
S050 - Host BSC - IBM ARTIC Adapter
S051 - Host Async - IBM ARTIC Adapter
S052 - Communications Driver - IBM ARTIC Adapter
S053 - Remote Change Management Server (RCMS)
S054 - Print Spooler
S055 - Streaming Tape Drive
S056 - Streaming Tape Drive Utility
S057 - File Compression/Decompression
S058 - 3270 Emulation in the Store Controller
S059 - Remote System Function
S064 - Application Loader
S068 - Debug
S069 - 3270 Emulation in the Point of Sale Terminal
S070 - I/O Processor
S072 - Point of Sale Terminal File Services
S074 - Point of Sale Terminal Services
S076 - Point of Sale Terminal Timer
S078 - Remote I/O Access Method
S080 - Point of Sale Terminal Store Loop
S082 - Point of Sale Terminal Device Channel Adapter
S084 - Point of Sale Terminal IPL
S085 - Point of Sale Terminal Partial Dump
S086 - Set Terminal Characteristics
S090 - Point of Sale Terminal Printer
S091 - Point of Sale Terminal Matrix Keyboard
S092 - Point of Sale Terminal 50-Key Keyboard
S093 - Point of Sale Terminal Alphanumeric or ANPOS Keyboard
S094 - Cash Drawer Adapter
S095 - Operator Display
S096 - Alphanumeric Display
S097 - Shopper Display
S098 - Point of Sale Terminal Video Display Adapter
S100 - Managers Keylock
S102 - Optical Character Reader (OCR) Adapter
S104 - Point of Sale Scanner
S108 - Single-Track Magnetic Stripe Reader
S109 - Dual-Track Magnetic Stripe Reader
S110 - Scale Adapter
S112 - Coin Dispenser Adapter
S114 - Totals Retention
S116 - Point of Sale Terminal Keyboard Tone
S118 - Serial Port Adapter
S120 - Magnetic Wand Adapter
S122 - 1520 Hand-Held Scanner Model A02
S124 - Hand-Held Bar Code Reader
S125 - Point of Sale Terminal RAM Disk
S126 - SSRT Store Controller

Exxx Event Code (See the "IBM 4680 Store System: Messages Guide".)

A.6 Store Loop

Use this section to find additional information about the store loop.

The following information is provided to assist you in understanding normal store loop functions. You can use it to assist you in developing store loop recovery procedures and problem determination procedures unique to the store loop configuration.

The store loop is a cable over which data is transmitted between the store controller and the point-of-sale terminals of an IBM 4680 Store System.

The store controller manages the data flow on the store loop. The rules for sending and receiving data over the loop are a subset of the Synchronous Data Link Control (SDLC) rules.

Subtopics

- A.6.1 Configuration
- A.6.2 Store Loop Hardware
- A.6.3 Store Loop Wiring Concentrator
- A.6.4 Polls
- A.6.5 End-of-Poll Timeouts
- A.6.6 Beacons
- A.6.7 Cyclical Redundancy Check (CRC) / Message Retransmit
- A.6.8 Store Loop Error Conditions and Error Messages
- A.6.9 Store Loop Error Recovery Procedures

A.6.1 Configuration

The physical loop, which starts and ends at the store controller, connects the 4683s in a serial or radial arrangement. The store loop wiring is a shielded, twisted-pair cable that is installed by the user. This cable must meet the electrical and physical specifications outlined in *IBM 4680 Store System: Preparing Your Site*. The store loop can also be installed using the IBM Cabling System.

Several types of loop configurations are possible, depending on the type of cable used. Two of these configurations are described here.

- A radial store loop uses a twisted-pair cable that runs from each 4683 and the store controller to a centrally located Loop Wiring Concentrator (LWC). See Figure A-4 in topic A.6.3.
- A serial store loop uses a twisted-pair cable that connects the store controller's loop transmitter to the first 4683's loop receiver. Then, a twisted-pair cable connects the loop transmitter in each successive 4683 to the loop receiver in the next 4683. Finally, a twisted-pair cable returns from the last 4683's loop transmitter to the store controller's receiver to complete the loop. See Figure A-5 in topic A.6.3.

Up to sixty-four 4683s can be connected to one store loop.

Note: System performance can be affected based on transaction rate.

Systems using a single store controller are limited to a single loop. Loops generally use two twisted pairs in a single jacket with a connection similar to the one shown in Figure A-6 in topic A.6.3.

No remote loops are supplied with this system.

A.6.2 Store Loop Hardware

The IBM 4680 Store System store loop is made up of the following hardware:

- A store controller with one or two Store Loop Adapters
- A store controller store loop attachment cable(s)
- A store loop adapter in each point-of-sale terminal
- A store loop attachment cable for each point-of-sale terminal
- A shorting plug (1B) for each store loop attachment cable
- Store loop wiring including the receptacles for plugging into the store loop.

A store loop in an IBM 4680 Store System is configured with a store controller managing a communications line to which terminals are connected. Point-of-sale terminals are connected in series to form a loop with the store controller. The store loop is totally contained within a store.

The distance between powered-ON point-of-sale terminals on the store loop should not exceed 1220 m (4000 ft.).

A point-of-sale terminal is attached to the store loop with store loop attachment cable 1. A 4683-xx1 attaches directly to the store loop. A 4683-xx2 attaches to a partner 4683-xx1 or 4684. It is not attached to the store loop. A 4683-xx2 will display the store loop status of its partner 4683-xx1 or 4684.

The store loop receptacles and the connectors that attach to the receptacles are self-shorting. This means that when a store loop attachment cable is disconnected from a receptacle, the transmit and receive contacts in the **receptacle** will automatically connect together to maintain the continuity of the store loop.

The same contacts in the store loop attachment **cable connector** will connect together when the connector is disconnected from a receptacle. The transmit and receive contacts connecting together causes the point-of-sale terminal transmit data to be wrapped back so the terminal will receive the same data that it transmits.

Shorting plug (1B) is attached to the point-of-sale terminal store loop attachment cable 1. It is designed to be used at the **terminal end** of its store loop attachment cable 1. This allows store loop continuity to be maintained when the store loop attachment cable is disconnected from socket 1 on the point-of-sale terminal base unit.

A.6.3 Store Loop Wiring Concentrator

Figure A-4 is a diagram of 4683s and a store controller connected by radial store loop cables to a loop wiring concentrator.

PICTURE 222

Figure A-4. Example of Store Loop (Radial). The 4683-P can also be a 4683-001 or 4683-A01. The 4683-002 can also be a 4683-A02.

PICTURE 223

Figure A-5. Example of Store Loop (Serial). The 4683-P can also be a 4683-001 or 4683-A01. The 4683-002 can also be a 4683-A02.

PICTURE 224

Figure A-6. Radial Store Loop Wiring Connected to a Loop Wiring Concentrator. The 4683-P can also be a 4683-001 or 4683-A01.

PICTURE 225

NOTES:

- This illustration represents a typical store loop, using the IBM Loop Wiring Concentrator. Your store may not be wired like this, but the position of your 4683s on the loop and their relationship to the controller will be similar.
- The 4683-P can also be a 4683-001 or 4683-A01. The 4683-002 can also be a 4683-A02.
- The store controller transmits data to the first 4683 down-loop on the store loop. This 4683 receives the data and passes it to the next 4683 down-loop. This continues with each 4683 receiving data from the 4683 immediately up-loop from its position, and passing it on to the next 4683 down-loop. The last 4683 down-loop passes the data back to the store controller.

Figure A-7. Store Loop Using Wiring Concentrators

PICTURE 226

NOTES:

- This illustration represents a typical store loop, using the IBM Loop Wiring Concentrator. Your store may not be wired like this, but the position of your 4683s on the loop and their relationship to the controller will be similar.
- The 4683-P can also be a 4683-001 or 4683-A01. The 4683-002 can also be a 4683-A02.
- The store controller transmits data to the first 4683 down-loop on the store loop. This 4683 receives the data and passes it to the next 4683 down-loop. This continues with each 4683 receiving data from the 4683 immediately up-loop from its position, and passing it on to the next 4683 down-loop. The last 4683 down-loop passes the data back to the store controller.

Figure A-8. Store Loop with LAN

A.6.4 Polls

The store controller transmits unique poll messages to invite 4683s on the store loop to transmit. The poll messages are propagated around the store loop as each 4683 receives, and then retransmits all messages. The position of a 4683 on the store loop determines the sequence in which it receives its unique poll.

A 4683 must be polled before it can respond to a message that it received from the store controller. If a 4683 is waiting with a message or a response to a message, it transmits its terminal number followed by the message or response when it is polled. It then resumes passing received data to the next 4683 on the store loop. If a 4683 has neither a message nor a response to a message, it does not respond to the poll.

When the store controller transmits a message to a 4683, an acknowledgment of that message is required. The acknowledgment is not transmitted until the 4683 receives a poll. If the store controller does not receive an acknowledgment within a certain period of time, the message is retransmitted to the 4683.

A.6.5 End-of-Poll Timeouts

An end-of-poll character is transmitted with every poll. The store controller expects to receive the end-of-poll character that is transmitted with each poll. If the end-of-poll is not received, the store controller retries. If an end-of-poll character is received, the store controller resumes normal operation. If retries fail, the store controller then runs a wrap test on its own store loop adapter.

If the store controller store loop adapter wrap test fails, the store controller loop relay drops. When the loop relay drops, store loop continuity is maintained and the store controller is removed from the store loop. When the store controller is removed from the store loop, the 4683s detect the absence of polls and they start to beacon. When a 4683 receives its own beacon, this is confirmation that the store loop is intact and the 4683 transmits a backup request. The 4683 continues to transmit the backup request until it receives a poll from a store controller. When the **enabled** backup store controller recognizes the backup request, it takes control of the store loop and begins transmitting polls. See "Backup Store Controller" in topic A.5.1.

If no failure is detected during the store controller store loop adapter wrap test, the store controller continues to poll and monitor the receive side of the store loop. Any beacon received at the store controller contains the number of the beaoning 4683. The location of the beaoning 4683 on the store loop indicates the approximate location of the store loop problem.

If no beacons are received, the store controller indicates an end-of-poll timeout. The end-of-poll timeout also indicates the approximate location of the store loop problem. In this case the problem is in the store controller, the last 4683 on the store loop, or the store loop segment between the last 4683 on the store loop and the store controller.

A.6.6 Beacons

A beacon is a message that a 4683 transmits to indicate it is not receiving polls from the store controller. A 4683 expects to continuously receive polls. When a 4683 does not receive polls for a specified period of time, a poll timeout occurs. When a poll timeout occurs, the 4683 automatically runs a wrap test of its store loop adapter.

If a failure is detected during the wrap test, the 4683 drops its loop relay. The 4683 is removed from the store loop and store loop continuity is maintained. Also, when a 4683 is powered-OFF, the loop relay drops and this has the same effect.

If no failure is detected during the adapter wrap test, the 4683 stays on the store loop and continuously transmits a beacon message containing its terminal number. While the beacon is being transmitted, the 4683 monitors the receive side of the store loop looking for polls.

□ If a beacon is received from another 4683 on the store loop, the 4683 stops transmitting its own beacon and passes on the received beacon. The store controller receives the beacon message containing the beaoning terminal number. The location of the beaoning 4683 indicates the approximate location of the store loop problem. The problem can exist in:

- The beaoning 4683
- The 4683 just prior to the beaoning 4683 on the store loop
- The store loop segment between these two 4683s.

If the beaoning 4683 is the first 4683 in the store loop, the problem can exist in:

- The beaoning 4683
- The store controller
- The store loop segment between the store controller and the 4683.

□ If a 4683 receives its own beacon, this means that the store controller is down. The 4683:

1. Stops beaoning
2. Transmits a backup request message notifying all 4683s on the store loop that the store controller is down.

Note: The 4683 continues to transmit the backup request until it receives a poll from a store controller. When a poll is received, this indicates system recovery has occurred and normal operation is resumed.

A.6.7 Cyclical Redundancy Check (CRC) / Message Retransmit

The data format and error recovery method used for store loop traffic is designed to assure the data integrity of all messages received and transmitted by the store controller and each of the 4683s. Each message transmitted to the store loop by the store controller or a 4683 contains a CRC code based on the transmitted data.

The receiving 4683 or store controller calculates the CRC code using the received data. If the CRC code matches the CRC code in the received data, the message is acknowledged to the sender as good. If the CRC code **does not** match, no acknowledgement is sent. This results in the message being retransmitted by the originator.

- The store controller records an entry in the System Log when the number of messages received from a 4683 with CRC data errors (CRC mismatch), exceeds 1% of the total number of messages received from the 4683.
The System Log entry "System message W000, B4/S008(or S009)/E017", indicates that 1% of the messages received from 4683 xxx contained CRC data errors (CRC mismatch).
- The store controller records an entry in the System Log when the number of messages requiring retransmission to a 4683 exceeds 1% of the total number of messages transmitted to the 4683.
The System Log entry "System message W000, B4/S008(or S009)/E018", indicates that 1% of the messages transmitted to 4683 xxx were not acknowledged and were retransmitted.

A.6.8 Store Loop Error Conditions and Error Messages

It is important to understand the terms down-loop and up-loop when dealing with store loop failures. These terms are defined as the position of a 4683 or store controller in relation to the direction of data flow on the store loop.

1. The store controller transmits data to the first 4683 down-loop on the store loop.
2. This 4683 receives the loop data, accepts or adds data, and passes the data on to the next 4683 down-loop from its own position on the store loop.
3. This continues with each 4683 receiving data from the 4683 immediately up-loop from its position on the store loop and passing the data to the next 4683 down-loop.
4. The last 4683 down-loop passes the data back to the store controller.

A 4683 is offline from the store controller.

A 4683 is offline when it is not receiving store loop polls or responses to messages. Many conditions can cause a 4683 to be offline. These conditions can exist in the 4683, in the store controller, or in the store loop wiring. When a 4683 is offline, the 4683 keyboard OFFLINE light comes ON. When the OFFLINE light is ON, the operator should press **S1**, type **2**, and press **S2** at the 4683 keyboard to display the message and further define the reason for the offline condition.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.

SYSTEM MESSAGE AVAILABLE is displayed at the store controller.

A system message is waiting to be displayed. Press **System Request** and then type **M** at the store controller keyboard to display the message.

Note: Point-of-sale terminals that have not yet been loaded with the Terminal Operating System are not able to provide the operator support necessary to display the message that defines the offline condition. A 4683 that is in the process of receiving an Initial Program Load (IPL) across the store loop displays progress messages U001 thru U008.

U003 - A 4683 that is displaying message U003 is not receiving store loop polls from the store controller. When a 4683 is not receiving store loop polls, it transmits a beacon message containing its terminal number. If a 4683 has not been configured with a terminal number, it cannot beacon.

A 4683 displays message U003 whether it has or has **not** been configured with a terminal number. The external indications at the 4683 are the same for either situation until the 4683 has completed the IPL. If the 4683 is beaconing, the 4683s down-loop and the store controller indicates this in the normal manner.

U003 can be caused by a failure in the store controller or an open store loop up-loop from the 4683 displaying U003.

U004 - A 4683 that is displaying message U004 has received store loop polls and has sent a load request message to the store controller, but has not yet received a response to the load request.

U004 can be caused by no response from the store controller or an open store loop down-loop from the 4683 displaying U004.

U005 - A 4683 that is displaying message U005 has received a response from the store controller and is in the process of receiving a program load.

Note: The position of a 4683 on the store loop determines which offline condition exists at that 4683. The location of the loop problem in the store loop determines which error messages are displayed at the store controller.

If a failure is detected when a 4683 runs its store loop adapter wrap test:

- The 4683 removes itself from the store loop and goes offline.
- The keyboard MESSAGE PENDING light comes ON.
- Message W002 is placed in the message queue.

If a failure is detected when the store controller runs its store loop adapter wrap test:

- The store controller removes itself from the store loop.
- Message W763 is logged in the System Message Log.
- The 4683s go offline and issue a backup request.

Note: A 4683 is considered active if it is attached to the store loop, has its power ON, and is configured with a terminal number entered in its Totals Retention.

If the 4683s are offline because of an open store loop:

Down-loop from the open store loop condition:

- The first active 4683 down-loop beacons.
- Message W005 is placed in the message queue of the beaconing 4683.
- The active 4683s down-loop from the beaconing 4683 indicate that a 4683 up-loop is beaconing and they pass the beacon on to the next 4683.
- Message W007 is placed in the message queue of each active 4683 down-loop from the beaconing 4683.
- The store controller receives the beacon from the beaconing 4683 and log message W760 in the System Message Log.

Up-loop from the open store loop condition:

- The 4683s do not beacon because they receive store loop polls.
- They do not see the beacon from the beaconing 4683.
- If a 4683 responds to a poll with a message, the message does not reach the store controller.
- Eventually the 4683 goes offline because the store controller failed to respond to the message.
- Message W004 is placed in the message queue of each active 4683 up-loop from an open store loop condition.

If no active 4683s are down-loop from an open store loop condition:

- The store controller does not receive the expected end-of-poll.
- The store controller does not receive a beacon.
- An end-of-poll timeout occurs at the store controller.
- Message W764 is logged in the System Message Log at the store controller.

If a 4683 detects an open store loop condition and the 4683 has not been configured with a terminal number:

- The 4683 cannot beacon because it does not have a terminal number.
- Message W001 is placed in the 4683 message queue.
- The active 4683s down-loop from this 4683, if any, beacon.
 - If there are no active 4683s down-loop from this 4683:
 - An end-of-poll timeout occurs at the store controller.
 - Message W764 is logged in the System Message Log at the store controller.

If a 4683 beacons, and then receives its own beacon:

- The 4683 stops beaconing and transmit a backup request message to notify all active 4683s on the store loop that the store loop is intact but that the store controller is down.
- Message W003 is placed in the message queue of all active 4683s on the store loop.

If an open store loop is detected at the store controller:

- Message W760 or message W764 is logged at the store controller.
- After the open store loop is resolved, message W761 is logged at the store controller.

If a 4683 fails to respond to a message from the store controller after a retry attempt, the store controller logs message W762 in the System Message Log.

A.6.9 Store Loop Error Recovery Procedures

Chapter 6, "Problem Determination Procedures." contains detailed step-by-step problem determination procedures (PDPs) for the store loop. They are intended for on-site store loop problem determination.

The following is intended to provide a better general understanding of the store loop for personnel responsible for resolving store loop problems.

Each store must maintain a "Terminal Identification Chart" or a store loop layout chart. The chart must indicate:

- The physical location of the 4683s on the loop
- The terminal number of each 4683 on the loop
- The physical order of the terminal numbers on the loop
- The direction of loop data flow on the loop.

The chart can be a picture of the store loop showing the store controller at the top of a circle and each 4683 placed around the circle. The loop must be closed with the last 4683 down-loop connected to the store controller.

Use an arrow to show the direction of data flow from the store controller, through each 4683, and back to the store controller. Starting at the store controller, list the terminal number of the first point-of-sale terminal down-loop from the store controller. Continue until you complete the list with the last 4683 down-loop from the store controller (the 4683 with its down-loop segment going directly back to the store controller).

The first step in isolating any store loop failure is to verify that the distance between active 4683s on the store loop does not exceed the maximum of 1220 m (4000 ft.). If too many 4683s are powered-**OFF** the distance can exceed the maximum. Exceeding 1220 m (4000 ft.) can result in permanent or intermittent store loop failures. If the distance does not exceed 1220 m (4000 ft.), proceed with the following problem determination procedures.

Subtopics

A.6.9.1 When the Beaconsing 4683 is the First 4683 on the Store Loop

A.6.9.2 When the Beaconsing 4683 is not the First 4683 on the Store Loop

A.6.9.3 When the Store Controller Receives End-of-Poll Timeouts

A.6.9.1 When the Beaconsing 4683 is the First 4683 on the Store Loop

Note: This information is for reference only. To resolve the problem described here, see message W005 or message W760.

1. Message W005 is displayed at the 4683 and message W760 is displayed at the store controller.
2. Disconnect the first 4683 from the store loop. If normal operation resumes, leave this 4683 off the store loop and have it repaired.
3. If removing the first 4683 from the store loop does not result in the resumption of normal operation, reconnect the 4683 to the store loop.
4. Now disconnect the store controller from the store loop. If the result of this action is an OFFLINE message W003 at the 4683, the failure is in the store controller. Normal operation cannot be re-established unless a backup store controller takes over the store loop or the primary store controller is repaired.
5. If removing the store controller does not result in the condition described in the previous step, reconnect the store controller to the store loop. The problem is in the store loop wiring segment between the store controller and the first 4683 on the store loop. This wiring must be bypassed or repaired to resume normal operation.

A.6.9.2 When the Beaconsing 4683 is not the First 4683 on the Store Loop

Note: This information is for reference only. To resolve the problem described here, see message W005 or message W760.

1. Message W005 is displayed at the 4683 and W760 is displayed at the store controller.
2. Disconnect the beaconsing 4683 from the store loop. If this action results in normal store loop operation, the beaconsing 4683 is failing. It should be left off the store loop until it is repaired.
3. If removing the beaconsing 4683 does not resolve the store loop problem, reconnect this 4683 to the store loop and disconnect the first active 4683 up-loop from the beaconsing 4683 from the store loop. If normal store loop operation resumes with the 4683 removed, the 4683 is failing. It should be left off the store loop until it is repaired.
4. If removal of the 4683 up-loop from the beaconsing 4683 does not resolve the problem, the failure is in the store loop wiring segment between these two 4683s. Normal operation cannot resume until this segment is bypassed or repaired.

A.6.9.3 When the Store Controller Receives End-of-Poll Timeouts

Note: This information is for reference only. To resolve the problem described here, see message W764.

1. Message W764 is displayed at the store controller.
2. Disconnect the last 4683 from the store loop. If normal operation resumes, leave this failing 4683 off the store loop until it is repaired.
3. If removing the last 4683 does not resolve the situation, reconnect this 4683 to the store loop and disconnect the store controller. If the result of this step is an offline message W003 at the 4683s, the store controller is failing. Normal operation cannot be re-established unless a backup store controller takes over the store loop.
4. If the previous step does not show that the store controller is failing, reconnect the store controller to the store loop. The problem is in the store loop wiring segment between the store controller and the last 4683 on the store loop. Normal operation cannot resume until this segment is bypassed or repaired.

A.7 Point of Sale Terminal

Use this section to find additional information about the point-of-sale terminal.

Subtopics

- A.7.1 Device IDs for the Point of Sale Terminal
- A.7.2 Displaying Point of Sale Terminal Configuration Using STC
- A.7.3 Displaying a Point of Sale Terminal Message
- A.7.4 Displaying the Terminal Number
- A.7.5 Changing the Terminal Number
- A.7.6 Entering the Terminal Number
- A.7.7 Resetting the Terminal Number
- A.7.8 Initial Program Load (IPL)
- A.7.9 Power-On Self Test for the Point of Sale Terminal
- A.7.10 Verification Tests for the Point of Sale Terminal

A.7.1 Device IDs for the Point of Sale Terminal

The following is a list of the device IDs. The device IDs are used by Set Terminal Characteristics (STC) to identify devices that are configured for or attached to a point-of-sale terminal. The device ID is also required when requesting a trace report of the device channel for a unique device.

Subtopics

A.7.1.1 Device IDs by ID Number

A.7.1.2 Device IDs by Device Type

A.7.1.1 Device IDs by ID Number

Table A-1. Device IDs by ID Number		
ID	Device	Socket Number
X'10'	Keyboard, 50-key or Combined Keyboard/Display	5A
X'11'	Keyboard, 50-key or Combined Keyboard/Display	5B
X'12'	Keyboard, Alphanumeric	5A
X'13'	Keyboard, Alphanumeric	5B
X'16'	Keyboard, Matrix	5A
X'17'	Keyboard, Matrix	5B
X'1A'	Keyboard, ANPOS	5A
X'1B'	Keyboard, ANPOS	5B
X'20'	Display, Alphanumeric	4A
X'21'	Display, Alphanumeric	4B
X'22'	Display, Operator or Combined Keyboard/Display	4A (5A if Combined Keyboard/Display)
X'23'	Display, Operator or Combined Keyboard/Display	4B (5B if Combined Keyboard/Display)
X'26'	Display, Shopper	4A
X'27'	Display, Shopper	4B
X'28'	Display, Video	81 on the Feature Adapter in location 2A
X'29'	Display, Video	81 on the Feature Adapter in location 2B
X'30'	Printer Model 1 or 2	7
X'34'	Printer Model 3	7
X'36'	Printer Model 2A Fiscal	7
X'38'	Printer Model 3A Fiscal	7
X'40'	MSR (Single-Track)	6 on the keyboard attached to Socket 5A
X'41'	MSR (Single-Track)	6 on the keyboard attached to Socket 5B
X'44'	1520 Hand-Held Scanner Model A01 Optical Character Reader (OCR)	21 on the Feature Adapter in location 2A 21 on the Feature Adapter in location 2A
X'45'	1520 Hand-Held Scanner Model A01 Optical Character Reader (OCR)	21 on the Feature Adapter in location 2B 21 on the Feature Adapter in location 2B
X'46'	MSR (Dual-Track) ANPOS or Combined Keyboard/Display (Low-Profile)	5A
X'47'	MSR (Dual-Track)	5B
X'4A'	Point of Sale Scanner	17
X'4B'	1520 Hand-Held Scanner Model A02 Hand-Held Bar Code Reader	5B 9B
X'4C'	Magnetic Wand	26 on the Feature

4680 Store System and 4683/4684 Point of Sale Terminal: Problem Determination Guide
 Device IDs by ID Number

		Adapter in location 2A
X'4D'	Magnetic Wand	26 on the Feature Adapter in location 2B
X'50'	Totals Retention	Internal to the base unit
X'54'	Cash Drawer	3A
X'54'	Cash Drawer	3B
X'60'	Coin Dispenser	29 on the Feature Adapter in location 2A
X'61'	Coin Dispenser	29 on the Feature Adapter in location 2B
X'64'	RS232 Device	25 on the Feature Adapter in location 2A
X'65'	RS232 Device	25 on the Feature Adapter in location 2B
X'68'	RS232 Device	23 on the Feature Adapter in location 2A
X'69'	RS232 Device	23 on the Feature Adapter in location 2B
X'6A'	Scale (Feature Expansion B or C only)	21 on the Feature Adapter in location 2A
X'6B'	Scale (Feature Expansion B or C only)	21 on the Feature Adapter in location 2B
X'6E'	Scale	17

A.7.1.2 Device IDs by Device Type

Table A-2. Device IDs by Device Type		
Device	Socket Number	ID
Cash Drawer	3A	X'54'
	3B	X'54'
Coin Dispenser	29 on the Feature Adapter in location 2A	X'60'
	29 on the Feature Adapter in location 2B	X'61'
Display, Alphanumeric	4A	X'20'
	4B	X'21'
Display, Operator or Combined Keyboard/Display	4A (5A if Combined Keyboard/Display)	X'22'
	4B (5B if Combined Keyboard/Display)	X'23'
Display, Shopper	4A	X'26'
	4B	X'27'
Display, Video	81 on the Feature Adapter in location 2A	X'28'
	81 on the Feature Adapter in location 2B	X'29'
Hand-Held Bar Code Reader	9B	X'4B'
Keyboard, 50-key or Combined Keyboard/Display	5A	X'10'
	5B	X'11'
Keyboard, Alphanumeric	5A	X'12'
	5B	X'13'
Keyboard, ANPOS	5A	X'1A'
	5B	X'1B'
Keyboard, Matrix	5A	X'16'
	5B	X'17'
MSR (Single-Track)	6 on the keyboard attached to Socket 5A	X'40'
	6 on the keyboard attached to Socket 5B	X'41'
MSR (Dual-Track)	5A (ANPOS or Combined Keyboard/Display)	X'46'
	5B	X'47'
Magnetic Wand	26 on the Feature Adapter in location 2A	X'4C'
	26 on the Feature Adapter in location 2B	X'4D'
Optical Character Reader (OCR)	21 on the Feature Adapter in location 2A	X'44'
	21 on the Feature Adapter in location 2B	X'45'
Point of Sale Scanner	17	X'4A'
Printer Model 1 or 2	7	X'30'
Printer Model 3	7	X'34'

4680 Store System and 4683/4684 Point of Sale Terminal: Problem Determination Guide
 Device IDs by Device Type

Printer Model 2A Fiscal	7	X'36'
Printer Model 3A Fiscal	7	X'38'
RS232 Device	25 on the Feature Adapter in location 2A	X'64'
	25 on the Feature Adapter in location 2B	X'65'
	23 on the Feature Adapter in location 2A	X'68'
	23 on the Feature Adapter in location 2B	X'69'
Scale	21 on the Feature Adapter in location 2A	X'6A'
	21 on the Feature Adapter in location 2B	X'6B'
	17 (Shares Socket with Point of Sale Scanner)	X'6E'
Totals Retention	Internal to the base unit.	X'50'
1520 Hand-Held Scanner Model A01	21 on the Feature Adapter in location 2A	X'44'
	21 on the Feature Adapter in location 2B	X'45'
1520 Hand-Held Scanner Model A02	5B	X'4B'

A.7.2 Displaying Point of Sale Terminal Configuration Using STC

STC = Set Terminal Characteristics. For a 4683-xx2, see "Displaying 4683-xx2 Configuration" in topic A.7.2.2.

