**XEROX**

OFFICE SYSTEMS DIVISION

# 8000 PROCESSOR SERVICE MANUAL
## NOVEMBER, 1984
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## 8000 PROCESSOR SERVICE MANUAL
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**CHAPTER 8  PRINCIPLES OF OPERATION**

Refer to 8000 Series Reference Manual.

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## 8000 PROCESSOR SERVICE MANUAL
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CHAPTER 1  GENERAL DATA

8000 PROCESSOR SERVICE MANUAL

### 1.1   HOW TO USE THIS MANUAL

This service manual provides information necessary for maintenance of the 8000 Processor, including the Floppy Disk Drive and the 10MB Rigid Disk Drive.

The 8000 Series Reference Manual provides the complete instructions for use of 8000 Series service manuals.

### 1.2   MODEL CONFIGURATIONS

Various models of 8000 Series products are available. The 8000 Series Reference Manual provides product codes, model configurations, and catalog number information, as well as related explanations.

### 1.3   CALL MANAGEMENT

The Call Management procedures are to be performed during every service call. The complete Call Management procedures are provided in the 8000 Series Reference Manual.

### 1.4   CHANGE TAG INDEX

Refer to the 8000 Series Reference Manual for instructions about use of matrix tags.

The 8000 Processor has one matrix tag. The matrix tag is located on the right side of the processor frame. Any important modification of the processor, the floppy disk drive, the 10MB rigid disk drive, or related cables and connectors, must be indicated on the 8000 Processor matrix tag.

Matrix tag numbers for the Processor are classified as explained below.

| Tag Numbers | Classification |
|---|---|
| 1 to 200, inclusive (increasing in sequence) | Manufacturing cut-in and field installation |
| 225 to 201, inclusive (decreasing in sequence) | Field change only |

| CHANGE TAG INDEX FOR 8000 PROCESSOR | | |
|---|---|---|
| Tag No. | Description | Serial No. Cut-in |
| 1<br>N | Tag 1 provides improved voltage sequence and power supply reliability to correct the data loss problems. Related parts are the 10/42MB DC Interface Harness 152S81272, the 29MB Interface Harness 152S81278, the IOP PWA 140S24742, a new AC Distribution PWA, and a new power supply assembly The Power Supply assembly includes Power Supply Interconnect Harness 117S10065, A1 PWA 140S11866, and A2 PWA 140S11867. | T22-040400 |
| 2<br>R | Tag 2 disables the reset function of time-of-day clock. Related part is the Maintenance Panel PWA 140S82722. | T22-040400 |
| 3<br>NOTE 1 | Tag 3 provides capability for Communications option. Related part is the OPT PWA 140S24701, which is mandatory for COMM option. A requirement for COMM option is the RS-232-C COMM Harness Installation Kit 73S80414. | T22-042673 |
| 4<br>R | Tag 4 corrects the system lock-up problems with improvements to the operating timing. Related part is the CP PWA 140S24713. Tag 4 is supered by Tag 25. | T22-042673 |
| 5<br>NOTE 1 | Tag 5 corrects the P1 Printer lock-up problems. Related part is the IOP PWA 140S24743, which is mandatory for P1 Printer. | T22-042673 |

NOTE 1: These tags are optional unless system contains either the COMM option or the P1 Printer. Tag 3 is required for the COMM option and Tag 5 is required for the P1 Printer.

| CHANGE TAG INDEX FOR 8000 PROCESSOR | | |
|---|---|---|
| Tag No. | Description | Serial No. Cut-in |
| 6 | CANCELLED. | |
| 7<br>N | Tag 7 provides capability to use alternate disk drives by modifications to front bezel. Related part is the Floppy Drive Bezel 56P80141. | ---- |
| 8<br>M | Tag 8 eliminates data loss problems on non-removable disks; a grounded write enable signal on HSIO PWA ensures the correct control of the write circuit when power is switched off and on. Related part is the HISO PWA 140S24755. | T22-043568 |
| 9<br>R | Tag 9 eliminates double fused circuits and reduces quantity of the fuses on PWA. Related part is the AC Distribution PWA 140S82762, or 140S82709 (alt.), which includes a plastic safety shield. | T22-044888 |
| 10<br>R | Tag 10 prevents A1 PWA component damage and eliminates possible data loss problems caused by transient interference; the changes are made to the -5V and 12V power supplies Related part is the power supply A1 PWA 140S12125. | T22-044285 |
| 11<br>R | Tag 11 changes the EPROMs on IOP PWA to provide alternate part capability and compatibility with future issues of software. | ---- |

| CHANGE TAG INDEX FOR 8000 PROCESSOR | | |
|---|---|---|
| Tag No. | Description | Serial No. Cut-in |
| 12 R | Tag 12 reduces transient interference on the Power Normal signal at the input of the IOP PWA. Related parts are the IOP PWA 140S24745 and the 8037 IOP PWA 140S24746. | T22-045251 |
| 13 R | Tag 13 reduces overvoltage problems and shutdown problems caused by transient interference; the changes are made to the A1 PWA. Related part is the power supply A1 PWA 140S12198. | T22-444995 131-220297-9 |
| 14 R | Tag 14 provides power supply changes to reduce overvoltage shutdown problems. Related part is the power supply A1 PWA 140S12204. | T22-045497 131-220498-0 |
| 15 R Class 5 | Tag 15 adds a braid shield to the display/keyboard portion of the WS/Server Signal Harness, in accordance with multinational requirements. Related part is the WS/Server Signal Harness 152S25130. | T22- 131- |
| 16 R Class 5 | Tag 16 adds outer braid and ground connections at card cage and connector panel, in accordance with multinational requirements. Related part is the 29MB Interface Harness 152S24592 | T22- 131- |

| CHANGE TAG INDEX FOR 8000 PROCESSOR | | |
|---|---|---|
| Tag No. | Description | Serial No. Cut-in |
| 17 R Class 3 | Tag 17 connects backplane grounds in six places, to provide ground uniformity. Related part is the Backplane Assembly 140S82902. | T22- 131- |
| 18 R | Tag 18 improves the location of the AC harness inside the processor. Related part is the Processor AC Harness 152S25190. | T22- 131- |
| 19 M | Tag 19 provides a safety retrofit, in accordance with UL requirements, to replace sheet metal bottom pans that have perforations. Affected serial number range is T22-043550 to T22-046688, inclusive. Related part is a replacement bottom pan, with perforations, which is included in the UL Bottom Pan Replacement Kit 601S50245. | T22-046689 |
| 20 M | Tag 20 requires inspection of processors for presence of UL approved bottom pan Affected serial number range is T22-043550 to T22-046688, inclusive. Related kit is the Processor UL Bottom Pan Inspection Kit 601S50248. | T22-046689 |
| 21 NOTE 1 | Tag 21 improves phase lock loop circuit on HSIO PWA Related parts are HSIO PWA 140S24756 and HSIO PWA (alt.) 140S24757. | T22- |

