

EK-MK3BR-MG-001

# Barclays Branch Controller

Maintenance Guide  
(MK III)

First Edition, March 1985

Copyright © 1985  
by Digital Equipment Company Ltd.

All Rights Reserved

Printed in U.K.

The information in this document is subject to change without notice. Digital Equipment Company Ltd. assumes no responsibility for any errors herein.

The following are trademarks of Digital Equipment Company Ltd.

**digital**™

DEC  
DECmate  
DECUS  
DECwriter  
DIBOL  
Work Processor

PDP  
P/OS  
Professional  
Rainbow  
RSTS  
MASSBUS

RT  
UNIBUS  
VAX  
VMS  
VT  
RSX

# CONTENTS

## BARCLAYS BRANCH CONTROLLER MKIII MAINTENANCE GUIDE

Introduction .....	1
Testing the System .....	2
Diagnostic Indication Under Application Software .....	7
Section 1 – Access to the Field-Replaceable Units (FRUs) .....	8
Section 2 – Power Checks .....	11
Section 3 – Control/Keyswitch Assembly .....	13
Section 4 – KDJ11-B (M8190) .....	14
Section 5 – MSV11-PL.1 (M8067) .....	16
Section 6 – MSV11-PL.2 (M8067) .....	18
Section 7 – KMV11-B.1 (M7501) .....	20
Section 8 – KMV11-B.2 (M7501) .....	22
Section 9 – KMV11-B.3 (M7501) if Installed .....	24
Section 10 – DLV11-J (M8043) if Installed .....	26
Section 11 – DRV11 (M7941) .....	28
Section 12 – RQDX1 (M8639-YA) .....	30
Section 13 – RD52 Drive .....	34
Section 14 – RX50 .....	39
Section 15 – Auxiliary PSU .....	43
Section 16 – H7861 PSU .....	44
Appendix A – Barclays Controller Cable Routing .....	45
Appendix B – Complete List of Field Replaceable Units .....	46
Appendix C – Installation and Diagnostic Sequence .....	48
Appendix D – Access to the Barclays Controller ...	50
Appendix E – Barclays Fault Reporting Procedure .....	51
Appendix F – Mark and Firmware Revision Codes .....	52
Appendix G – The World Box (BA123) .....	53
Appendix H – Loading Barclays Software .....	54

## FIGURES

1	Loopback Layout .....	3
2	Access to the FRUs .....	10
3	Power Check Flowchart .....	11
4	Voltage Location Diagram .....	12
5	Front Panel Cable Layout .....	13
6	KDJ11-B Jumper and Switch Locations ...	14
7	KDJ11-B Backplane Position .....	15
8	KDJ11-B Cable Connections .....	15
9	MSV11-PL.1 Jumper Locations .....	16
10	MSV11-PL.1 Backplane Position .....	17
11	MSV11-PL.1 Module Arrangement .....	17
12	MSV11-PL.2 Jumper Locations .....	18
13	MSV11-PL.2 Backplane Position .....	19
14	MSV11-PL.2 Module Arrangement .....	19
15	KMV11-B.1 Jumper and Switch Locations ...	20
16	KMV11-B.1 Backplane Position .....	21
17	KMV11-B.1 Cable Connections .....	21
18	KMV11-B.2 Jumper and Switch Locations ...	22
19	KMV11-B.2 Backplane Position .....	23
20	KMV11-B.2 Cable Connections .....	23
21	KMV11-B.3 Jumper and Switch Locations ...	24
22	KMV11-B.3 Backplane Position if Installed ...	25
23	KMV11-B.3 Cable Connections .....	25
24	DLV11-J Jumper Locations .....	26
25	DLV11-J Backplane Position .....	27
26	DLV11-J Cable Connections .....	27
27	DRV11 Jumper Locations .....	28
28	DRV11 Backplane Position .....	29
29	DRV11 Cable Connections .....	29
30	RQDX1 Jumper Locations .....	30
31	RQDX1 Backplane Position .....	31
32	RQDX1 Cable Connections .....	31
33	Disk Subsystem Connections .....	32
34	Connections to the Distribution PCB .....	33
35	RD52 Connections to the Distribution PCB ...	35
36	Drive Base Plate - General Arrangement ...	36
37	RD52 Skid Plate Removal .....	37
38	Read/Write PCB Jumper DS3 .....	38
39a	Removing the PSU Cover - Step 1 .....	40
39b	Removing the PSU Cover - Step 2 .....	40
40	RX50 Skid Plate Removal .....	41
41	RX50 Connections to the Distribution PCB ...	42
A-1	Cable Detail .....	45
D-1	Lions Rack Assembly .....	50
G-1	MKIII Controller in the BA123 World Box ...	53

## TABLES

1	Display Codes (in Test Sequence) .....	4
2	Access to FRUs .....	8
F-1	Mark and Revision Codes .....	52
H-1	Customer Software Diskettes in Load Sequence .....	54
H-2	LED Codes for Software Load .....	56



# **BARCLAYS BRANCH CONTROLLER MKIII MAINTENANCE GUIDE**

## **INTRODUCTION**

An internal diagnostic in the Barclays branch controller tests the controller modules at power-up or initialization. The diagnostic checks the position of the keyswitch on the front panel, and modifies the test sequence as follows:

## **NORMAL**

The diagnostic runs one complete pass of the test sequence and then boots from the system disk. External loopback tests are not performed, so the loopback connectors are not used. Front panel toggle-switches are disabled.

## **TEST**

External loopback tests **ARE** performed, so loopback connectors must be installed on all communications connectors. The diagnostic will cycle continuously. Boot will **NOT** occur until the keyswitch is moved from the TEST position. Front panel toggle-switches are enabled.

## **AUX**

This keyswitch position is used to select a fast boot. Only basic CPU functions, the DRV11, and the first 32K words of each memory board are tested. This limited test takes about one minute. The disk drives are then tried in the order below. The system is booted from the first drive which has bootable media loaded.

1. RX50 0 (logical drive 1)
2. RX50 1 (logical drive 2)
3. RD52 (logical drive 0)

Front panel toggle-switches are disabled.

### TESTING THE SYSTEM

#### CAUTION

**At all times, remove any RX50 diskettes before switching the power ON or OFF.**

Check that the mains power switch is ON. The switch is located at the back of the controller, and can be accessed from the right-hand side. Before starting the diagnostic, check that the PWR OK and AUX PWR OK LEDs on the front panel are ON, and that the fans are running. If either LEDs or fans are not working, refer to Section 2. If all is working correctly you can continue.

Make sure that the HALT switch is up and the keyswitch is in the NORMAL position. Then press the initialization (INT) button. This button is just above the mains ON/OFF switch.

Check that the six diagnostic LEDs are flashing the alternating pattern shown in Table 1 (LED Test). This proves that all the LEDs are working. The test lasts about 10 seconds and indicates that the diagnostic is running. After this the LEDs flash the mark and firmware revision code for five seconds (see Appendix F). The RUN LED should be on. The diagnostic tests each field-replaceable unit (FRU) in turn, and displays a code on the six LEDs that indicates the FRU under test. If an FRU has failed, the RUN LED goes off, leaving the FRU code displayed on the six LEDs.

See Table 1 for display codes, to find out which FRU has failed and where removal/replacement is described.

A successful test (RUN LED on, six LEDs off) should take about 10 minutes. If the diagnostics are successful, move the keyswitch to the TEST position, fit loopback connectors on the distribution panel (see Figure 1 for loopback layout), and insert two scratch diskettes in the RX50. Press the initialization button and run the test for one complete pass. Swap the KMV11 loopback connectors and then repeat the test. Thus each KMV11 connector is tested with both types of loopback.

If the diagnostics run one error-free pass with each loopback, the unit should be serviceable. If there is an error, replace the indicated FRU and test the branch controller again.





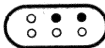
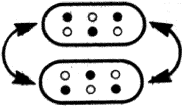
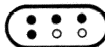
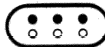

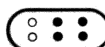
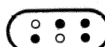
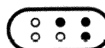
Put the keyswitch back to NORMAL.





# 4 MAINTENANCE GUIDE (MKIII)

**Table 1 Display Codes (in Test Sequence)**

Unit Under Test	Display Layout	Change FRU (See Below)
Power-Up Test		Section 4
Halt-On-Boot		N/A
Basic CPU Test		Section 4
ROM Checksum		Section 4
DRV11		Section 11
LED Test (ID Pattern)		Section 3
MK and Firmware Revision	See Appendix F	Appendix F
Memory Management		Section 4
Extended Instruction Set		Section 4
Cache Test		Section 4
Floating Point		Section 4
Serial Line Unit		Section 4
Line Time Clock Test		Section 4

● = LED on, ○ = LED off.

**Table 1 Display Codes (in Test Sequence) (Cont)**

Unit Under Test	Display Layout	Change FRU (See Below)
MSV11-PL.1		Section 5
Double Addressing.1		Section 5
MSV11-PL.2		Section 6
Double Addressing.2		Section 6
KMV11-B.1		Section 7
KMV11-B.1 Channel A		Section 7
KMV11-B.1 Channel B		Section 7
KMV11-B.2		Section 8
KMV11-B.2 Channel A		Section 8
KMV11-B.2 Channel B		Section 8
KMV11-B.3		Section 9
KMV11-B.3 Channel A		Section 9
KMV11-B.3 Channel B		Section 9

• = LED on, ○ = LED off.

## 6 MAINTENANCE GUIDE (MKIII)

**Table 1 Display Codes (in Test Sequence) (Cont)**

Unit Under Test	Display Layout	Change FRU (See Below)
DLV11-J		Section 10
RQDX1 Controller		Section 12
RD52 Drive		Section 13
RX50 Drive 1		Section 14
RX50 Drive 2		Section 14
RD52 Disk		Section 13
RX50 Diskette 1		N/A
RX50 Diskette 2		N/A
RD52 Boot		N/A
RX50 Drive 2 Boot		N/A
RX50 Drive 1 Boot		N/A
System Running		N/A

• = LED on, ○ = LED off.