Subtopics

A.7.2.1 Displaying 4683-xx1 Configuration

A.7.2.2 Displaying 4683-xx2 Configuration

A.7.2.1 Displaying 4683-xx1 Configuration

1. Press and hold the dump switch on the 4683-xx1.
2. Switch **POWER OFF** and then release the dump switch.
3. Wait 5 seconds, and switch power ON.
4. Wait for message U005 to display.
5. Press and release the dump switch.

This causes the point-of-sale terminal to ignore its current terminal number and prompt for a new terminal number by displaying message Z001.

6. Wait for message Z001 to display.

If you have more than one display attached to the point-of-sale terminal, the Zxxx messages are displayed on the system display. See "Entering Terminal Numbers" in the *IBM 4680 Store System: User's Guide* for a description of the default system display.

7. Enter the current terminal number (lxxx where xxx = a number from 001 to 999) and then press **S2**. **Do not enter a new terminal number.**

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.

8. When message Z010 displays, press **S2**.

Messages in the range of Z014 through Z024 are displayed. The text associated with these messages indicates the socket number and whether a device is configured or attached to that socket. For a list of point-of-sale terminal device IDs, see "Device IDs for the Point of Sale Terminal" in topic A.7.1.

9. Press **S2** after each message is displayed.

- If a socket has no device configured or attached, its message is not displayed.
- An error message may be displayed when you IPL the point-of-sale terminal if a socket has a device configured but not attached.

10. When message Z025 displays, press **S2**.

11. When message Z012 displays, this indicates the operation is complete.

- If an error was discovered:
 - The configuration must be corrected at the store controller. See the *IBM 4680 Store System: User's Guide* to correct the configuration.
-- or --
 - The correct device must be connected to the correct socket at the point-of-sale terminal.

12. Press **S2**.

13. If Customer Setup (CSU) has **never** been run, it is automatically loaded and started.

14. If CSU has been run, the initial point-of-sale terminal application program is loaded.

A.7.2.2 Displaying 4683-xx2 Configuration

Note: This procedure assumes that the 4683-xx2 is up and running at the time the request is made. When "Displaying 4683-xx1 Configuration" in topic A.7.2.1 is performed, the 4683-xx2 displays message Z001.

1. Press **S1**, type **71**, and press **S2**.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = **S1** and **Enter** = **S2**.

2. Wait approximately one minute for message Z002 to display.

If you have more than one display attached to the point-of-sale terminal, the Zxxx messages display on the system display. See "Entering Terminal Numbers" in the *IBM 4680 Store System: User's Guide* for a description of the default system display.

3. Key the current terminal number (lxxx where xxx = a number from 001 to 999) and then press **S2**. **Do not enter a new terminal number.**

If the terminal number you entered in does not equal the current 4683-xx2 terminal number, message Z004 displays. If this message is displayed, ensure that you are entering the correct terminal number.

4. When message Z010 displays, press **S2**.

Messages in the range of Z014 through Z024 are displayed. The text associated with these messages indicates the socket number and whether a device is configured or attached to that socket. For a list of point-of-sale terminal device IDs, see "Device IDs for the Point of Sale Terminal" in topic A.7.1.

5. Press **S2** after each message is displayed.

- If a socket has no device configured or attached, its message is not displayed.
- An error message may be displayed when you IPL the point-of-sale terminal if a socket has a device configured but not attached.

6. When message Z025 displays, press **S2**.

7. When message Z012 displays, this indicates the operation is complete.

- If an error was discovered:
 - The configuration must be corrected at the store controller. See the *IBM 4680 Store System: User's Guide* to correct the configuration.
-- or --
 - The correct device must be connected to the correct socket at the point-of-sale terminal.

8. Press **S2**.

9. If customer setup (CSU) has never been run, it is automatically loaded and started.

10. If CSU has been run, the initial point-of-sale terminal application program is loaded.

A.7.3 *Displaying a Point of Sale Terminal Message*

The lights on the keyboard give you status information about the system. When one of these lights comes on, the system is sending a message to the point-of-sale terminal system display. The types of messages are:

- A Wait message. See "Displaying a Wait Message" in topic A.7.3.1.
- An Offline message. See "Displaying an Offline Message" in topic A.7.3.2.
- A System message. See "Displaying a System Message" in topic A.7.3.3.

PICTURE 227

Figure A-9. 50-key Keyboard Lights

Subtopics

- A.7.3.1 Displaying a Wait Message
- A.7.3.2 Displaying an Offline Message
- A.7.3.3 Displaying a System Message
- A.7.3.4 Displaying a System Message (Message Pending Light is Off)
- A.7.3.5 Displaying a System Message (Message Pending Light is On)

A.7.3.1 Displaying a Wait Message

When the keyboard Wait light comes on, the application running on the point-of-sale terminal is waiting for some action to be completed (for example, waiting for a program to load). Only system function requests are accepted from the keyboard. A message related to the wait condition can be displayed.

- If you display the message when the WAIT light is ON, the message indicates the reason for the current wait condition.
- If you display the message when the WAIT light is OFF, the message indicates the reason for a previous wait condition.

1. Press **S1**, type **1**, and press **S2**.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.

2. The WAIT message appears on the point-of-sale terminal system display.

Example of a Wait message:

```
+-----+
|      |
| W321 |
|      |
| WAIT |
|      |
|      |
+-----+
```

3. Find the message in Chapter 2, "Messages" or in the *IBM 4680 Store System: Messages Guide*.
4. To clear the message, press **Clear**.

A.7.3.2 Displaying an Offline Message

When the keyboard Offline light comes on, normal system communications have been interrupted and the point-of-sale terminal is offline (not communicating with the store controller). You can display a message related to the offline condition by using a system function request.

- If you display the message when the OFFLINE light is ON, the message indicates the reason for the current offline condition.
- If you display the message when the OFFLINE light is OFF, the message indicates the reason for a previous offline condition.

1. Press **S1**, type **2**, and press **S2**.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.

2. The OFFLINE message appears on the point-of-sale terminal system display.

Example of an Offline message:

```
+-----+
|      |
| W004 CONTROLLER DOES |
| NOT RESPOND          |
|      |
+-----+
```

3. Find the message in Chapter 2, "Messages" or in the *IBM 4680 Store System: Messages Guide*.
4. To clear the message, press **Clear**.

A.7.3.3 *Displaying a System Message*

The point-of-sale terminal receives numerous messages from the system such as:

- Prompting messages
- Information messages
- Status messages.

The point-of-sale terminal keeps the last five system messages it received. When you display the system messages, the most current message displays first and the least current message displays last. The least current message is deleted if a new message increases the number of messages beyond five. You can display these messages when:

- The MESSAGE PENDING light is OFF. See "Displaying a System Message (Message Pending Light is Off)" in topic A.7.3.4.
- The MESSAGE PENDING light is ON. See "Displaying a System Message (Message Pending Light is On)" in topic A.7.3.5.

A.7.3.4 *Displaying a System Message (Message Pending Light is Off)*

If the MESSAGE PENDING light is OFF when you display a message, the message you see is the last message queued. You can continue displaying the messages by repeating the keying sequence until message W204 is displayed. W204 indicates that you have seen all the queued messages.

If you continue displaying messages beyond this point, the display sequence starts over. The most current message is displayed again, and then the remainder of the queued messages are displayed again.

1. Press **S1**, type **3**, and press **S2**.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.

2. The system message appears on the point-of-sale terminal system display.

Example of a system message:

```
+-----+  
|      |  
| W008 PROGRAM IS      |  
| BEING LOADED        |  
|      |  
+-----+
```

3. Find the message in Chapter 2, "Messages" or in the *IBM 4680 Store System: Messages Guide*.
4. To clear the message, press **Clear**.

A.7.3.5 *Displaying a System Message (Message Pending Light is On)*

When the MESSAGE PENDING light comes ON, the point-of-sale terminal has received a message that you have not seen. The light stays ON until you display the message.

If you display the message when the light is ON, you see the message that caused the MESSAGE PENDING light to come ON. This is the most current message. More messages can be waiting to be displayed. You can display these messages by repeating the keying sequence until message W204 is displayed. This indicates that you have seen all the queued messages.

If you continue displaying messages beyond this point the display sequence starts over. The most current message is displayed again, and then the remainder of the queued messages are displayed again.

1. Press **S1**, type **3**, and press **S2**.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.

2. The system message appears on the point-of-sale terminal system display.

Example of a system message:

```
+-----+
|       |
| W008  |
| PROGRAM IS |
| BEING LOADED |
|       |
+-----+
```

3. Find the message in Chapter 2, "Messages" or in the *IBM 4680 Store System: Messages Guide*.
4. To clear the message, press **Clear**.

A.7.4 Displaying the Terminal Number

The first time a point-of-sale terminal is powered-ON, a terminal number is not stored in its Totals Retention.

The initial point-of-sale terminal application program load uses a default terminal number. During set terminal characteristics (STC), the terminal number is entered by the operator and stored in totals retention storage. This terminal number is permanently assigned unless it is reset or changed by STC.

To display the terminal number:

1. Press **S1**, type **7**, and press **S2**.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = **S1** and **Enter** = **S2**.

2. Message W012 (containing the terminal number) appears on the system display.

To exit:

- If you are in Test Mode, press **S2**.
- If you are **not** in Test Mode, press **Clear**.

A.7.5 Changing the Terminal Number

After the terminal number has been entered, you may want to change it.

Note: You can display the current terminal number by pressing **S1**, typing **7**, and pressing **S2**. Message W012 (containing the terminal number) appears on the system display. Press **Clear** to exit.

1. Press **S1**, type **71**, and press **S2**.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = **S1** and **Enter** = **S2**.

2. Wait approximately one minute for message Z002 to display.

The Zxxx messages appear on the system display. For a description of the default system display, see "Entering Terminal Numbers" in the *IBM 4680 Store System: User's Guide*.

3. Enter the new terminal number (1xxx where xxx = a number from 001 to 999) and then press **S2**.

4. If this is a 4683-xx1 or 4684, continue at step 5.

If this is a 4683-xx2, message Z004 displays. Switch **POWER OFF** and continue at "Entering the Terminal Number" in topic A.7.6.

5. When message Z010 displays, press **S2**.

6. Watch the display for a series of messages.

7. Press **S2** to view each message. When message Z012 displays, the operation is complete

8. Press **S2**. The Terminal Operating System loads if this is a 4683-xx1 or 4684.

9. If Customer Setup (CSU) has **never** been run, it is automatically loaded and started. If it has been run, the initial point-of-sale terminal application program is loaded.

A.7.6 Entering the Terminal Number

The terminal number must be entered before the point-of-sale terminal can operate on the store loop. If the number has never been entered, message Z001 displays after the power-on self test is complete.

This procedure is used when the terminal number has never been entered.

1. Switch power ON.
2. Wait for message Z001 to display.

The Zxxx messages appear on the system display. For a description of the default system display, see "Entering Terminal Numbers" in the *IBM 4680 Store System: User's Guide*.

3. Enter the terminal number (lxxx where xxx = a number from 001 to 999) and then press **S2**.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.

If this is a 4683-xx2, the terminal number must be specified in the configuration record of the partner 4683-xx1 or 4684.

4. When message Z010 displays, press **S2**.
5. Watch the display for a series of messages.
6. Press **S2** to view each message. When message Z012 displays, the operation is complete.
7. Press **S2**. The Terminal Operating System is loaded if this is a 4683-xx1 or 4684.
8. If Customer Setup (CSU) has **never** been run, it is automatically loaded and started. If it has been run, the initial point-of-sale terminal application program is loaded.

A.7.7 *Resetting the Terminal Number*

1. Press **S1**, type **71**, and press **S2**.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = **S1** and **Enter** = **S2**.

2. Wait approximately one minute for message Z002 to display.

3. Type **1000** and then press **S2**.

4. If this is a 4683-xx1 or 4684, continue at step 5.

If this is a 4683-xx2, the terminal number is reset to 000 and message Z004 displays. Switch **POWER OFF**.

5. The terminal number is reset to 000, the display clears, the point-of-sale terminal starts the load process, and messages U001 through U007 are displayed.

- If the point-of-sale terminal is to be removed from the store loop, switch **POWER OFF** at the base unit. The terminal number remains reset to 000 until a new number is entered.
- If another terminal number is to be entered, continue at "Entering the Terminal Number" in topic A.7.6.

A.7.8 Initial Program Load (IPL)

Subtopics

A.7.8.1 Description of an IPL

A.7.8.2 Source of an IPL

A.7.8.1 Description of an IPL

An initial program load (IPL) is a group of program and data components that are loaded into the point-of-sale terminal read/write random access storage (RAM).

An IPL contains three major components:

- The System Code
- The Input/Output (I/O) Driver Code
- The Application Code.

These components are selected by the user to make the hardware perform the tasks needed by the point-of-sale terminal operator.

The system code is loaded at power-on time by code that resides in the read-only storage (ROS). The system code defines and controls the tasks requested by the application program.

The I/O driver code controls the I/O devices that are attached to the point-of-sale terminal. This code is selected by the user. A permanent record of which I/O code to load is kept in the system area of the non-volatile RAM. This code is loaded by the system code.

The application code establishes the procedures that the operator uses to do a job. The application program components do this by assigning tasks to the hardware and to the operator in an ordered structure. These components also supervise the interaction and information exchange between the operator tasks and the hardware tasks. This code is also loaded by the system code.

The point-of-sale terminal needs the system, I/O driver, and application code immediately after the power-on self tests have run successfully. If storage retention was enabled (4683-xx1 only), the storage contents are saved when the power is switched off. Therefore, RAM is kept active by either the battery or the wall power and no IPL is needed. If storage retention was not enabled, the point-of-sale terminal needs an IPL when the power is switched on.

A.7.8.2 Source of an IPL

All system, I/O driver, and application components reside in the store controller. When the point-of-sale terminal needs an IPL, it requests one through the store loop to the store controller. The store controller then transmits the system code to the point-of-sale terminal.

In an IBM 4680 Store System, the 4683-xx2 gets its IPL from its partner 4683-xx1 or 4684. For other applications, the 4683-xx2 gets its IPL from its controlling device.

A.7.9 Power-On Self Test for the Point of Sale Terminal

The point-of-sale terminals have tests that run automatically each time power is switched ON at the base unit.

Note: When power is switched **OFF** at the 4683-xx1 or 4684, operation is halted at an attached 4683-xx2.

These tests are located in the point-of-sale terminal read-only-storage (ROS) and they test the following:

- Cash drawer attachment logic
- Device channel
- Display logic
- Keyboard logic
- Processor logic (4683-xx1 or 4684 only)
- Read Only Storage [ROS] (4683-xx1 or 4684 only)
- Storage (4683-xx1 or 4684 only)
- Store loop channel (4683-xx1 or 4684 only)
- Timer (4683-xx1 or 4684 only)
- Totals storage.

A.7.10 Verification Tests for the Point of Sale Terminal

To run these tests, a 4683-xx1 must be connected to the store loop. If you have a 4683-xx2, it must be connected to an operating 4683-xx1 or 4684. Power must be ON.

The Point of Sale Terminal Verification Tests verify correct operation of the Feature Expansion cards and the devices attached to the terminal. The progress and results of these tests is shown as a series of messages on the terminal display.

Tests are run for the Feature Expansion cards and devices that are configured for the point-of-sale terminal.

Tests are bypassed for Feature Expansion cards and devices that are **not** configured for the terminal.

For information about how to run the tests, see "TEST 4230: Point of Sale Terminal Verification (4683/4684)" in topic 4.23.

B.0 Appendix B. Collecting Information About a Problem

This appendix includes the IBM 4680 Store System procedures for collecting and reporting system hardware information. The store system is an IBM 4680 Store System when the IBM 4680 Operating System is running in the store controller. This information can then be used to analyze problems.

Subtopics

- B.1 Requesting a Store Controller Storage Dump
- B.2 Requesting a 4683 Storage Dump
- B.3 Requesting a Storage Dump Report
- B.4 Requesting a System Log Report
- B.5 Creating a 4680 Problem Analysis Diskette
- B.6 Requesting Store Controller Status
- B.7 Problem Data Collection Form

B.1 Requesting a Store Controller Storage Dump

Subtopics

- B.1.1 IBM Personal Computer AT or PS/2 Storage Dump
- B.1.2 IBM 4684 Point of Sale Terminal Storage Dump

B.1.1 IBM Personal Computer AT or PS/2 Storage Dump

Warning: This procedure stops store operations. The storage dump occurs and the store controller IPLs.

1. Press a dump switch on the Personal Computer AT or PS/2. See Figure B-1.

Message W507 displays.

If two Store Loop Adapters are installed, you can press either dump switch. They both do the same thing.

2. Wait for the dump to finish (approximately two minutes).

Message W507 disappears and the store controller IPLs.

3. When the dump is complete, notify the store programmer.

Note: Figure B-1 shows the Store Loop Adapters installed in the Personal Computer AT. The dump switch is in the same location on the Store Loop Adapters in the PS/2. The Store Loop Adapters can be installed in any expansion slot in the Personal Computer AT or PS/2. This figure shows them installed in slots 1 and 2.

PICTURE 228

Figure B-1. Location of Store Controller Dump Switch

B.1.2 IBM 4684 Point of Sale Terminal Storage Dump

Warning: This procedure stops store operations. The storage dump occurs and the 4684 IPLs.

1. Press the dump switch shown in Figure B-2.

Message W507 displays.

Figure B-1 in topic B.1.1 shows the Store Loop Adapters installed in the Personal Computer AT. The dump switch is in the same location on the Store Loop Adapter(s) in the 4684 Point of Sale Terminal.

2. Wait for the dump to finish (approximately two minutes).

Message W507 disappears and the 4684 IPLs.

3. When the dump is complete, notify the store programmer.

Note: On a 4684 using the 4680 Operating System, both the point-of-sale terminal dump and the store controller dump occur at the same time. Also, both dumps are entered in the store controller dump file.

PICTURE 229

Figure B-2. Location of 4684 Dump Switch

B.2 Requesting a 4683 Storage Dump

1. Press the dump switch on the 4683-xx1. See Figure B-3.

If this is a 4683-xx2, you must press the dump switch on its partner 4683-xx1 or 4684.

2. Wait for the dump to complete (approximately 10 minutes).

While the dump is in progress, U008 displays.
When the dump is complete, U008 disappears and the 4683 IPLs.

3. When the dump is complete, notify the store programmer.

Note: Message W052 is placed in the message queue at the store controller.

PICTURE 230

Figure B-3. Location of 4683 Dump Switch

6. On the FORMAT DUMP DATA screen, enter 1 or 2 for the dump you want to format and then enter 1 (display) as the output destination.
Note: To prepare the Dump Report to copy to a Problem Analysis Diskette, enter 3 File for destination.

```

+-----+
|
|                                     FORMAT DUMP DATA
|
|      Select one of the following:
|
|      1   Terminal dump
|      2   Controller dump
|
|      Type your selection number _
|
|      SELECT AN OUTPUT DESTINATION FROM THE FOLLOWING:
|
|      1 = Display (default)   2 = Printer   3 = File
|
|      Type your selection number, then press ENTER _
|
|      (Message line)
|      F1HELP F2   F3QUIT F4   F5   F6   F7   F8   F9   F10
|      (Status line)
|
+-----+

```

7. Examine the terminal number (if applicable), date, time, and reason for the dump to determine if the dump file contains the dump you requested. If the dump file does not contain the dump you requested, try to recreate the problem and request the storage dump again.
8. Press **Esc** to return to the PROBLEM ANALYSIS REPORT screen.
Note: You can return to the SYSTEM MAIN MENU by pressing **F3** after pressing **Esc**.
9. If you plan to create a PROBLEM ANALYSIS DISKETTE, continue at step 5 of "Requesting a System Log Report" in topic B.4. On the SYSTEM LOG REPORT screen, enter 7 (All of the Above Reports).

6. On the SYSTEM LOG REPORT screen, enter the number correspond to the System Log section you want. For example, 1 is section B1, 2 is B2, and so forth.

```

                                     SYSTEM LOG REPORT

Select one of the following:

1  Controller Hardware Errors
2  Terminal Hardware Errors
3  Terminal Events
4  Controller Events
5  System Events
6  Application Events
7  All of the above reports

Type your selection number, then press ENTER _

(Message line)
F1HELP F2  F3QUIT F4  F5  F6  F7  F8  F9  F10
(Status line)

```

7. As the next screens appear, make selections to do the tasks you want. To get the System Log Report ready to copy to a 4680 Problem Analysis Diskette, enter 3 (File).

```

                                     SYSTEM LOG REPORT
                                     XXXXXXXXXXXXXXX LOG
Type the necessary information.

START SCAN
Date (mm/dd/yy)      01/01/86
Time (hh:mm)         00:00

STOP SCAN
Date (mm/dd/yy)      12/31/99
Time (hh:mm)         23:59

CONTROLLER ID      *
TERMINAL NUMBER    *
SOURCE NUMBER      *

DESTINATION        1      1 = Display      2 = Printer      3 = File
FORMAT MODE        1      1 = Long        2 = Short        3 = Both

When complete, press ENTER.

(Message line)
F1HELP F2  F3QUIT F4  F5  F6  F7  F8  F9  F10
(Status line)

```

Note: XXXXXXXXXXXXXXX LOG indicates the log being displayed.

8. When the display indicates that report creation is complete, press **Esc** to return to the PROBLEM ANALYSIS REPORT screen.

Note: You can return to the SYSTEM MAIN MENU by pressing F3 after pressing **Esc**.

9. If you plan to create a PROBLEM ANALYSIS DISKETTE, continue at step 5 of "Creating a 4680 Problem Analysis Diskette" in topic B.5. When the CREATE PROBLEM ANALYSIS DISKETTE screen appears, select *System Log Report* and *Terminal Dump* or *Controller Dump*.

6. Obtain a formatted diskette and insert it into the appropriate drive (A or B).
7. On the CREATE PROBLEM ANALYSIS DISKETTE screen, select the reports to be copied to the diskette. If you are going to copy a System Log Report to the 4680 Problem Analysis Diskette, you must first write the System Log Report to a file. See step 7 of "Requesting a System Log Report" in topic B.4. **This is necessary for any of the REPORTs listed on the screen.**

```
+-----+
|                                     |
|             CREATE PROBLEM ANALYSIS DISKETTE             |
|                                     |
|   Type an X by the item(s) you wish to be copied.....  |
|                                     |
|             MODIFICATION   STATUS                               |
|             DATE                                     |
|                                     |
|   SYSTEM LOG REPORT                                       |
|   TERMINAL DUMP                                           |
|   CONTROLLER DUMP                                         |
|   SYSTEM TRACE REPORT                                     |
|   PERFORMANCE REPORT                                     |
|   MODULE LEVEL REPORT                                     |
|                                     |
|   Type the desired diskette selection:                   |
|                                     |
|   DESTINATION   1   1 = DISKETTE DRIVE A                 |
|                                     |
|                                     |
|   Insert a formatted diskette into the selected drive.   |
|   To continue, press ENTER.                              |
|                                     |
|   (Message line)                                         |
|   F1HELP F2   F3QUIT F4   F5   F6   F7   F8   F9   F10  |
|   (Status line)                                         |
|                                     |
+-----+
```

8. When the display indicates that diskette creation is complete, press **F3** twice to return to the SYSTEM MAIN MENU.
9. Remove the diskette from the drive, label it, and give it to the person responsible for 4680 Problem Analysis Diskettes (Help Desk personnel, Store Programmer, or the IBM Support Center for Software Assistance).

This list describes the items on CONTROLLER STATUS Page 1 of 3.

ITEM ON PAGE 1 of 3 INDICATES

xx ID of the store controller

Type - Configured or Acting Master
File Server
Alternate Master
Alternate File Server

Loop 1 or 2 - Configured Store Loop Control
Backup Store Loop

Loop 1 or 2 - Status Controlling Loop
Backup Allowed
Backup Prevented
Providing Backup
Receiving Backup

System Trace - Active
Inactive

Performance Monitor - Active
Inactive

Controller RAM disk - Active
Inactive

Automatic Resume - Active
Inactive

6. Press **PgDn** to view page 2.

This is an example of CONTROLLER STATUS Page 1. Examples of CONTROLLER STATUS Page 2 and CONTROLLER STATUS Page 3 are on the following page.

```
CONTROLLER STATUS                              Page 1 of 3
      ID - xx
      Time - 00:00

Type        - Configured: Master
               File Server
               Acting: Master
               File Server

Loop 1      - Configured: Store Loop Control
               Status: Controlling Loop

Loop 2      - Configured: Backup Store Loop
               Status: Standby

System Trace -              Inactive
Performance Monitor -        Inactive
Controller RAM Disk -        Inactive
Automatic Resume -           Active

Press PgDn for additional controller status.
To refresh the status, press F9.

(Message line)
F1        F2        F3QUIT F4        F5        F6        F7        F8        F9Refresh    F10
(Status line)
```

7. Press **PgDn** to view page 3.

This is an example of CONTROLLER STATUS Page 2.

```
CONTROLLER STATUS                              Page 2 of 3
      ID - xx
```

```
Time - 00:00

Master          xx          xx
File Server     xx          xx
Alternate Master xx          xx
Alternate File Server xx      xx

Active Controller Connections:
  xx  xx

Inactive Controller Connections:
  xx  xx  xx  xx  xx

Press PgUp to see the previous page of controller status.
Press PgDn for additional Controller status.
To refresh the status, press F9.

(Message line)
F1   F2   F3QUIT F4   F5   F6   F7   F8   F9Refresh
(Status line)
```

8. Press **PgUp** to view the previous pages.

This is an example of CONTROLLER STATUS Page 3.

```
-----
CONTROLLER STATUS (Loop Status)   Page 3 of 3
      ID - xx
      Time - 00:00

----- Loop 1 -----      ----- Loop 2 -----      Auto-
Node  Configured  Acting:      Configured:  Acting:      Resume
-----
xx    Control    Controlling   Backup      Standby      Y
xx    Control    Controlling   Backup      Standby      N
xx    Backup     Prevented     Backup      Standby

Note: Only active controllers (Nodes) are listed.

Press PgUp to see the previous page of controller status.
To refresh the status, press f9.

(Message line)
F1   F2   F3QUIT F4   F5   F6   F7   F8   F9Refresh
(Status line)
```

B.7 Problem Data Collection Form

Date _____ Time _____

Store Number _____ Controller Number _____ Terminal Number _____

Message (that you received) _____

Symptom (that you observed) _____

Describe the Problem _____

What were you trying to do? _____

Can you make the problem happen again? (Y=Yes, N=No)

What else was happening in the store?