NOTE 1: TAG 21 is mandatory on processor with 42MB drive Install at time of repair on processor without 42MB drive

| CHANGE TAG INDEX FOR 8000 PROCESSOR | | |
|---|---|---|
| Tag No. | Description | Serial No. Cut-in |
| 22 M | Tag 22 changes circuits on IOP PWA in order to improve power normal function. It also includes 3.1 Boot EPROMs for 80/300MB systems without Tag 224, and ensures compatibility with future issues of software. Related parts are the IOP PWA 140S24747 and mandatory retrofit kit 601S50272. Field availability date is 7/1/83. | T22- |
| 23 O | Tag 23 reduces the audible noise level of the 8000 Processor. The reduction in noise is accomplished by issuing pads for the covers, and installing quieter processor and power supply fans. Note that Tag 23 is a production only cut-in. A version of the noise reduction improvement (TAG 223) is available as an option in kit form for field installation. | T22- |
| 24 | CANCELLED. | T22- |
| 25 NOTE 1 | Tag 25 deletes CP PWA 140S24713 and adds 140S26730. This is required to support Extended Virtual Memory, which is required for certain applications. Tag 25 supercedes Tag 4. | T22- |
| 26 R | Tag 26 deletes OPT PWA 140S25881 and adds 140S27740. Tag 26 is required to track and control LSEP port changes. Required by special applications. | T22- |
| 27 O | XSIS only. Tag 27 incorporates a special CP PWA (referred to as CPE-FP PWA) with a parallel port into the the 8000 Processor. Related parts are CPE-FP PWA 140S06291, Parallel Port Harness 152S03143, and Connector Plate 15P08318. The CPE-FP PWA contains two 37 pin connectors on the front edge of the PWA. The Comm Connector Plate has been changed to make room for the parallel port connector. Parallel Port Harness is routed from the CPE-FP PWA (P31) to the connector plate. Tag 22 or 224 is required | M67 |

NOTE 1: TAG 25 is **MANDATORY** on Versatec's Expert workstations and optional on all 8000NS Processors

| CHANGE TAG INDEX FOR 8000 PROCESSOR | | |
|---|---|---|
| Tag No. | Description | Serial No. Cut-in |
| 28<br>O | XSIS only. Tag 28 incorporates a special MCC PWA (referred to as MCC-P2) to increase the 8000 Processor Memory capacity to 3584K Bytes. Related part is MCC-P2 PWA 140S07070. This is accomplised by removing the PWAs from slots 5 and 6, then installing the MCC-P2 PWA in slot 5. | M67 |
| 223<br>O | Tag 223 reduces the audible noise level of the 8000 Processor The reduction in noise is accomplished by issuing pads for the covers, and installing quieter processor and power supply fans. | T22- |
| 224<br>M | Tag 224 provides level 3.1 Boot EPROMs required in processors used for 80/300MB systems. Related retrofit applies to IOP PWA 140S24744 and IOP PWA 140S24746. | T22- |
| 225<br>Class 1 | RX 29MB Processors only. Tag 225 replaces the display/keyboard portion of the WS/Server Signal Harness, and replaces the 29MB Interface Harness, with EEC/VDE approved har nesses. Related parts are included in the RX 29MB Interface Harness and Processor/Display Signal Harness Installation Kit 601S996. | 131- |
| 225<br>Class 1 | RX 10MB Processors only. Tag 225 replaces the display/keyboard portion of the WS/Server Signal Harness with an EEC/VDE approved harness. Related part is included in the RX Processor/Display Signal Harness Installation Kit 601S998. | 131- |

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## CHAPTER 2 INSTALLATION/REMOVAL

## PROCESSOR SERVICE MANUAL

REFER TO 8000 SERIES REFERENCE MANUAL

**3**

CHAPTER 3  REPAIR DATA

PROCESSOR SERVICE MANUAL

| 3.1 | PROCESSOR TOP COVER |
|---|---|
| | REF PL 4.1 |

**REMOVAL**
1   SWITCH OFF SYSTEM POWER.
2.   REMOVE BOTH SIDE COVERS.
3.   REMOVE PROCESSOR TOP COVER.
    a   Remove the six nuts securing the top cover to frame.
    b   Remove top cover.

**REPLACEMENT**
1.   REPLACE PROCESSOR TOP COVER.
    a   Perform removal procedure in reverse order.

| 3.2 | PROCESSOR FANS |
|---|---|
| | REF PL 4.1 |

**REMOVAL**
1.   SWITCH OFF SYSTEM POWER.
2.   REMOVE LEFT SIDE COVER.
3.   REMOVE THE PROCESSOR FANS.
    a   Loosen screw securing the fan safety cover.
    b   Lift cover and move the fans out far enough to disconnect harness.
    c   Disconnect harness connectors from the fans.
    d   Remove the fans.

**REPLACEMENT**

**CAUTION**
The fans must be installed with arrows indicating up for the correct air flow. Ensure that harness wiring is not pinched between the fans and brackets.

1.   REPLACE THE PROCESSOR FANS.
    a.   Perform removal procedure in reverse order.

| 3.3 | MAINTENANCE PANEL PWA (MP PWA) |
|---|---|
| | REF PL 4.2 |

**REMOVAL**
1.   SWITCH OFF SYSTEM POWER.
2.   DISCONNECT AC POWER CORD FROM WALL OUTLET.
3.   REMOVE FRONT AND RIGHT SIDE COVERS.
4.   REMOVE MAINTENANCE PANEL PWA.
    a.   Disconnect ON/OFF switch connector J1 from AC Distribution PWA
    b.   Disconnect the MP display harness connector P1 from rear of MP PWA.
    c.   Disconnect flat ribbon cable from front of MP PWA.
    d.   Remove the two screws securing the MP housing to frame.
    e.   Remove MP assembly.
    f.   Remove the two screws securing the MP PWA to housing.
    g.   Remove MP PWA.