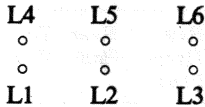
**DIAGNOSTIC INDICATION UNDER APPLICATION SOFTWARE**

Under Barclays software, when the controller is functioning normally, the six LEDs continuously flash, all ON for five seconds and then all OFF for five seconds.

If a hardware error occurs, one or more of the diagnostic LEDs will stay on while the rest keep flashing. The RUN LED will stay ON. The LEDs have the following meanings.

- L1 ON - KMV11 failure
- L2 ON - One or more KMV11 lines failed
- L3 ON - One or more back office terminals failed
- L4 ON - Line to computer-center failed
- L5 ON - RD52 failed
- L6 ON - Invalid, should not occur

For an applications software error the LEDs will stop flashing and a steady code will be displayed. If this is the case, Barclays Support Services at Radbroke Hall should be informed. LEDs are laid out as follows:



## SECTION 1

## ACCESS TO THE FIELD-REPLACEABLE UNITS (FRUs)

**CAUTION**

Before switching the power OFF, remove any diskettes from the RX50s.

**WARNING**

Switch off power before disconnecting any cable or removing an FRU

Table 2 lists the FRUs and the sequence of removing the covers for access. Below the table is a description of how to remove the covers. See Appendix B for a complete list of FRUs.

**NOTE**

See Appendix D for access to the Barclays controller.

Table 2 Access to FRUs

FRU	Rear Dress Plate	Rear Panel	Top Cover	Drive Base Plate	Dist. PCB
PCBs/cables	1	3	2		
Module box	1	3	2		
H7861 PSU	1		2	3	4
Power controller	1	3	2		
Disk drives	1		2	3	
240 V fan	1		2	3	
Auxiliary PSU	1		2	3	
Distribution PCB	1		2		
Disk subsystem cables	1		2	3	

KMV11 cables are dressed against the rear panel. Appendix A shows how the rear-panel cable-loom is assembled.

See Figure 2 for access to FRUs.

## Cover Removal (See Table 2)

### REAR DRESS PLATE

Remove the rear dress plate by lifting it up and pulling it to the rear.

### TOP COVER

Undo the two captive screws at the top rear corners of the top cover. Grip the handles and slide back the cover. Then lift up the cover and remove it.

### REAR PANEL (as viewed from the back)

Remove the two crosshead screws at the left-hand corners of the rear panel. Loosen the two screws at the right-hand corners. Push the panel slightly to the left and then pull it gently to the rear.

### DRIVE BASE PLATE AND BEZEL ASSEMBLY

Undo the four quarter-turn fasteners on the front panel, and pull the drive base plate 2 or 3 inches forward. Disconnect P6 (Figure 4). Disconnect J1, J2, J8, J10, J13, and J4 from the distribution PCB. Disconnect the RX50 cables at the RX50. Disconnect the lanyard which fastens the drive base plate to the main chassis.

### CAUTION

**The RD52 is mounted on the drive base plate, so the base plate must be handled carefully. Separate the base plate from the main chassis and remove it to a stable surface in order to work on it safely.**

### DISTRIBUTION PCB ASSEMBLY

Disconnect all connectors on the front of the distribution PCB. Loosen the two screws at the hinge (back) of the distribution PCB assembly. Remove the front screw (at the left-hand side). The distribution panel assembly can now be hinged backward.

## Cover Replacement

To replace the covers, reverse the previous procedures.

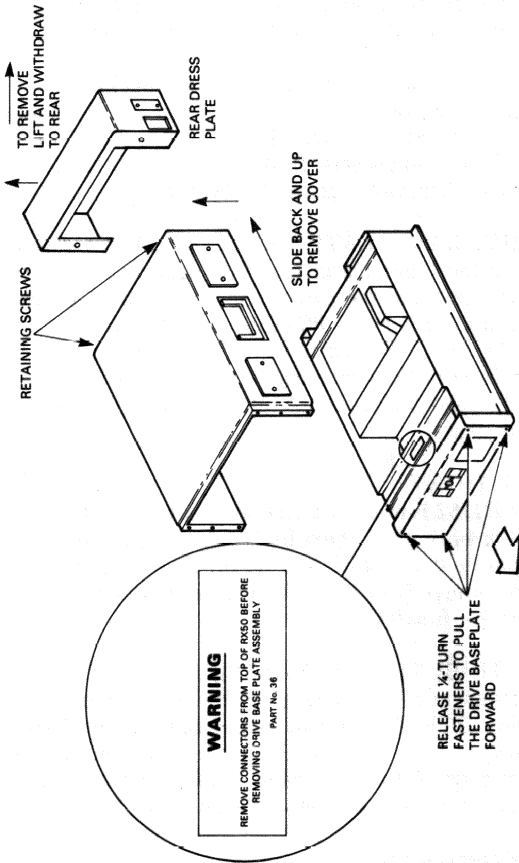
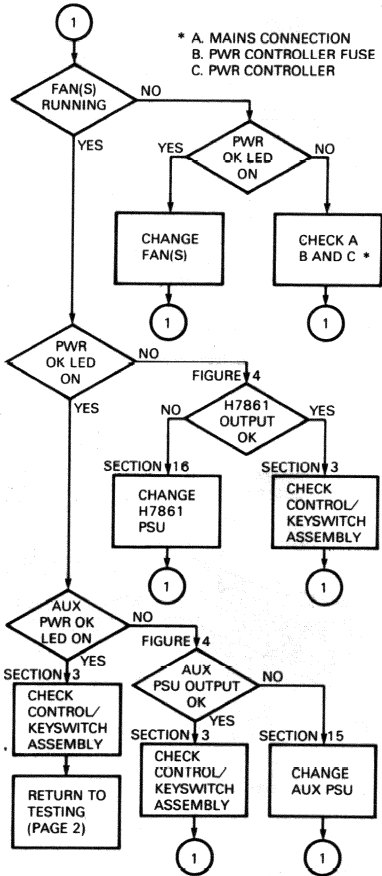


Figure 2 Access to the FRUs



**SECTION 2**

**POWER CHECKS**



RD2077

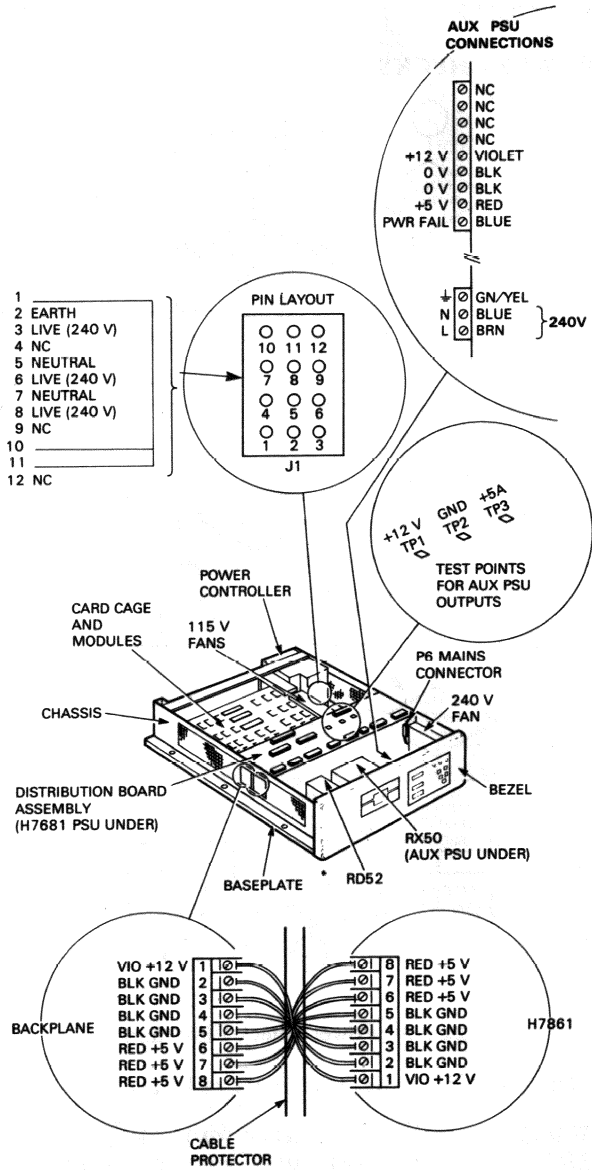
**Figure 3 Power Check Flowchart**

The two PSUs power two groups of LEDs.

<p>PWR OK          RUN          AUX PWR OK          W/Prot RX50s</p>	}	<p>H7861          PSU</p>	<p>AUX PWR OK          W/Prot RX50s          All RD52 LEDs          6 Diag.LEDs</p>	}	<p>AUX          PSU</p>
--	---	-------------------------------	---	---	-----------------------------

If all LEDs of a group are off, check the associated PSU.

# 12 MAINTENANCE GUIDE (MKIII)



RD2059

Figure 4 Voltage Location Diagram

## SECTION 3

### CONTROL/KEYSWITCH ASSEMBLY

To test the LEDs of the control/keyswitch assembly, press both RD52 WRITE PROTECT buttons in, release both on-line/off-line (READY) buttons, and disconnect J11 from the distribution PCB. Put the main power switch on.

Check on the front panel that RUN\*, PWR OK, AUX PWR OK, the four RD52 LEDs, and the six diagnostic LEDs are all ON.

To check the WRITE PROTECT LEDs for the RX50 drives, put a write-protected diskette into each drive. The corresponding LEDs 1 and 2 should come on.

If any LED is not working, change the control/keyswitch assembly.

Reconnect the DRV11 cable to J11 of the distribution PCB. If a diagnostic LED stops working when the DRV11 cable is reconnected, change the DRV11.