Choose keywords from the list on the other side of this form.

Primary keywords: _____

Additional keywords: _____

Component ID = _____

MAKE COPIES OF THIS FORM FOR FUTURE USE

Primary Keyword	Description
AB	ABEND
ADRS	Address, Displacement, Offset
DEVS	Device Type and Model
FLDS	Fields, Label, Name
LVLS	Levels
MSG	Message
OPCS	OP Codes, I/O Command Codes, T/P OP Codes, Request Codes
OVS	Overlaid Core
PCSS	Statements, Commands, JCL, Options, Parameters, Keys, Process Names, Environments, Special Characters, Diagnose Command, Responses, Physical Unit, Logical Unit
PIDS	Component
PUBS	Pub ID, Chapter, Page, Section, Appendix, TNL
PRCS	Return Code, Status Code, Condition, Feedback

PTFS	PTF, APAR, Service Level
REGS	Registers
RIDS	Module, Macro, Csect, Exec, Access Method, Subroutine, Panel
SIG	Signal
VALUE	Value
WS	Wait State

Additional Keyword	Description
ADCS	Advanced Data Communications for Stores
ALERT	Diagnostic information generated by a system that indicates potential system problems.
APPLPGM	Store Application Program
ANDISP	Alphanumeric Display
ANKBRD	Alphanumeric Keyboard
ASM	Apply Software Maintenance
BALDUE	Balance Due
Bx/Sxxx	The information in a message that indicates the System Log section, the Source of the problem, and the Event that occurred.
CASHDRA	The cash drawer on the point-of-sale terminal.
COMPILE	A program that decodes instructions and produces a machine language program which can be executed later.
CONFIG	Configuration is the process of creating Operating System records that are used later by the system to ensure that software support exists for the hardware.
CONSOLE	The store controller keyboard and display.
CONTROL	The store controller that supports the store loop.
D/C/S	Department/Class/Stock
DEBUG	The process of correcting software errors.
DISK	The resident fixed disk drive in the store controller.
DISKETT	The resident fixed diskette drive in the store controller.
DISPLAY	The monitor on the store controller.
DRIVES	The software component that controls a device.
DSX	Distributed Systems Executive
DUMP	The contents of the memory in the point-of-sale terminal or store controller.
EAN	European Article Number
EOT	End of Transmission
HANG	Describes a problem where an attached device does not accept input or the point-of-sale terminal or store controller cannot continue to operate. For example, the keyboard does not accept input.
HOST	The system at the central-site.
INCORRO	Describes a problem that is indicated by incorrect output.
IPL	Initial Program Load
KEYBOAR	50-Key Keyboard

LAN	Local Area Network
MATRIXK	DMatrix Keyboard
OCR	Optical Character Reader
OPDISP	Operator Display
PERFM	Describes a problem that is performance related.
PLD	Power Line Disturbance
PIPE	An in-memory buffer used by programs to exchange messages.
PROCESS	A task created by the operating system each time an application begins execution. The process is defined to the system by the existence of a process descriptor record.
RAMDISK	In-memory disk files (point-of-sale terminal or store controller)
RCxxxxx/x	Return Code
READ	To acquire or interpret data from a storage device.
SCANNER	A device that reads and interprets bar codes, and generates signals corresponding to the bar code characters.
SESSION/x	The identification of a session where xx equals a value from 1 to 64. The session is established by the Operating System upon request to support communication between the store controller and one or more point-of-sale terminals.
SHOPDIS	Shopper Display
SVC	Supervisor Call
SYSFUNC	The function requested by pressing specially programmed keys the point-of-sale terminal or store controller keyboard.
TAPE	Streaming Tape Drive
TERMINA	SAny combination of 4683s or 4684s.
TRACE	collection of data exchanged between two points for a specified period of time.
UPC	Universal Product Code
USEREXI	A call to user-written code from the main application.
VIDEODI	PVideo Display
1520-A0	1520 Hand-Held Scanner Model A01
1520-A0	1520 Hand-Held Scanner Model A02
3687-2	3687 Checkout Scanner Model 2
4683-P	Model Px1
4683-1	Model 001
4683-2	Model 002
4683-A0	Model A01
4683-A0	Model A02

C.0 Appendix C. Locations

Subtopics

- C.1 Front View of the 4683
- C.2 Rear View of the 4683
- C.3 Front View of the 4684
- C.4 Rear View of the 4684
- C.5 Point of Sale Terminal Displays
- C.6 Point of Sale Terminal Keyboards
- C.7 Cable Sockets and Devices

C.1 Front View of the 4683

PICTURE 231

C.2 Rear View of the 4683

PICTURE 232

C.3 Front View of the 4684

PICTURE 233

C.4 Rear View of the 4684

PICTURE 234

C.5 Point of Sale Terminal Displays

PICTURE 235

C.6 Point of Sale Terminal Keyboards

PICTURE 236

Note: The Enhanced A/N Keyboard is used only on the 4684.

C.7 Cable Sockets and Devices

The following topics list the 4683 and 4684 cable sockets and the devices that attach to them.

Use this information to find the cable socket for a 4683 or 4684 device.

Subtopics

C.7.1 IBM 4683 Base Unit Cable Sockets and Devices

C.7.2 IBM 4684 System Unit Cable Sockets and Devices

C.7.1 IBM 4683 Base Unit Cable Sockets and Devices

Table C-1. IBM 4683 Base Unit Cable Sockets and Devices		
Socket Number	Device Name	Cable Number
1	Store Loop (4683-xx1 Only)	1
3A	Cash Drawer A	3
3B	Cash Drawer B or Remote Alarm	3
4A	Alphanumeric, Operator, or Shopper Display	4
4B	Alphanumeric, Operator, or Shopper Display	4
5A	50-Key Keyboard, Alphanumeric Keyboard, ANPOS Keyboard, Combined Keyboard/Display, or Matrix Keyboard	5
5B	50-Key Keyboard, Alphanumeric Keyboard, ANPOS Keyboard, Combined Keyboard/Display, Matrix Keyboard, Dual-Track MSR, or 1520 Hand-Held Scanner Model A02	5
6	Single-Track Magnetic Stripe Reader (MSR) Note: Socket 6 is located on the 50-key keyboard.	None
7	Printer	7
9A	Reserved	-
9B	Hand-Held Bar Code Reader	-
11	4683-xx2 TO 4683-xx1 or 4684	11
17	Checkout Scanner or Scanner/Scale	17
21	1520 Hand-Held Scanner Model A01, Optical Character Reader (OCR), or Scale	21
22	Reserved	-
23	RS-232 Device	23
25	RS-232 or Current Loop Device	25
26	Magnetic Wand	26
29	Coin Dispenser	29
81	Video Display	81
82	Video Display	82

- The Feature Expansion cards can be installed in location 2A (left) or 2B (right).
- A blank filler plate is installed to cover the opening when no card is installed.
- If you exchange a card, you must put its replacement in the same location.
- All models of the 4683 can have one or two Feature Expansion cards.

PICTURE 237

Figure C-1. IBM 4683 Base Unit Feature Expansion Cards and Back Panels.
 The back panels of the 4683-001 and 4683-A01 look the same as the 4683-P. The back panel of the 4683-A02 looks the same as the 4683-002 except the 4683-A02 has socket 9A.

C.7.2 IBM 4684 System Unit Cable Sockets and Devices

Table C-2. IBM 4684 System Unit Cable Sockets and Devices		
Socket Number	Device Name	Cable Number
1A	Baseband Network	-
1B	Baseband Network or Token-Ring	-
3A	Cash Drawer A or Remote Alarm A	3
3B	Cash Drawer B or Remote Alarm B	3
4A or 4B	Alphanumeric, Operator, or Shopper Display	4
5A	50-Key Keyboard, Alphanumeric Keyboard, ANPOS Keyboard, Combined Keyboard/Display, Matrix Keyboard, or Dual-Track MSR	5
5B	50-Key Keyboard, Alphanumeric Keyboard, ANPOS Keyboard, Combined Keyboard/Display, Matrix Keyboard, Dual-Track MSR, or 1520 Hand-Held Scanner Model A02	5
6	Single-Track Magnetic Stripe Reader (MSR) Note: Socket 6 is located on the 50-key keyboard.	None
7	Point of Sale Printer	7
9A	Reserved	-
9B	Hand-Held Bar Code Reader	-
11	4683-xx2 Point of Sale Terminal	11
17	Checkout Scanner or Scanner/Scale	17
[1]	System Unit Keyboard	-
[2]	Pointing Device (Mouse)	-
[AA]	System Unit Video Display	-
[BB]	System Unit Printer	-
[CC]	System Unit Asynchronous Communications	-
[DD]	Dump Switch	-

PICTURE 238

Figure C-2. IBM 4684 System Unit Back Panel

D.0 Appendix D. Part Numbers

Subtopics

D.1 Part Numbers of Supply Items

D.2 Part Numbers of Some Store Controller Components

D.3 Part Numbers of Point of Sale Terminal Device Cables and Power Cords

D.4 Replacement Lock Serial Numbers and Part Numbers

D.1 Part Numbers of Supply Items

Table D-1. Supply Item Part Numbers	
Description	IBM P/N
Battery Pack (4683 Storage Retention)	4783928
MSR Cleaning Card (Single-Track and Dual-Track)	6019483
MSR Dual-Track Test Card	90X9640
MSR Single-Track Test Card	4055210
Paper (One Roll) Printer Model 1, 2, or 3	432768
Paper (1 Case of 50 Rolls) Printer Model 1, 2, or 3	432767
Ribbon Cartridge (Black) Printer Model 1 or 2	4483015
Ribbon Cartridge (Purple) Printer Model 1 or 2	1040247
Ribbon Cartridge (Black) Printer Model 3	1040888
Ribbon Cartridge (Purple) Printer Model 3	1040875
Ribbon Cartridge (Black Auto-Inking) Printer Model 3	1040900

D.2 Part Numbers of Some Store Controller Components

Table D-2. Part Numbers for Some Personal Computer AT Store Controller Components	
Description	IBM P/N
Multiprotocol Communications Adapter	6236178
System Board (Store Controller Models 819, 839, 849, and 899)	61X6605
Store Loop Adapter	6347798

Note: For other store controllers, see the parts catalog for the store controller.

D.3 Part Numbers of Point of Sale Terminal Device Cables and Power Cords

Table D-3. Point of Sale Terminal Device Cables and Power Cords Part Numbers	
Description	IBM P/N
Cash Drawer (integrated), 0.5 m (20 in.)	6316831
Cash Drawer (distributed), 3.8 m (12.5 ft.)	6316832
Coin Dispenser (non-IBM), 4 m (13 ft.)	6316847
Alphanumeric Display (integrated), 0.5 m (20 in.)	6316834
Alphanumeric Display (distributed), 3.8 m (12.5 ft.)	6316835
5-Inch Monochrome Display (distributed), 4 m (13 ft.)	6316852
Keyboard (distributed), 3.8 m (12.5 ft.)	6316857
Keyboard (integrated), 0.5 m (20 in.)	6316858
Dual-Track MSR (distributed), 3.8 m (12.5 ft.)	6316857
Dual-Track MSR (integrated), 0.5 m (20 in.)	6316858
Operator Display (integrated), 0.5 m (20 in.)	6316834
Operator Display (distributed), 3.8 m (12.5 ft.)	6316835
Optical Character Reader (OCR), 4 m (13 ft.)	6316850
Printer (integrated), 0.7 m (30 in.)	6316843
Printer (distributed), 3.8 m (12.5 ft.)	6316844
RS232 or Current Loop device (16-pin connector on the terminal end and 25-pin connector on the device end), 4 m (13 ft.)	6316845
RS232 device (8-pin connector on the terminal end and 25-pin connector on the device end), 4 m (13 ft.)	6316846
Scale (non-IBM), 4 m (13 ft.)	76X0003
Special attachment (Non-IBM Cash Drawer or Remote Alarm), 4 m (13 ft.)	63X4997
Special attachment Y (Dual-Track MSR and 1520 Model A02), 0.2 m (8 in.)	25F6266
Store Loop attachment, 4 m (13 ft.)	6316840
Video Display (9-Inch Monochrome), 0.18 m (8 in.)	83X8277
Video Display (9-Inch Monochrome), 3.5 m (12 ft.)	83X8278
4683-xx1 to 4683-xx2 6 m (20 ft.)	6316837
4683-xx1 to 4683-xx2 20 m (65 ft.)	6316838
4683-xx1 to 4683-xx2 to user-provided store loop wiring, 4 m (13 ft.)	6316839
4683 Power Cord, (U. S.) 4 m (13 ft.)	6952296
4683 Power Cord, (U. S.) 2.8 m (10 ft.)	6952297
4683 Power Cord, (U. S.) 1.8 m (6 ft.)	6952298
4683 Power Cord, (U. S. Locking) 1.8 m (6 ft.)	7842128
4683 Power Cord, (U. S. Locking) 4.3 m (14 ft.)	7842130

D.4 Replacement Lock Serial Numbers and Part Numbers

This is a list of the **standard** IBM lock serial numbers and part numbers for point-of-sale terminal devices. When replacement locks are needed, order the part number that corresponds to the IBM lock serial number stamped in your lock insert. Two keys are included with each lock insert. Replacement keys are not available separately.

Table D-4. Replacement Locks Serial Numbers and Part Numbers		
IBM Lock Type	Lock Serial Number	IBM P/N
Random Lock	MM750 through MM925	4783901
Specific Lock	MM926	4783902
Specific Lock	MM927	4783903
Specific Lock	MM987	4783904
Specific Lock	MM929	4783905
Specific Lock	MM930	4783906
Specific Lock	MM931	4783907
Specific Lock	MM932	4783908
Specific Lock	MM933	4783909
Specific Lock	MM934	4783910
Specific Lock	MM935	4783911
Specific Lock	MM936	4783912
Specific Lock	MM937	4783913
Specific Lock	MM938	4783914
Specific Lock	MM939	4783915
Specific Lock	MM940	4783916
Specific Lock	MM941	4783917
Specific Lock	MM942	4783918
Specific Lock	MM943	4783919
Specific Lock	MM944	4783920
Specific Lock	MM945	4783921
Blank Insert	Blank	4783923

E.0 Appendix E. IBM 4683 Model A02 Stand-Alone Test Procedure

The 4683 Model A02 can test a limited set of attached devices when it is disconnected from its partner terminal. The cable in socket 11 can be disconnected or connected during the stand-alone tests.

Subtopics

E.1 Preparing to Run Tests

E.1 Preparing to Run Tests

Note: The only way to stop Backup Mode or Test Mode is to switch **POWER OFF** at the 4683 base unit.

1. Ensure that the 4683 Model A02 is powered ON.
2. Press the 4683 dump switch.
3. One of the following messages is displayed.

□ **If Backup Mode is enabled:**

```
+-----+
| S1=BACKUP S2=TEST |
+-----+
```

Press S2 and continue at step 4.

□ **If Backup Mode is not enabled:**

```
+-----+
| BACK UP NOT ENABLED |
| PRESS ANY KEY       |
+-----+
```

Press any key and continue at step 4.

If a different message or no message is displayed:

- The terminal is not a 4683 Model A02.
- or -
- The 4683 base unit is failing. Service the base unit. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.

4. The following message is displayed.

```
+-----+
| T0005 * TEST MODE * |
| PRESS THE 1 KEY     |
+-----+
```

5. Press the 1 key on the keyboard numeric keypad.
6. The following message is displayed and the following menu of tests is printed at the Point of Sale Printer.

```
+-----+
| T0007 ENTER A TEST  |
| NUMBER - 1 THROUGH 6 |
+-----+
```

```
*****
T0006 TERMINAL IN TEST MODE
```

TESTS AVAILABLE FOR ATTACHED DEVICES

- 1 PRINTER TEST
- 2 DISPLAY TEST
- 3 SCANNER TEST
- 4 CASH DRAWER TEST
- 5 KEYBOARD TEST
- * 6 MAGNETIC STRIPE READER

* NOTE: Single Track MSR Only

```
SELECT A TEST BY NUMBER
*****
```

7. Test Mode is ready to test one of the devices in the list. Message T0007 is displayed at the completion of each test, with the exception

of the keyboard test. To exit the keyboard test and display message T0007, press the 0 key.

Enter the number for the test you want to run and continue at:

1. "Testing the Printer" in topic E.1.1 (This test will not run on the Model 3 printer.)
2. "Testing the Displays" in topic E.1.2.
3. "Testing the Scanners" in topic E.1.3.
4. "Testing the Cash Drawers" in topic E.1.4.
5. "Testing the Keyboard" in topic E.1.5.
6. "Testing the Magnetic Stripe Reader" in topic E.1.7.

Subtopics

- E.1.1 Testing the Printer
- E.1.2 Testing the Displays
- E.1.3 Testing the Scanners
- E.1.4 Testing the Cash Drawers
- E.1.5 Testing the Keyboard
- E.1.6 Keyboard Scan Codes
- E.1.7 Testing the Magnetic Stripe Reader

E.1.2 Testing the Displays

1. When you press the **2** key (Display Test), the following sequence is shown on all displays one screen at a time.

ALPHANUMERIC, OPERATOR, AND VIDEO DISPLAYS	SHOPPER DISPLAY
IHIHIHIHIHIHIHIH HIHIHIHIHIHIHIHI	HIH8H8 8 8 8 8.8 8 IHIHI
HIHIHIHIHIHIHIHI IHIHIHIHIHIHIHIH	IHI2I2 2 2 2 2.2 2 HIHIH
##### *@@*@@*@@*@@*@@	*#*5*5 5 5 5 5.5 5 @*@@
@@@@*@@*@@*@@ #####	@*@@ .0 0 *###

Note: When in Test Mode, all terminal displays (except the operator display) show all messages. Video displays show two lines of 20 characters in the center of the screen.

2. Ensure that the four screens are displayed correctly on all terminal displays.
 - If you have a symptom at one of the displays, follow the *Repair Action* for the symptom. See Chapter 3, "Symptoms."
 - If a *Tnnnn* message (*n* = any number) is displayed, follow the *User Response* for the message. See "Tnnnn Messages" in topic 2.7.
 - If any other message is displayed, follow the *User Response* for the message. See Chapter 2, "Messages."
3. You can repeat the test as many times as you like by pressing **2** (Display Test) when message T0007 is displayed.

E.1.3 Testing the Scanners

1. When you press the 3 key (Scanner Test), the following message is displayed.

```
+-----+
| T5440 SCANNER TEST |
| SCAN A LABEL       |
+-----+
```

Note: The scanner test reads and prints label data from:

- The Hand-Held Bar Code Reader
 - The Point of Sale Scanner.
2. Read a label with the scanning device.

Each time the scanner test is selected, one label can be read and printed.
 3. Compare the printing to the label to verify that the label was read correctly.
 - If the printing does not match the label, follow the *Repair Action* for the this symptom. See Chapter 3, "Symptoms."
 - If you have a different scanner symptom, follow the *Repair Action* for the symptom. See Chapter 3, "Symptoms."
 - If a *Tnnnn* message (*n* = any number) is displayed, follow the *User Response* for the message. See "Tnnnn Messages" in topic 2.7.
 - If any other message is displayed, follow the *User Response* for the message. See Chapter 2, "Messages."
 4. You can repeat the test as many times as you like by pressing 3 (Scanner Test) when message T0007 is displayed.

E.1.4 Testing the Cash Drawers

1. When you press the **4** key (Cash Drawer Test), the cash drawer test begins.

Note: When two cash drawers are attached to the 4683 base unit, both are tested.

- If the manager's keylock is OFF (fully clockwise), the following message is displayed:

```
+-----+
|       |
| T3140 CASH DRWR TEST |
| TURN MANAGER KEY ON  |
|       |
+-----+
```

Turn the manager's keylock ON (fully counterclockwise) and continue at step 2.

- If the manager's keylock is ON (fully counterclockwise), continue at step 2.

2. A cash drawer *status* message like the following example is displayed.

```
+-----+
|       |
| T3141 CD1 IS CLOSED  |
| PRESS 1 TO OPEN      |
|       |
+-----+
```

- If the status of the cash drawer does not match the status in the message, follow the *Repair Action* for this symptom. See "Cash Drawer Symptoms (4683/4684)" in topic 3.3.4.
- If a cash drawer is attached and messages about it are **not** displayed, service the cash drawer. For service information, see the *IBM 4683/4684 Point of Sale Terminal: Maintenance Manual*.
- If you have a different cash drawer symptom, follow the *Repair Action* for the symptom. See "Cash Drawer Symptoms (4683/4684)" in topic 3.3.4.
- If a Tnnnn message (n = any number) is displayed, follow the *User Response* for the message. See "Tnnnn Messages" in topic 2.7.
- If any other message is displayed, follow the *User Response* for the message. See Chapter 2, "Messages."

3. You can repeat the test as many times as you like by pressing **4** (Cash Drawer Test) when message T0007 is displayed.

E.1.6 Keyboard Scan Codes

The following figures show the scan codes and their positions on the three types of keyboards.

PICTURE 239

Figure E-1. 50-Key and Combined Keyboard/Display Keyboard Scan Codes

PICTURE 240

Figure E-2. Alphanumeric Keyboard Scan Codes

PICTURE 241

Figure E-3. Matrix Keyboard Scan Codes

E.1.7 Testing the Magnetic Stripe Reader

This procedure tests the Single-Track MSR attached to socket 6 on the 50-key keyboard or the alphanumeric keyboard.

1. When you press the 6 key (Magnetic Stripe Reader Test), the following message is displayed.

```
+-----+
|      |
| T6140 MSR TEST      |
| READ MSR TEST CARD |
|      |
+-----+
```

2. Read the test card (P/N 4055210).
3. The following message is displayed for a few seconds and then it is replaced with message T0007.

```
+-----+
|      |
| T6141 TEST CARD READ |
| CORRECTLY            |
|      |
+-----+
```

- If you have a symptom, follow the *Repair Action* for the symptom. See "Magnetic Stripe Reader (MSR) Symptoms (4683/4684)" in topic 3.3.11.
 - If a T617n message (n = any number) is displayed, follow the *User Response* for the message. See "Tnnnn Messages" in topic 2.7.
 - If any other message is displayed, follow the *User Response* for the message. See Chapter 2, "Messages."
4. You can repeat the test as many times as you like by pressing 6 (Magnetic Stripe Reader Test) when message T0007 is displayed.

F.0 Appendix F. IBM Vital Product Data Procedures

Subtopics

F.1 Collecting Vital Product Data

F.2 VPD 8010: Entering Vital Product Data

F.3 VPD 8020: Printing Vital Product Data (VPD)

F.1 Collecting Vital Product Data

Subtopics

F.1.1 Collecting VPD for the 4683

F.1.2 Collecting VPD for the 4684

F.1.1 Collecting VPD for the 4683

1. Switch **POWER OFF** at the 4683.
2. Unplug the 4683 base unit power cord from the power receptacle.
3. Record the type and model of the base unit. Omit the dash (-).

Example: 4683002

The type and model are embossed on the top of the base unit cover at the back-right corner.

4. Record the serial number of the base unit. Include the dash (-).

Example: 23-12345

The serial number is embossed on the top of the base unit cover at the back-right corner.

5. Record the engineering change (EC) number of the base card installed in the base unit.

The EC number is usually located on a label on the component side of the base card near cable socket 7. If you do not find it there, look near the center of the card.

6. Record the EC number of the power supply installed in the base unit.

The EC number is found in the storage retention battery compartment behind the side cover (battery access).

F.1.2 Collecting VPD for the 4684

1. Use the store procedures to stop any application programs that are running on the 4684.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

2. Switch **POWER OFF**.
3. Unplug the 4684 system unit power cord from the power receptacle.
4. Record the type and model of the system unit. Omit the dash (-).

Example: 4684300

The type and model are embossed on the top of the system unit cover at the back-right corner.

5. Record the serial number of the system unit. Include the dash (-).

Example: 23-12345

The serial number is embossed on the top of the system unit cover at the back-right corner.

6. Record the Engineering Change (EC) number of the system board installed in the system unit.
7. Record the EC number of the power supply installed in the system unit.

F.2 VPD 8010: Entering Vital Product Data

+----+
|001|
+----+

Are you using the 4680 Operating System?

Yes No

| |
| +----+
| |002|
| +----+

| - Continue at Step 008.

+----+
|003|
+----+

Before starting this procedure ensure that the:

Point-of-sale terminal is powered-ON.

4683-xx1 is attached to the store loop.

4683-xx2 is attached to a 4683-xx1 or 4684.

Store loop is controlled by a store controller running the 4680 Operating System.

Is message T0010 displayed?

Yes No

| |
| +----+
| |004|
| +----+

| - Press **S1**, type **91**, and press **S2** to enter Test Mode, and continue at Step 005.

| **Note:** On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = **S1** and **Enter** = **S2**.

+----+
|005|
+----+

(From step 004)

- Type **98** and press **S2**.

Message T9801 is displayed.

Are you entering vital product data at a 4683?

Yes No

| |
| +----+
| |006|
| +----+

| - Continue at Step 012.

+----+
|007|
+----+

- Continue at Step 011.

+----+
|008|
+----+

(From step 002)

You are using the 4684 Reference Diskette to enter vital product data.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

1. Use the store procedures to stop any application programs that are running on the 4684.
2. Switch **POWER OFF**.
3. IPL (Initial Program Load) the 4684 by inserting the Reference Diskette in the 4684 diskette drive and switching power ON.
4. Switch power ON at any attached 4683.

A Reference Diskette Copyright is displayed.

Message M0001 PRESS THE 1 KEY is displayed (alphanumeric display only).

5. Press the 1 key on the 4684 **primary** keyboard if prompted by the alphanumeric display.

MENU-M1 is displayed.

6. Select START UTILITIES from MENU-M1.

MENU-U1 is displayed.

7. Select SET/PRINT VITAL PRODUCT DATA from MENU-U1.

MENU-U2 is displayed.

Are you entering vital product data at the 4684?

Yes No

```
|
| |
| +---+
| |009|
| +---+
```

- Continue at Step 013.

```
+---+
|010|
```

```
+---+
```

- Continue at Step 014.

```
+-----+
|           Entering Vital Product Data Using the IBM 4860 Operating System           |
+-----+
```

```
+---+
```

```
|011|
```

```
+---+
```

(From step 007)

You are entering vital product data at a 4683.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.

The assignment of the alphabetic keys is shown in topic F.2.

1. Enter the serial number of the 4683 base unit (embossed on the base unit cover). Include the dash (-).

EXAMPLE: 23-12345

2. Press **S2**.

One of the following messages is displayed:

Message T9802

-- or --

Message T9803

3. Enter the EC number of the base card installed in the base unit. Omit the dash, if present.

If there are more than seven characters in the EC number, enter only the first seven characters.

4. Press **S2**.

Message T9804 is displayed.

5. Enter the EC number of the power supply installed in the base unit.

6. Press **S2**.

Message T9805, then message T0010, is displayed.

7. Switch **POWER OFF** at the 4683, wait 5 seconds, and switch power ON again. This activates the vital product data entry.

To print and review the data, see "VPD 8020: Printing Vital Product Data (VPD)" in topic F.3.

```
+---+
```

```
|012|
```

```
+---+
```

(From step 006)

You are entering vital product data at a 4684.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.

The assignment of the keyboard keys is shown in topic F.2.

1. Enter the serial number of the 4684 system unit (embossed on the system unit cover). Include the dash (-).

EXAMPLE: 23-12345

2. Press **S2**.

One of the following messages is displayed:

Message T9802

-- or --

Message T9803

3. Enter the EC number of the system board installed in the system unit. Omit the dash, if present.

If there are more than seven characters in the EC number, enter only the first seven characters.

4. Press **S2**.

Message T9804 is displayed.

5. Enter the EC number of the power supply installed in the system unit.

6. Press **S2**.

Message T9805, then message T0010, is displayed.