**REPLACEMENT**
1.  REPLACE MAINTENANCE PANEL PWA.
    a.  Perform removal procedure in reverse order.
2.  VERIFY THAT MP LED SEGMENTS CAN DISPLAY *8888*.
    a   Run preboot diagnostics and observe MP as follows:
        Pre-Tag 11 will display *8888*.
        Tag 11 will display *8888*, then *0000*.

3.4   **ON/OFF SWITCH**
      REF PL 4.2

**REMOVAL**
1.  SWITCH OFF SYSTEM POWER.
2   DISCONNECT AC POWER CORD FROM WALL OUTLET.
3.  REMOVE FRONT AND RIGHT SIDE COVERS.
4.  REMOVE ON/OFF SWITCH.
    a   Disconnect ON/OFF switch connector J1 from AC
        Distribution PWA.
    b   Disconnect the MP display harness connector P1
        from rear of MP PWA.
    c   Disconnect flat ribbon cable from front of MP PWA.
    d   Remove the two screws securing the MP housing to
        frame.
    e.  Remove MP assembly.
    f   Remove the two screws securing the MP PWA to
        housing.
    g.  Remove ON/OFF switch.

**REPLACEMENT**
1.  REPLACE ON/OFF SWITCH.
    a.  Perform removal procedure in reverse order.

3.5   **AC DISTRIBUTION PWA**
      REF PL 4.2

**REMOVAL**
1.  SWITCH OFF SYSTEM POWER.
2.  DISCONNECT AC POWER CORD FROM WALL OUTLET.
3.  REMOVE RIGHT SIDE COVER.
4.  REMOVE AC DISTRIBUTION PWA.
    a.  Disconnect connectors P1 to P5, inclusive, from AC
        Distribution PWA.
    b.  Loosen the three screws securing the AC Distribu-
        tion PWA to frame.
    c.  Lift PWA, then pull it down to remove.

**REPLACEMENT**

NOTE: Refer to Figure 3-1 for the correct connector locations.

1.  REPLACE AC DISTRIBUTION PWA.
    a.  Perform removal procedure in reverse order.
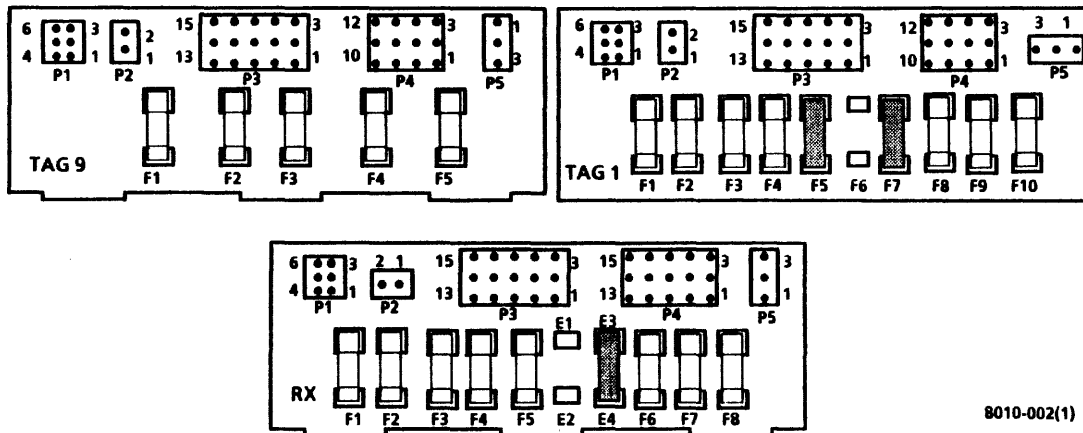
8010-002(1)

Figure 3-1  AC Distribution PWAs

| 3.6 | BACKPLANE ASSEMBLY |
|-----|--------------------|
|     | REF PL 4.2         |

## WARNING
High voltages are present in the power supply for 2 minutes after AC power cord has been disconnected from wall outlet.

**REMOVAL**
1. REMOVE TRANSFORMER (3.8).
2. REMOVE POWER SUPPLY (3.7).
3. 10/42MB ONLY   REMOVE DISK DRIVE (3.11/3.11).
4. REMOVE BACKPLANE ASSEMBLY.
   a. Disconnect harnesses from PWAs in card cage.
   b. Pull PWAs away from backplane.
   c. Release the voltage test harness connector from front of processor frame.
   d. Cut the two test harness cable ties from front of processor frame.
   e. Disconnect voltage test harness connector J4 from interface harness connector P4.
   f. Remove the six screws securing the backplane assembly to card cage.
   g. Remove backplane assembly.

**REPLACEMENT**
1. REPLACE BACKPLANE ASSEMBLY.
   a. Perform removal procedure in reverse order.
2. RUN ALAG.



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Figure 3-2  Backplane Wiring          3-5

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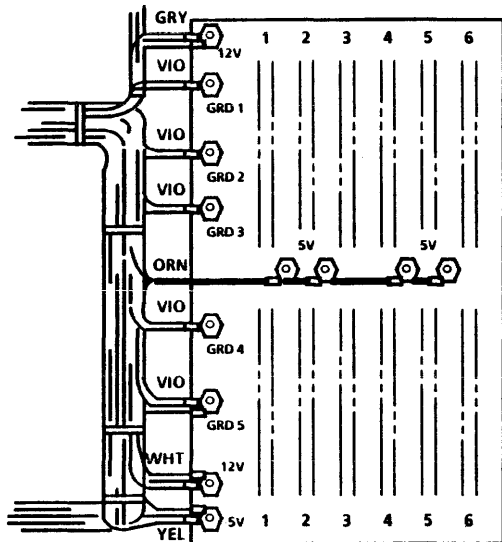
| 3.6.1 | **BACKPLANE HARNESSES** |
|---|---|
|  | REF PL 4.2 |

**REMOVAL**

### WARNING
High voltages are present in the power supply for 2 minutes after AC power cord has been disconnected from wall outlet.

1. REMOVE BACKPLANE ASSEMBLY (3.6).
2. REMOVE BACKPLANE HARNESSES.
   a. Remove hardware securing the harness terminals to backplane.
   b. Remove backplane harnesses.

**REPLACEMENT (FIGURE 3-2)**
1. REPLACE BACKPLANE HARNESSES.
   a. Perform removal procedure in reverse order.
2. RUN ALAG.

| 3.7 | **POWER SUPPLY ASSEMBLY** |
|---|---|
|  | REF PL 4.3 |

**REMOVAL**
1. SWITCH OFF SYSTEM POWER.
2. DISCONNECT AC POWER CORD FROM WALL OUTLET.
3. REMOVE RIGHT SIDE COVER.

### WARNING
High voltages are present in the power supply for 2 minutes after AC power cord has been disconnected from wall outlet.