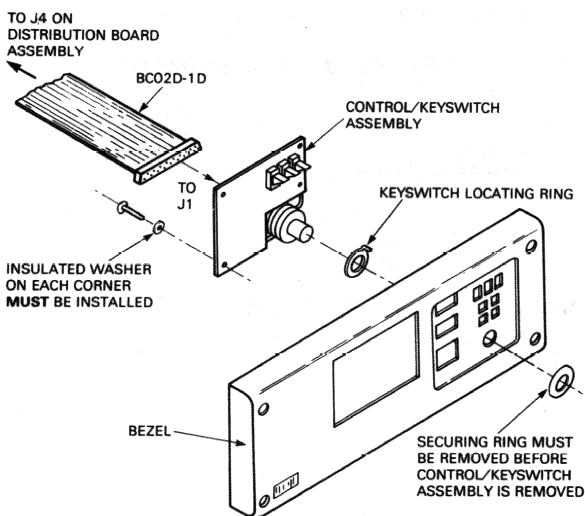


Figure 5 Front Panel Cable Layout

RD1978

\* RUN should be ON initially. It will go OFF if the processor is halted – for example, when the diagnostic tests the DRV11 (with J11 disconnected). Error codes will still be displayed on the KDJ11-B (see Section 4).

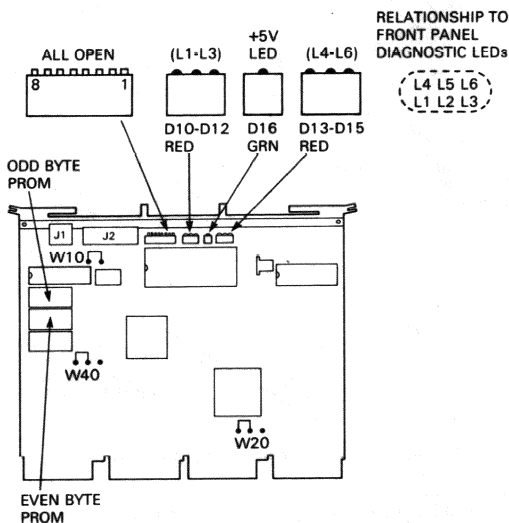
## SECTION 4

## KDJ11-B (M8190)

If the unit fails with the keyswitch at **NORMAL**, change the PCB. If the unit fails with the keyswitch at **TEST**, change the cables/PCB. Note that the PCB LEDs reflect the same codes as the front-panel diagnostic LEDs.

1. See Section 1 for cover removal
2. Remove cable connections (see Figures 7 and 8)
3. Remove PCB
4. Check new PCB jumper/switch positions (see Figure 6)
5. Check PROMs in new PCB are:
 

23-134E5-00	(Even byte)	Location E116
23-135E5-00	(Odd byte)	Location E117
6. Fit new PCB and reconnect the cables
7. Refer to Section 1 for cover replacement.



RD1979

Figure 6 Jumper and Switch Locations

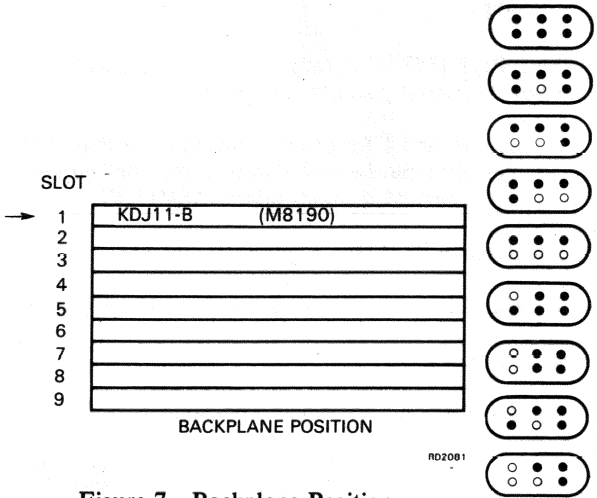


Figure 7 Backplane Position

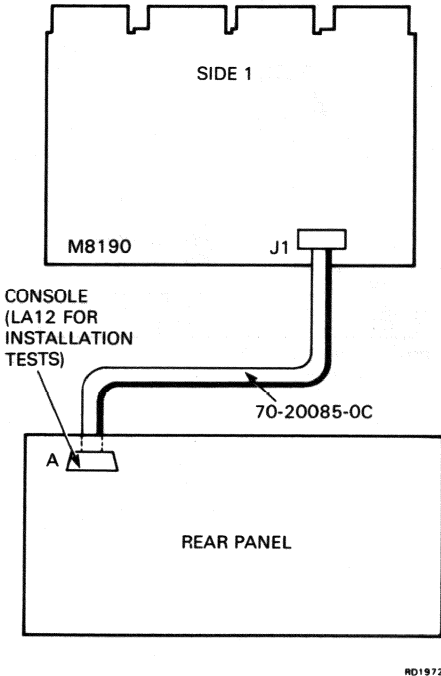


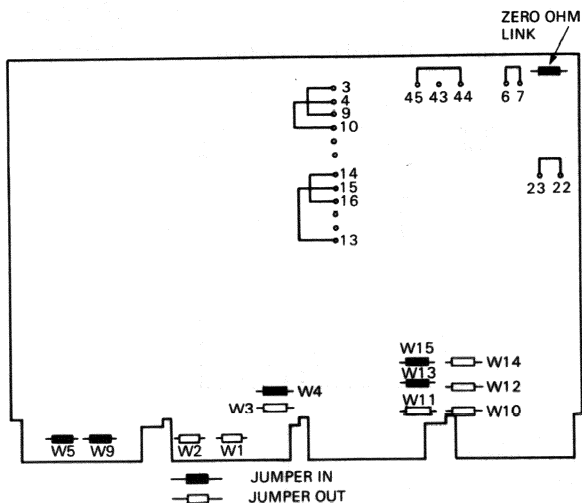
Figure 8 Cable Connections

**SECTION 5**

**MSV11-PL.1 (M8067) (range 0 to 256K words)**

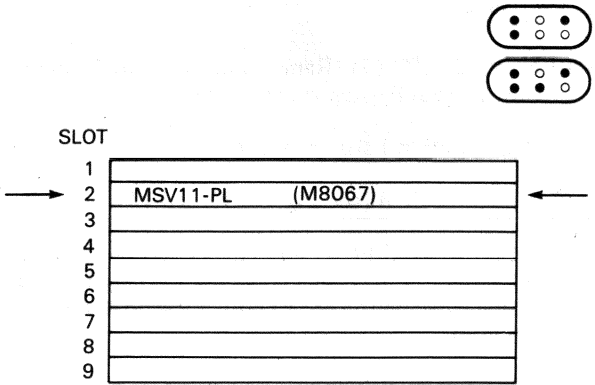
Follow the step-by-step guide below:

1. See Section 1 for cover removal. Note that fault indication may be caused by incorrect configuration of the second memory board MSV11-PL.2
2. Remove PCB (see Figures 10 and 11)
3. Check new PCB for jumper positions (see Figure 9)
4. Fit new PCB
5. See Section 1 for cover replacement.



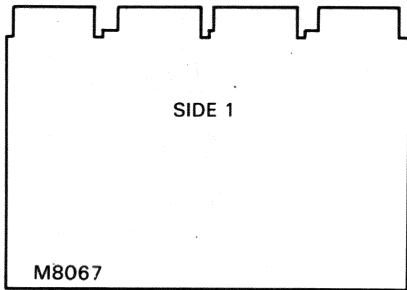
RD1655

**Figure 9 Jumper Locations**



RD1981

Figure 10 Backplane Position



RD1608

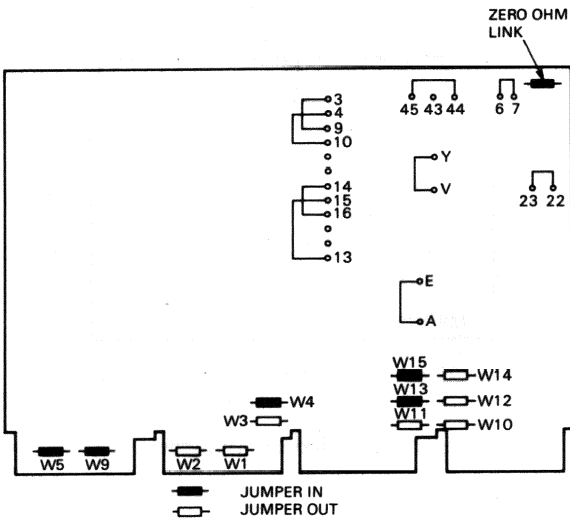
Figure 11 Module Arrangement

**SECTION 6**

**MSV11-PL.2 (M8067) (Range 256K to 512K Words)**

Follow the step-by-step guide below:

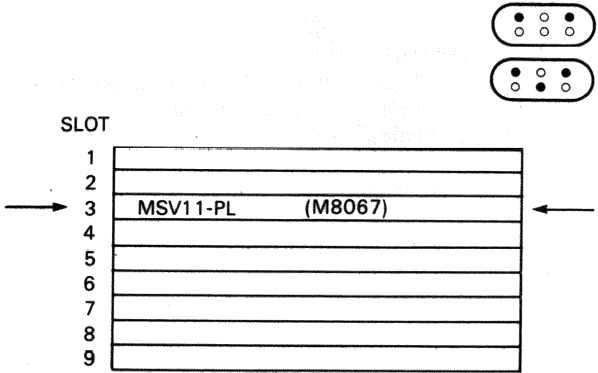
1. See Section 1 for cover removal
2. Remove PCB (see Figures 13 and 14)
3. Check new PCB for jumper positions (see Figure 12). Incorrect configuration may cause a fault indication on MSV11-PL.1 test (first memory board)
4. Fit new PCB
5. See Section 1 for cover replacement.