7. Switch **POWER OFF** at the 4684, wait 5 seconds, and switch power ON again. This activates the vital product data entry.

To print and review the data, see "VPD 8020: Printing Vital Product Data (VPD)" in topic F.3.

PICTURE 242

Figure F-1. 50-Key Keyboard and Combined Keyboard/Display Key Assignments

PICTURE 243

Figure F-2. Alphanumeric Keyboard Key Assignments

PICTURE 244

Figure F-3. Matrix Keyboard Key Assignments

+-----+
| Entering Vital Product Data Using the IBM 4684 Reference Diskette |
+-----+

+---+

|013|

+---+

(From step 009)

You are entering vital product data at the 4683.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.

You can bypass an entry by pressing **S2**.

The assignment of the keyboard keys is shown in topic F.2.

1. Select ENTER 4683 VITAL PRODUCT DATA from MENU-U2.
Message T9801 is displayed.
2. Enter the type and model number of the 4683 base unit (embossed on the system unit cover). Omit the dash (-).
EXAMPLE: 4683002
3. Press **S2**.
Message T9802 is displayed.
4. Enter the serial number of the base unit (embossed on the base unit cover). Include the dash (-).
EXAMPLE: 23-12345
5. Press **S2**.
Message T9803 is displayed.
6. Key the EC number of the base card installed in the base unit.
7. Press **S2**.
Message T9804 is displayed.
8. Key the EC number of the power supply installed in the base unit.
9. Press **S2**.

To print and review the data, see "VPD 8020: Printing Vital Product Data (VPD)" in topic F.3.

+---+
|014|
+---+
(From step 010)

You are entering vital product data at the 4684.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.

You can bypass an entry by pressing **S2**.

The assignment of the keyboard keys is shown in topic F.2.

1. Select ENTER 4684 VITAL PRODUCT DATA from MENU-U2.
Message T9801 is displayed.
2. Enter the type and model number of the 4684 system unit (embossed on the system unit cover). Omit the dash (-).
EXAMPLE: 4684300
3. Press **S2**.
Message T9802 is displayed.
4. Enter the serial number of the system unit (embossed on the system unit cover). Include the dash (-).
EXAMPLE: 23-12345
5. Press **S2**.
Message T9803 is displayed.
6. Enter the EC number of the system board installed in the system unit.
7. Press **S2**.
Message T9804 is displayed.
8. Enter the EC number of the power supply installed in the system unit.
9. Press **S2**.

To print and review the data, see "VPD 8020: Printing Vital Product Data (VPD)" in topic F.3.

PICTURE 245

Figure F-4. 50-Key Keyboard and Combined Keyboard/Display Key Assignments

PICTURE 246

Figure F-5. Alphanumeric Keyboard Key Assignments

PICTURE 247

Figure F-6. Matrix Keyboard Key Assignments

F.3 VPD 8020: Printing Vital Product Data (VPD)

+---+
|001|
+---+

Are you using the 4680 Operating System?

Yes No

| |
| +---+
| |002|
| +---+

You are using the 4684 Reference Diskette.

- To print VPD for the **4683**, continue at Step 016.
- To print VPD for the **4684**, continue at Step 017.

+---+
|003|
+---+

Is message T0010 displayed?

Yes No

| |
| +---+
| |004|
| +---+

- Press **S1**, type **91**, and press **S2** to enter Test Mode, and continue at Step 005.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = **S1** and **Enter** = **S2**.

+---+
|005|
+---+

(From step 004)

Message T0010 is displayed.

- Type **97** and press **S2** to start the print procedure.

Message T9701 is displayed.

- Enter the 3-digit terminal number and press **S2**.

Is message T9702 displayed?

Yes No

| |
| +---+
| |006|
| +---+

Continue at Step 008.

+---+
|007|
+---+

Message T9702 indicates that the terminal number you entered was the wrong length.

- Re-enter the 3-digit terminal number.

Continue at Step 011.

+---+
|008|
+---+

(From step 006)

Is message T9703 displayed?

Yes No

| |
| +---+
| |009|
| +---+

|
| Continue at Step 011.
|

+----+
| 010 |
+----+

Message T9703 indicates that the terminal number you entered was not valid or was not found.

- Re-enter a valid terminal number.

Continue at Step 011.

+----+
| 011 |
+----+

(From steps 007, 009, and 010)

The VPD for the selected point-of-sale terminal prints at the receipt station on the point-of-sale printer.

Is the selected terminal a 4683?

Yes No

|
| +----+
| | 012 |
| +----+

| Continue at Step 015.

+----+
| 013 |
+----+

Continue at Step 014.

+-----+
| Printing Vital Product Data (VPD) Using the IBM 4860 Operating System |
+-----+

+----+
| 014 |
+----+

(From step 013)

Printing Vital Product Data for the 4683

The data is printed one item per line. Each item represents a segment of VPD for the selected 4683.

The first three lines list:

- The Terminal Number
- The Type and Model
- The Serial Number.

The next three lines list the engineering change (EC) number for:

- The Base Card
- The Power Supply
- The Read-Only-Storage (ROS) Module on the Base Card.

The remainder of the lines list the EC number of the microprocessor modules for each device that is connected.

Message T9701 is displayed when printing is finished.

- Do one of the following:

- Enter a new terminal number to print VPD for another point-of-sale terminal.
- Type **0** and press **S2** to stop the print procedure.
 - Message T0010 is displayed.
 - Type **99** and press **S2** to exit Test Mode.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.

+----+
|015|
+----+
(From step 012)

Printing Vital Product Data for the 4684

The data is printed one item per line. Each item represents a segment of VPD for the selected 4684.

The first three lines list:

- The Terminal Number
- The Type and Model
- The Serial Number.

The next three lines list the engineering change (EC) number for:

- The System Board
- The Power Supply
- The Read-Only-Storage (ROS) Module on the System Board.

The remainder of the lines lists the EC number of the microprocessor modules for each device that is connected.

Message T9701 is displayed when printing is finished.

- Do one of the following:

- Enter a new terminal number to print VPD for another point-of-sale terminal.
- Type 0 and press S2 to stop the print procedure.
 - Message T0010 is displayed.
 - Type 99 and press S2 to exit Test Mode.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.

+-----+
| Printing Vital Product Data (VPD) Using the IBM 4684 Reference |
| Diskette |
+-----+

+----+
|016|
+----+
(From step 002)

Printing Vital Product Data for the 4683

1. Use the store procedures to stop any application programs that are running on the 4684.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

2. Switch **POWER OFF**.
3. IPL (Initial Program Load) the 4684 by inserting the Reference Diskette in the 4684 diskette drive and switching power ON.
4. Switch power ON at the attached 4683.

A Reference Diskette Copyright is displayed.

Message M0001 PRESS THE 1 KEY is displayed (alphanumeric display only).

5. Press the 1 key on the 4684 **primary** keyboard if prompted by the alphanumeric display.

MENU-M1 is displayed.

6. Select START UTILITIES from MENU-M1.

MENU-U1 is displayed.

7. Select SET/PRINT VITAL PRODUCT DATA from MENU-U1.

MENU-U2 is displayed.

8. Select PRINT 4683 VITAL PRODUCT DATA from MENU-U2.

The VPD is printed one item per line at the receipt station on the point-of-sale printer attached to the 4684. If there is no point-of-sale printer, the VPD is displayed.

Each item represents a segment of the VPD data for the 4683. The first four lines list:

- Terminal type
- Terminal serial number
- The Engineering Change (EC) number for the base card
- The EC number for the power supply.

+----+

|017|

+----+

(From step 002)

Printing Vital Product Data for the 4684

1. Use the store procedures to stop any application programs that are running on the 4684.

Warning: Switching **POWER OFF** at a 4684 affects operations at all point-of-sale terminals attached to it.

2. Switch **POWER OFF**.

3. IPL (Initial Program Load) the 4684 by inserting the Reference Diskette in the 4684 diskette drive and switching power ON.

A Reference Diskette Copyright is displayed.

Message M0001 PRESS THE 1 KEY is displayed (alphanumeric display only).

4. Press the 1 key on the 4684 **primary** keyboard if prompted by the alphanumeric display.

MENU-M1 is displayed.

5. Select START UTILITIES from MENU-M1.

MENU-U1 is displayed.

6. Select SET/PRINT VITAL PRODUCT DATA from MENU-U1.

MENU-U2 is displayed.

7. Select PRINT 4684 VITAL PRODUCT DATA from MENU-U2.

The VPD is printed one item per line at the receipt station on the point-of-sale printer attached to the 4684. If there is no point-of-sale printer, the VPD is displayed.

Each item represents a segment of the VPD data for the 4684. The first four lines list:

- Terminal type
 - Terminal serial number
 - The Engineering Change (EC) number for the system board
 - The EC number for the power supply.
-

G.0 Appendix G. IBM 4684 Configuration and Utility Procedures

Subtopics

- G.1 Introduction to Configuration
- G.2 Preparing to Run Configuration
- G.3 Introduction to Utilities
- G.4 Preparing to Run Utilities

G.1 Introduction to Configuration

Subtopics

G.1.1 Flow Chart of MENUs

G.1.2 Understanding the Configuration Process

G.1.3 Primary Keyboards and Displays for the 4684 Terminal

G.1.1 Flow Chart of MENUs

PICTURE 248

G.1.2 Understanding the Configuration Process

The configuration process can be done in two ways: Automatic configuration and manual configuration.

Subtopics

G.1.2.1 Automatic Configuration

G.1.2.2 Manual Configuration

G.1.2.1 Automatic Configuration

Automatic configuration is a process that will determine which internal devices, option adapters, and POS devices are attached and where they are connected. This process will occur under two circumstances:

- When you answer **yes** to the question:

```
M0101 A CONFIGURATION ERROR OCCURRED.  
DO YOU WANT TO RUN CONFIGURATION ?  
1=YES 0=NO
```

- When you select CREATE/CHANGE CONFIGURATION from MENU-C1.

The automatic configuration process may cause some questions to be asked concerning attached devices.

The configuration information will not be permanently saved until you select ACTIVATE NEW CONFIGURATION from MENU-C2.

G.1.2.2 Manual Configuration

Manual configuration consists of two parts:

- Delete or remove a device from the configuration even though it is attached and has been previously configured.
- Add a device that is not attached and therefore cannot be automatically configured.

In all of the above cases, the configuration information will not be permanently saved until you select ACTIVATE NEW CONFIGURATION from MENU-C2.

G.1.3 Primary Keyboards and Displays for the 4684 Terminal

A primary display and primary keyboard will be assigned either automatically or by selecting CHANGE 4684 DEFAULT CONFIGURATION from MENU-C4.

- The primary display is where all messages will appear while using the Reference Diskette.
- The primary keyboard is where all input is expected while using the Reference Diskette.

There can be only one primary display and one primary keyboard.

Initially, the primary devices are assigned during automatic configuration. They are assigned based upon which devices are attached and where they are attached. Normally, you will have no reason to change the primary display and primary keyboard that are assigned automatically. However, if you need to change these assignments, select CHANGE 4684 DEFAULT CONFIGURATION from MENU-C2. MENU-C4 will display and give you a choice of changing the primary assignments. Be aware that the next time automatic configuration is run, the primary keyboard and primary display assignments will again be selected automatically and the changes you made will be lost.

Normally, the primary display is assigned as follows:

- 1st choice** The video display attached to the system unit video display socket
- 2nd choice** The display attached to socket 4A
- 3rd choice** The display attached to socket 4B, 9A, or 9B

Normally, the primary keyboard is assigned as follows:

- 1st choice** The Enhanced A/N or ANPOS keyboard attached to socket 1
- 2nd choice** The keyboard attached to socket 5A
- 3rd choice** The keyboard attached to socket 5B

G.2 Preparing to Run Configuration

Read the following before beginning.

Some of the events happen quickly. Be careful not to miss them if you are reading the book as the IPL proceeds

1. Use your store procedures to stop any application programs that are running.
2. Do the following to IPL (Initial Program Load):
 - a. Switch **POWER OFF** at the 4684.
 - b. Insert the Reference Diskette in the 4684 diskette drive.
 - c. Switch power ON at the 4683 (if attached).
 - d. Switch power ON at the 4684.
3. Power-on self tests will automatically when power is switched ON. The messages that **normally** display during the IPL process are as follows:
 - a. The video display (if present) displays characters that represent the memory test progress.
 - b. A series Unnn messages display that represent the progress of the IPL.
 - c. A Reference Diskette Copyright message displays.
 - d. Message M0001 PRESS THE 1 KEY displays (alphanumeric display only), otherwise MENU-M1 displays.

Press the 1 key on the *primary* keyboard.
 - e. MENU-M1 displays.

- If message M0101 is displayed, answer YES. MENU-C2 will display after Automatic Configuration is run. See MENU-C2 at "Creating or Changing Configuration" in topic G.2.1.
- If MENU-M1 does not display, see Chapter 2, "Messages" in topic 2.0.
- If the display(s) is blank or illegible, go to Chapter 3, "Symptoms" in topic 3.0.
- If an error number(s) is displayed, note the number(s) and then press **S1**. Additional information or instructions will be displayed to help continue problem determination.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.

If the IPL does not continue after pressing **S1**, go to Chapter 2, "Messages" in topic 2.0 and follow the *User Response* for the displayed message(s).

When MENU-M1 is displayed you are prepared to start configuration.

To create or change configuration	See "Creating or Changing Configuration" in topic G.2.1.
To backup the configuration	See "Backing Up the Configuration" in topic G.2.6.
To restore configuration	See "Restoring the Configuration" in topic G.2.7.
To view the active configuration	See "Viewing the Active Configuration" in topic G.2.8.

Subtopics

- G.2.1 Creating or Changing Configuration
- G.2.2 Descriptions of Items in Configuration Menu-C1
- G.2.3 Descriptions of Items in Configuration Menu-C2
- G.2.4 Descriptions of Items in Configuration Menu-C3 and Menu-C4
- G.2.5 Restrictions When Connecting Displays
- G.2.6 Backing Up the Configuration
- G.2.7 Restoring the Configuration
- G.2.8 Viewing the Active Configuration

G.2.9 Using Optional 4684 System Unit Configuration

G.2.1 Creating or Changing Configuration

To start configuration, begin at "Preparing to Run Configuration" in topic G.2.

1. Select START CONFIGURATION from MENU-M1.
2. Select CREATE/CHANGE CONFIGURATION from MENU-C1.
3. The 4684 system unit devices that are attached will be automatically configured.
4. All POS devices that are attached and powered ON will be automatically configured.

Note: If you want to configure a device that will be attached at a later time, you can select CHANGE 4684 DEFAULT CONFIGURATION or CHANGE 4683 DEFAULT CONFIGURATION from MENU-C2. Then select ADD A DEVICE NOT ATTACHED from MENU-C3 or MENU-C4.

```

+-----+
| Table G-1. MENU-C1
+-----+
| VIEW ACTIVE CONFIGURATION
+-----+
| CREATE/CHANGE CONFIGURATION
+-----+
| BACKUP CONFIGURATION
+-----+
| RESTORE CONFIGURATION
+-----+
| OPTIONAL SYSTEM UNIT CONFIGURATION
+-----+
| QUIT
+-----+
    
```

```

+-----+
| Table G-2. MENU-C2
+-----+
| VIEW NEW 4684 CONFIGURATION
+-----+
| VIEW NEW 4683 CONFIGURATION
+-----+
| ACTIVATE NEW CONFIGURATION
+-----+
| CHANGE 4684 DEFAULT CONFIGURATION
+-----+
| CHANGE 4683 DEFAULT CONFIGURATION
+-----+
| QUIT CONFIGURATION
+-----+
    
```

```

+-----+
| Table G-3. MENU-C3
+-----+
| DELETE AN ATTACHED 4683 DEVICE
+-----+
| ADD A 4683 DEVICE NOT ATTACHED
+-----+
| CHANGE THE KEYPAD LAYOUT
+-----+
| RETURN TO MENU-C2
+-----+
    
```

```

+-----+
| Table G-4. MENU-C4
+-----+
| DELETE AN ATTACHED 4684 DEVICE
+-----+
| ADD A 4684 DEVICE NOT ATTACHED
+-----+
| CHANGE THE PRIMARY DISPLAY
+-----+
| CHANGE THE PRIMARY KEYBOARD
+-----+
| CHANGE THE KEYPAD LAYOUT
+-----+
    
```



```
| ENTER THE FIXED DISK TYPE |  
+-----+  
| RETURN TO MENU-C2 |  
+-----+  
+-----+
```

G.2.2 Descriptions of Items in Configuration Menu-C1

VIEWING ACTIVE CONFIGURATION - Allows you to view the currently active 4684 or 4683 configuration before any changes are made.

CREATE/CHANGE CONFIGURATION - Automatically configures both the 4684 system unit internal devices and option adapters, as well as the external point-of-sale devices. It will allow you to manually change the configuration of the 4683 and 4684 point-of-sale devices if necessary.

If a Multiprotocol Communications Adapter is configured, you are allowed to change the protocol options.

If a Token-Ring Network Adapter is configured, you may be asked to select the correct network data rate.

If a Realtime Interface Co-Processor Multiport/2 (ARTICm/2) or X.25/2 (ARTICx/2) adapter is configured, you will be asked to select the correct transmit and receive clock settings.

There may be other option adapters configured that cause questions to be asked as well.

BACKUP CONFIGURATION - Allows you to save the 4684 and 4683 configuration data by writing the current configuration to the Backup Reference Diskette.

RESTORE CONFIGURATION - Allows you to retrieve the 4684 or 4683 configuration data from the Backup Reference Diskette and make it the current configuration by writing it into memory in the 4684.

G.2.3 Descriptions of Items in Configuration Menu-C2

VIEW NEW 4684/4683 CONFIGURATION - Allows you to view the configuration of the 4684 or 4683 after changes have been made but before they are activated. See Figure G-1 in topic G.2.8 for information on the 4684 slots.

ACTIVATE NEW CONFIGURATION - The 4684 will IPL to activate new (new or changed) configuration data. Select this when you have finished entering all configuration data.

CHANGE 4684/4683 DEFAULT CONFIGURATION - Allows you to change the default options of the 4684 or 4683. These options include deleting and adding devices, primary display and keyboard selection and changing the numeric keypad layout.

Note: Each time automatic configuration is run, any changes that were made to the primary display and the primary keyboard assignments will be lost.

You must **ACTIVATE NEW CONFIGURATION** after you change the defaults to make the change effective.

G.2.4 Descriptions of Items in Configuration Menu-C3 and Menu-C4

DELETE AN ATTACHED DEVICE - Allows you to delete a device from the 4684 or 4683 configuration.

If you want to delete an entire 4683 terminal from the configuration, you must select this menu item.

You must **ACTIVATE NEW CONFIGURATION** after you **DELETE** the device to make the change effective.

ADD A DEVICE NOT ATTACHED - Allows you to add a new device to the 4684 or 4683 configuration that was not attached when the POS automatic configuration was run. You must **ACTIVATE NEW CONFIGURATION** after you **ADD** the device to make the change effective.

G.2.5 Restrictions When Connecting Displays

There are a few restrictions and limitations to be aware of when connecting or configuring displays to the 4684 or 4683.

If these restrictions and limitations are not observed, unpredictable problems may occur.

- If you have **TWO** Alphanumeric (A/N) Displays, one must be connected to socket 4A and the other to **ONE** of the following sockets: 4B, 9A, or 9B.
- If you have **TWO** Operator Displays, one must be connected to socket 4A and the other to **ONE** of the following sockets: 4B, 9A, or 9B.
- If you have **TWO** Shopper Displays, one must be connected to socket 4A and the other to **ONE** of the following sockets: 4B, 9A, or 9B.
- If you have a Combined Keyboard/Display connected to socket 5A, **DO NOT** connect an Operator Display to socket 4A.
- If you have a Combined Keyboard/Display connected to socket 5B, **DO NOT** connect an Operator Display to socket 4B, 9A, or 9B.

G.2.6 Backing Up the Configuration

To start configuration, begin at "Preparing to Run Configuration" in topic G.2.

1. Select START CONFIGURATION from MENU-M1.
2. Select BACKUP CONFIGURATION from MENU-C1.
3. Follow the instructions on the display to perform the backup.

G.2.7 Restoring the Configuration

To start configuration, begin at "Preparing to Run Configuration" in topic G.2.

1. Select START CONFIGURATION from MENU-M1.
2. Select RESTORE CONFIGURATION from MENU-C1.
3. Follow the instructions on the display to restore the configuration.

G.2.8 Viewing the Active Configuration

To start configuration, begin at "Preparing to Run Configuration" in topic G.2.

1. Select START CONFIGURATION from MENU-M1.
2. Select VIEW ACTIVE CONFIGURATION from MENU-C1.
3. The current or active configuration record that is saved in the 4684 is displayed.
4. Follow the instructions on the display. See Figure G-1 for information on the 4684 slots.

```
Slot 1      (option adapter)
 Dual Asynchronous Adapter
 ISDN Interface Co-Processor/2 Adapter
 Multiprotocol Communication Adapter
 Token-Ring Network Adapter
 X.25 Interface Co-Processor/2 (ARTICx/2)
 2-8MB 80286 Memory Expansion Adapter

Slot 2      (option adapter)
 ISDN Interface Co-Processor/2
 Dual Asynchronous Adapter
 Multiprotocol Communication Adapter
 Token-Ring Network Adapter
 X.25 Interface Co-Processor/2 (ARTICx/2)
 2-8MB 80286 Memory Expansion Adapter

Slot 3      ( Reserved )
Slot 4      ( Reserved )
Slot 5      ( 4684 Feature Card and Memory Expansion Adapter )
Slot 6      ( Baseband Network ) Models 111, 131, and 161 only
Slot 7      ( Device Channel )
Slot 8      ( Fixed Disk ) Models 130, 131, 160 and 161 only
```

Figure G-1. 4684 Device List For Option Slots 1-8

G.2.9 Using Optional 4684 System Unit Configuration

This special program is provided for situations when the normal 4684 system unit configuration functions are inadequate to configure the system unit. It can be invoked when it is necessary to have a full function change or view configuration for the 4684 system unit.

To use this procedure, the following requirements must be met:

- An Enhanced A/N or ANPOS keyboard must be attached and configured as the primary keyboard.
- A video display must be attached and configured as the primary display.

To start this program MENU-C1 must be displayed. Then select OPTIONAL SYSTEM UNIT CONFIGURATION.

G.3 Introduction to Utilities

- BACKUP REFERENCE DISKETTE - Allows you to make a *backup* copy of the original Reference Diskette. Once you have a copy (Backup Reference Diskette), store the original in a safe place and use the copy.
- COPY OPTION DISKETTE TO REFERENCE DISK - Allows you to copy files from an Option Diskette (provided with option adapters) to the Backup Reference Diskette. This procedure is normally done during the initial 4684 setup or when additional options are added to the 4684.
- SET SYSTEM DATE AND TIME - Allows you to view or change the system date and time settings.
- SET VITAL PRODUCT DATA - Allows you to view or change the 4684 vital product data.
- MOVE THE 4684 - Secures the fixed disk read/write heads so that no damage will occur during a move.
- QUIT UTILITIES - Returns to MENU-M1.

Subtopics

G.3.1 Flow Chart of MENUs

G.3.1 Flow Chart of MENUs

PICTURE 249

G.4 Preparing to Run Utilities

Read the following before beginning.

Some of the events happen quickly. Be careful not to miss them if you are reading the book as the IPL proceeds

1. Use your store procedures to stop any application programs that are running.
2. Do the following to IPL (Initial Program Load):
 - a. Switch **POWER OFF** at the 4684.
 - b. Insert the Reference Diskette in the 4684 diskette drive.
 - c. Switch power ON at the 4683 (if attached).
 - d. Switch power ON at the 4684.
3. Power-on self tests will automatically when power is switched ON. The messages that **normally** display during the IPL process are as follows:
 - a. The video display (if present) displays characters that represent the memory test progress.
 - b. A series Unnn messages display that represent the progress of the IPL.
 - c. A Reference Diskette Copyright message displays.
 - d. Message M0001 PRESS THE 1 KEY displays (alphanumeric display only), otherwise MENU-M1 displays.

Press the 1 key on the *primary* keyboard.

- e. MENU-M1 displays.
 - If message M0101 is displayed, answer YES. MENU-C2 will display after Automatic Configuration is run. See MENU-C2 at "Creating or Changing Configuration" in topic G.2.1.
 - If MENU-M1 does not display, see Chapter 2, "Messages" in topic 2.0.
 - If the display(s) is blank or illegible, go to Chapter 3, "Symptoms" in topic 3.0.
 - If an error number(s) is displayed, note the number(s) and then press **S1**. Additional information or instructions will be displayed to help continue problem determination.

Note: On the ANPOS Keyboard (during some procedures) and on the Enhanced Alphanumeric Keyboard, **Esc** = S1 and **Enter** = S2.

If the IPL does not continue after pressing **S1**, go to Chapter 2, "Messages" in topic 2.0 and follow the *User Response* for the displayed message(s).

When MENU-M1 is displayed you are prepared to start utilities.

To backup the Reference Diskette	See "Making a Backup Reference Diskette" in topic G.4.1.
To copy an Option Diskette to the Reference Diskette	See "Copying an Option Diskette to the Reference Diskette" in topic G.4.2.
To set the system date and time	See "Setting System Date And Time" in topic G.4.3.
To set the Vital Product Data	See "Setting Vital Product Data" in topic G.4.4.
To move the 4684	See "Moving the 4684 (Securing the Fixed Disk)" in topic G.4.5.

Subtopics

- G.4.1 Making a Backup Reference Diskette
- G.4.2 Copying an Option Diskette to the Reference Diskette
- G.4.3 Setting System Date And Time

- G.4.4 Setting Vital Product Data
- G.4.5 Moving the 4684 (Securing the Fixed Disk)
- G.4.6 Logging Errors
- G.4.7 Formatting the Fixed Disk

G.4.1 Making a Backup Reference Diskette

To start utilities, begin at "Preparing to Run Utilities" in topic G.4.

1. Select START UTILITIES from MENU-M1.
2. Select BACKUP REFERENCE DISKETTE from MENU-U1.
3. Follow the instructions on the display.

G.4.2 Copying an Option Diskette to the Reference Diskette

To start utilities, begin at "Preparing to Run Utilities" in topic G.4.

1. Select START UTILITIES from MENU-M1.
2. Select COPY OPTION DISKETTE TO REFERENCE DISKETTE from MENU-U1.
3. Follow the instructions on the display.

G.4.3 Setting System Date And Time

To start utilities, begin at "Preparing to Run Utilities" in topic G.4.

1. Select START UTILITIES from MENU-M1.
2. Select SET SYSTEM DATE AND TIME from MENU-U1.
3. Follow the instructions on the display.

G.4.4 Setting Vital Product Data

To start utilities, begin at "Preparing to Run Utilities" in topic G.4.

1. Select START UTILITIES from MENU-M1.
2. Select SET VITAL PRODUCT DATA from MENU-U1.
3. Follow the instructions on the display.

G.4.5 Moving the 4684 (Securing the Fixed Disk)

To start utilities, begin at "Preparing to Run Utilities" in topic G.4.

1. Select START UTILITIES from MENU-M1.
2. Select MOVE THE 4684 from MENU-U1.
3. Follow the instructions on the display.

G.4.6 Logging Errors

To start an error log, begin at "Preparing to Run Tests" in topic 5.2.

1. Select START TESTS from MENU-M1.
2. Select RUN SYSTEM UNIT TESTS from MENU-T1.
3. Select TEST SYSTEM UNIT from MENU-T2.
4. Select LOG OR DISPLAY ERRORS from MENU-T3.
5. MENU-T5 allows several selections. Select the desired function.
6. Follow the instructions on the display.

G.4.7 Formatting the Fixed Disk

To run this procedure, begin at "Preparing to Run Tests" in topic 5.2.