4. REMOVE POWER SUPPLY ASSEMBLY.
   a. Disconnect J1, J2, and J3 connectors from power supply.
   b. Remove screws securing the wires to +5VDC and +5V RTN terminals on power supply.
   c. Remove the four screws securing the power supply to frame.
   d. Pull power supply from frame.

**REPLACEMENT**

### CAUTION
DO NOT attach connectors or AC power cord until power supply is completely installed.

NOTE: Ensure that locating pins on rear of power supply extend through holes on left side of processor frame BEFORE replacing the screws.

1. REPLACE POWER SUPPLY ASSEMBLY.
   a. Perform removal procedure in reverse order.

3.7.1   A1 PWA
        REF PL 4 3

### WARNING
High voltages are present in the power supply for 2 minutes after
AC power cord has been disconnected from wall outlet.

**REMOVAL**
1   REMOVE POWER SUPPLY ASSEMBLY (3.7).
2   REMOVE A1 PWA.
    a   Remove the six hex screws securing the A1 PWA to
        chassis
    b   Disconnect P1 connector from J4 on A1 PWA.
    c   Disconnect harness connector from the fan.
    d   Remove A1 PWA

**REPLACEMENT (FIGURE 3-3)**
1   REPLACE A1 PWA.
    a   Perform removal procedure in reverse order.



8010-117
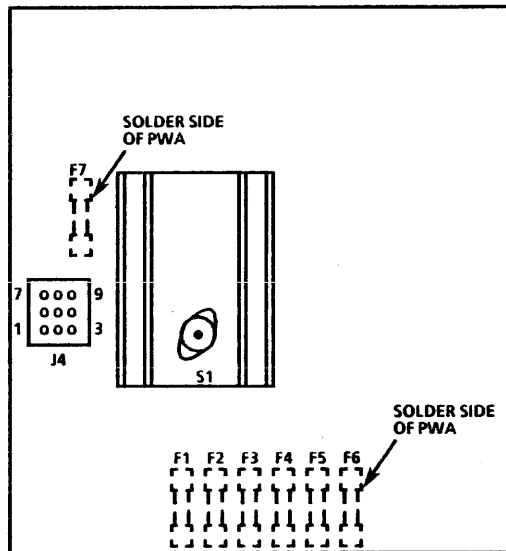
Figure 3-3  A1 PWA Connector and Component Locations   3-7

| 3.7.2 | A2 PWA |
|---|---|
| | REF PL 4.3 |

**REMOVAL**

## WARNING
High voltages are present in the power supply for 2 minutes after AC power cord has been disconnected from wall outlet.

1   REMOVE POWER SUPPLY ASSEMBLY (3.7).
2   REMOVE A2 PWA.
   a   Remove the six hex screws securing the A2 PWA to chassis.
   b   Disconnect P2 connector from J1 on A2 PWA.
   c   Remove A2 PWA.

**REPLACEMENT (FIGURE 3-4)**

NOTE: Ensure that K1 relay is firmly installed in its socket on new A2 PWA. See Figure 3-6 for component location.

1   REPLACE A2 PWA.
   a.   Perform removal procedure in reverse order.



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3-8

Figure 3-4  A2 PWA Connector and Component Locations
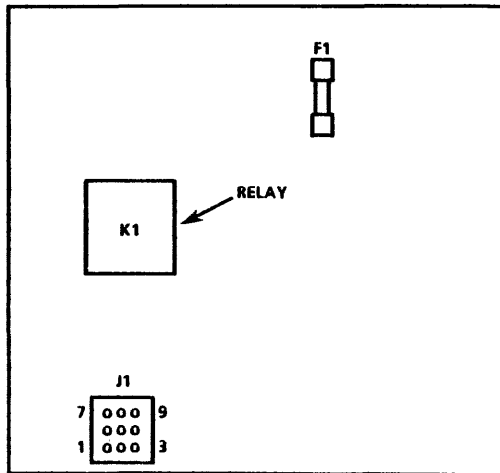
| 3.7.3 | POWER SUPPLY INTERCONNECT HARNESS |
|---|---|
| | REF PL 4.3 |

**REMOVAL**

## WARNING
High voltages are present in the power supply for 2 minutes after
AC power cord has been disconnected from wall outlet.

1. REMOVE A1 PWA (3.7.1).
2. REMOVE A2 PWA (3.7.2).
3. REMOVE INTERCONNECT HARNESS.
   a    Cut cable ties securing the harness to the fan.
   b    Remove interconnect harness.

**REPLACEMENT**
1   REPLACE INTERCONNECT HARNESS.
    a    Perform removal procedure in reverse order.

| 3.7.4 | POWER SUPPLY FAN |
|---|---|
| | REF PL 4 3 |

**REMOVAL**

## WARNING
High voltages are present in the power supply for 2 minutes after
AC power cord has been disconected from wall outlet.

1    REMOVE A2 PWA (3.7.2)

2. REMOVE A1 PWA (3.7.1).
3. REMOVE THE POWER SUPPLY FAN.
   a.    Cut cable ties securing the harness to the fan.
   b.    Remove hardware securing the fan to chassis.
   c.    Remove the power supply fan.

**REPLACEMENT (FIGURE 3-3)**

## CAUTION
For the correct air flow, the fan must be installed with arrow
indicating up.

1.    REPLACE THE POWER SUPPLY FAN.
   a.    Ensure that the thermal breaker switch S1 on A1
         PWA, has been reset. See Figure 3-3 for switch
         location.
   b.    Perform removal procedure in reverse order.

| 3.8 | TRANSFORMER ASSEMBLY |
|---|---|
| | REF PL  4 3 |

**REMOVAL**
1.    SWITCH OFF SYSTEM POWER.
2.    DISCONNECT AC POWER CORD FROM WALL OUTLET.
3.    REMOVE RIGHT AND LEFT SIDE COVERS.
4.    REMOVE TRANSFORMER ASSEMBLY.
   a.    Disconnect P2 connector from P4 on AC distribution
         PWA.
   b.    Disconnect P1 connector from J1 on power supply.

  c Cut cable tie securing the transformer harness to chassis.

  d Remove screw securing the capacitor clamp to frame.

  e Remove screw securing the transformer ground wire to frame.

  f Remove the two screws securing the transformer to chassis.

  g Carefully remove transformer, capacitor, and harness from frame.