RD1980

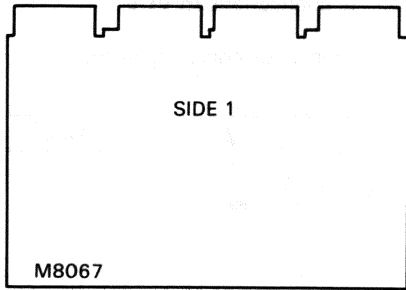
**Figure 12 Jumper Locations**





RD1982

Figure 13 Backplane Position



RD1608

Figure 14 Module Arrangement

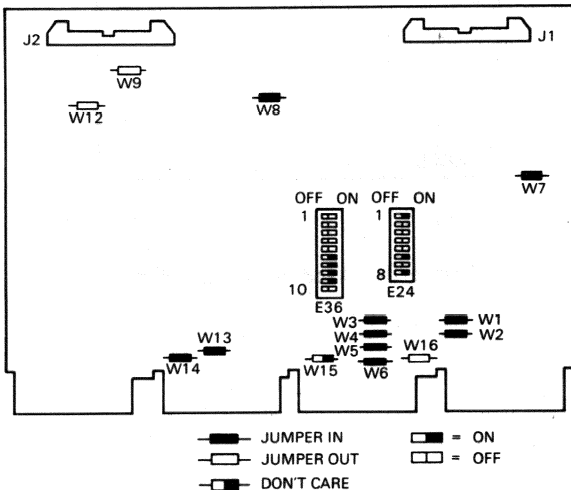
**SECTION 7**

**KMV11-B.1 (M7501)**

If unit fails with keyswitch in **NORMAL** position, change PCB. If unit fails with keyswitch in **TEST** position, change cables/PCB.

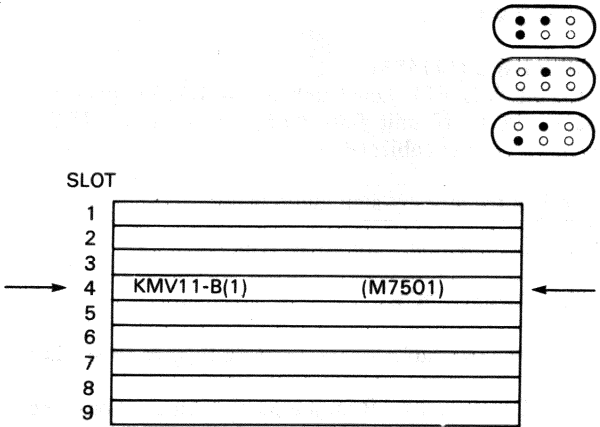
Follow the step-by-step guide below:

1. See Section 1 for cover removal
2. Remove PCB
3. Remove cable connections (see Figures 16 and 17)
4. Check new PCB for jumper/switch positions (see Figure 15)
5. Fit new PCB
6. Fit cable connections to PCB
7. See Section 1 for cover replacement.



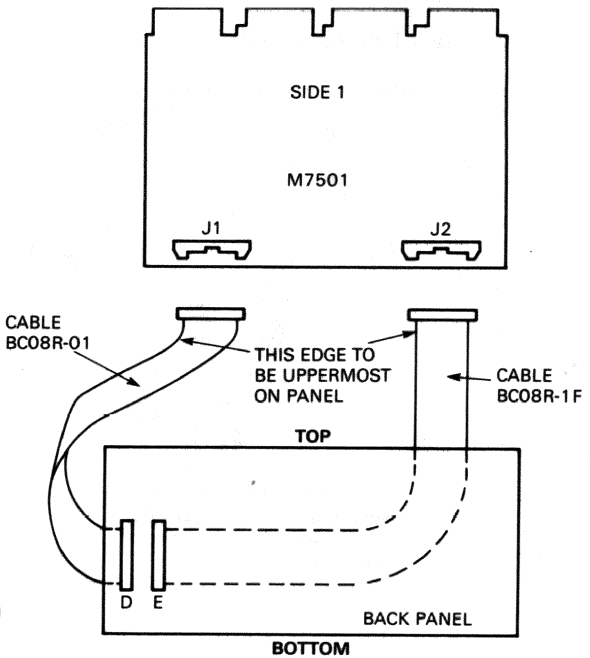
RD1856

**Figure 15 Jumper and Switch Locations**



RD1983

Figure 16 Backplane Position



RD1959

Figure 17 Cable Connections

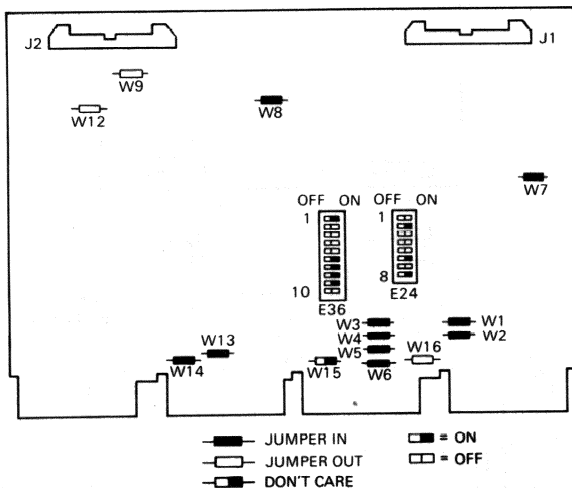
## SECTION 8

## KMV11-B.2 (M7501)

If unit fails with keyswitch in NORMAL position, change PCB. If unit fails with keyswitch in TEST position, change cables/PCB.

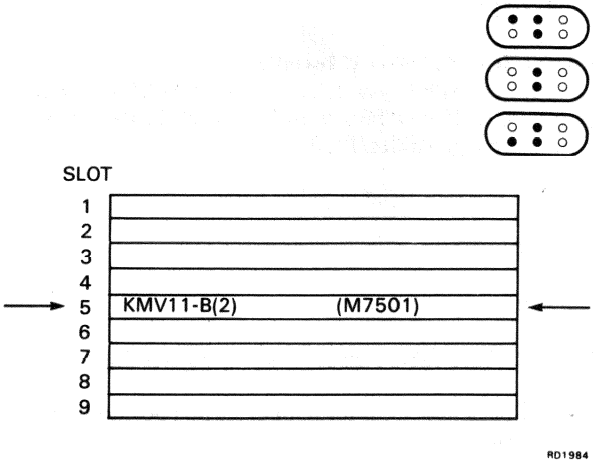
Follow the step-by-step guide below:

1. See Section 1 for cover removal
2. Remove PCB
3. Remove cable connections (see Figures 19 and 20)
4. Check new PCB for jumper/switch positions (see Figure 18)
5. Fit new PCB
6. Fit cable connections to PCB
7. See Section 1 for cover replacement.



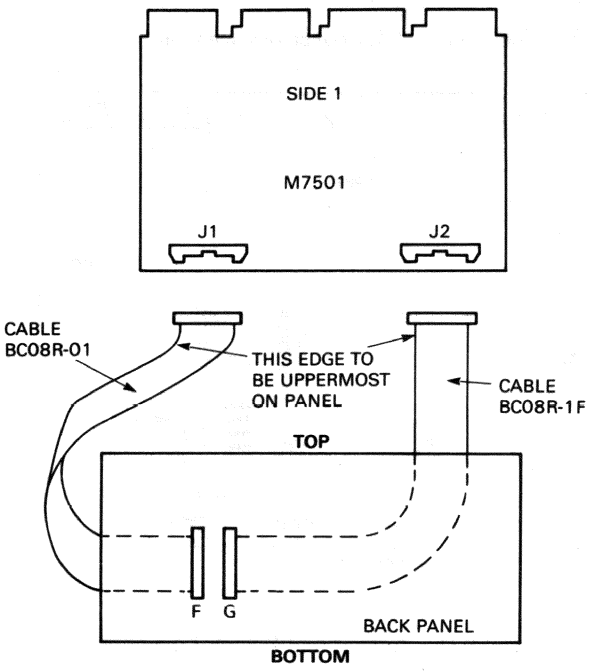
RD1657

Figure 18 Jumper and Switch Locations



RD1984

Figure 19 Backplane Position



RD1960

Figure 20 Cable Connections

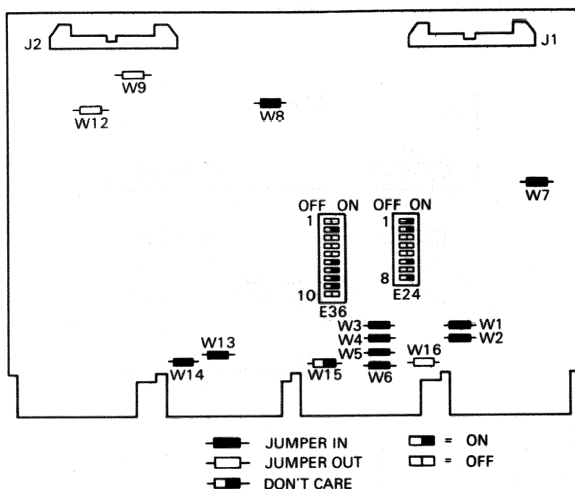
## SECTION 9

**KMV11-B.3 (M7501) if Installed**

If unit fails with keyswitch in the **NORMAL** position, change PCB. If unit fails with keyswitch in the **TEST** position, change cables/PCB.

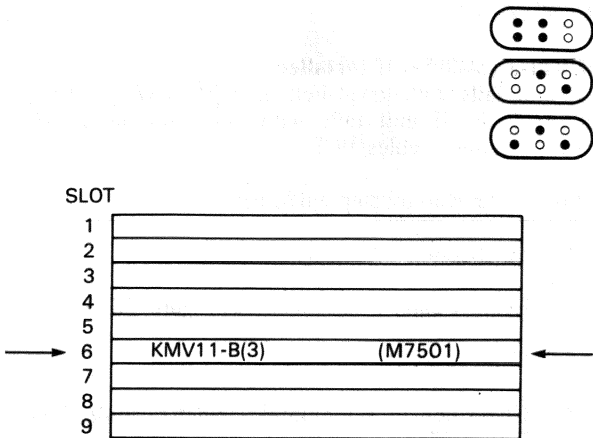
Follow the step-by-step guide below:

1. See Section 1 for cover removal
2. Remove PCB
3. Remove cable connections (see Figures 22 and 23)
4. Check new PCB for jumper/switch positions (see Figure 21)
5. Fit new PCB
6. Fit cable connections to PCB
7. See Section 1 for cover replacement.