1. Select START TESTS from MENU-M1.
2. Select RUN SYSTEM UNIT TESTS from MENU-T1.
3. Select FORMAT FIXED DISK from MENU-T2.
4. Follow the instructions on the display.
 - If a message error occurs follow the *User Response* for the message in Chapter 2, "Messages."

GLOSSARY Glossary

This glossary defines terms and abbreviations used in this book. Consult the *IBM Dictionary of Computing*, SC20-1699, and the index of this book for terms that you do not find in this glossary.

```
+---+  
| A |  
+---+
```

access method. A software component in a processor for controlling the flow of information through a network.

access unit. A unit that allows multiple attaching devices access to a token-ring network at a central point such as a wiring closet or in an open work area.

active. (1) Able to communicate on the network. A token-ring network adapter is active if it is able to transmit and receive on the network. (2) Operational. (3) Pertaining to a node or device that is connected or is available for connection to another node or device. (4) Currently transmitting or receiving.

adapter. (1) In the point-of-sale terminal, a circuit card that, with its associated software, enables the terminal to use a function or feature. (2) In a LAN, within a communicating device, a circuit card that, with its associated software and/or microcode, enables the device to communicate over the network.

adapter address. Twelve hexadecimal digits that identify a LAN adapter.

Adapter Support Interface. Software used to operate IBM Token-Ring Network adapters in an IBM personal computer and to provide a common interface to application programs.

ADCS. Advanced data communications for stores, a program product that functions at the host processor to permit host-to-store communication.

address. (1) In data communication, the IEEE-assigned unique code or the unique locally administered code assigned to each device or workstation connected to a network. (2) A character, group of characters, or a value that identifies a register, a particular part of storage, a data source, or a data sink. The value is represented by one or more characters. (3) To refer to a device or an item of data by its address. (4) The location in the storage of a computer where data is stored. (5) In word processing, the location, identified by the address code, of a specific section of the recording medium or storage. (6) In word processing, the location, identified by the address code, of a specific section of the recording medium or storage.

address space. The complete range of addresses that is available to a programmer.

addressing. (1) The assignment of addresses to the instructions of a program. (2) In data communication, the way the originator or control station selects the unit to send a message to.

alert. (1) An error message sent to the system services control point (SSCP) at the host system. (2) For IBM LAN management products, a notification indicating a possible security violation, a persistent error condition, or an interruption or potential interruption in the flow of data around the network. See also *network management vector transport*. (3) In SNA, a record sent to a system problem management focal point to communicate the existence of an alert condition. (4) In the NetView program, a high-priority event that warrants immediate attention. This data base record is generated for certain event types that are designed by user-constructed filters.

alert transport frame. A special frame that carries an application-program-generated alert from a LAN device to a LAN management program for forwarding to a NetView host. See also *network management vector transport*.

alphanumeric. Pertaining to a character set containing letters, digits, and other characters, such as punctuation marks.

alternate adapter. In a personal computer that is used on a LAN and that supports installation of two network adapters, the adapter that uses alternate (not standard or default) mapping between adapter-shared RAM, adapter ROM, and designated computer memory segments. The alternate adapter is usually designated as adapter 1 in configuration parameters. Contrast with *primary adapter*.

Alternate File Server. A store controller that maintains image versions of all non-system mirrored files and that can assume control if the configured File Server becomes disabled.

Alternate Master Store Controller. The store controller that can take control of the LAN if the configured Master Store Controller becomes disabled. It maintains image versions of both system mirrored and system compound files.

American National Standard Code for Information Interchange (ASCII). The standard code, using a coded character set consisting of 7-bit coded characters (8 bits including parity check), used for information interchange among data processing systems, data communication systems, and associated equipment. The ASCII set consists of control characters and graphics characters.

American National Standards Institute (ANSI). An organization for the purpose of establishing voluntary industry standards.

analog. Pertaining to data consisting of continuously variable physical quantities. Contrast with *digital*.

ANPOS keyboard. The alphanumeric point-of-sale keyboard. This keyboard consists of a section of alphanumeric keys, a programmable set of point-of-sale keys, a numeric keypad, and system function keys.

ANSI. American National Standards Institute.

APAR. Authorized program analysis report. A report of a problem caused by a suspected defect in a current unaltered release of a program.

appendage. An application program routine that assists in handling the occurrence of specific events.

application program. (1) A program written for or by a user that applies to the user's own work. (2) A program written for or by a user that applies to a particular application. (3) A program written for or by a user that is specific to the user's own application. (4) A program used to connect and communicate with stations in a network, enabling users to perform application-oriented activities.

architecture. A logical structure that encompasses operating principles including services, functions, and protocols. See *computer architecture*, *network architecture*, *Systems Application Architecture (SAA)*, *Systems Network Architecture (SNA)*.

array. An arrangement of elements in one or more dimensions.

ARTIC adapter. A family of communications coprocessor adapters that, with appropriate electrical interfaces, can support a wide range of communication devices. For the 4680 Store System, an ARTIC adapter provides communications support for ASYNC, BSC, SDLC, and X.25 communications. The family of adapters includes the following models:

- ARTICx/2 adapter - the IBM X.25 Interface Co-Processor/2 adapter
- ARTICm/2 adapter - the IBM Realtime Interface Co-Processor Multiport/2 adapter
- ARTICm adapter - the IBM Realtime Interface Co-Processor Multiport

adapter

ASCII. American Standard Code for Information Interchange. The standard character set used for information interchange among data processing systems, data communications systems, and associated equipment. The ASCII set consists of printed characters, such as letters, numbers, and special symbols, and control characters, such as line feed and carriage return.

assembler. Computer program that translates assembly language statements into machine code.

asynchronous. (1) Pertaining to two or more processes that do not depend upon the occurrence of a specific event such as a common timing signal. (2) In Fiber Distributed Data Interface (FDDI) rings, a type of data traffic that does not need bounded access delay to the medium and guaranteed throughput.

asynchronous transmission. Transmission in which each information character is individually synchronized, usually by the use of start elements and stop elements. Sometimes referred to as start-stop transmission.

attach. (1) To connect a device physically. (2) To make a device a part of a network logically.

attaching device. Any device that is physically connected to a network and can communicate over the network.

audible signal. (1) An alarm activated when predetermined events require operator attention or intervention for system operation. (2) A beep or tone that signals the completion of a *wanding* or scanning operation.

```
+---+  
| B |  
+---+
```

background. On a color display, the part of the display screen that surrounds a character.

background application. A non-interactive program that can be selected from the background application screen or can start automatically when the system is IPLed.

backup. Pertaining to a system, device, file, or facility that can be used in the event of a malfunction or the loss of data.

backup copy. A copy, usually of a program or of a library member, that is kept in case the original or the working copy is unintentionally altered or destroyed.

backup diskette. A diskette that contains information copied from another diskette. It is used in case the original information is unintentionally altered or destroyed.

bandwidth. (1) The difference, expressed in hertz, between the highest and the lowest frequencies of a range of frequencies. For example, analog transmission by recognizable voice telephone requires a bandwidth of about 3000 hertz (3 kHz). (2) The bandwidth of an optical link designates the information-carrying capacity of the link and is related to the maximum bit rate that a fiber link can support.

baseband. (1) A frequency band that uses the complete bandwidth of a transmission medium. Contrast with *broadband*, *carrierband*.. (2) A method of data transmission that encodes, modulates, and impresses information on the transmission medium without shifting or altering the frequency of the information signal.

base level. A complete distribution of program product code incorporating

all corrective diskettes from the previous base level. Each base level is assigned a 4-digit number.

baseband LAN. A LAN in which information is encoded, multiplexed, and transmitted without modulation of a carrier.

base unit. The part of the IBM 4683 Point of Sale terminal that contains the power supply and the interfaces.

BASIC. Beginner's All-purpose Symbolic Instruction Code. A programming language that uses common English words.

Basic Input/Output System (BIOS). In IBM personal computers with PC I/O channel architecture, microcode that controls basic hardware operations such as interactions with diskette drives, fixed disk drives, and the keyboard.

batch. Smaller subdivisions of price change records within an event. Each batch has a 12-character ID and a 30-character description field.

baud. The rate at which signal conditions are transmitted per second. Contrast with *bits per second (bps)*.

beacon. (1) A frame sent by an adapter on a ring network indicating a serious ring problem, such as a broken cable. It contains the addresses of the beaconing station and its nearest active upstream neighbor (NAUN). (2) To send beacon frames continuously. An adapter is *beaconing* if it is sending such a frame.

beaconing. An error-indicating function of token-ring adapters that assists in locating a problem causing a hard error on a token-ring network.

beaconing terminal. A terminal that is not receiving the normal signal from the store loop. Therefore, it transmits a "beacon" message.

binary. (1) Pertaining to a system of numbers to the base two; the binary digits are 0 and 1. (2) Pertaining to a selection, choice, or condition that has two possible different values or states.

binary synchronous communication (BSC). A form of telecommunication line control that uses a standard set of transmission control characters and control character sequences, for binary synchronous transmission of binary-coded data between stations. Contrast with *synchronous data link control (SDLC)*.

binary synchronous transmission. Data transmission in which timing signals generated at the sending and receiving stations control the synchronization of characters. Contrast with asynchronous transmission.

BIOS. Basic Input/Output System.

bit. Either of the binary digits: a 0 or 1. zero or one.

bits per second (bps). The rate at which bits are transmitted per second. Contrast with *baud*.

block-check character. (1) In cyclic redundancy checking, a character that is transmitted by the sender after each message block and is compared with a character computed by the receiver to determine if the transmission has been successful. (2) In binary synchronous communication (BSC), a transmission control character that is used to determine whether all of the bits transmitted are also received.

bps. Bits per second.

Bps. Bytes per second.

bridge. (1) An attaching device connected to two LAN segments to allow the transfer of information from one LAN segment to the other. A bridge may connect the LAN segments directly by network adapters and software in a single device, or may connect network adapters in two separate devices through software and use of a telecommunications link between the two adapters. (2) A functional unit that connects two LANs that use the same logical link control (LLC) procedures but may use the same or different medium access control (MAC) procedures. Contrast with *gateway* and *router*.

broadband. A frequency band divisible into several narrower bands so that different kinds of transmissions such as voice, video, and data transmission can occur at the same time. Synonymous with *wideband*. Contrast with *baseband*.

broadcast. Simultaneous transmission of data to more than one destination.

BSC. Binary synchronous communication.

buffer. (1) A portion of storage used to hold input or output data temporarily. (2) A routine or storage used to compensate for a difference in data rate or time of occurrence of events, when transferring data from one device to another.

building cable. The permanently installed cable within a building that interconnects offices to wiring closets, wiring closets to wiring closets, and wiring closets to computer rooms of building entrances.

bus. (1) In a processor, a physical facility on which data is transferred to all destinations, but from which only addressed destinations may read in accordance with appropriate conventions. (2) A network configuration in which nodes are interconnected through a bidirectional transmission medium. (3) One or more conductors used for transmitting signals or power.

bus network. A network configuration that provides a bidirectional transmission facility to which all nodes are attached. A sending node transmits in both directions to the ends of the bus. All nodes in the path examine and may copy the message as it passes.

bypass. To eliminate an attaching device or an access unit from a ring network by allowing the data to flow in a path around it.

byte. (1) A string that consists of a number of bits, treated as a unit, and representing a character. (2) A binary character operated upon as a unit and usually shorter than a computer word. (3) A string that consists of a particular number of bits, usually 8, that is treated as a unit, and that represents a character. (4) A group of 8 adjacent binary digits that represent one extended binary-coded decimal interchange code (EBCDIC). (5) See *n-bit byte*.

```
+---+  
| C |  
+---+
```

C. A high-level programming language designed to optimize run time, size, and efficiency.

C & SM. Communications and Systems Management.

cable loss (optical). The loss in an optical cable equals the attenuation coefficient for the cables fiber times the cable length.

cable segment. A section of cable between components or devices on a network. A segment may consist of a single patch cable, multiple patch cables connected together, or a combination of building cable and patch cables connected together. See *LAN segment*, *ring segment*.

call. The action of bringing a function or subprogram into effect, usually by specifying the entry conditions and jumping to an entry point.

carrier. A wave or pulse train that may be varied by a signal bearing information to be transmitted over a communication system.

carrierband. A frequency band in which the modulated signal is superimposed on a carrier signal (as differentiated from baseband), but only one channel is present on the medium. Contrast with *baseband*, *broadband*.

cash drawer. A drawer at a point-of-sale terminal that can be programmed to open automatically. See *till*.

CD. Corrective diskette.

CGROUP. Internal name used by the compiler and the linker to distinguish all program segments that contain program code. See *DGROUP*.

chain. (1) Transfer of control from the currently executing program to another program or overlay. (2) Referencing a data record from a previous data record.

channel. (1) A functional unit, controlled by a host computer, that handles the transfer of data between processor storage and local peripheral equipment. (2) A path along which signals can be sent. (3) The portion of a storage medium that is accessible to a given reading or writing station.

charge. A sales transaction in which a customer has the partial or total value of purchased merchandise added to an account for later payment.

circuit. (1) A logic device. (2) One or more conductors through which an electric current can flow.

clear. To delete data from a screen or from memory.

closed network. Synonym for *closed path*.

closed path. A network in which all of the cable paths and wiring closets are directly or indirectly connected. Synonymous with *closed network*.

CNM. Communication network management.

COBOL. (Common Business-Oriented Language) A high-level programming language, based on English, that is used primarily for business applications.

collision. (1) An unwanted condition that results from concurrent transmissions on a channel. (2) When a frame from a transmitting adapter encounters any other signal in its path (frame, noise, or another type of signal), the adapter stops transmitting and a collision is registered.

command. (1) A request for performance of an operation or execution of a program. (2) A character string from a source external to a system that represents a request for system action.

communication adapter. A circuit card and its associated software that enable a device, such as a personal computer, to be connected to a network or another computer (examples include binary synchronous, asynchronous, modem, and LAN adapters).

communication channel. A path for transmitting information from one location to another.

communication link. A data communication line that connects the host processor to the store controller.

communication network management (CNM). The process of designing, installing, operating, and managing distribution of information and control among users of communication systems.

Communications and Systems Management. A set of tools, programs, and network functions used to plan, operate, and control an SNA communications network. C & SM runs on the store controller and must also exist at the host site.

compiler. A program that decodes instructions written as pseudo codes and produces a machine language program to be executed at a later time. Contrast with interpretive routine. Synonymous with compiling program.

component. (1) Any part of a network other than an attaching device, such as an IBM 8228 Multistation Access Unit. (2) Hardware or software that is part of a functional unit.

compound files. Files that are kept on the Master Store Controller, the Alternate Master Store Controller, and all other eligible store controllers.

computer architecture. The organizational structure of a computer system, including hardware and software.

computer program. A series of instructions for a computer to process.

concentrator. (1) In data transmission, a functional unit that permits a common transmission medium to serve more data sources than there are channels currently available within the transmission medium. (2) Any device that combines incoming messages into a single message (concentration) or extracts individual messages from the data sent in a single transmission sequence (deconcentration). (3) See also *access unit*, *wiring concentrator*.

configuration. (1) The group of devices, options, and programs that make up a data processing system or network as defined by the nature, number, and chief characteristics of its functional units. More specifically, the term may refer to a hardware configuration or a software configuration. (2) See also *system configuration*.

configuration file. The collective set of definitions that describes a configuration.

connect. In a LAN, to physically join a cable from a station to an access unit or network connection point. Contrast with *attach*.

constant. String or numeric value that does not change throughout program execution.

contention. In a LAN, a situation in which two or more data stations are allowed by the protocol to start transmitting concurrently and thus risk collision.

control block. (1) A storage area used by a computer program to hold control information. (2) In the IBM Token-Ring Network, a specifically formatted block of information provided from the application program to the Adapter Support Interface to request an operation.

control character. A character whose occurrence in a particular context initiates, modifies, or stops a control operation. A control character may be recorded for use in a subsequent action, and it may have a graphic representation in some circumstances.

controller. A unit that controls input/output operations for one or more devices.

conversation. A logical connection between two programs over an LU type 6.2 session that allows them to communicate with each other while processing a transaction. See also basic conversation and mapped conversation.

conversation partner. One of the two programs involved in a conversation.

conversation state. The condition of a conversation that reflects what the past action on that conversation has been and that determines what the next set of actions may be.

core. The central region of an optical fiber through which light is transmitted.

corrective diskette (CD). A set of diskettes that contain modules to replace the modules in the active program subdirectory. The first diskette of the set must contain a product control file that describes which product the modules are to be applied to and a list of all modules that are to be replaced.

CRC. Cyclic redundancy check.

credit authorization. The process of accepting or rejecting a request for credit approval.

customer receipt. An itemized list of merchandise purchased and paid for by the customer.

cyclic redundancy check (CRC). Synonym for *frame check sequence (FCS)*.

```
+---+  
| D |  
+---+
```

data. (1) A representation of facts, concepts, or instructions in a formalized manner suitable for communication, interpretation, or processing by human or automatic means. (2) Any representations such as characters or analog quantities to which meaning is or might be assigned.

data base. A set of data, part or the whole of another set of data, that consists of at least one file, and that is sufficient for a given purpose or for a given data processing system.

data circuit. (1) A pair of associated transmit and receive channels that provide a means of two-way data communication. (2) In SNA, see also *link connection*. **Note 1:** Between data-switching exchanges, the data circuit may include data circuit-terminating equipment (DCE), depending on the type of interface used at the data-switching exchange. **Note 2:** Between a data station and a data-switching exchange or data concentrator, the data circuit includes the data-terminating equipment at the data station end. It may also include equipment similar to a DCE at the data-switching exchange or data-concentrator location.

data communication. (1) Transfer of information between functional units by means of data transmission according to a protocol. (2) The transmission, reception, and validation of data.

data file. A collection of related data records organized in a specific manner; for example, a payroll file (one record for each employee, showing such information as rate of pay and deductions) or an inventory file (one record for each inventory item, showing such information as cost, selling price, and number in stock.) See also *data set, file*.

data integrity. (1) The condition that exists as long as accidental or intentional destruction, alteration, or loss of data does not occur.

(2) Preservation of data for its intended use.

data link. (1) Any physical link, such as a wire or a telephone circuit, that connects one or more remote terminals to a communication control unit, or connects one communication control unit with another. (2) The assembly of parts of two data terminal equipment (DTE) devices that are controlled by a link protocol, and the interconnecting data circuit, that enable data to be transferred from a data source to a data sink. (3) In SNA, see also *link*. **Note:** A telecommunication line is only the physical medium of transmission. A data link includes the physical medium of transmission, the protocol, and associated devices and programs; it is both physical and logical.

data processing system. A network, including computer systems and associated personnel, that accepts information, processes it according to a plan, and produces the desired results.

data rate. See *data transfer rate*, *line data rate*.

data set. Logically related records treated as a single unit. See also *file*.

data station. See *station*.

data structure. The syntactic structure of symbolic expressions and their storage allocation characteristics.

data terminal equipment (DTE). (1) That part of a data station that serves as a data source, data receiver, or both. (2) Equipment that sends or receives data, or both.

data transfer. (1) The result of the transmission of data signals from any data source to a data receiver. (2) The movement, or copying, of data from one location and the storage of the data at another location.

data transfer rate. The average number of bits, characters, or blocks per unit of time passing between equipment in a data-transmission session. The rate is expressed in bits, characters, or blocks per second, minute, or hour.

data transmission. The conveying of data from one place for reception elsewhere by means of telecommunications.

data type. The mathematical properties and internal representation of data and functions.

deactivation. The process of taking any element out of service, rendering it inoperative, or placing it in a state in which it cannot perform the functions for which it was designed.

debug. To detect, diagnose, and eliminate errors in computer programs.

default. Pertaining to an attribute, value, or option that is assumed when none is explicitly specified.

delimiter. (1) A character used to indicate the beginning or end of a character string. (2) A bit pattern that defines the beginning or end of a frame or token on a LAN.

destination. Any point or location, such as a node, station, or particular terminal, to which information is to be sent.

device. (1) A mechanical, electrical, or electronic contrivance with a specific purpose. (2) An input/output unit such as a terminal, display, or printer. See also *attaching device*.

device driver. The code needed to attach and use a device on a computer or a network.

DGROUP. Internal name used by the compiler and the linker to distinguish all program segments that contain program data. See *CGROUP*.

diagnostics. Modules or tests used by computer users and service personnel to diagnose hardware problems.

digital. (1) Pertaining to data in the form of digits. Contrast with *analog*. (2) Pertaining to data consisting of numerical values or discrete units.

direct memory access (DMA). The transfer of data between memory and I/O units without processor intervention.

directory. (1) A table of identifiers and references that correspond to items of data. (2) An index that a control program uses to locate one or more blocks of data that are stored in separate areas of a data set in direct access storage.

disabled. (1) Pertaining to a state of a processing unit that prevents the occurrence of certain types of interruptions. (2) Pertaining to the state in which a transmission control unit or audio response unit cannot accept incoming calls on a line.

disk. A round, flat plate coated with a magnetic substance on which computer data is stored. See also *integrated disk, fixed disk*.

diskette. A thin, flexible magnetic disk permanently enclosed in a protective jacket. A diskette is used to store information for processing.

diskette drive. The mechanism used to seek, read, and write data on diskettes.

Disk Operating System. An operating system for computer systems that use disks and diskettes for auxiliary storage of programs and data.

display. (1) A visual presentation of data. (2) A device that presents visual information to the point-of-sale terminal operator and to the customer, or to the display station operator.

distributed. Physically separate but connected by cables.

Distributed Systems Executive (DSX). An IBM licensed program available for IBM host systems that allows the host system to get, send, and remove files, programs, formats and procedures in a network of computers.

DMA. (Direct memory access) A procedure or method designed to gain direct access to main storage to achieve data transfer without involving the processing unit.

DOS. Disk Operating System.

down-loop. The position of a terminal or store controller on the store loop in relation to the direction of data flow on the store loop. For example, each terminal or store controller transmits loop data to the next terminal "down-loop" from its position on the store loop and it receives loop data from the next terminal "up-loop" from its position on the store loop. See *up-loop*.

downstream. (1) On an IBM Token-Ring Network, the direction of data flow. (2) In the direction of data flow or toward the destination of transmission (contrast with *upstream*).

driver. Software component that controls a device.

DSX. Distributed Systems Executive.

DTE. Data terminal equipment.

dump. (1) To write at a particular instant the contents of storage, or part of storage, onto another data medium for the purpose of safeguarding or debugging the data. (2) Data that has been dumped.

duplex. In data communication, pertaining to a simultaneous two-way independent transmission in both directions. Synonymous with *full-duplex*. Contrast with *half-duplex*.

```
+----+  
|  E  |  
+----+
```

EAN. European article number.

EBCDIC. Extended binary-coded decimal interchange code. A coded character set consisting of 8-bit coded characters.

element. (1) In a set, an object, entity, or concept having the properties that define a set. (2) A parameter value in a list of parameter values.

emulation. (1) The imitation of all or part of one computer system by another, primarily by hardware, so that the imitating system accepts the same data, executes the same programs, and achieves the same results as the imitated computer system. (2) The use of programming techniques and special machine features to permit a computing system to execute programs written for another system.

enabled. (1) On a LAN, pertaining to an adapter or device that is active, operational, and able to receive frames from the network. (2) Pertaining to a state of a processing unit that allows the occurrence of certain types of interruptions. (3) Pertaining to the state in which a transmission control unit or an audio response unit can accept incoming calls on a line.

end delimiter. The last byte of a token or frame, consisting of a special, recognizable bit pattern.

end user. The ultimate source or destination of data flowing through an SNA network. An end user can be an application program or a workstation operator.

enterprise. A business or organization that consists of two or more sites separated by a public right-of-way or a geographical distance. Contrast with *establishment*.

error condition. The condition that results from an attempt to use instructions or data that are invalid.

error message. A message that is issued because an error has been detected.

establishment. A user's premises that do not extend across public rights of way (for example, a single office building, warehouse, or campus). Contrast with *enterprise*.

European article number (EAN). A number that is assigned to and encoded on an article of merchandise for scanning in some countries.

evaluation. Reduction of an expression to a single value.

event. (1) Processing unit containing price changes and item file updates. All records in an event share common characteristics such as type of change and event due date. (2) An occurrence of significance to a task; for example, the completion of an asynchronous operation, such as an I/O operation.

exception. An abnormal condition such as an I/O error encountered in processing a data set or a file. See also *overflow exception* and *underflow exception*.

execute. To perform the actions specified by a program or a portion of a program.

execution. The process of carrying out an instruction or instructions of a computer program by a computer.

exit. To execute an instruction or statement within a portion of a program in order to terminate the execution of that portion. **Note:** Such portions of programs include loops, routines, subroutines, and modules.

expansion board. In an IBM personal computer, a panel containing microchips that a user can install in an expansion slot to add memory or special features. Synonymous with *expansion card*, *extender card*.

expansion card. Synonym for *expansion board*.

expansion slot. In an IBM personal computer, one of several receptacles in the system board of the system unit or expansion unit into which a user can install an expansion board such as a memory expansion option.

expression. A notation, within a program, that represents a value: a constant or a reference appearing alone, or combinations of constants and references with operators.

extended binary-coded decimal interchange code (EBCDIC). A coded character set consisting of 8-bit coded characters.

extender card. Synonym for *expansion board*.

```
+---+  
| F |  
+---+
```

fault. An accidental condition that causes a functional unit to fail to perform its required function.

FCC. Federal Communications Commission.

feature. A part of an IBM product that may be ordered separately by the customer.

Feature Expansion. A card that plugs into an IBM 4683 Point of Sale Terminal and allows additional devices to be used.

Federal Communications Commission (FCC). A board of commissioners appointed by the President under the Communications Act of 1934, having the power to regulate all interstate and foreign communications by wire and radio originating in the United States.

field. On a data medium or a storage medium, a specified area used for a particular category of data; for example, a group of character positions used to enter or display wage rates on a panel.

file. A named set of records stored or processed as a unit. For example,

an invoice may form a record and the complete set of such records may form a file. See also *data set*, *data file*.

file access. Methods of entering a file to retrieve the information stored in the file.

file allocation table (FAT). A table used by the operating system to allocate space on a disk for a file and to locate and chain together parts of the file that may be scattered on different sectors so that the file can be used in a random or sequential manner.

file server. (1) A store controller that maintains prime versions of all non-system mirrored files. (2) A high-capacity disk storage device or a computer that each computer on a network can access to retrieve files that can be shared among the attached computers.

file type. The attribute of a file that specifies to which store controllers it is distributed.

fixed disk drive. In a personal computer system unit, a disk storage device that reads and writes on rigid magnetic disks. It is faster and has a larger storage capacity than a diskette and is permanently installed.

flag. A character or indicator that signals the occurrence of some condition, such as the setting of a switch, or the end of a word.

formatted diskette. A diskette on which track and sector control information has been written and that can be used by the computer to store data. **Note:** A diskette must be formatted before it can receive data.

frame. (1) The unit of transmission in some LANs, including the IBM Token-Ring Network and the IBM PC Network. It includes delimiters, control characters, information, and checking characters. On a token-ring network, a frame is created from a token when the token has data appended to it. On a token bus network (IBM PC Network), all frames including the token frame contain a preamble, start delimiter, control address, optional data and checking characters, end delimiter, and are followed by a minimum silence period. (2) A housing for machine elements. (3) In synchronous data link control (SDLC), the vehicle for every command, every response, and all information that is transmitted using SDLC procedures. Each frame begins and ends with a flag.

frame check sequence (FCS). (1) A system of error checking performed at both the sending and receiving station after a block check character has been accumulated. (2) A numeric value derived from the bits in a message that is used to check for any bit errors in transmission. (3) A redundancy check in which the check key is generated by a cyclic algorithm. Synonymous with *cyclic redundancy check (CRC)*.

frequency. The rate of signal oscillation, expressed in hertz (cycles per second).

full-duplex. Synonym for *duplex*.

function. (1) A specific purpose of an entity, or its characteristic action. (2) A subroutine that returns the value of a single variable. (3) In data communications, a machine action such as a carriage return or line feed.

function key. A key on a terminal, such as an ENTER key, that causes the transmission of a signal not associated with a character that can be printed or displayed. Detection of the signal usually causes the system to perform some predefined action for the operator or determined by the application program.

functional unit. An entity of hardware, software, or both, capable of accomplishing a specified purpose.