**REPLACEMENT**
1. REPLACE TRANSFORMER ASSEMBLY.
  a Perform removal procedure in reverse order.

```
3.9     LINE FILTER
        REF PL. 4.3
```

**REMOVAL**
1. SWITCH OFF SYSTEM POWER.
2. DISCONNECT AC POWER CORD FROM REAR OF PROCESSOR.
3. REMOVE REAR AND RIGHT SIDE COVERS.
4. REMOVE LINE FILTER.
  a Disconnect line filter connector J2 from AC harness connector P1.
  b Remove the screw securing the line filter ground wire to frame.
  c Remove the screw securing the capacitor clamp to frame.

  d Move capacitor to one side.

  e Remove the two screws securing the line filter to frame (one screw is located on rear of processor frame).

  f Remove line filter.

**REPLACEMENT**
1. REPLACE LINE FILTER.
  a Perform removal procedure in reverse order.

```
3.10    FLOPPY DISK DRIVE
        REF PL. 4.4
```

**REMOVAL**
1. SWITCH OFF SYSTEM POWER.
2. REMOVE FRONT AND BOTH SIDE COVERS.
3. REMOVE FLOPPY DISK DRIVE.
  a. Disconnect AC harness connector J9 from J4 on disk drive
  b. Disconnect DC harness connector J5 from J5 on disk drive
  c. Disconnect signal harness connector P1 from J1 on disk drive.
  d. Remove the two screws securing the disk drive to frame
  e. Pull disk drive out of processor frame.
  f. Place cardboard inside drive (from new drive) to prevent heads from touching.
  g. If new disk drive is being installed, remove bezel and brackets from old disk drive.

REPLACEMENT (FIGURES 3-5 to 3-8, inclusive)

## CAUTION

Jumpers on new disk drive must be correctly configured BEFORE installation. Several versions of disk drives are now in use. Ensure that the correct figure is referred to when verifying the jumper locations.

1. JUMPERS MUST BE INSTALLED AS SHOWN IN FIGURES 3-5 to 3-8, inclusive.
   a   Remove any jumpers not shown in appropriate figure.
   b   Add any jumpers necessary, as shown in appropriate figure.

NOTE: When installing the new disk drive, ensure that brackets go under rails on processor frame.

2. REPLACE FLOPPY DISK DRIVE.
   a   If new drive is being installed, attach bezel and brackets from old drive to new drive.
   b   Remove cardboard from inside new drive and insert into old drive.
   c   Perform removal procedure in reverse order.
3. RUN ALAG.
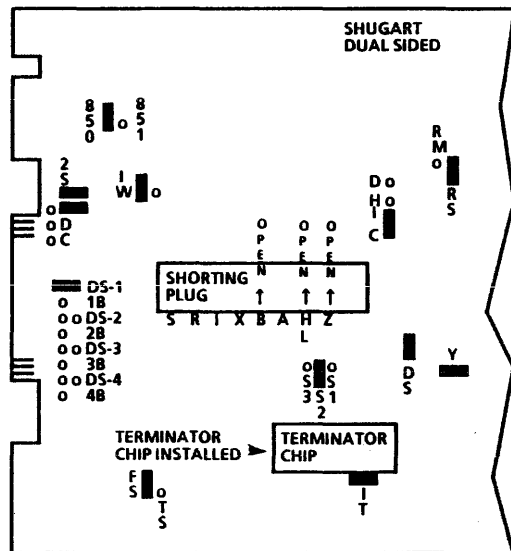


8010-119

Figure 3-5  Jumper Locations for MLC 10 PWA
on Shugart Floppy Disk Drive          3-11
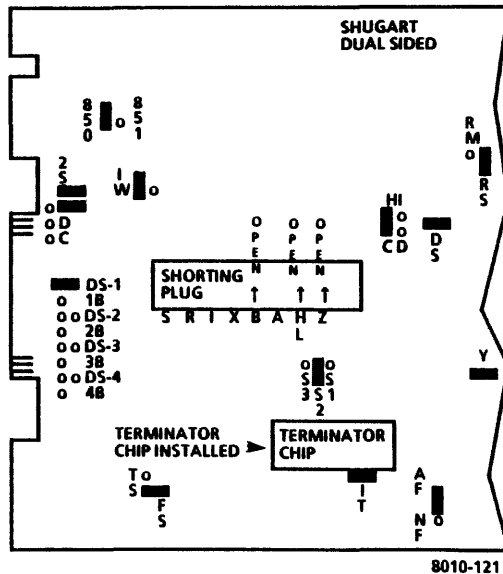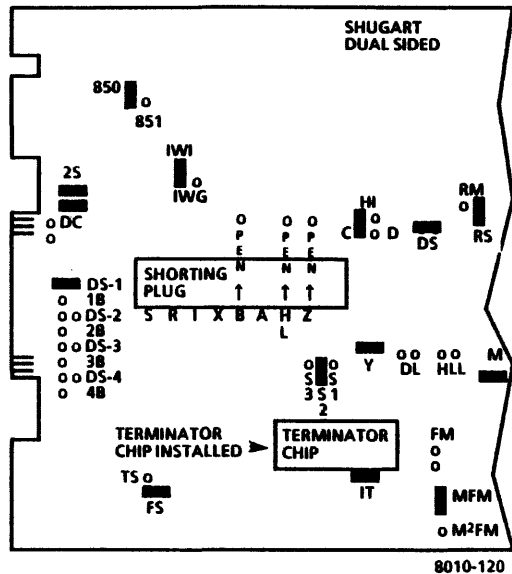
Figure 3-6  Jumper Locations for MLC 14 or MLC 15 PWAs
3-12               on Shugart Floppy Disk Drive

Figure 3-7  Jumper Locations for MLC 11 or MLC 12 PWAs
on Shugart Floppy Disk Drive
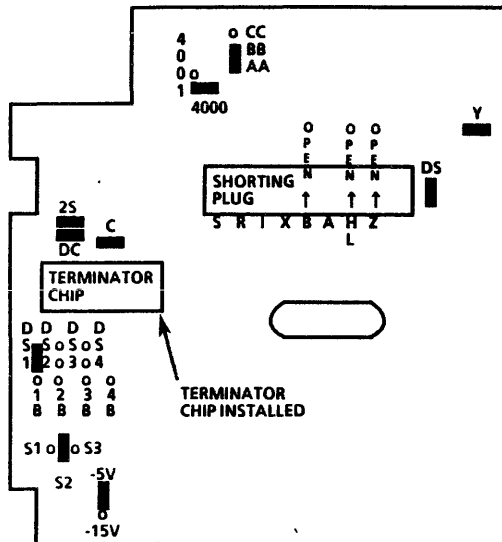
Figure 3-8  Jumper Locations for PWA
on Remex Floppy Disk Drive

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### 3.10.1  FLOPPY DRIVE BELT
REF PL. 4.4

**REMOVAL**
1. REMOVE FLOPPY DISK DRIVE (3.10).
2. REMOVE FLOPPY DRIVE BELT.
   a. Position the drive on its left side.
   b. Turn spindle pulley and remove belt from pulley.
   c. Pull belt from rear of disk drive.