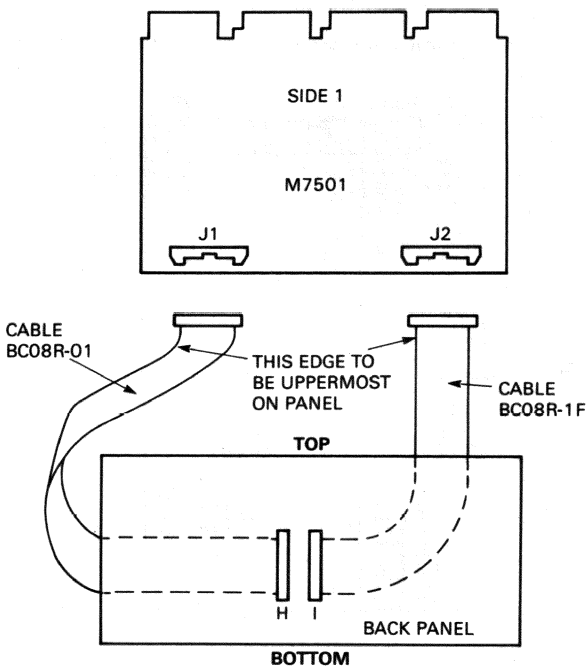
RD1658

Figure 21 Jumper and Switch Locations



RD1985

Figure 22 Backplane Position if Installed



RD1961

Figure 23 Cable Connections

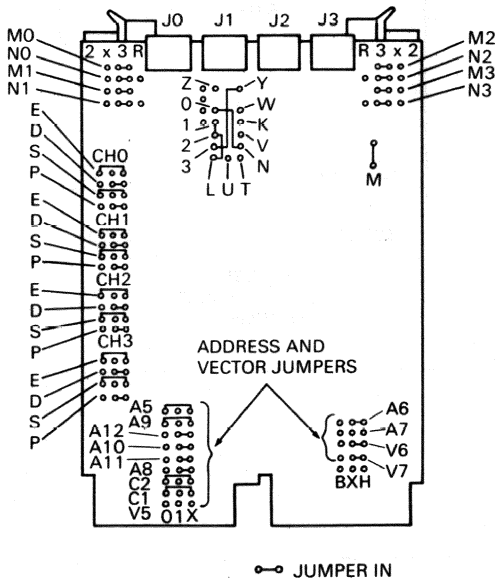
**SECTION 10**

**DLV11-J (M8043) if Installed**

If unit fails with keyswitch in **NORMAL** position, change PCB. If unit fails with keyswitch in **TEST** position, change cables/PCB.

Follow the step-by-step guide below:

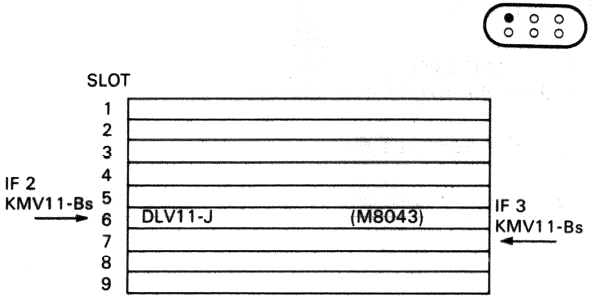
1. See Section 1 for cover removal
2. Remove cable connections (see Figures 25 and 26)
3. Remove PCB
4. Check new PCB for jumper/switch positions (see Figure 24)
5. Fit new PCB
6. Fit cable connections to PCB
7. See Section 1 for cover replacement.



RD1618

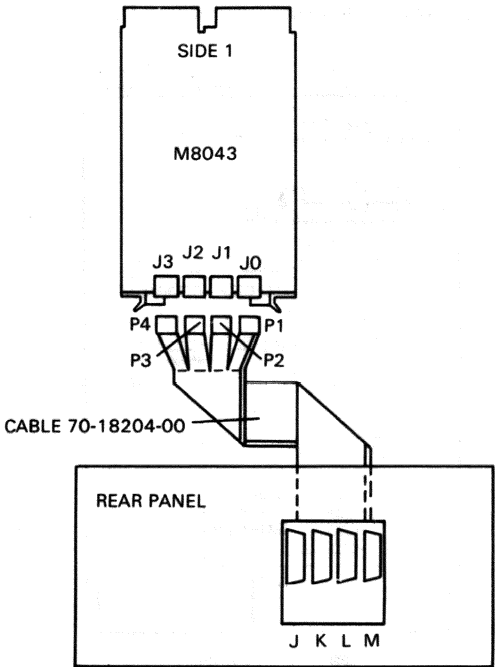
**Figure 24 Jumper Locations**





RD1986

Figure 25 Backplane Position



RD1620

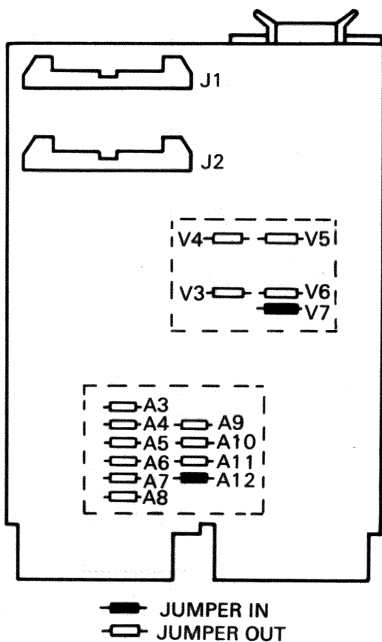
Figure 26 Cable Connections

**SECTION 11**

**DRV11 (M7941)**

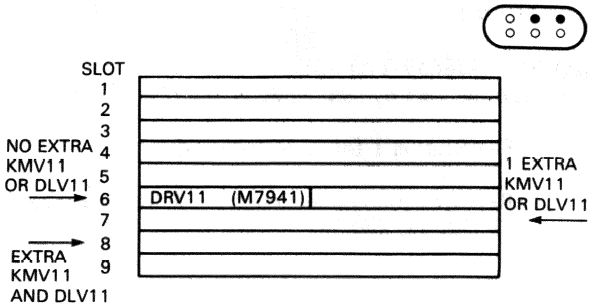
Follow the step-by-step guide below:

1. See Section 1 for cover removal
2. Remove cable connections (see Figures 28 and 29)
3. Remove PCB
4. Check new PCB for jumper/switch positions (see Figure 27)
5. Fit new PCB
6. Fit cable connections to PCB
7. See Section 1 for cover replacement.



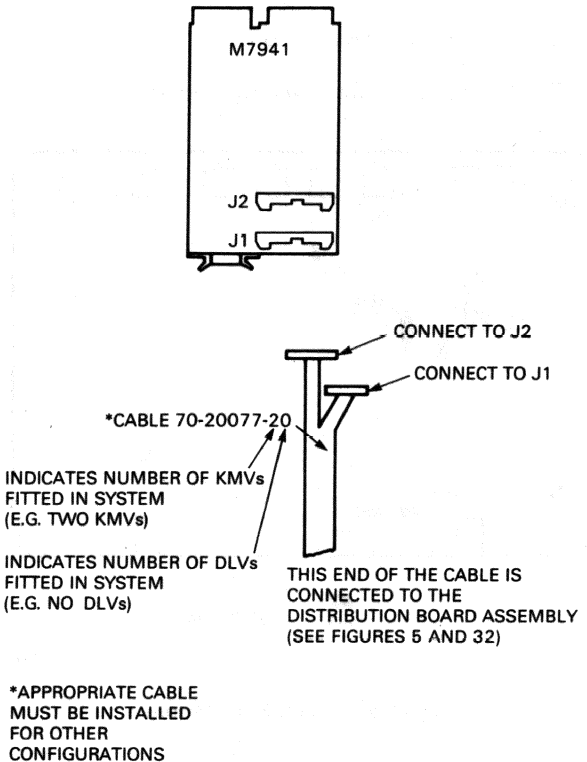
RD1624

**Figure 27 Jumper Locations**



RD1625

Figure 28 Backplane Position



RD1987

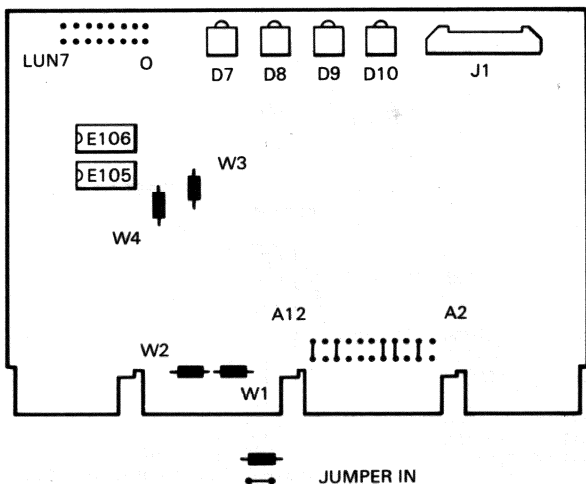
Figure 29 Cable Connections

SECTION 12

RQDX1 (M8639-YA)

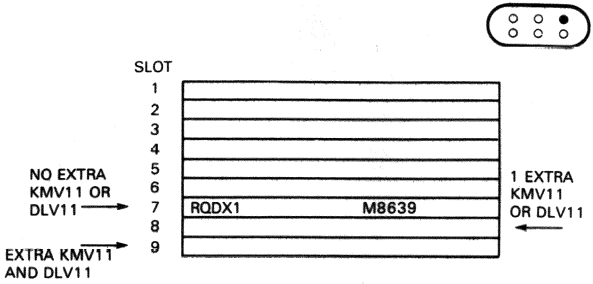
Follow the step-by-step guide below:

1. See Section 1 for cover removal
2. Remove cable connections from PCB (see Figures 31, 32, 33, and 34)
3. Remove PCB
4. Check new PCB jumper/switch positions (Figure 30)
5. Fit new PCB
6. Fit cable connections to PCB
7. See Section 1 for cover replacement.