+---+
| G |
+---+

gateway. A device and its associated software that interconnect networks of systems of different architectures. The connection is usually made above the reference model network layer. For example, a gateway allows LANs access to System/370 host computers. Contrast with *bridge* and *router*.

group. (1) A set of related records that have the same value for a particular field in all records. (2) A collection of users who can share access authorities for protected resources. (3) A list of names that are known together by a single name.

+---+
| H |
+---+

half-duplex. In data communication, pertaining to transmission in only one direction at a time. Contrast with *duplex*.

hard error. An error condition on a network that requires that the source of the error be removed or that the network be reconfigured before the network can resume reliable operation. See also *beaconing*. Contrast with *soft error*.

hardware. Physical equipment as opposed to programs, procedures, rules, and associated documentation.

HCP. Host command processor for advanced data communications.

header. The portion of a message that contains control information for the message such as one or more destination fields, name of the originating station, input sequence number, character string indicating the type of message, and priority level for the message.

hertz (Hz). A unit of frequency equal to one cycle per second. **Note:** In the United States, line frequency is 60Hz or a change in voltage polarity 120 times per second; in Europe, line frequency is 50Hz or a change in voltage polarity 100 times per second.

hierarchical file system. Multilevel file organization scheme that uses various levels of branching subdirectories. The base level of the hierarchy is the root directory.

host computer. (1) The primary or controlling computer in a multi-computer installation or network. (2) In a network, a processing unit in which resides a network access method. Synonymous with *host processor*.

host processor. (1) In a network, a computer that primarily provides services such as computation, data base access, or special programs or programming languages. (2) Synonym for *host computer*.

Hz. See *hertz*.

+---+
| I |
+---+

IBM Personal Computer Disk Operating System (DOS). A disk operating system based on MS-DOS (*)

identifier. String of characters used to name elements of a program, such as variable names, reserved words, and user-defined function names.

IEEE. Institute of Electrical and Electronics Engineers.

inactive. (1) Not operational. (2) Pertaining to a node or device not connected or not available for connection to another node or device. (3) In the IBM Token-Ring Network, pertaining to a station that is only repeating frames or tokens, or both.

initial program load (IPL). The initialization procedure that causes an operating system to begin operation.

input/output device. See I/O device.

input/output (I/O). (1) Pertaining to a device whose parts can perform an input process and an output process at the same time. (2) Pertaining to a functional unit or channel involved in an input process, output process, or both, concurrently or not, and to the data involved in such a process.

input sequence table. Defines all input data that is expected by the application from the keyboard, OCR device, point-of-sale scanner, and wand on the 4683-xx1 or 4684. The table allows the terminal I/O processor to recognize operator input and organize it into a form the application expects.

inquiry. A request for information from memory.

insert. To make an attaching device an active part of a LAN.

instruction. In a programming language, a meaningful expression that specifies one operation and identifies its operands, if any.

integrated. Arranged together as one unit.

integrated disk. An integral part of the processor that is used for magnetically storing files, application programs, and diagnostics. Synonymous with *disk*.

interaction. A basic unit used to record system activity, consisting of the acceptance of a line of terminal input, processing of the line, and a response, if any.

interactive. Pertaining to an application or program in which each entry calls forth a response from a system or program. An interactive program may also be conversational, implying a continuous dialog between the user and the system.

interface. (1) A shared boundary between two functional units, defined by functional characteristics, common physical interconnection characteristics, signal characteristics, and other characteristics as appropriate. (2) A shared boundary. An interface may be a hardware component to link two devices or a portion of storage or registers accessed by two or more computer programs. (3) Hardware, software, or both, that links systems, programs, or devices.

interference. (1) The prevention of clear reception of broadcast signals. (2) The distorted portion of a received signal.

International Organization for Standardization (ISO). An organization of national standards bodies from various countries established to promote development of standards to facilitate international exchange of goods and services, and develop cooperation in intellectual, scientific, technological, and economic activity.

interrupt. (1) A suspension of a process, such as execution of a computer program, caused by an external event and performed in such a way that the process can be resumed. (2) To stop a process in such a way that it can be resumed. (3) In data communication, to take an action at a receiving station that causes the sending station to end a transmission. (4) A means of passing processing control from one software or microcode module

or routine to another, or of requesting a particular software, microcode, or hardware function.

interrupt level. The means of identifying the source of an interrupt, the function requested by an interrupt, or the code or feature that provides a function or service.

I/O. Input/output.

I/O device. Equipment for entering and receiving data from the system.

I/O processor. Equipment that receives data from, processes data, and sends data to one or more I/O devices.

IPL. Initial program load.

ISO. International Organization for Standardization.

item. (1) One member of a group. (2) In a store, one unit of a commodity, such as one box, one bag, or one can. Usually an item is the smallest unit of a commodity to be sold.

item code. (1) The number assigned to an item that can indicate the manufacturer as well as the specific item in that manufacturer's line of goods. (2) The number assigned to an item for indexing into the user's files.

```
+---+
| J |
+---+
```

jumper cable. Synonym for *patch cable*.

```
+---+
| K |
+---+
```

K. When referring to storage capacity, a symbol that represents two to the tenth power, or 1024.

Kb. Kilobit

KB. Kilobyte

keyboard. A group of numeric keys, alphabetic keys, special character keys, or function keys used for entering information into the terminal and into the system.

keyed file. Type of file composed of keyed records. Each keyed record has two parts: a key and data. A key is used to identify and access each record in the file.

kilobit (Kb). One thousand binary digits.

kilobyte (KB). 1024 bytes for processor and data storage (memory) size; otherwise, 1000 bytes.

```
+---+
| L |
+---+
```

label. Constant, either numeric or literal, that references a statement or function.

LAN. Local area network.

LAN adapter. The circuit card within a communicating device (such as a personal computer) that, together with its associated software, enables the device to be attached to a LAN.

LAN segment. (1) Any portion of a LAN (for example, a single bus or ring) that can operate independently but is connected to other parts of the establishment network via bridges. (2) An entire ring or bus network without bridges. See *cable segment*, *ring segment*.

layer. (1) One of the seven levels of the Open Systems Interconnection reference model. (2) In open systems architecture, a collection of related functions that comprise one level of hierarchy of functions. Each layer specifies its own functions and assumes that lower level functions are provided. (3) In SNA, a grouping of related functions that are logically separate from the functions of other layers. Implementation of the functions in one layer can be changed without affecting functions in other layers.

line. On a terminal, one or more characters entered before a return to the first printing or display position.

line data rate. The rate of data transmission over a telecommunications link.

link. (1) In the IBM 4680 Store System, the logical connection between nodes including the end-to-end link control procedures. (2) The combination of physical media, protocols, and programming that connects devices on a network. (3) In computer programming, the part of a program, in some cases a single instruction or an address, that passes control and parameters between separate portions of the computer program. (4) To interconnect items of data or portions of one or more computer programs. (5) In SNA, the combination of the link connection and link stations joining network nodes. See also *link connection*. **Note:** A link connection is the physical medium of transmission; for example, a telephone wire or a microwave beam. A link includes the physical medium of transmission, the protocol, and associated devices and programming; it is both logical and physical.

linkage editor. A computer program used to create one load module from one or more independently-translated object modules or load modules by resolving cross references among the modules.

link connection. (1) All physical components and protocol machines that lie between the communicating link stations of a link. The link connection may include a switched or leased physical data circuit, a LAN, or an X.25 virtual circuit. (2) In SNA, the physical equipment providing two-way communication and error correction and detection between one link station and one or more other link stations. (3) In the IBM 4680 Store System, the logical link providing two-way communication of data from one network node to one or more other network nodes.

link station. (1) A specific place in a service access point (SAP) that enables an adapter to communicate with another adapter. (2) A protocol machine in a node that manages the elements of procedure required for the exchange of data traffic with another communicating link station. (3) A logical point within a SAP that enables an adapter to establish connection-oriented communication with another adapter. (4) In SNA, the combination of hardware and software that allows a node to attach to and provide control for a link.

listing. A printout, usually prepared by a language translator, that lists the source code.

literal. In a source program, an explicit representation of the value of an item, which value must be unaltered during any translation of the source program; for example, the word "ENTER" in the instruction: "If X = 0 print 'ENTER'."

load. In computer programming, to enter data into memory or working

registers.

lobe. In the IBM Token-Ring Network, the section of cable (which may consist of several segments) that connects an attaching device to an access unit.

lobe receptacle. In the IBM Token-Ring Network, an outlet on an access unit for connecting a lobe.

local area network (LAN). A computer network located on a user's premises within a limited geographical area. **Note:** Communication within a LAN is not subject to external regulations; however, communication across the LAN boundary may be subject to some form of regulation.

locally administered address. An adapter address that the user can assign to override the universally administered address. Contrast with *universally administered address*.

logging. The chronological recording of events occurring in a system or a subsystem for accounting or data collection purposes.

logical connection. In a network, devices that can communicate or work with one another because they share the same protocol. See also *physical connection*.

logical link control (LLC) sublayer. One of two sublayers of the ISO Open Systems Interconnection data link layer (which corresponds to the SNA data link control layer), proposed for LANs by the IEEE Project 802 Committee on Local Area Networks and the European Computer Manufacturers Association (ECMA). It includes those functions unique to the particular link control procedures that are associated with the attached node and are independent of the medium; this allows different logical link protocols to coexist on the same network without interfering with each other. The LLC sublayer uses services provided by the medium access control (MAC) sublayer and provides services to the network layer.

logical unit (LU). In SNA, a port through which an end user accesses the SNA network in order to communicate with another end user and through which the end user accesses the functions provided by system services control points (SSCPs). An LU can support at least two sessions, one with an SSCP and one with another LU, and may be capable of supporting many sessions with other logical units.

logon (n), log on (v). The procedure for starting up a point-of-sale terminal or store controller for normal sales operations by sequentially entering the correct security number and transaction number. Synonymous with *sign-on, sign on*.

loop. (1) A set of instructions that may be executed repeatedly while a certain condition prevails. See also *store loop*. (2) A closed unidirectional signal path connecting input/output devices to a network.

Loop Wiring Concentrator (LWC). A device that serves as a junction to connect the store loop cable from individual terminals to the store controller.

LU. Logical unit.

LWC. Loop Wiring Concentrator.

```
+---+
|  M  |
+---+
```

MAC. Medium access control.

machine code. The machine language used for entering text and program instructions onto the recording medium or into storage and which is

subsequently used for processing and printout.

machine language. A language that is used directly by a machine.

macro. An instruction that causes the execution of a predefined sequence of instructions in the same source language.

magnetic stripe. The magnetic material (similar to recording tape) on merchandise tickets, credit cards, and employee badges. Information is recorded on the stripe for later "reading" by the magnetic stripe reader (MSR) or magnetic wand reader attached to the point-of-sale terminal.

magnetic stripe reader (MSR). A device that reads coded information from a magnetic stripe on a card, such as a credit card, as it passes through a slot in the reader.

magnetic wand reader. A device that reads coded information from a magnetic stripe on merchandise tickets, employee badges, or credit cards.

main storage. Program-addressable storage from which instructions and other data can be loaded directly into registers for execution or processing.

Master Store Controller. The store controller that maintains prime versions of system mirrored files and all compound files.

Master Terminal. An IBM 4683-xx1 Point of Sale Terminal that keeps the Terminal Program Load (TPL) so it can load the other terminals on the store loop.

Mb. Megabit

MB. Megabyte

medium. A physical carrier of electrical or optical energy.

medium access control (MAC) protocol. In a LAN, the part of the protocol that governs communication on the transmission medium without concern for the physical characteristics of the medium, but taking into account the topological aspects of the network, in order to enable the exchange of data between data stations.

megabit (Mb). A unit of measure for throughput. 1 megabit = 1,048,576 bits.

megabyte (MB). A unit of measure for data. 1 megabyte = 1,048,576 bytes.

megahertz (MHz). A unit of measure of frequency. 1 megahertz = 1,000,000 hertz.

memory. Program-addressable storage from which instructions and other data can be loaded directly into registers for subsequent execution or processing.

message. (1) An arbitrary amount of information whose beginning and end are defined or implied. (2) A group of characters and control bit sequences transferred as an entity. (3) In telecommunication, a combination of characters and symbols transmitted from one point to another. (4) A logical partition of the user device's data stream to and from the adapter. See also *error message*, *operator message*.

MHz. Megahertz.

Micro Channel. The architecture used by IBM Personal System/2 computers, Models 50 and above. This term is used to distinguish these computers

from personal computers using a PC I/O channel, such as an IBM PC, XT, or an IBM Personal System/2 computer, Model 25 or 30.

microcode. (1) One or more microinstructions. (2) A code, representing the instructions of an instruction set, that is implemented in a part of storage that is not program-addressable. (3) To design, write, and also test one or more microinstructions.

microprocessor. An integrated circuit that accepts coded instructions for execution. The instructions may be entered, integrated, or stored internally.

mirrored files. Files that are kept on both the Master Store Controller and the Alternate Master Store Controller or on both the File Server and Alternate File Server. System mirrored files are kept on the Master Store Controller and Alternate Store Controller and non-system mirrored files are kept on the File Server and Alternate File Server.

modem (MODulator/DEMODulator). A device that converts digital data from a computer to an analog signal that can be transmitted in a telecommunication line, and converts the analog signal received to data for the computer.

module. A program unit that is discrete and identifiable with respect to compiling, combining with other units, and load; for example, the input to, or output from, an assembler, compiler, linkage editor, or executive routine.

monitor. (1) A functional unit that observes and records selected activities for analysis within a data processing system. Possible uses are to show significant departures from the norm, or to determine levels of utilization of particular functional units. (2) Software or hardware that observes, supervises, controls, or verifies operations of a system.

monochrome display. See *video display*.

MSAP. Medium access control (MAC) service access point.

MSR. Magnetic stripe reader.

multipoint. Pertaining to communication among more than two stations over a single telecommunication line.

multistation access unit (MSAU). (1) A lobe concentrator that allows multiple attaching devices access to the ring at a central point such as a wiring closet or in an open work area. In the IBM Token-Ring Network, a wiring concentrator that can connect multiple lobes to a ring network. Synonymous with *access unit*.

multitasking. (1) Pertaining to the concurrent execution of two or more tasks by a computer. (2) Multiprogramming that provides for the concurrent performance, or interleaved execution, of two or more tasks.

+---+
| N |
+---+

name. An alphanumeric term that identifies a data set, statement, program, or cataloged procedure.

NAUN. Nearest active upstream neighbor.

n-bit byte. A string that consists of n bits.

NCP. Network control program.

nearest active upstream neighbor (NAUN). For any given attaching device on an IBM Token-Ring Network, the attaching device that is sending frames or tokens directly to it.

NetView. A host-based IBM network management licensed program that provides communication network management (CNM) or communications and systems management (C&SM) services.

NetView Distribution Manager (NetView DM). A component of the NetView family supporting resource distribution within *Change Management*, and providing central control of software and microcode distribution and installation, to processors in a distributed/departmental (SNA) network system. It allows a similar control of user data objects across the network, and provides the facilities to support the remote initiation of command lists.

network. (1) A configuration of data processing devices and software connected for information interchange. (2) An arrangement of nodes and connecting branches. Connections are made between data stations.

network administrator. A person who manages the use and maintenance of a network.

network architecture. The logical structure and operating principles of a computer network. See also *systems network architecture (SNA)* and *Open System Interconnection (OSI) architecture*. **Note:** The operating principles of a network include those of services, functions, and protocols.

network control program (NCP). A control program for the 3704 or 3705 Communications Controller, generated by the user from a library of IBM-supplied modules.

network layer. (1) In the Open Systems Interconnection reference model, the layer that provides for the entities in the transport layer the means for routing and switching blocks of data through the network between the open systems in which those entities reside. (2) The layer that provides services to establish a path between systems with a predictable quality of service. See *Open Systems Interconnection (OSI)*.

network management. The conceptual control element of a station that interfaces with all of the architectural layers of that station and is responsible for the resetting and setting of control parameters, obtaining reports of error conditions, and determining if the station should be connected to or disconnected from the network.

network management vector transport. The portion of an alert transport frame that contains the alert message.

network wiring closet. See *wiring closet*.

node. (1) Any device, attached to a network, that transmits and/or receives data. (2) An end point of a link, or a junction common to two or more links in a network. Nodes can be processors, controllers, or workstations. Nodes can vary in routing and other functional capabilities. (3) In a network, a point where one or more functional units interconnect transmission lines.

noise. (1) A disturbance that affects a signal and that can distort the information carried by the signal. (2) Random variations of one or more characteristics of any entity, such as voltage, current, or data. (3) Loosely, any disturbance tending to interfere with normal operation of a device or system.

numeric key. A keyboard key for entering information in the form of a number for processing by, or through, a terminal. Processing does not actually begin until a function key is pressed after the numeric entry is made. Contrast with *function keys*.

+---+

| O |
+---+

OCR. Optical character recognition.

OCR reader. A device that reads hand-written or machine-printed symbols into a computing system.

office. See *work area*.

offline. Operation of a functional unit without the control of a computer or control unit.

online. Operation of a functional unit that is under the continual control of a computer or control unit. The term also describes a user's access to a computer using a terminal.

open. (1) To make an adapter ready for use. (2) A break in an electrical circuit. (3) To make a file ready for use.

Open Systems Interconnection (OSI). (1) The interconnection of open systems in accordance with specific ISO standards. (2) The use of standardized procedures to enable the interconnection of data processing systems. **Note:** OSI architecture establishes a framework for coordinating the development of current and future standards for the interconnection of computer systems. Network functions are divided into seven layers. Each layer represents a group of related data processing and communication functions that can be carried out in a standard way to support different applications.

Open Systems Interconnection (OSI) architecture. Network architecture that adheres to a particular set of ISO standards that relates to Open Systems Interconnect.

Open Systems Interconnection (OSI) reference model. A model that represents the hierarchical arrangement of the seven layers described by the Open Systems Interconnection architecture.

operands. An entity to which an operation is applied.

operating system. Software that controls the execution of programs. An operating system may provide services such as resource allocation, scheduling, input/output control, and data management. Examples are IBM PC DOS and IBM OS/2.

Operating System/2 (OS/2). A set of programs that control the operation of high-speed large-memory IBM personal computers (such as the IBM Personal System/2 computer, Models 50 and above), providing multitasking and the ability to address up to 16 MB of memory. Contrast with *Disk Operating System (DOS)*.

operation. (1) A defined action, namely, the act of obtaining a result from one or more operands in accordance with a rule that completely specifies the result for any permissible combination of operands. (2) A program step undertaken or executed by a computer. (3) An action performed on one or more data items, such as adding, multiplying, comparing, or moving.

operator. (1) A symbol that represents the action being performed in a mathematical operation. (2) A person who operates a machine.

operator message. A message from the operating system or a program telling the operator to perform a specific function or informing the operator of a specific condition within the system, such as an error condition.

optical character recognition (OCR). The machine identification of printed characters through the use of light-sensitive devices.

option. (1) A specification in a statement, a selection from a menu, or a setting of a switch, that may be used to influence the execution of a program. (2) A hardware or software function that may be selected or enabled as part of a configuration process. (3) A piece of hardware (such as a network adapter) that can be installed in a device to modify or enhance device function.

OS. Operating system.

OSI. Open Systems Interconnect.

OS/2. Operating System/2.

output device. A device in a data processing system by which data can be received from the system. Synonymous with *output unit*.

output unit. Synonym for *output device*.

overflow exception. A condition caused by the result of an arithmetic operation having a magnitude that exceeds the largest possible number. See also *underflow exception*.

overlay. Part of a larger program read into a computer's main memory only when needed. An overlay replaces other portions of the larger program that are no longer needed. The use of overlays reduces the amount of main memory required by a program. An overlay is only supported on the store controller and requires its own copy of the runtime subroutine library.

owner. In relation to files, an owner is the user that creates the file and therefore has complete access to the file.

```
+---+  
| P |  
+---+
```

packing. Method of conserving disk storage space by stripping the high-order nibbles from ASCII numerals and storing the remaining low-order nibbles two to a byte.

page. (1) The portion of a panel that is shown on a display surface at one time. (2) To move back and forth among the pages of a multiple-page panel. See also *scroll*. (3) In a virtual storage system, a fixed-length block that has a virtual address and is transferred as a unit between main storage and auxiliary storage.

panel. The complete set of formatted information that appears in a single display on a visual display unit.

parallel port. (1) A port that transmits the bits of a byte in parallel along the lines of the bus, one byte at a time, to an I/O device. (2) On a personal computer, it is used to connect a device that uses a parallel interface, such as a dot matrix printer, to the computer. Contrast with *serial port*.

parameter. (1) A name in a procedure that is used to refer to an argument passed to that procedure. (2) A variable that is given a constant value for a specified application and that may denote the application. (3) An item in a menu or for which the user specifies a value or for which the system provides a value when the menu is interpreted. (4) Data passed between programs or procedures.

parity bit. A binary digit appended to a group of binary digits to make the sum of all the digits (including the appended binary digit) either always odd (odd parity) or always even (even parity).

parity check. (1) A redundancy check by which a recalculated parity bit

is compared to the previously given parity bit. (2) A check that tests whether the number of ones (or zeros) in an array of binary digits is odd or even.

parity (even). A condition when the sum of all of the digits in an array of binary digits is even.

parity (odd). A condition when the sum of all of the digits in an array of binary digits is odd.

partner. See conversation partner.

partner terminal. The term used to describe the relationship of a Mod 1 terminal and Mod 2 terminal when they are attached to each other.

patch cable. A length of cable with data connectors at both ends that is normally used to interconnect two sections of building cable at a patch panel or to connect a product to the building cable. Synonymous with *jumper cable*.

path. (1) Reference that specifies the location of a particular file within the various directories and subdirectories of a hierarchical file system. (2) In a network, any route between any two nodes. (3) The route traversed by the information exchanged between two attaching devices in a network. (4) A command in IBM PC DOS and IBM OS/2 that specifies directories to be searched for commands or batch files that are not found by a search of the current directory.

PC DOS. Personal Computer Disk Operating System.

PCF. Product control file

PC Network. An IBM broadband or baseband LAN with a bus topology in which messages are broadcast from PC Network adapter to PC Network adapter.

personal computer (PC). A desk-top, free-standing, or portable microcomputer that usually consists of a system unit, a display, a monitor, a keyboard, one or more diskette drives, internal fixed-disk storage, and an optional printer. PCs are designed primarily to give independent computing power to a single user and are inexpensively priced for purchase by individuals or small businesses. Examples include the various models of the IBM Personal Computers, and the IBM Personal System/2 computer.

Personal Computer Disk Operating System (PC DOS). A program that controls the operation and execution of application programs one task at a time in IBM personal computers. Contrast with *Operating System/2 (OS/2)*.

phase. The relative timing (position) of periodic electrical signals.

physical connection. The ability of two connectors to mate and make electrical contact. In a network, devices that are physically connected can communicate only if they share the same protocol. See also *logical connection*.

physical unit (PU). In SNA, the component that manages and monitors the resources of a node, such as attached links and adjacent link stations, as requested by a system services control point (SSCP) via an SSCP-SSCP session.

pipe. A sequential file in a memory buffer that is used to pass messages from one program to another.

PLD. Power line disturbance

plug. (1) A connector for attaching wires from a device to a cable, such as a store loop. A plug is inserted into a receptacle or plug. (2) To

insert a connector into a receptacle or socket.

point-of-sale terminal. (1) The IBM 4683 Point of Sale Terminal: A unit that provides point-of-sale transaction, data collection, credit authorization, price look-up, and other inquiry and data entry functions. (2) The IBM 4684 Point of Sale Terminal: A unit that provides central processing, point-of-sale transaction, data collection, credit authorization, price look-up, and other inquiry and data entry functions.

polling. (1) Interrogation of devices for purposes such as to avoid contention, to determine operational status, or to determine readiness to send or receive data. (2) In data communication, the process of inviting data stations to transmit, one at a time. The polling process usually involves the sequential interrogation of several data stations.

polling characters (address). A set of characters specific to a terminal and the polling operation; response to these characters indicates to the computer whether the terminal has a message to enter.

port. (1) An access point for data entry or exit. See also *medium access port*. (2) A connector on a device to which cables for other devices such as display stations and printers are attached. Synonymous with *socket*.

post. (1) To affix to a usual place. (2) To provide items such as return code at the end of a command or function. (3) To define an appendage routine. (4) To note the occurrence of an event.

POST. Power-On Self Test.

Post Telephone and Telegraph Administration (PTT). A generic term for the government-operated common carriers in countries outside the USA. Examples of PTT are the General Post Office in the United Kingdom, the Bundespost in Germany, and the Nippon Telephone and Telegraph Public Corporation in Japan. See also *communications common carrier*.

power line disturbance. Interruption or reduction of electrical power.

Power-On Self Test (POST). A series of diagnostic tests that are run automatically each time the computer's power is switched on.

primary adapter. In a personal computer that is used on a LAN and that supports installation of two network adapters, the adapter that uses standard (or default) mapping between adapter shared RAM, adapter ROM, and designated computer memory segments. The primary adapter is usually designated as adapter 0 in configuration parameters. Contrast with *alternate adapter*.

primary store controller. The store controller designated to control the store loop under normal conditions.

printout. Any printed document produced by a point-of-sale terminal printer or by some other printer.

problem determination. The process of determining the source of a problem as being a program component, a machine failure, a change in the environment, a common-carrier link, a user-supplied device, or a user error.

problem determination procedure. A prescribed sequence of steps taken to accomplish problem determination. Such procedures frequently include steps aimed at recovery from, or circumvention of, problem conditions.

procedure. (1) A set of related control statements that cause one or more programs to be performed. (2) In a programming language, a block, with or without formal parameters, whose execution is invoked by means of a procedure call. (3) A set of instructions that gives a service representative a step-by-step procedure for tracing a symptom to the cause of failure.

processor. In a computer, a functional unit that interprets and executes instructions.

product control file (PCF). A file used by Apply Software Maintenance to control the process of applying maintenance.

prompt. A character or word displayed by the operating system to indicate that it is ready to accept input.

protocol. (1) A set of semantic and syntactic rules that determines the behavior of functional units in achieving communication. (2) In SNA, the meanings of and the sequencing rules for requests and responses used for managing the network, transferring data, and synchronizing the states of network components. (3) A specification for the format and relative timing of information exchanged between communicating parties.

PS. Presentation space.

PSN. Public switched network.

PTT. Post Telephone and Telegraph Administration.

PU. Physical unit.

public switched (telephone) network (PSN). A telephone network that provides lines and exchanges to the public. It is operated by the communication common carriers in the USA and Canada, and by the PTT Administrations in other countries.

```
+---+
| Q |
+---+
```

queue. A line or list formed by items in a system waiting for service; for example, tasks to be performed or messages to be transmitted in a message routing system.

```
+---+
| R |
+---+
```

radio frequency (RF). Any frequency in the range within which radio waves may be transmitted, from about 10 KHz to about 300,000 MHz.

RAM. Random access memory.

RAM size. The amount of RAM that is directly mapped into the computer's memory map.

random access. An access mode in which specific logical records are obtained from or placed into a mass storage file in a nonsequential manner.

random-access memory (RAM). A computer's or adapter's volatile storage area into which data may be entered and retrieved in a nonsequential manner.

raster. In computer graphics, a predetermined pattern of lines that provides uniform coverage of a display space.