**REPLACEMENT**
1. REPLACE FLOPPY DRIVE BELT.
   a. Perform removal procedure in reverse order.
2. RUN ALAG.

### 3.11  10MB DISK DRIVE
REF PL. 4 5

REMOVAL (FIGURES 3-9 and 3-10)

NOTE: RX only References in the following procedures to a call for assistance or report of conditions, should be made to the RX Technical Specialist.

**CAUTION**

Drive replacement deletes customer files. This requires restoration of files by customer. BEFORE replacing drive, contact OPTS or TSC; then notify customer's System Administrator or Network Coordinator. Customer **MUST** be notified **BEFORE**

replacing rigid drive. It is possible that Systems Analyst will know work around procedure, and drive will not require replacing. If customer will not agree to drive replacement, contact Systems Analyst for further instructions. **NEVER REPLACE DISK DRIVE WITHOUT FIRST NOTIFYING CUSTOMER AND SYSTEMS ANALYST.**

1.  ENSURE THAT THE CORRECT DISK DRIVE REPLACEMENT POLICY WAS FOLLOWED.
    a   Ensure that OPTS or TSC was contacted.
    b.  Ensure that customer approves and understands disk drive is to be replaced.
    c   Ensure that Systems Analyst is notified.
2   SWITCH OFF SYSTEM POWER.
3.  REMOVE FRONT AND RIGHT SIDE COVERS.

### CAUTION
Before removing the disk drive, spindle locking bracket and screw must be installed. Turning the spindle in a counterclockwise direction will cause damage to the head and the disk surface.

4.  INSTALL SPINDLE LOCK.
    a.  Remove spindle locking bracket and screw from the storage position (Figure 3-9).
    b.  Turn pulley in <u>clockwise direction only</u>, until hole in pulley aligns with hole in belt cover.
    c.  Install locking bracket and screw through the access hole in disk drive cover (Figure 3-10).
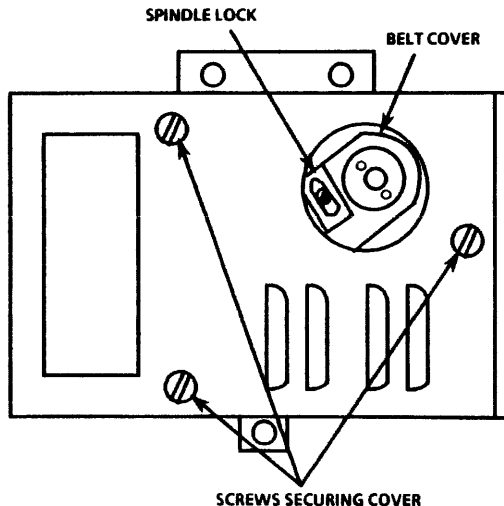


8010-124

Figure 3-9  Storage Location
for 10MB Spindle Lock

SPINDLE LOCK

BELT COVER



SCREWS SECURING COVER
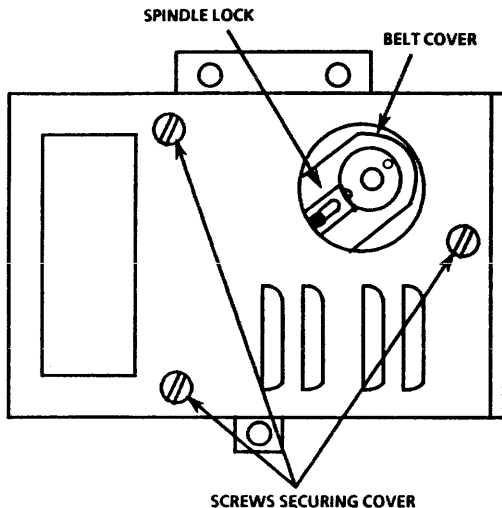
8010-125

Figure 3-10  Locked Position
for 10MB Spindle Lock

5.  REMOVE 10MB DISK DRIVE.
    a.  Disconnect AC harness connector J7 from J4 on disk drive.
    b.  Disconnect the signal control harness connector P1 from J1 on disk drive.
    c.  Remove data transfer harness connector P2 from J2 on disk drive.

NOTE: Disk drive must be removed from processor before DC interface harness can be disconnected.

    d.  Remove the three screws securing the disk drive to side of processor frame.
    e   Remove disk drive from processor.
    f.  Disconnect DC harness connector J2 from J5 on disk drive.
    g.  If new disk drive is being installed, remove brackets from old disk drive assembly.

REPLACEMENT (FIGURE 3-11)

CAUTION
New disk drive jumpers must be configured BEFORE installation.

1.  JUMPERS MUST BE INSTALLED AS SHOWN IN FIGURE 3-11.
    a.  Remove any jumpers not shown in figure.
    b.  Add any jumpers necessary, as shown in figure.

3-15

Figure 3-11   Jumper Locations For 10MB Control PWA
3-16                or 10MB Control/Stepper PWA
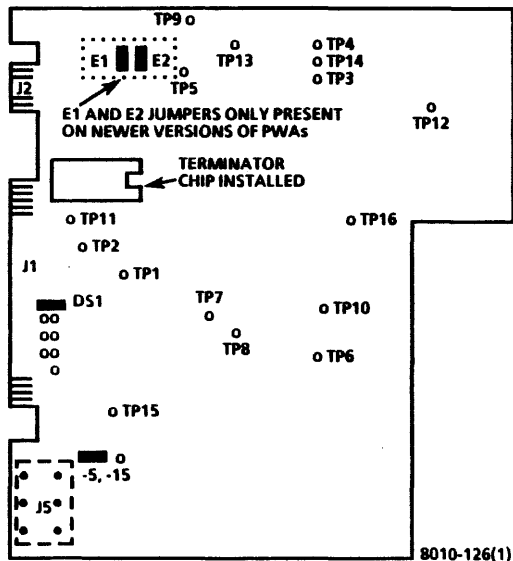
**CAUTION**
Do not apply power while spindle locking bracket and screw are installed on disk drive.