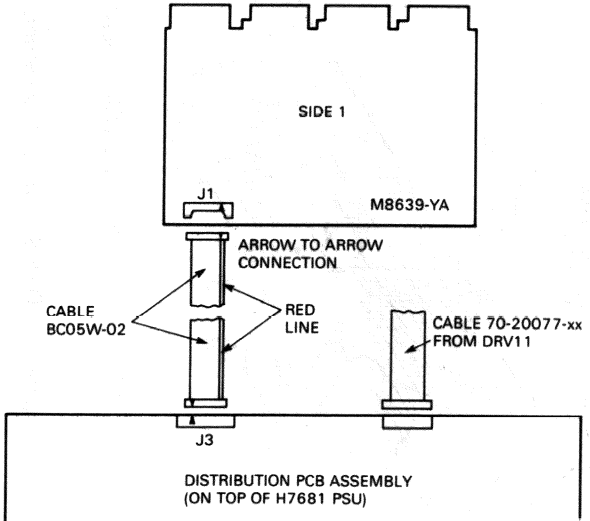
RD1647

Figure 30 Jumper Locations



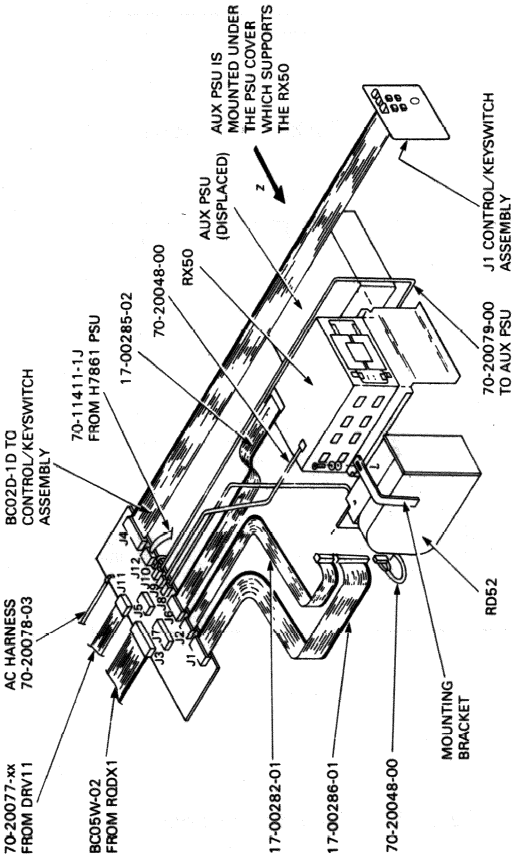
RD1659

Figure 31 Backplane Position



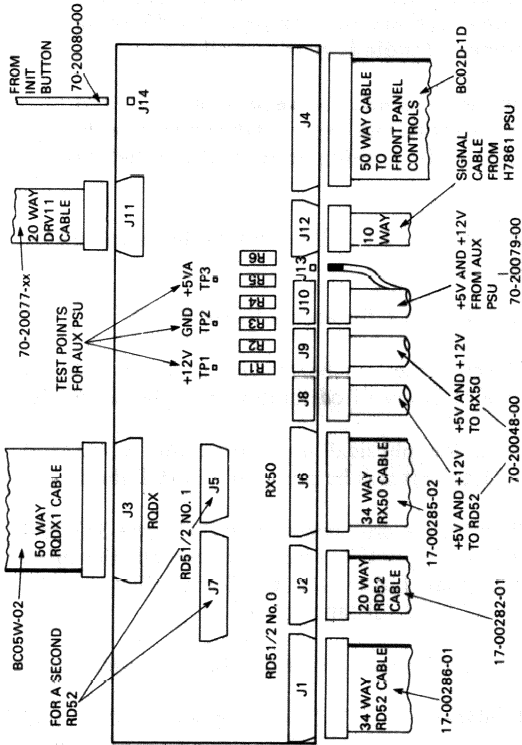
RD1988

Figure 32 Cable Connections



RD7080

Figure 33 Disk Subsystem Connections



RD1989

Figure 34 Connections to the Distribution PCB

## SECTION 13

### RD52 DRIVE

#### NOTE

The RD52 has to be preformatted in the DIGITAL branch office for use with RQDX1. The formatter program must be ZRQBB? or later.

The Read/Write PCB is not an FRU. If it is defective, replace the complete RD52 drive assembly. Handle it gently at all times.

Allow 30 seconds between power-off and handling the RD52, to permit the arm assembly to lock in the landing zone, and the disk to stop.

To replace the RD52 drive, follow the step-by-step guide below:

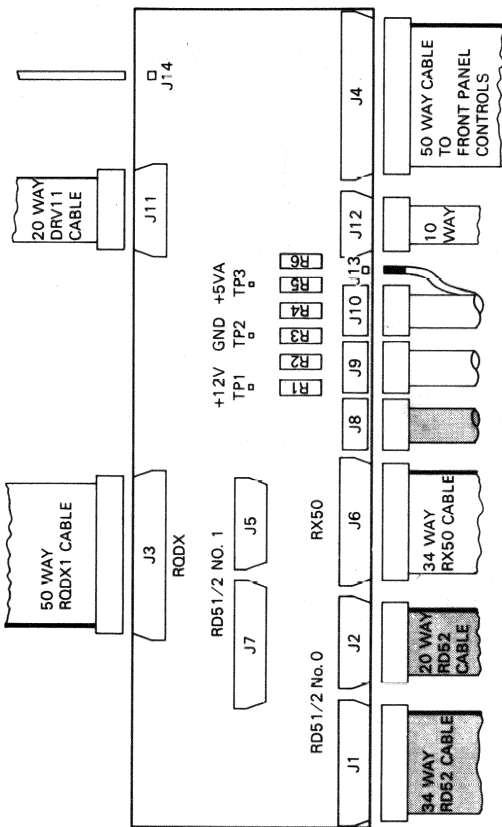
1. See Section 1 for access to the RD52.
2. Unscrew the four bezel screws (Figure 36) and remove the bezel from the drive base plate assembly.
3. Note the physical position of the RD52 and cables. This will help you to re-install the drive.
4. Remove the crosshead screw B (Figure 36), and the two mounting screws underneath the drive base plate. Lift out the RD52 and cables, and the RD52 plate (distance plate).
5. Remove the mounting bracket (crosshead screw A).
6. Replacement RD52s are supplied with a skid plate (Figure 37) attached. Remove the skid plate and transfer it to the defective drive.
7. Check that jumper DS3 only is installed on the PCB of the new RD52 (Figure 38).
8. Transfer the mounting bracket (screw A, finger-tight) to the new drive.
9. Transfer the cables to the new drive.



10. Using the two mounting screws (underneath), remount the RD52 plate and the RD52 in the drive base plate.
11. Connect the mounting bracket (screw B) to the chassis, then tighten screw A.
12. Screw the bezel to the drive base plate.
13. See Section 1 for cover replacement. Figure 35 shows RD52 connections to the distribution PCB.

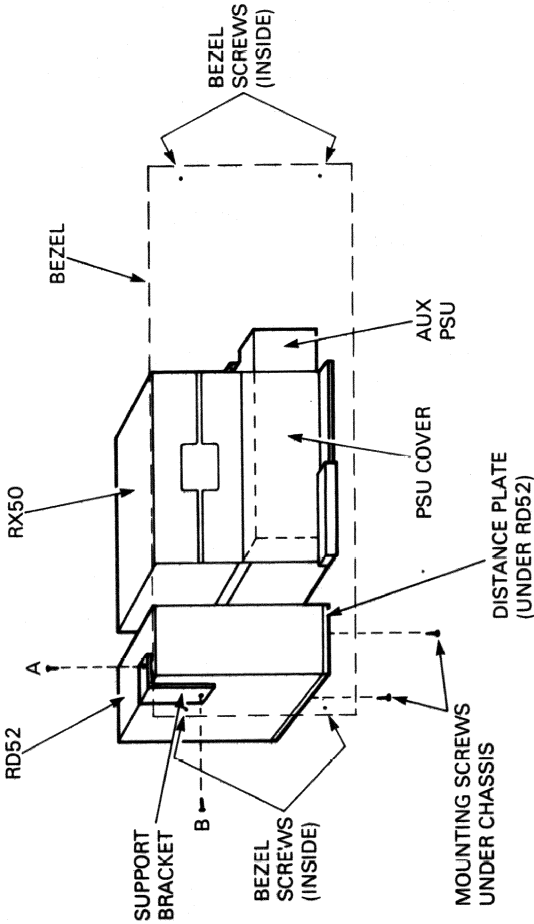
**NOTE**

**If a replacement RD52 has been installed, you will have to load Barclays software onto the drive. For instructions on loading Barclays software see Appendix H.**