RCMS. Remote Change Management Server

read. To acquire or to interpret data from a storage device, from a data medium, or from another source.

read-only memory (ROM). A computer's or adapter's storage area whose contents cannot be modified by the user except under special circumstances.

realtime. (1) Pertaining to the actual time during which a physical process occurs. (2) Pertaining to data collected concurrently with physical events, so that the results of the collection operation may be used to influence the sequence of events.

receive. To obtain and store information transmitted from a device.

receptacle. Electrically, a fitting equipped to receive a plug and used to complete a data connection or electrical path. See also *lobe receptacle*.

record. A collection of related items of data, treated as a unit; for example, in stock control, each invoice could constitute one record. A complete set of such records may form a file.

Reference Diskette. (1) A diskette shipped with the IBM Personal System/2 computers with Micro Channel architecture. The diskette contains code and files used for configuration of options and for hardware diagnostic testing. (2) A diskette shipped with the IBM 4684 Point of Sale Terminal. It contains code and files used for configuration of options and for hardware diagnostic testing.

register. (1) A storage area in a computer's memory where specific data is stored. Registers are used in the actual manipulation of data values during the execution of a program. (2) A storage device having a specified storage capacity such as bit, byte, or computer word, and usually intended for a special purpose. (3) In the IBM 4680 Store System, a term that refers to the point-of-sale terminal.

remodulator. In broadband networks, an active device that demodulates inbound information and remodulates it on the higher frequency outbound channel. A remodulator may or may not provide frame error detection and does not amplify inbound noise distortion. It provides network clocking by broadcasting continuous idle when the inbound channel is not transmitting information. Contrast with *translator*.

Remote Change Management Server (RCMS). The IBM 4680 Store System function that interfaces with the host DSX program for file transmission.

remove. (1) To take an attaching device off a network. (2) To stop an adapter from participating in data passing on a network.

response. The information the network control program sends to the access method, usually in answer to a request received from the access method. (Some responses, however, result from conditions occurring within the network control program, such as accumulation of error statistics.)

retransmit. To repeat the transmission of a message or a segment of a message.

retry. In data communication, sending the current block of data a prescribed number of times or until it is entered correctly and accepted.

return code. (1) A value (usually hexadecimal) provided by an adapter or a program to indicate the result of an action, command, or operation. (2) A code used to influence the execution of succeeding instructions. (3) A value established by the programmer to be used to influence subsequent program action. This value can be printed as output or loaded in a register.

RF. Radio frequency.

ring network. A network configuration in which a series of attaching

devices is connected by unidirectional transmission links to form a closed path. A ring of an IBM Token-Ring Network is referred to as a LAN segment or as a Token-Ring Network segment.

ring segment. Any section of a ring that can be isolated (by unplugging connectors) from the rest of the ring. A segment can consist of a single lobe, the cable between access units, or a combination of cables, lobes, and/or access units. See *cable segment*, *LAN segment*.

ring topology. A logically circular, unidirectional transmission path without defined ends. Control can be distributed or centralized.

ROM. Read-only memory.

root directory. Highest or base level directory in a hierarchical file system. Subdirectories branch off of the root directory.

router. An attaching device that connects two LAN segments, which use similar or different architectures, at the reference model network layer. Contrast with *bridge* and *gateway*.

routine. Part of a program, or a sequence of instructions called by a program, that may have some general or frequent use.

routing. (1) The assignment of the path by which a message will reach its destination. (2) The forwarding of a message unit along a particular path through a network, as determined by the parameters carried in the message unit, such as the destination network address in a transmission header.

runtime error. Error occurring during program execution.

runtime subroutine library (RTSL). Set of common, frequently needed program operations that is linked to a compiled program for execution.

```
+---+  
| S |  
+---+
```

SAA. Systems Application Architecture.

sales transaction. See *transaction*.

scan. To pass an item over or through the scanner so that the encoded information is read. See also *wanding*.

scanner. A device that examines the bar code on merchandise tickets, credit cards, and employee badges and generates analog or digital signals corresponding to the bar code.

scroll. To move all or part of the display image vertically or horizontally to display data that cannot be observed within a single display image. See also *page (2)*.

SDLC. Synchronous Data Link Control.

sector. A 512-byte area of the control unit diskette, the amount of data that is transferred at one time to or from the diskette.

segment. See *cable segment*, *LAN segment*, *ring segment*.

selling price. The current price field in the item record. Only one selling price can be active for an item.

sequential file. A disk file in which records are read from or placed

into the file according to the order they are processed.

serial port. On personal computers, a port used to attach devices such as display devices, letter-quality printers, modems, plotters, and pointing devices such as light pens and mice; it transmits data one bit at a time. Contrast with *parallel port*.

server. (1) A device, program, or code module on a network dedicated to providing a specific service to a network. (2) On a LAN, a data station that provides facilities to other data stations. Examples are a file server, print server, and mail server.

service access point (SAP). (1) A logical point made available by an adapter where information can be received and transmitted. A single SAP can have many links terminating in it. (2) In Open Systems Interconnection (OSI) architecture, the logical point at which an n + 1-layer entity acquires the services of the n-layer. For LANs, the n-layer is assumed to be data link control (DLC). A single SAP can have many links terminating in it. These link "end-points" are represented in DLC by link stations.

session. (1) A connection between two application programs that allows them to communicate. (2) In SNA, a logical connection between two network addressable units that can be activated, tailored to provide various protocols, and deactivated as requested. (3) The data transport connection resulting from a call or link between two devices. (4) The period of time during which a user of a node can communicate with an interactive system, usually the elapsed time between log on and log off. (5) In network architecture, an association of facilities necessary for establishing, maintaining, and releasing connections for communication between stations.

signal. (1) A time-dependent value attached to a physical phenomenon for conveying data. (2) A variation of a physical quantity, used to convey data.

sink. The destination of any data involved in a data transfer.

SNA. Systems Network Architecture.

socket. Synonym for *port* (2).

soft error. An intermittent error on a network that causes data to have to be transmitted more than once to be received. A soft error affects the network's performance but does not, by itself, affect the network's overall reliability. If the number of soft errors becomes excessive, reliability is affected. Contrast with *hard error*.

source. The origin of any data involved in a data transfer.

source program. A computer program expressed in a source language.

SSCP. System services control point.

stack. Data structure to which values are added and from which values are removed at only one end. That is, the last value placed onto the stack must be the first value removed from the stack. The stack is used to pass variables from one routine to another and to store all local variables for each iteration of a recursive procedure.

start delimiter. The first byte of a token or frame, consisting of a special, recognizable bit pattern.

state. See conversation state.

station. (1) A point-of-sale terminal that consists of a processing unit, a keyboard, and a display. It can also have input/output devices, such as a printer, a magnetic stripe reader or cash drawers. (2) A communication

device attached to a network. The term used most often in LANs is an *attaching device* or *workstation*. (3) An input or output point of a system that uses telecommunication facilities; for example, one or more systems, computers, terminals, devices, and associated programs at a particular location that can send or receive data over a telecommunication line. See also *attaching device*, *workstation*.

store controller. A programmable unit in a network used to collect data, to direct inquiries, and to control communication within a system. In the IBM 4680 Store System, the store controller is an IBM 4684 Point of Sale Terminal, an IBM Personal Computer AT, or an IBM PS/2 with a Store Loop Adapter feature installed.

store loop. In the IBM 4680 Store System, a cable over which data is transmitted between the store controller and the point-of-sale terminals.

Store Loop Adapter. A hardware component used to connect the loop to a control unit, such as the IBM Personal Computer AT.

subdirectory. Any level of file directory lower than the root directory within a hierarchical file system.

subprogram. Section of code that performs a specific task and is logically separate from the main program. A subprogram differs from a function in that parameters are passed by reference rather than by value.

subroutine. Section of code that performs a specific task and is logically separate from the rest of the program.

subsystem. A secondary or subordinate system, or programming support, usually capable of operating independently of or asynchronously with a controlling system.

SVC. Switched virtual circuit.

switch. On an adapter, a mechanism used to select a value for, enable, or disable a configurable option or feature.

switched virtual circuit (SVC). A virtual circuit that is requested by a virtual call. It is released when the virtual circuit is cleared.

synchronous. (1) Pertaining to two or more processes that depend upon the occurrence of a specific event such as a common timing signal.
(2) Occurring with a regular or predictable timing relationship.

synchronous data link control (SDLC). A discipline conforming to subsets of the Advanced Data Communication Control Procedures (ADCCP) of the American National Standards Institute (ANSI) and High-level Data Link Control (HDLC) of the International Organization for Standardization, for managing synchronous, code-transparent, serial-by-bit information transfer over a link connection. Transmission exchanges may be duplex or half-duplex over switched or nonswitched links. The configuration of the link connection may be point-to-point, multipoint, or loop.

synchronous transmission. Data transmission in which the sending and receiving instruments are operating continuously at substantially the same frequency and are maintained, by means of correction, in a desired phase relationship.

system. In data processing, a collection of people, machines, and methods organized to accomplish a set of specific functions. See also *data processing system* and *operating system*.

system configuration. A process that specifies the devices and programs that form a particular data processing system.

Systems Application Architecture (SAA). An architecture developed by IBM that consists of a set of selected software interfaces, conventions, and

protocols, and that serves as a common framework for application development, portability, and use across different IBM hardware systems.

system services control point (SSCP). In SNA, the focal point within an SNA network for managing the configuration, coordinating network operator and problem determination requests, and providing directory support and other session services for end users of the network. Multiple SSCPs, cooperating as peers, can divide the network into domains of control, with each SSCP having a hierarchical control relationship to the physical units (PUs) and logical units (LUs) within its domain.

Systems Network Architecture (SNA). The description of the logical structure, formats, protocols, and operational sequences for transmitting information units through, and controlling the configuration and operation of, networks. **Note:** The layered structure of SNA allows the ultimate origins and destinations of information, that is, the end users, to be independent of, and unaffected by, the specific SNA network services and facilities used for information exchange.

system unit. (1) A part of a computer that contains the processing unit, and may contain devices such as disk and diskette drives. (2) In an IBM personal computer, the unit that contains the processor circuitry, read-only memory (ROM), random-access memory (RAM), and the I/O channel. It may have one or more disk or diskette drives. (3) In an IBM 4684 terminal, the part of the terminal that contains the processing unit, ROM, RAM, disk and diskette drives, and the I/O channel.

```
+---+
| T |
+---+
```

task. A basic unit of work.

telecommunication line. (1) Any physical medium, such as a wire, that is used to transmit data. **Note:** A telecommunication line is the physical medium. A data link includes the physical medium of transmission, the protocol, and associated devices and programs; it is both physical and logical. (2) The portion of a data circuit external to data-circuit terminating equipment (DCE) that connects the DCE to a data-switching exchange (DSE), that connects a DCE to one or more other DCEs, or that connects a DSE to another DSE.

terminal. In data communication, a device, usually equipped with a keyboard and a display, capable of sending and receiving information over a communication channel.

terminal number. A number assigned to a terminal to identify it for addressing purposes.

terminator. A 75-ohm, resistive connector used on the end of a cable or an unused tap to minimize cable reflections.

throughput. (1) A measure of the amount of work performed by a computer system over a given period of time, for example, number of jobs per day. (2) A measure of the amount of information transmitted over a network in a given period of time. For example, a network's data transfer rate is usually measured in bits per second.

till. A tray in the cash drawer of the point-of-sale terminal, used to keep the different denominations of bills and coins separated and easily accessible.

token. A sequence of bits passed from one device to another on the token-ring network that signifies permission to transmit over the network. It consists of a starting delimiter, an access control field, and an end delimiter. The frame control field contains a token bit that indicates to a receiving device that the token is ready to accept information. If a device has data to send along the network, it appends the data to the token. When data is appended, the token then becomes a frame. See *frame*.

token-bus network. A bus network in which a token-passing procedure is

used.

token-passing. In a token-ring network, the process by which a node captures a token; inserts a message, addresses, and control information; changes the bit pattern of the token to the bit pattern of a frame; transmits the frame; removes the frame from the ring when it has made a complete circuit; generates another token; and transmits the token on the ring where it can be captured by the next node that is ready to transmit.

token ring. A network with a ring topology that passes tokens from one attaching device (node) to another. A node that is ready to send can capture a token and insert data for transmission.

token-ring network. (1) A ring network that allows unidirectional data transmission between data stations by a token-passing procedure over one transmission medium so that the transmitted data returns to and is removed by the transmitting station. The IBM Token-Ring Network is a baseband LAN with a star-wired ring topology that passes tokens from network adapter to network adapter. (2) A network that uses a ring topology, in which tokens are passed in a circuit from node to node. A node that is ready to send can capture the token and insert data for transmission. (3) A group of interconnected token rings.

topology. The physical or logical arrangement of nodes in a computer network. Examples include ring topology and bus topology.

TP. Transaction program.

trace. (1) A record of the execution of a computer program. It exhibits the sequences in which the instructions were executed. (2) A record of the frames and bytes transmitted on a network.

transaction. (1) The process of recording item sales, processing refunds, recording coupons, handling voids, verifying checks before tendering, and arriving at the amount to be paid by or to a customer. The receiving of payment for merchandise or service is also included in a transaction. (2) In an SNA network, an exchange between two programs that usually involves a specific set of initial input data that causes the execution of a specific task or job. Examples of transactions include the entry of a customer's deposit that results in the updating of the customer's balance, and the transfer of a message to one or more destination points.

transfer rate. See *transfer data rate*.

translator. In broadband networks, an active device for converting an inbound channel to a higher frequency outbound channel. The conversion is done by removing the inbound carrier, adding the outbound carrier, and amplifying the signal. (A translator amplifies inbound errors and noise distortion.) Contrast with *remodulator*.

transmission. The sending of data from one place for reception elsewhere.

transmission medium. (1) A physical carrier of electrical energy or electromagnetic radiation. (2) The physical medium that conveys data between data stations; for example, twisted pair wire, optical fiber, coaxial cable.

transmit. To send information from one place for reception elsewhere.

transmitter. (1) A circuit used in data communication applications to send information from one place for reception elsewhere. (2) The device in which the transmission circuits are housed.

twisted pair. A transmission medium that consists of two insulated conductors twisted together to reduce noise.

+---+
| U |
+---+

underflow exception. A condition caused by the result of an arithmetic operation having a magnitude less than the smallest possible nonzero number.

universally administered address. The address permanently encoded in an adapter at the time of manufacture. All universally administered addresses are unique. Contrast with *locally administered address*.

universal product code (UPC). An encoded number that can be assigned to and printed on or attached to an article of merchandise for scanning.

UPC. Universal product code.

up-loop. The position of a terminal or store controller on the store loop in relation to the direction of data flow on the store loop. For example, each terminal or store controller receives loop data from the next terminal "up-loop" from its position on the store loop and it transmits loop data to the next terminal "down-loop" from its position on the store loop. See *down-loop*.

upstream. On an IBM Token-Ring Network, the direction opposite that of data flow. Contrast with *downstream*.

user. (1) Category of identification defined for file access protection. (2) A person using a program or system.

user-defined function. Set of statements created and given a function name by the user. The function performs a specific task and is called into action by referencing the function by name. See *function*.

```
+---+  
|  V  |  
+---+
```

variable. (1) A named entity that is used to refer to data and to which values can be assigned. Its attributes remain constant, but it can refer to different values at different times. (2) In computer programming, a character or group of characters that refers to a value and, in the execution of a computer program, corresponds to an address. (3) A quantity that can assume any of a given set of values.

vector. One or more related fields of data, in a specified format. A quantity usually characterized by an ordered set of numbers.

version. A separate IBM-licensed program, based on an existing IBM-licensed program, that usually has significant new code or new function.

video display. (1) An electronic transaction display that presents visual information to the point-of-sale terminal operator and to the customer. (2) An electronic display screen that presents visual information to the display operator.

virtual circuit. Synonym for *virtual connection*.

virtual connection. (1) A connection between two nodes on the network that is established using the transport layer and provides reliable data between nodes. (2) A logical connection established between two data terminal equipment (DTE) devices. Synonymous with *virtual circuit*.

virtual storage (VS). (1) The storage space that may be regarded as addressable main storage by the user of a computer system in which virtual addresses are mapped into real addresses. The size of virtual storage is limited by the addressing scheme of the computer system and by the amount of auxiliary storage available, not by the actual number of main storage locations. (2) Addressable space that is apparent to the user as the processor storage space, from which the instructions and the data are

mapped into the processor storage locations.

visual display unit (VDU). A device with a TV-like display screen, usually equipped with a keyboard.

```
+---+  
| W |  
+---+
```

wand. A commercially available device used to read information encoded on merchandise tickets, credit cards, and employee badges.

wanding. Passing the tip of the wand reader over information encoded on a merchandise ticket, credit card, or employee badge.

wideband. Synonym for *broadband*.

wiring closet. A room that contains one or more distribution panels and equipment racks that are used to interconnect cables. Sometimes called a *network wiring closet* to distinguish it from a telephone wiring closet.

wiring concentrator. A unit that allows multiple attaching devices access to the ring at a central point such as a wiring closet or in an open work area. A star-wired ring consists of one or more concentrators connected together to form a ring. See also *access unit*.

work area. An area in which terminal devices (such as displays, keyboards, and printers) are located. Access units may also be located in work areas.

workstation. (1) An I/O device that allows either transmission of data or the reception of data (or both) from a host system, as needed to perform a job: for example, a display station or printer. (2) A configuration of I/O equipment at which an operator works. (3) A terminal or microcomputer, usually one connected to a mainframe or network, at which a user can perform tasks.

world. Category of identification defined for file access protection.

4683-xx1. A point-of-sale terminal in the IBM 4680 Store System that loads and executes programs. A 4683-xx1 can be any of the following models: 4683-001, 4683-A01, 4683-P11, 4683-P21, 4683-P41.

4683-xx2. A point-of-sale terminal in the IBM 4680 Store System that does not load and execute programs, but attaches to a terminal that does. A 4683-xx2 can be either of the following models: 4683-002, 4683-A02.

(*) MS-DOS is a trademark of the Microsoft Corporation.

A

active configuration (4684 reference diskette) G.2.2

adapter
 See option adapter (4684)
 See scanner adapter (3687 model 2)

adapter status (baseband network) 5.6.2.1

adapter test (baseband network) 5.6.1.1

addresses (token-ring) 5.7

air deflector (3687 model 2)
 removing 7.3.1
 replacing 7.3.2

alphanumeric display
 removing and replacing 7.1
 symptom 3.3.1
 testing 4.1 5.4.2

alphanumeric keyboard
 removing and replacing 7.6
 symptom 3.3.16
 testing 4.9 5.4.1

alternate adapter (token-ring) 5.7

Annn through Lnnn message 2.5

ANPOS keyboard
 removing and replacing 7.6
 symptom 3.3.16
 testing 4.9 5.4.1
 testing (MSR) 4.6 5.4.7

application program status xxx* 2.4

ARTICx/2
 See X.25 interface co-processor/2 (ARTICx/2)

audible tone
 See keyboard tone

automatic configuration (4684 reference diskette) G.1.2.1

B

back cover (4683 base unit) 7.28.3

back cover (4684 system unit) 7.29.3

backup
 configuration A.5.2
 symptom (4683-A02) 3.3.2

backup configuration (4684 reference diskette) G.2.2 G.2.6

backup mode error message (4683 model A02) 2.13

backup the 4684 reference diskette G.4.1

baffle plate (3687 model 2)
 See air deflector (3687 model 2)

base unit
 cable sockets and devices 7.30 C.7.1
 removing and replacing 7.28
 removing and replacing a feature expansion card 7.28.5
 removing and replacing the back cover 7.28.3
 removing and replacing the battery pack 7.28.4
 removing and replacing the power cord 7.28.6

baseband network
 adapter status (baseband network) 5.6.2.1
 adapter test 5.6.1.1
 display network unit ID number 5.6.1.4
 display network utilization test 5.6.1.3
 menu of tests 5.6.1
 receive verification test 5.6.1.2
 symptom 3.3.3
 testing 5.6
 transmit verification test 5.6.1.2

battery pack (4683-xx1 only)
 part number D.1
 removing 7.28.4.1
 replacing 7.28.4.2

beaconing A.6.6

blank keylock insert
 removing and replacing 7.8

C

cable
 part number D.3
 4683 base unit sockets and devices 7.30 C.7.1
 4684 system unit sockets and devices 7.31 C.7.2

card (feature expansion)
 See feature expansion card (4683 only)

cash drawer
 removing and replacing 7.2
 symptom 3.3.4
 testing 4.2 5.4.10

change configuration (4684 reference diskette) G.2.1

changing configuration (4684 reference diskette) G.2.2

changing the terminal number A.7.5

checkout scanner
 See scanner

coin dispenser (4683 only)

- removing and replacing 7.4
- symptom 3.3.5
- testing 4.3
- collecting information about a problem B.0 to B.6
- combined keyboard/display
 - removing and replacing 7.6
 - symptom (display) 3.3.1
 - symptom (keyboard) 3.3.16
 - symptom (MSR) 3.3.11
 - testing (display) 4.1 5.4.2
 - testing (keyboard) 4.9 5.4.1
 - testing (MSR) 4.6 5.4.7
- command mode help level A.5.5.2
- configuration (backup) A.5.2
- configuration (4684)
 - automatic G.1.2.1
 - backup G.2.2 G.2.6
 - changing G.2.1 G.2.2
 - creating G.2.1 G.2.2
 - manual G.1.2.2
 - optional G.2.9
 - preparing to run G.2
 - restoring G.2.2 G.2.7
 - running G.0
 - viewing G.2.2 G.2.8
- copy an option diskette (4684 reference diskette) G.4.2
- create configuration (4684 reference diskette) G.2.1
- creating a 4680 problem analysis diskette B.5
- creating configuration (4684 reference diskette) G.2.2
- CSU testing 4.23
- current loop device (socket 25)
 - removing and replacing 7.21
 - symptom 3.3.24
 - testing 4.16 5.4.12
- customer receipt paper (model 1 or 2) 7.15.3
- customer receipt paper (model 3) 7.16.3
- D**
- diskette drive (4684)
 - symptom 3.3.6
 - testing 5.5.1
- display network unit ID number (baseband network) 5.6.1.4
- display network utilization test (baseband network) 5.6.1.3
- display (point-of-sale)
 - alphanumeric
 - removing and replacing 7.1
 - symptom 3.3.1
 - testing 4.1 5.4.2
 - combined keyboard/display
 - removing and replacing 7.6
 - symptom 3.3.1
 - testing 4.1
 - testing (display) 5.4.2
 - operator
 - removing and replacing 7.13
 - symptom 3.3.1
 - testing 4.1 5.4.2
 - shopper
 - removing and replacing 7.20
 - symptom 3.3.23
 - testing 4.15 5.4.3
 - video (4683 except 5-inch/127mm)
 - removing and replacing 7.23
 - symptom 3.3.31
 - testing 4.20 5.4.4
 - video (4684 system unit)
 - removing and replacing 7.23
 - 5-inch (127mm) monochrome
 - removing and replacing 7.24
 - symptom 3.3.31
 - testing 4.20
- displaying a message
 - point-of-sale terminal offline message A.7.3.2
 - point-of-sale terminal system message A.7.3.3
 - point-of-sale terminal wait message A.7.3.1
 - store controller A.5.4
- displaying point-of-sale terminal configuration A.7.2
- displaying the terminal number A.7.4
- displays (point-of-sale terminal) C.5
- dual asynchronous adapter testing (4684) 5.5.1
- dual-track MSR
 - See magnetic stripe reader (MSR)
- dump procedure
 - Personal Computer AT B.1.1
 - PS/2 B.1.1

- store controller storage B.1
- 4683 storage B.2
- 4684 B.1.2
- dump switch (4683 only)
 - Personal Computer AT B.1.1
 - PS/2 B.1.1
 - store controller B.1
 - symptom 3.3.7
 - testing 4.4
 - 4683 B.2
 - 4684 B.1.2
- E**
- eight-character message 2.1
- end-of-poll timeout A.6.5
- enhanced alphanumeric keyboard
 - removing and replacing 7.6
 - testing 5.4.1
- entering the terminal number A.7.6
- error log (4684) G.4.6
- event number A.5.6
- example messages 2.1
- expanded memory testing (4684) 5.5.1
- expansion card (feature)
 - See feature expansion card (4683 only)
- expandable supply
 - See supply item part number
- F**
- fan symptom (4683 base unit or 4684 system unit) 3.3.8
- FCC statement FRONT_1.2
- feature card and memory expansion adapter testing (4684) 5.5.1
- feature expansion card (4683 only)
 - removing 7.28.5.1
 - replacing 7.28.5.2
 - testing (port 23 and 25 test) 5.4.12
- file server store controller A.4.1
- five-character message 2.1
- fixed disk drive (4684)
 - parking the heads G.4.5
 - securing G.4.5
 - symptom 3.3.9
 - testing 5.5.1
- format (message) A.5.6
- formatting the fixed disk 5.5
- formatting the fixed disk (4684) G.4.7
- four-character message 2.1
- front view of the 4683 C.1
- front view of the 4684 C.3
- H**
- hand-held bar code reader
 - removing and replacing 7.5
 - symptom 3.3.10
 - testing 4.5 5.4.9
- I**
- IBM PC network A.4
- identifier (message) A.5.6
- initial program load sequence (4684) 5.1.2
- initial program load (IPL)
 - description A.7.8.1
 - source A.7.8.2
- Interrupt Level (token-ring) 5.7
- IPL sequence (4684) 5.1.2
- ISDN interface co-processor/2 adapter testing (4684) 5.5.1
- J**
- journal paper (model 1 or 2) 7.15.4
- journal paper (model 3) 7.16.4
- K**
- keyboard light
 - message pending A.7.3 A.7.3.3
 - offline A.7.3 A.7.3.2
 - symptom 3.3.16
 - testing 4.9 5.4.1
 - wait A.7.3 A.7.3.1
- keyboard port testing (4684) 5.5.1
- keyboard scan codes E.1.6
- keyboard tone
 - symptom 3.3.16
 - testing 4.9 5.4.1
- keyboard (point-of-sale)
 - audible tone symptom 3.3.16
 - light symptom 3.3.16
 - removing and replacing 7.6
 - symptom 3.3.16
 - testing 4.9 5.4.1
 - tone symptom 3.3.16

keyboard (4684 system unit)
 removing and replacing 7.6
 testing 5.4.1
 keyboards (point-of-sale terminal) C.6
 keylock insert
 part number D.4
 removing and replacing 7.7
 removing the keylock blank 7.8.1
 replacing the keylock blank 7.8.2
 symptom 3.3.16
 keyword B.7
L
 LAN A.4
 library (4680/4683/4684) PREFACE.1
 light (keyboard)
 See keyboard light
 local area network A.4
 locations
 front view of 4683 C.1
 front view of 4684 C.3
 point-of-sale terminal displays C.5
 point-of-sale terminal keyboards C.6
 rear view of 4683 C.2
 rear view of 4684 C.4
 4683 base unit cable sockets and devices 7.30 C.7.1
 4684 system unit cable sockets and devices 7.31 C.7.2
 lock part number D.4
 logging errors (4684) G.4.6
 loop
 See store loop
 low-profile dual-track MSR
 See magnetic stripe reader (MSR)
M
 magnetic stripe reader (MSR)
 removing and replacing (dual-track) 7.10
 removing and replacing (low-profile dual-track) 7.11
 removing and replacing (single-track) 7.9
 symptom 3.3.11
 testing (dual-track) 4.6 5.4.7
 testing (low-profile dual-track) 4.6 5.4.7
 testing (single-track) 4.6 5.4.7
 magnetic wand (4683 only)
 removing and replacing 7.12
 symptom 3.3.12
 testing 4.7
 manager's keylock
 removing and replacing 7.7
 symptom 3.3.16
 testing 4.9 5.4.1
 manual configuration (4684 reference diskette) G.1.2.2
 master store controller A.4.2
 matrix keyboard
 removing and replacing 7.6
 symptom 3.3.16
 testing 4.9 5.4.1
 memory dump procedure
 See dump procedure
 memory expansion adapter testing (4684) 5.5.1
 memory expansion testing (4684) 5.5.1
 MENU-L1 5.6.2
 MENU-T2 run system unit tests 5.5
 MENU-T4 5.5.1
 MENU-T4 token-ring network adapter 5.7
 MENU-T4 X.25 Interface Co-Processor/2 test 5.8
 MENU-T6 5.4
 MENU-T6 run POS (point-of-sale) device tests 5.4
 menus (4684 reference diskette test) 5.1.1
 message
 Annn through Lnnn message 2.5
 application program status xxx* 2.4
 backup mode error (4683 model A02) 2.13
 description A.5.5
 event number description A.5.6
 example 2.1
 general format A.5.6
 message identifier A.5.6
 Mnnnn 2.6
 Nnnn through Snnn message 2.5
 point-of-sale terminal message A.7.3
 power-on self test 2.3
 severity level A.5.6
 SHELL error message A.5.5.2
 source number definition A.5.6
 stand-alone test mode (4683 model A02) 2.13