2.   REPLACE 10MB DISK DRIVE.
a.   If new disk drive is being installed, remove brackets from old disk drive, and install on new disk drive.
b.   Connect DC harness connector J2 to J5 on disk drive.
c.   Place disk drive in processor.
d.   Ensure that harnesses are not pinched between frame and disk drive.
e.   Replace the three screws securing the disk drive to frame, but DO NOT tighten screws.

**CAUTION**
Disk drive must be lifted up when tightening the three screws.

f.   Lift disk drive up, away from the two support brackets at bottom of processor frame.
g.   While supporting the disk drive away from the support brackets, tighten the two top screws.
h.   Tighten bottom screw
i.   Connect the signal control harness connector P1, to J1 on disk drive
j.   Connect data transfer harness connector P2 to J2 on disk drive.
k.   Connect processor AC harness connector J7 to J4 on disk drive.

3.   REMOVE SPINDLE LOCK FROM 10MB DISK DRIVE.

a. Remove spindle lock bracket and screw (Figure 3-10).
b. Position and secure the spindle lock bracket for storage (Figure 3-9).

NOTE: The 10MB disk drives have bad page error maps from the OEM supplier (the Original Equipment Manufacturer of the drive) and Xerox Refer to Figure 3-12 for a sample of the error maps. Refer to Figure 3-13 for a flow chart on preparing the drive for software

4   CHECK THE DATE OF XEROX ERROR MAPS. IF DATED 11-30-82 OR BEFORE, OR THE MAP DOES NOT EXIST (FIGURE 3-12), PROCEED TO STEP 12.
   a   Remove map from the right side of drive.
   b   Locate date on the Xerox error map. If dated 11-30-82 or before, or the map does not exist, proceed to step 13.
5   RUN ALAG AND VERIFY A SUCCESSFUL COMPLETION.
   a   If ALAG completes successfully, proceed to step 6.
   b   If ALAG fails while PV Scavenger is running, proceed to step 6.
   c   If ALAG does not complete and an MP Code other than 1199 is displayed, see MP Code List.
   d   If *physical volume needs forward conversion Warnings* is displayed on the screen, proceed to step 13.

```
┌─────────────────────────────────────────────┐
│               OEM ERROR MAP                  │
│                                              │
│ SA1004 SCAN ERROR LOG          SERIAL #A36497│
│ TRK  HD        BYTE COUNT  LENGTH (BITS)      │
│ 078  00          01315         14             │
│ 144  03          02219         15             │
│ 145  03          02220         03             │
│ 253  03          03938         01             │
│ 254  03          03939         02             │
│                                              │
│ END ERROR LOG                                │
└─────────────────────────────────────────────┘
```

```
┌─────────────────────────────────────────────┐
│               XEROX ERROR MAP                │
│                                              │
│ XX Megabyte Storage Device                   │
│ Serial number: A12102                        │
│ Date: 22-Jan-82                              │
│                          Bad Page  Manual  Media│
│   Page   Cyl  HD   Sec   Table   Entry   Scan│
│   3908   017  03   16      X                 │
│  14420   064  03   00              X         │
│                                              │
│ Number of bad pages: 2                       │
└─────────────────────────────────────────────┘
```

8010 - 054(1)

Figure 3-12  Sample of OEM and Xerox Error Maps
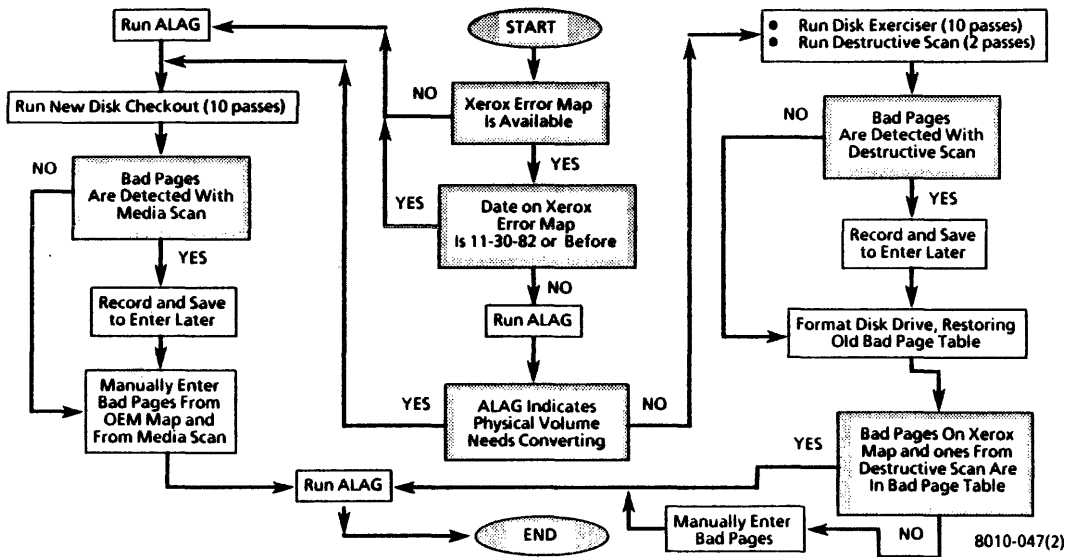
Figure 3-13  Rigid Disk Drive or Processor Software Preparation Flow Chart

8010-047(2)

**CAUTION**

The following steps contain instructions that will destroy customer files. **DO NOT** logon with Analyst privileges, or perform these steps, unless service manual procedures instruct you to do so. Performing these exercises on disk drives containing any customer files will DESTROY ALL CUSTOMER INFORMATION.

6. LOGON WITH ANALYST PRIVILEGES.
   a. Refer to 8000 NS Diagnostics Handbook for detailed instructions.
7. RUN DISK EXERCISER FOR 10 PASSES TO DETERMINE THE CONDITION OF THE HARDWARE.
   a. Refer to the 8000 NS Diagnostics Handbook on how to run Disk Exerciser.
   b. If an error is detected other than a Header CRC, Label CRC, or Data CRC, perform Level 1 Checkout in the 8000 Processor Service Manual.
   c. If no error is detected, or the error is a Header CRC, Label CRC, or Data CRC, continue with step 8.
8. RUN DESTRUCTIVE SCAN FOR 2 PASSES, WITH 2 RETRIES.
   a. Refer to 8000 NS Diagnostics Handbook for detailed instructions.
   b. If bad pages are detected while Destructive Scan is running, record and save to use later.