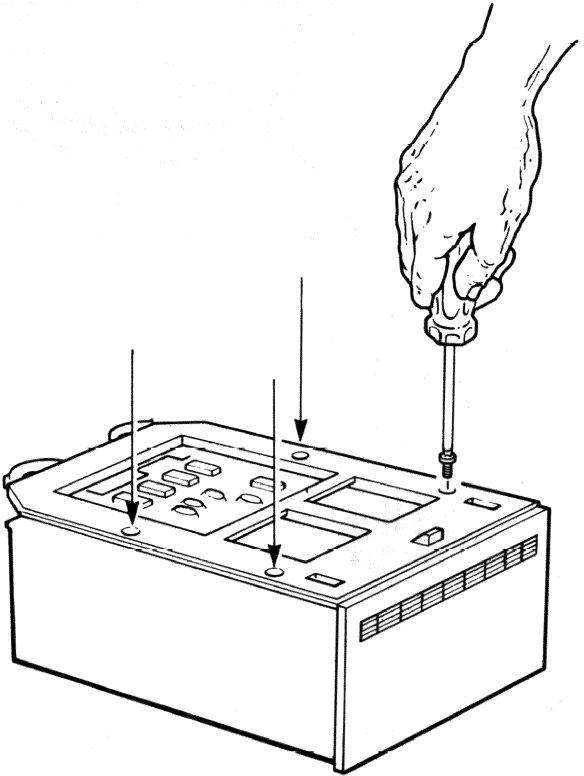
RD1990

Figure 35 RD52 Connections to the Distribution PCB



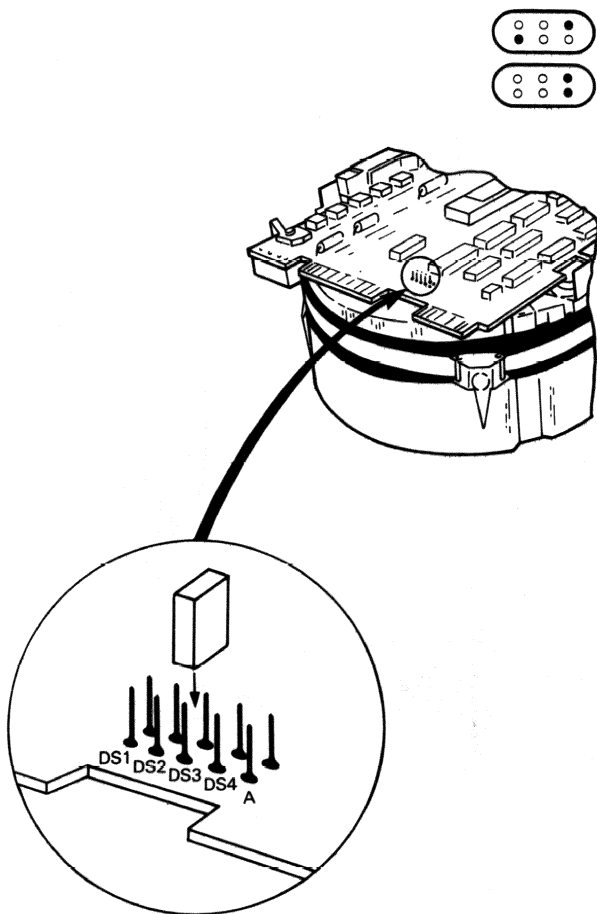
RD2054

Figure 36 Drive Base Plate - General Arrangement



RD2055

Figure 37 RD52 Skid Plate Removal



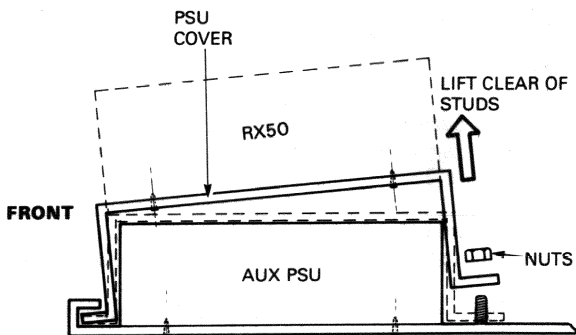
RD1971

Figure 38 Read/Write PCB Jumper DS3

**SECTION 14****RX50**

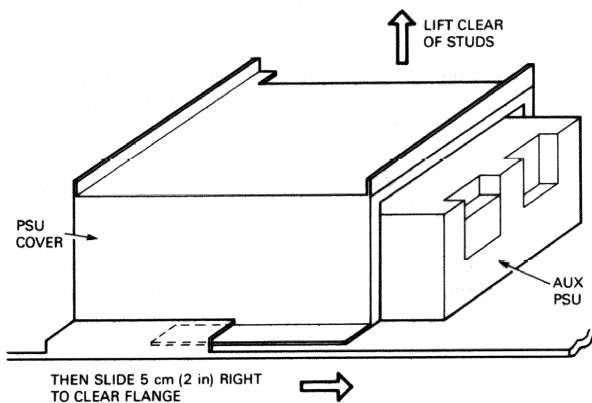
1. See Section 1 for access to the RX50. Note the warning notice on the chassis cross-member (see Figure 2).
2. Unscrew the four bezel screws (Figure 36) and remove the bezel from the drive base plate assembly.
3. Remove the two nuts holding the PSU cover to the drive base plate (see Figure 39a).
4. Perform the operations shown in Figures 39a and 39b, and then lift out the base plate assembly and RX50 complete.
5. Remove the four screws holding the drive to the PSU cover.
6. Remove the skid plate from the replacement drive (see Figure 40) and transfer it to the defective drive.
7. Make sure that J17 (next to the interface connector) is not installed in the replacement drive.
8. Install the replacement drive (reverse the procedure in steps 3 to 5) but do NOT fully tighten the two nuts on the PSU cover.
9. Re-install the bezel.
10. Align the front of the RX50 in the bezel cutout and tighten the two nuts on the PSU cover.
11. See Section 1 for cover replacement.

Figure 41 shows RX50 connections to the distribution PCB.



RD2056

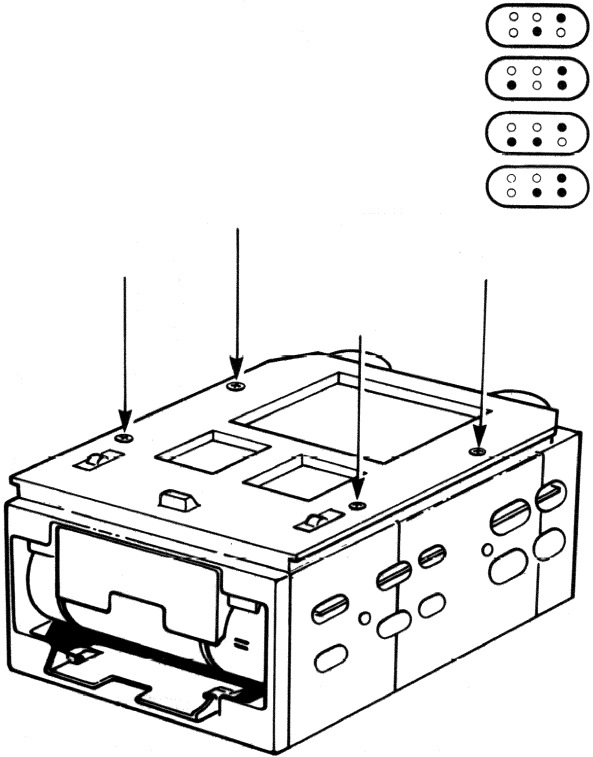
Figure 39a Removing the PSU Cover – Step 1



FRONT VIEW

RD2057

Figure 39b Removing the PSU Cover – Step 2



RD1674

Figure 40 RX50 Skid Plate Removal





**SECTION 15****AUXILIARY PSU****WARNING**

**240 V ac may be exposed on the auxiliary PSU connections. See voltage location diagram, Figure 4.**

1. See Section 1 for access to the AUX PSU.
2. Remove the base plate assembly and RX50 complete (see Section 14, steps 1 to 4).
3. Note how the cables connect to the AUX PSU.
4. Remove the self-tapping screw and the cover from the 240 V ac connections.
5. Disconnect the 240 V ac, dc, and signal connections from the AUX PSU (see Figure 4).
6. Unscrew the four countersunk screws holding the AUX PSU to the drive base plate.
7. Lift out the AUX PSU.
8. Install the replacement AUX PSU (reverse the procedure in steps 2 to 7).
9. Replace the covers (see Section 1).

## SECTION 16

### H7861 PSU

1. See Section 1 for access to the H7861.
2. Disconnect J12 at the distribution PCB.
3. Disconnect the 70-20078-00 cable from the power controller.
4. Slacken the eight screws of the H7861 dc power connection (see Figure 4).
5. Remove the two screws on top of the H7861 and undo the spring-loaded latches at the front.
6. Lift out the H7861.
7. Transfer the 70-20078-00 cable to the replacement H7861.
8. Install the replacement H7861 (reverse the procedure in steps 2 to 6).
9. Replace the covers (see Section 1).



## APPENDIX B

## COMPLETE LIST OF FIELD-REPLACEABLE UNITS

Part No.	Description
MODULES:	
DRV11	M7941 (*, **)
KDJ11-BC	M8190
KMV11-B	M7501 (*, **)
MSV11-PL	M8067-LA (*, **)
RQDX1	M8639-YA
PERIPHERALS:	
RD52-A	
RX50-AA (**)	
CABLES:	
BC08R-01	12-inch KMV11 cable (*, **)
BC08R-1F	18-inch KMV11 cable (*, **)
70-20085-0C	12-inch console cable
BC02D-1D	Keyswitch assembly cable
BC05W-02	24-inch RQDX1 cable
70-11411-0K	3M backplane cable (*, **)
70-11411-1J	3M H7861 signal cable (*, **)
70-17971-00	DC harness
70-20077-20	DRV11/distribution PCB cable
70-20078-00	AC harness
17-00282-01	20-way RD52 data cable (**)
17-00285-02	34-way RX50 signal cable (**)
17-00286-01	34-way RD52 signal cable (**)
70-20048-00	Disk power cable (**)
70-20079-01	Distribution supply cable 5 V/12 V
70-20080-00	Fan supply cable
70-20064-00	Modem thick cable (**)
70-20070-00	Loopback connector (**)
70-20084-00	Modem thin cable (**)
70-20069-00	Loopback connector (**)

(\*) Items are common to Barclays branch controller MKI

(\*\*) Items are common to Barclays branch controller MKII

**COMPLETE LIST OF FIELD-REPLACEABLE UNITS (Cont)**

<b>Part No.</b>	<b>Description</b>
<b>SELF-TEST/BOOT ROMS:</b>	
23-134E5-00	Even byte
23-135E5-00	Odd byte
<b>POWER SUPPLIES:</b>	
H7861	BA11-S +5 volt, +12 volt (*, **)
30-24276-01	Auxiliary power supply
<b>DISTRIBUTION PCB ASSEMBLY:</b>	
54-15815-01	Distribution PCB assembly
<b>CONTROL/KEYSWITCH ASSEMBLY</b>	
70-20081-01	Control/keyswitch assembly
<b>FAN HOUSING:</b>	
12-20267-01	Fan assembly, BA11-S (*, **)
12-10930-02	Front bezel, fan

- (\*) Items common to Barclays branch controller MKI
- (\*\*) Items common to Barclays branch controller MKII

**NOTE**

**The MKIII branch controller print set MP-01533-01 contains complete parts lists.**

**APPENDIX C****INSTALLATION AND DIAGNOSTIC SEQUENCE****Installation Sequence**

The following sequence assumes that a representative of Barclays Management Service Department (MSD) is on site. If not, miss out steps 2 and 8.