system log section definition A.5.6
 Tnnnn message 2.7
 Unnn message 2.8
 Wnnn error message 2.9
 Wnnn message 2.9
 Xnnn message 2.10
 xxx* 2.4
 Ynnn message 2.11
 Znnn message 2.12
 4683 model A02 stand-alone test mode 2.13
 message pending light A.7.3 A.7.3.3
 Mnnnn message 2.6
 model A02 stand-alone test
 starting the test E.0
 testing the cash drawers E.1.4
 testing the displays E.1.2
 testing the keyboard E.1.5
 testing the magnetic stripe reader E.1.7
 testing the printer E.1.1
 testing the scanners E.1.3
 mouse port testing (4684) 5.5.1
 mouse symptom (4684 only) 3.3.13
 MSR
 See magnetic stripe reader (MSR)
 multiple controller feature A.4
 multiprotocol communications adapter testing (4684) 5.5.1
N
 Nnnn through Snnn message 2.5
 number (terminal)
 See terminal number
O
 OCR
 See optical character reader (4683 only)
 offline light A.7.3 A.7.3.2
 online test
 See operating system tests
 operating system tests
 audible tone 4.9
 cash drawer 4.2
 coin dispenser (4683 only) 4.3
 current loop device 4.16
 device attached to socket 23 4.16
 device attached to socket 25 4.16
 display (alphanumeric) 4.1
 display (combined keyboard/display) 4.1
 display (operator) 4.1
 dump switch (4683 only) 4.4
 hand-held bar code reader 4.5
 keyboard light 4.9
 keyboard tone 4.9
 keyboard (alphanumeric) 4.9
 keyboard (ANPOS) 4.9
 keyboard (combined keyboard/display) 4.9
 keyboard (matrix) 4.9
 keyboard (point-of-sale) 4.9
 keyboard (50-key) 4.9
 magnetic wand (4683 only) 4.7
 manager's keylock 4.9
 MSR (dual-track) 4.6
 MSR (low-profile dual-track) 4.6
 MSR (single-track) 4.6
 OCR (4683 only) 4.8
 optical character reader (4683 only) 4.8
 point-of-sale printer 4.10
 point-of-sale scanner 4.11
 power-on self test (4683) 4.12
 remote alarm 4.13
 RS-232 device 4.16
 scale (4683 only) 4.14
 shopper display 4.15
 socket 23 or 25 (RS-232 or current loop) 4.16
 storage retention (4683-xx1 only) 4.18
 store loop 4.17
 testing summary 4.24
 totals retention 4.19
 verification tests (point-of-sale terminal) 4.23
 1520 hand-held scanner model A01 (4683 only) 4.21
 1520 hand-held scanner model A02 4.22
 4680 printer 4.10
 4683 video display 4.20
 operator display
 removing and replacing 7.13
 symptom 3.3.1
 testing 4.1 5.4.2

optical character reader (4683 only)
 removing and replacing 7.14
 symptom 3.3.14
 testing 4.8
 option adapter (4684)
 baseband network symptom 3.3.3
 symptom 3.3.15
 token-ring network symptom 3.3.29
 4684 store loop adapter/A symptom 3.3.26
 option diskette (4684 reference diskette) G.4.2
P
 paper (model 1 or 2 customer receipt) 7.15.3
 paper (model 1 or 2 journal) 7.15.4
 paper (model 3 customer receipt) 7.16.3
 paper (model 3 journal) 7.16.4
 parking the 4684 fixed disk heads G.4.5
 part number
 cable D.3
 keylock D.4
 power cord D.3
 store controller component D.2
 supply item D.1
 PC network A.4
 point-of-sale display
 See display (point-of-sale)
 point-of-sale printer
 See printer (point-of-sale)
 point-of-sale scanner
 See scanner
 point-of-sale terminal
 cable part number D.3
 configuration A.7.2
 configuration (4684 reference diskette) G.0
 description of 4683 A.1
 description of 4684 A.2
 device ID A.7.1
 dump switch B.2
 front view of 4683 C.1
 front view of 4684 C.3
 input voltage for 4683 A.1.1
 input voltage for 4684 A.2.1
 keylock part number D.4
 message A.7.3
 offline message A.7.3.2
 power cord part number D.3
 power-on self test A.7.9
 power-on self testing 4.12
 primary (system) display 4.1
 rear view of 4683 C.2
 rear view of 4684 C.4
 reference information A.7
 storage dump B.2
 supply item part number D.1
 symptom 3.3
 symptom (4683) 3.3.34
 symptom (4684) 3.3.35
 system display 6.25
 system message A.7.3.3
 system (primary) display 4.1
 utilities (4684 reference diskette) G.0
 view of displays C.5
 view of keyboards C.6
 wait message A.7.3.1
 4683 cable sockets and devices 7.30 C.7.1
 4684 cable sockets and devices 7.31 C.7.2
 point-of-sale terminal displays C.5
 point-of-sale terminal keyboards C.6
 pointing device symptom (4684 only) 3.3.13
 polling A.6.4
 port definitions (4684) 5.5.2
 POS (point-of-sale) device tests (4684 reference diskette) 5.4
 power cord
 part number D.3
 removing the 4683 power cord 7.28.6.1
 removing the 4684 power cord 7.29.4.1
 replacing the 4683 power cord 7.28.6.2
 replacing the 4684 power cord 7.29.4.2
 power line disturbance (PLD) recovery A.5.3
 power-on self test message 2.3
 power-on self test (point-of-sale terminal) A.7.9
 power-on self test (4683) 4.12
 power-on self test (4684) 5.1.2.1
 preparing to run configuration (4684 reference diskette) G.2
 preparing to run tests (4684 reference diskette) 5.2

preparing to run utilities (4684 reference diskette) G.4
 primary adapter (token-ring) 5.7
 primary display (4684) G.1.3
 primary keyboard (4684) G.1.3
 primary (system) display 4.1
 print head (model 1 or 2)
 removing and replacing (model 1 or 2) 7.15.5
 printer port testing (4684) 5.5.1
 printer (point-of-sale)
 model 1 symptom 3.3.17
 model 2 symptom 3.3.17
 model 3 symptom 3.3.18
 removing and replacing (model 1 or 2) 7.15
 removing and replacing (model 3) 7.16
 removing the print head (model 1 or 2) 7.15.5.1
 removing the ribbon cartridge (model 1 or 2) 7.15.6.1
 removing the ribbon cartridge (model 3) 7.16.5.1
 replacing customer receipt paper (model 1 or 2) 7.15.3
 replacing customer receipt paper (model 3) 7.16.3
 replacing journal paper (model 1 or 2) 7.15.4
 replacing journal paper (model 3) 7.16.4
 replacing the print head (model 1 or 2) 7.15.5.2
 replacing the ribbon cartridge (model 1 or 2) 7.15.6.2
 replacing the ribbon cartridge (model 3) 7.16.5.2
 testing 4.10
 testing model 1 or 2 5.4.5
 testing model 3 5.4.6
 printer (4684 system unit)
 removing 7.17.1
 replacing 7.17.2
 symptom 3.3.27
 problem analysis diskette (4680) B.5
 problem data collection form B.7
 problem determination procedure
 alphanumeric display is blank 6.1
 combined keyboard/display is blank 6.1
 hang condition on a point of sale terminal 6.24
 messages 6310 through 637F on a 4684 6.6
 messages 6390 through 63EF on a 4684 6.7
 multiple symptoms on a 4683 6.25
 operator display is blank 6.1
 point-of-sale display is blank 6.1
 point-of-sale terminal application problem 6.23
 point-of-sale video display is blank 6.2
 shopper display is blank 6.1
 store controller communications problem 6.3
 store controller power-on self test 6.4
 store loop problem 6.5
 unexpected IPL 6.26
 U001 6.8
 U002 6.9
 U003 6.10
 U004 6.11
 U005 6.12
 U006 6.13
 U007 6.14
 U008 6.15
 W001 message 6.16
 W003 message 6.17
 W004 message 6.18
 W005 message 6.19
 W762 message 6.20
 W764 message 6.21
 W772 message 6.22
 Proprinter
 removing 7.17.1
 replacing 7.17.2
 PS/2 option adapter
 See option adapter (4684)
 publications (hardware related) PREFACE.3
 publications (software related) PREFACE.2
R
 RAM size (token-ring) 5.7
 rear view of the 4683 C.2
 rear view of the 4684 C.4
 receipt paper (model 1 or 2) 7.15.3
 receipt paper (model 3) 7.16.3
 receive verification test (baseband network) 5.6.1.2
 reference diskette tests
 audible tone 5.4.1
 baseband network tests 5.6
 cash drawer 5.4.10
 current loop device 5.4.12
 device connected to socket 23 5.4.12

- device connected to socket 25 5.4.12
- display (alphanumeric) 5.4.2
- display (combined keyboard/display) 5.4.2
- display (operator) 5.4.2
- dual asynchronous adapter 5.5.1
- expanded memory 5.5.1
- feature card and memory expansion adapter 5.5.1
- feature expansion card (port 23 and 25) 5.4.12
- hand-held bar code reader 5.4.9
- ISDN interface co-processor/2 adapter 5.5.1
- keyboard light 5.4.1
- keyboard port 5.5.1
- keyboard tone 5.4.1
- keyboard (alphanumeric) 5.4.1
- keyboard (ANPOS) 5.4.1
- keyboard (combined keyboard/display) 5.4.1
- keyboard (enhanced alphanumeric) 5.4.1
- keyboard (matrix) 5.4.1
- keyboard (point-of-sale) 5.4.1
- keyboard (system-unit) 5.4.1
- keyboard (50-key) 5.4.1
- manager' keylock 5.4.1
- memory expansion adapter 5.5.1
- mouse port 5.5.1
- MSR (dual-track) 5.4.7
- MSR (low-profile dual-track) 5.4.7
- MSR (single-track) 5.4.7
- multiprotocol communications adapter 5.5.1
- point-of-sale printer model 1 or 2 5.4.5
- point-of-sale printer model 3 5.4.6
- point-of-sale scanner 5.4.8
- printer port 5.5.1
- RS-232 device 5.4.12
- shopper display 5.4.3
- socket 23 or 25 (RS-232 or current loop) 5.4.12
- system board 5.5.1
- system board async port 5.5.1
- system-unit-video-display 5.4.4
- token-ring adapter tests 5.7
- totals retention 5.4.11
- verification tests 5.3
- video display (4683 except 5-inch/127mm) 5.4.4
- video graphics array 5.5.1
- X.25 interface co-processor/2 test 5.8
- 1 IBM 4684 device channel 5.5.1
- 1024 Kb memory 5.5.1
- 2-8MB 80286 memory expansion adapter 5.5.1
- 4680 printer model 1 or 2 5.4.5
- 4680 printer model 3 5.4.6
- reference diskette (4684)
 - backup G.4.1
 - configuration G.0
 - copy an option diskette G.4.2
 - set system date G.4.3
 - set system time G.4.3
 - setting vital product data G.4.4
 - symptom 3.3.20
 - test menus 5.1.1
 - test procedures 5.0
 - utilities G.0
- reference information A.0
- related publications (hardware) PREFACE.3
- related publications (software) PREFACE.2
- remote alarm
 - removing and replacing 7.18
 - symptom 3.3.21
 - testing 4.13
- removal procedure
 - alphanumeric display 7.1.1
 - battery pack 7.28.4.1
 - cash drawer 7.2.1
 - coin dispenser (4683 only) 7.4.1
 - current loop device 7.21.1
 - device attached to socket 23 or 25 7.21.1
 - dual-track MSR 7.10.1
 - feature expansion card 7.28.5.1
 - hand-held bar code reader 7.5.1
 - keyboard 7.6.1
 - keylock blank insert 7.8.1
 - keylock insert 7.7.1
 - low-profile dual-track MSR 7.11.1
 - magnetic wand 7.12.1
 - operator display 7.13.1
 - optical character reader (OCR) 7.14.1

print head (model 1 or 2) 7.15.5.1
 printer ribbon cartridge (model 1 or 2) 7.15.6.1
 printer ribbon cartridge (model 3) 7.16.5.1
 printer (model 1 or 2) 7.15.1
 printer (model 3) 7.16.1
 Proprinter 7.17.1
 remote alarm 7.18.1
 RS-232 device 7.21.1
 scale 7.19.1
 scanner 7.3.1
 scanner adapter (3687 model 2) 7.27.1
 security base 7.22.1
 shopper display 7.20.1
 single-track MSR 7.9.1
 system unit printer 7.17.1
 system unit video display (4684) 7.23.1
 video display (except 5-inch monochrome) 7.23.1
 1520 hand-held scanner model A01 (4683 only) 7.25.1
 1520 hand-held scanner model A02 7.26.1
 4683 back cover 7.28.3.1
 4683 base unit 7.28.1
 4683 power cord 7.28.6.1
 4684 back cover 7.29.3.1
 4684 power cord 7.29.4.1
 4684 system unit 7.29.1
 5-inch monochrome display (4683 only) 7.24.1
 replacement procedure
 alphanumeric display 7.1.2
 battery pack 7.28.4.2
 cash drawer 7.2.2
 coin dispenser (4683 only) 7.4.2
 current loop device 7.21.2
 device connected to socket 23 or 25 7.21.2
 dual-track MSR 7.10.2
 feature expansion card 7.28.5.2
 hand-held bar code reader 7.5.2
 keyboard 7.6.2
 keylock blank insert 7.8.2
 keylock insert 7.7.2
 low-profile dual-track MSR 7.11.2
 magnetic wand 7.12.2
 operator display 7.13.2
 optical character reader (OCR) 7.14.2
 print head (model 1 or 2) 7.15.5.2
 printer ribbon cartridge (model 1 or 2) 7.15.6.2
 printer ribbon cartridge (model 3) 7.16.5.2
 printer (model 1 or 2) 7.15.2
 printer (model 3) 7.16.2
 Proprinter 7.17.2
 remote alarm 7.18.2
 RS-232 device 7.21.2
 scale 7.19.2
 scanner 7.3.2
 scanner adapter (3687 model 2) 7.27.2
 security base 7.22.2
 shopper display 7.20.2
 single-track MSR 7.9.2
 system unit printer 7.17.2
 system unit video display (4684) 7.23.2
 video display (except 5-inch monochrome) 7.23.2
 1520 hand-held scanner model A01 (4683 only) 7.25.2
 1520 hand-held scanner model A02 7.26.2
 4683 back cover 7.28.3.2
 4683 base unit 7.28.2
 4683 power cord 7.28.6.2
 4684 back cover 7.29.3.2
 4684 power cord 7.29.4.2
 4684 system unit 7.29.2
 5-inch monochrome display (4683 only) 7.24.2
 report (system log) B.4
 resetting the terminal number A.7.7
 restore configuration (4684 reference diskette) G.2.2
 restoring configuration (4684 reference diskette) G.2.7
 restrictions when connecting displays G.2.5
 ribbon cartridge
 removing and replacing (model 1 or 2) 7.15.6
 removing and replacing (model 3) 7.16.5
 ROM Address (token-ring) 5.7
 RS-232 device (socket 23 or 25)
 removing and replacing 7.21
 symptom 3.3.24
 testing 4.16 5.4.12
 running configuration (4684 reference diskette) G.0
 running utilities (4684 reference diskette) G.0

S

- scale
 - removing and replacing 7.19
 - symptom 3.3.22
 - testing 4.14
- scan codes (keyboard) E.1.6
- scanner
 - removing and replacing 7.3
 - symptom 3.3.19
 - testing 4.11 5.4.8
- scanner adapter (3687 model 2)
 - removing 7.27.1
 - replacing 7.27.2
- securing the 4684 fixed disk G.4.5
- security base
 - removing 7.22.1
 - replacing 7.22.2
- set system date (4684 reference diskette) G.4.3
- set system time (4684 reference diskette) G.4.3
- set vital product data (4684 reference diskette) G.4.4
- severity level (message) A.5.6
- SHELL error message A.5.5.2
- shopper display
 - removing and replacing 7.20
 - symptom 3.3.23
 - testing 4.15 5.4.3
- single-track MSR
 - See magnetic stripe reader (MSR)
- slot definitions (4684) 5.5.2
- socket locations (4683 base unit) 7.30 C.7.1
- socket locations (4684 system unit) 7.31 C.7.2
- socket 23 or 25 (RS-232 or current loop)
 - removing and replacing 7.21
 - symptom 3.3.24
 - testing 4.16 5.4.12
- source number A.5.6
- speaker
 - See keyboard tone
- stand-alone test mode message (4683 model A02) 2.13
- start here 1.0
- start problem determination 1.1
- storage dump procedure
 - See dump procedure
- storage dump report B.3
- storage retention (4683-xx1 only)
 - symptom 3.3.25
 - testing 4.18
- store controller
 - backup store controller A.5.1
 - component part number D.2
 - dump switch (Personal Computer AT) B.1.1
 - dump switch (PS/2) B.1.1
 - dump switch (4684) B.1.2
 - file server controller A.4.1
 - master controller A.4.2
 - message description A.5.5
 - reference information A.5
 - status B.6
 - storage dump B.1
 - symptom 3.1
- store controller power-on self test message
- store controller symptom
 - end-of-poll timeout 3.1
 - host communications are failing. 3.1
 - local area network (LAN) is failing. 3.1
 - parity check 3.1
 - ROM error 3.1
 - store loop beacon 3.1
 - store loop is failing 3.1
 - symptom or message not in this list. 3.1
 - system message available 3.1
 - Wnnn message 3.1
- store loop
 - backup A.5.1
 - beaconing A.6.6
 - configuration A.6.1
 - CRC error A.6.7
 - description A.6
 - end-of-poll timeout A.6.5
 - error condition A.6.8
 - error message A.6.8
 - hardware A.6.2
 - polling A.6.4
 - recovery procedure A.6.9

- reference information A.6
- symptom 3.2
- testing 4.17
- wiring concentrator A.6.3
- store loop symptom
 - end-of-poll timeout at the store controller. 3.2
 - store loop beacon 3.2
 - symptom or message not in this list. 3.2
 - W001 message 3.2
 - W002 message 3.2
 - W003 message 3.2
 - W004 message 3.2
 - W005 message 3.2
 - W006 message 3.2
 - W007 message 3.2
 - W760 message 3.2
 - W762 message 3.2
 - W763 message 3.2
 - W764 message 3.2
 - W771 message 3.2
 - W772 message 3.2
 - W774 message 3.2
- store system description (4680) A.3
- store system library PREFACE.1
- supply item part number
 - MSR cleaning card D.1
 - MSR test card D.1
 - paper roll D.1
 - ribbon cartridge D.1
 - storage retention battery pack D.1
- symptom
 - audible tone 3.3.16
 - backup mode (4683-A02) 3.3.2
 - baseband network (4684 only) 3.3.3
 - cash drawer 3.3.4
 - coin dispenser (4683 only) 3.3.5
 - current loop device 3.3.24
 - device attached to socket 23 3.3.24
 - device attached to socket 25 3.3.24
 - diskette drive (4684 only) 3.3.6
 - display (alphanumeric) 3.3.1
 - display (combined keyboard/display) 3.3.1
 - display (operator) 3.3.1
 - dump switch (4683-xx1 only) 3.3.7
 - fan (4683 base unit or 4684 system unit) 3.3.8
 - fixed disk (4684 only) 3.3.9
 - hand-held bar code reader 3.3.10
 - keyboard light 3.3.16
 - keyboard tone 3.3.16
 - keyboard (alphanumeric) 3.3.16
 - keyboard (ANPOS) 3.3.16
 - keyboard (combined keyboard/display) 3.3.16
 - keyboard (matrix) 3.3.16
 - keyboard (50-key) 3.3.16
 - keylock insert 3.3.16
 - magnetic stripe reader (MSR) 3.3.11
 - magnetic wand (4683 only) 3.3.12
 - manager keylock 3.3.16
 - mouse (4684 only) 3.3.13
 - OCR (4683 only) 3.3.14
 - optical character reader (4683 only) 3.3.14
 - option adapter (4684 only) 3.3.15
 - pointing device (4684 only) 3.3.13
 - printer model 1 (point-of-sale) 3.3.17
 - printer model 2 (point-of-sale) 3.3.17
 - printer model 3 (point-of-sale) 3.3.18
 - printer (4684 system unit) 3.3.27
 - reference diskette (4684 only) 3.3.20
 - remote alarm 3.3.21
 - RS-232 device 3.3.24
 - scale (4683 only) 3.3.22
 - scanner (point-of-sale) 3.3.19
 - shopper display 3.3.23
 - socket 23 or 25 (RS-232 or current loop) 3.3.24
 - storage retention (4683-xx1 only) 3.3.25
 - store controller 3.1
 - store loop 3.2
 - system unit printer (4684 only) 3.3.27
 - system unit video display (4684 only) 3.3.28
 - terminal number 3.3.34
 - terminal program load 3.3.34
 - token-ring network (4684 only) 3.3.29
 - totals retention 3.3.30
 - video display 3.3.31

1520 hand-held scanner model A01 (4683 only) 3.3.32
 1520 hand-held scanner model A02 3.3.33
 4683 point of sale terminal 3.3.34
 4683-A02 backup mode 3.3.2
 4684 point of sale terminal 3.3.35
 4684 store loop adapter/A 3.3.26
 system board async port testing (4684) 5.5.1
 system board testing (4684) 5.5.1
 system checkout 5.5
 system date (4684 reference diskette) G.4.3
 system display 6.25
 system log
 event number description A.5.6
 message entry description A.5.6
 message identifier A.5.6
 message severity level A.5.6
 section definition A.5.6
 source number definition A.5.6
 system log report B.4
 system time (4684 reference diskette) G.4.3
 system unit
 cable sockets and devices 7.31 C.7.2
 configuration (reference diskette) G.0
 moving G.4.5
 parking the fixed disk heads G.4.5
 primary display G.1.3
 primary keyboard G.1.3
 removing and replacing 7.29
 removing and replacing the back cover 7.29.3
 removing and replacing the power cord 7.29.4
 securing the fixed disk G.4.5
 utilities (reference diskette) G.0
 system unit keyboard
 See keyboard (4684 system unit)
 system unit printer
 See printer (4684 system unit)
 system unit tests 5.5
 system unit video display
 See video display (4684 system unit)
 system (primary) display 4.1
T
 terminal
 See point-of-sale terminal
 terminal display
 See display (point-of-sale)
 terminal number
 changing A.7.5
 displaying A.7.4
 entering A.7.6
 resetting A.7.7
 symptom 3.3.34
 terminal printer
 See printer (point-of-sale)
 See printer (4684 system unit)
 terminal program load symptom 3.3.34
 terminal storage retention
 See storage retention (4683-xx1 only)
 terminal totals retention
 See totals retention
 test menus (4684 reference diskette) 5.1.1
 test plug 4.16
 test procedure
 See operating system tests
 See reference diskette tests
 test (4680 operating system)
 See operating system tests
 test (4683 model a02 stand-alone)
 See model A02 stand-alone test
 test (4684 reference diskette)
 See reference diskette tests
 testing summary 4.24
 three-character message 2.1
 Tnnnn message 2.7
 token-ring
 tests 5.7
 totals retention
 symptom 3.3.30
 testing 4.19 5.4.11
 transmit/receive verification test (baseband network) 5.6.1.2
U
 Unnn message 2.8
 utilities (4684 reference diskette) G.0
 backup diskette, creating G.4.1
 copying an option diskette to the reference diskette G.4.2

flow chart of MENUs G.3.1
 formatting the fixed disk G.4.7
 introduction G.3
 logging errors G.4.6
 moving the 4684 G.4.5
 parking the fixed disk heads G.4.5
 preparing to run G.4
 securing the fixed disk G.4.5
 setting system date G.4.3
 setting system time G.4.3
 setting vital product data G.4.4

V

verification tests (4680 operating system) 4.23
 verification tests (4684 reference diskette) 5.3
 video display (4683 except 5-inch/127mm)
 removing and replacing 7.23
 symptom 3.3.31
 testing 4.20 5.4.4
 video display (4684 system unit)
 removing and replacing 7.23
 symptom 3.3.28
 testing 5.4.4
 video graphics array testing (4684) 5.5.1
 view active configuration (4684 reference diskette) G.2.8
 view of point-of-sale terminal
 front view of 4683 C.1
 front view of 4684 C.3
 point-of-sale terminal displays C.5
 point-of-sale terminal keyboards C.6
 rear view of 4683 C.2
 rear view of 4684 C.4
 viewing active configuration (4684 reference diskette) G.2.2
 vital product data
 collecting F.1
 entering F.2
 printing F.3
 setting G.4.4
 voltage (4683 input) A.1.1
 voltage (4684 input) A.2.1

W

wait light A.7.3 A.7.3.1
 Wnnn error message 2.9
 Wnnn message 2.9
 world trade difference

X

Xnnn message 2.10
 xxx* message 2.4
 X.25 interface co-processor/2 (ARTICx/2)
 tests 5.8

Y

Ynnn message 2.11

Z

Znnn message 2.12

Numerics

1 IBM 4684 device channel testing 5.5.1
 1024 Kb memory testing (4684) 5.5.1
 1520 hand-held scanner model A01
 removing and replacing 7.25
 symptom 3.3.32
 testing 4.21
 1520 hand-held scanner model A02
 removing and replacing 7.26
 symptom 3.3.33
 testing 4.22
 2-8MB 80286 memory expansion adapter testing (4684) 5.5.1
 3687 checkout scanner model 2
 removing and replacing 7.3
 removing the air deflector 7.3.1
 removing the baffle plate 7.3.1
 removing the scanner 7.3.1
 replacing the air deflector 7.3.2
 replacing the baffle plate 7.3.2
 replacing the scanner 7.3.2
 symptom 3.3.19
 testing 4.11
 4680 operating system tests
 See operating system tests
 4680 store system description A.3
 4680/4683/4684 library PREFACE.1
 4683 base unit
 See base unit
 4683 battery pack
 See battery pack (4683-xx1 only)
 4683 front view C.1

- 4683 model A02 stand-alone test
 - See model A02 stand-alone test
- 4683 model A02 stand-alone test mode message 2.13
- 4683 power cord
 - See power cord
- 4683 rear view C.2
- 4684 configuration (reference diskette)
 - See configuration (4684)
- 4684 front view C.3
- 4684 option adapter
 - See option adapter (4684)
- 4684 port definitions 5.5.2
- 4684 power cord
 - See power cord
- 4684 rear view C.4
- 4684 reference diskette test procedures 5.0
- 4684 slot definitions 5.5.2
- 4684 system unit
 - See system unit
- 4684 tests (reference diskette)
 - See reference diskette tests
- 5-inch (127mm) monochrome display
 - removing and replacing 7.24
 - symptom 3.3.31
 - testing 4.20
- 50-key keyboard
 - removing and replacing 7.6
 - symptom 3.3.16
 - testing 4.9 5.4.1