1. Make contact with the bank manager's assistant.
2. Make contact with the MSD representative.
3. Unpack and check controller and installation materials. Install controller in Lions trolley. Connect controller power cable to the power distribution panel on Lions rack. Do not connect to terminals or to the network.
4. Set keyswitch to TEST. Run power-up diagnostic with loopback connectors in the communications connectors.
5. Swap KMV11 loopback connectors (see next page). Repeat the diagnostic.
6. Connect LA12 to console connector. Run XXDP+ diagnostics for each device (see next page).
7. Run DECX/11 (see next page).
8. If all tests OK, make connections to network and to terminals.
9. Push controller and trolley under rack. Install strut (see Appendix D).

The MSD representative (if on site) will now load the Barclays software and will check that the controller works with the network.

10. If all is OK, the installation is complete. Contact bank manager's assistant before leaving.

**XXDP+ Diagnostics**

XXDP+ diagnostics, complete with preconfigured DECX/11 exercisers, are issued on diskette D333BCD-?? (?? is the standard REV and PATCH notation).

The following is a recommended sequence of XXDP+ diagnostics for installation of the Barclays systems.

OKDA	-	KDJ11 tests
VMSA	-	MSV11 tests
VDLA *	-	DLV11 tests
VKMA †	-	KMV11 logic tests
VKME ** †	-	KMV11 line/loopback tests
ZRQA	-	RX50/RD52/RQDX1 tests
ZRQB ***	-	Formatter for RD51/RD52
MARK3.BIN	-	DECX/11 exerciser

† Run at least two passes. The first pass is a quick test which does not test the module completely.

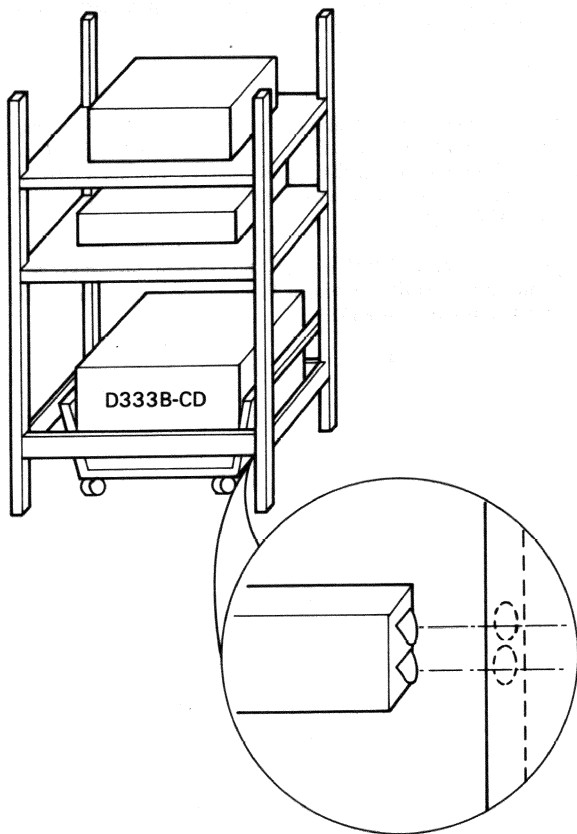
\* If a DLV11 is installed

\*\* There are two types of loopback connector for KMV11 ports, 2P-E155A-00 for RS-422 lines, and 2P-156A-00 for RS-423/232-C lines. (Run the test for two passes with each type of connector in each KMV11 port. That is to say, two times two passes of VKME.)

\*\*\* If your source of ZRQB is NOT the D333BCD-?? diskette, make sure that ZRQB is revision B or higher. Lower revision versions will not format RD52s.

**APPENDIX D****ACCESS TO THE BARCLAYS CONTROLLER**

In general, Barclays branch controllers are installed in a Lions rack, which contains modems and other equipment. This rack is NOT a DIGITAL product. In order to get the controller out, you need to remove a retaining strut in the rack. Lift one end of the strut while applying outward pressure to the adjacent vertical leg. See Figure D-1 for detail. Then do the same at the other end. You can now wheel out the controller on its trolley.



RD2006

**Figure D-1 Lions Rack Assembly**



**APPENDIX E****BARCLAYS FAULT REPORTING PROCEDURE**

When the bank system appears to be defective, the response of bank staff depends on the symptom.

Bank staff will usually report problems to Support Services at Radbroke Hall, Knutsford. Network Control at Wythenshawe, Gloucester, or Greater London may also be contacted. However, if the same fault (or a similar fault) has been previously handled by DIGITAL, bank staff may call DIGITAL Field Service direct.

If DIGITAL is not called directly, Support Services and/or Network Control will cooperate with bank staff to identify the defective unit. If necessary, bank personnel will be told to press the INT button and to report the LED status. If the controller is thought to be defective, Support Services will call DIGITAL Field Service.

Field Service should contact Support Services when they arrive on site. The telephone number is 0565-3888, ext 2127.

## APPENDIX F

## MARK AND FIRMWARE REVISION CODES

To make it easier to recognize a controller and its firmware, diagnostic LED sequences, from the MKII update onward, will include codes to identify the mark and the firmware revision. During the code which follows the flashing pattern, LEDs L1 L2 L3 and L4 L5 L6 display octal codes with the meanings given in Table F-1. An example of the code for a MKIII controller with version 1 firmware is given below the table.

Table F-1 Mark and Revision Codes

Decimal Value	1	2	4
Mark	L4	L5	L6
Revision	L1	L2	L3

## Example of Mark and Revision Codes

Decimal Value	1	2	4	
Mark	•	•	○	= 3
Revision	•	○	○	= 1

• = LED on, ○ = LED off.

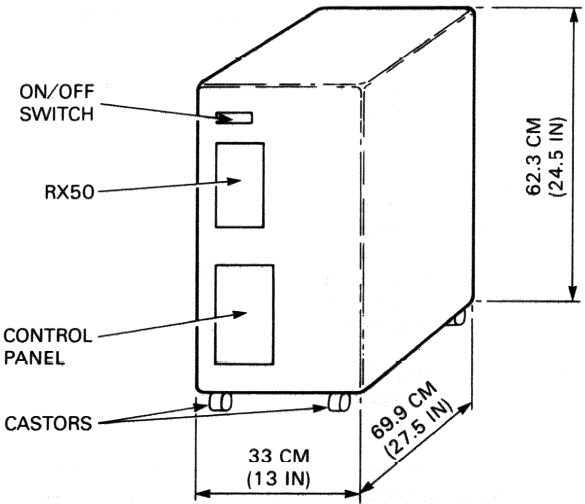
**APPENDIX G**

**THE WORLD BOX (BA123)**

Future MKIV branch controllers will be housed in the BA123 box. It is expected that the last 50 MKIII controllers will also be in the BA123 box. Therefore, although they will function as MKIIIs, they may look like MKIVs.

MKIIIs and MKIVs can be identified by identity labels.

Figure G-1 shows what these last 50 MKIIIs are expected to look like.



RD2058

**Figure G-1 MKIII Controller in the BA123 World Box**

Information on Barclays controllers in the world box will be provided when that information becomes available.

## APPENDIX H

## LOADING BARCLAYS SOFTWARE

**CAUTION**

**Make sure there are no diskettes in the RX50s when you switch the controller on.**

Table H-1 Customer Software Diskettes in Load Sequence

Diskette Marked	Contains	Held By Barclays	Held By FS
INISYS + SWCOPY	Master loader program	NO	YES
Disk1	Customer software	NO	YES
Disk2	Customer software	NO	YES
..	..	..	..
Diskn	Customer software	NO	YES
Additional information	Front office terminal and other software	MAYBE*	MAYBE*
(Branch name)	Branch commissioning and configuration information	YES	NO

\* The Additional Information diskette is used as a temporary method of updating the software package. Barclays branches that do not have front office terminals connected will not have the Additional Information diskette. If the bank does have this diskette, the bank version must be used. If the bank does NOT have this diskette but FS does, the FS version must be used.

It is the responsibility of the DIGITAL Field Service engineer to ask for the Additional Information and Branch Commissioning diskettes. It is the responsibility of the Barclays machine room supervisor to provide them upon request.

### **Prerequisites for Loading Software**

- The branch controller is switched on and the HALT switch is up.
- The branch controller and the RD52 have passed the power-up/initialization diagnostic test.

### **Procedure for Loading Software**

1. Put the keyswitch to AUX.
2. Insert the INISYS & SWCOPY (Master Loader) diskette into any RX50. This diskette must remain in the drive until the contents of all the diskettes have been loaded.
3. Press the INT button and wait for the controller to boot from the RX50.
4. See Table H-2 for LED codes that control the loading of software. Load the Customer Software diskettes (Disk1 to Diskn) into the other RX50. The LED codes of Table H-2 will tell you when to load each software diskette.
5. When Diskn has been read, a 'Load Complete' code will be displayed. Remove Diskn.
6. The LED code will tell you to load the Additional Software diskette or the Branch Commissioning diskette. Load them in that order if you have both.
7. When the appropriate 'load complete' code is displayed, remove all diskettes from the RX50s and press the INT button.
8. Put the keyswitch to NORMAL.

After boot, if the branch controller is functioning normally, the six diagnostic LEDs will continuously flash, all ON for five seconds and then all OFF for five seconds.

If the controller halts on RD52 boot, or if the indicated fault is not DIGITAL's responsibility, contact Barclays Support Services at Radbroke Hall, Knutsford.  
Tel 0565-3888 ext 2127.

See Page 6 for diagnostic codes displayed when the controller is running under Barclays software.

**Table H-2 LED Codes for Software Load**

Code	Meaning
	Load the first software disk (Disk1).
	The disk is loaded out of sequence or is defective. Load the correct disk.
	Disk reading.
	Software error. The load procedure has been aborted.
	† Load the next sequence disk.
	The disk is loaded out of sequence. Remove this disk and replace with the correct one.
	† Load complete. Remove Diskn.
	Load the Additional Software disk or the Branch Commissioning disk.
	The disk now reading is an Additional Software disk.
	The disk loaded is out of sequence or is defective. Load the correct Additional Software or Branch Commissioning disk.
	† Additional Software load complete. Remove the Additional Software disk.
	The disk now reading is a Branch Commissioning disk.
	Branch Commissioning disk load complete.
	Both Additional Software and Branch Commissioning disk loads complete. Remove all disks from the RX50s.

○ = LED OFF ● = LED ON

† = Relevant RX50 LED ON