**CAUTION**

When performing the next step, **RESTORE** the Bad Page Table.

9. FORMAT DISK DRIVE, RESTORING OLD BAD PAGE TABLE.
   a. Refer to 8000 NS Diagnostics Handbook for detailed instructions.
10. VERIFY BAD PAGE TABLE CONTAINS **ALL** PAGES ON XEROX ERROR MAP AND PAGES RECORDED DURING DESTRUCTIVE SCAN.
    a. Compare Bad Page Table on the display to Xerox error map, and pages recorded during Destructive Scan.
    b. If **all** pages are in the Bad Page Table, proceed to step 16.
11. MANUALLY ENTER BAD PAGES NOT IN BAD PAGE TABLE, THEN PROCEED TO STEP 16.
    a. Refer to 8000 NS Diagnostics Handbook for detailed instructions.
    b. After entering bad pages, proceed to Step 16.
12. RUN ALAG AND VERIFY A SUCCESSFUL COMPLETION.
    a. If ALAG completes successfully, proceed to step 13.
    b. If ALAG fails while PV Scavenger is running, continue with step 13.
    c. If ALAG does not complete and an MP Code other than 1199 is displayed, see MP Code List.
    d. If *physical volume needs forward conversion Warnings* is displayed on the screen, proceed to step 13.

**CAUTION**
The following steps contain instructions that will destroy customer files. **DO NOT** logon with Analyst privileges, or perform these steps, unless service manual procedures instruct you to do so. Performing these exercises on Disk Drives containing any customer files will DESTROY ALL CUSTOMER INFORMATION.

NOTE: If you cannot logon (system locked up), perform an Alternate Boot 0002, and press the **BREAK** or **STOP** key when Fault Analysis begins.

13. LOGON ON WITH ANALYST PRIVILEGES.
    a   Refer to 8000 NS Diagnostics Handbook for detailed instructions.
14. RUN NEW DISK CHECKOUT FOR 10 PASSES TO DETERMINE THE CONDITION OF THE HARDWARE.
    a.   Refer to the 8000 NS Diagnostics Handbook for detailed instructions.
    b    If an error is detected other than a Header CRC, Label CRC, or Data CRC while Destructive Exerciser is running, perform Level 1 Checkout in the 8000 Processor Service Manual.
    c.   If no error is detected while Destructive Exerciser is running, or the error is a Header CRC, Label CRC, or Data CRC, continue with next step.
    d.   When *Do you wish to reconstruct the bad page table at this time (Y/N):* Y is displayed, press return.
    e.   When *Do you wish to perform a media scan (Y/N):* is displayed, type y and press return.

    f.   When *Pass count (1-1000): 10* is displayed, type 2 and press return.
    g.   When *Retry Count (0-20): 2* is displayed, press return.
    h.   If bad pages are detected while media scan is running, record and save to use later.
    i.   If *Do you wish to test the bad pages (Y/N):* is displayed, type n and press return.
    j.   When *Do you wish to manually enter bad pages (Y/N):* is displayed, type y and press return.
    k.   If Xerox error map was dated 11-30-82 or before, proceed to step 15.
    l.   Select Page Format and enter bad pages from Xerox error map and bad pages detected during media scan.
    m.   Proceed to step 16.
15. MANUALLY ENTER BAD PAGES FROM OEM MAP AND MEDIA SCAN.
    a.   Refer to the 8000 NS Diagnostics Handbook for detailed instructions.
16. RUN ALAG AND VERIFY A SUCCESSFUL COMPLETION.
17. RETURN ERROR MAPS TO PLASTIC POUCH.
18. REPLACE COVERS.
19. INFORM SYSTEM ADMINISTRATOR TO PARTITION DISK, INSTALL SYSTEM SOFTWARE, AND RESTORE FILES.

| 3.11.1   10MB CONTROL PWA |
| REF PL 4.5 |

**REMOVAL (FIGURE 3-14)**
1. REMOVE 10MB DISK DRIVE (3.11).

**CAUTION**
DO NOT disconnect J7 and J8 connectors by pulling on wires; use body of connectors.

2. REMOVE CONTROL PWA (FIGURE 3-14).
   a   Disconnect J3, J5, J6, J7, J8, and J9 on Control PWA .
   b   Remove screw located on top edge of PWA.
   c   Loosen the three plastic quarter turn studs.
   d   Remove Control PWA.

**REPLACEMENT**

NOTE: If replacing the 10MB Control PWA with the 10MB Control/Stepper PWA, proceed to 3.11.3

1. JUMPERS <u>MUST BE</u> INSTALLED AS SHOWN IN FIGURE 3-11.
   a.   Remove any jumpers not shown in figure.
   b.   Add any jumpers necesary, as shown in figure.



8010-127(1)
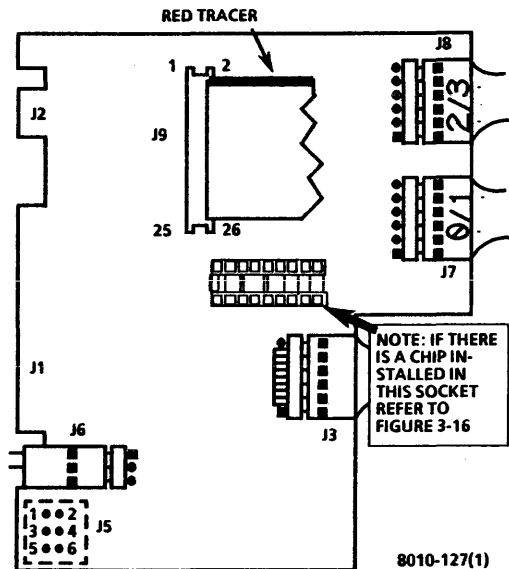
Figure 3-14   10MB Control PWA
Connector Locations                3-21

2.  REPLACE CONTROL PWA.
    a   See Figure 3-14 for the correct installation of connectors.
    b.  Perform removal procedure in reverse order.
3.  RUN ALAG.

<div style="border:1px solid">

**3.11.2  10MB STEPPER PWA**
    REF PL 4.5
</div>

**REMOVAL**
1.  REMOVE 10MB DISK DRIVE (3.15).
2.  REMOVE 10MB DISK DRIVE COVER (FIGURE 3-10).
    a.  Remove the three screws securing the cover to drive.
    b.  Remove cover from drive.
3.  REMOVE STEPPER PWA.
    a.  Disconnect flat ribbon connector from Stepper PWA.
    b.  Remove the three screws securing the Stepper PWA to casting.
    c.  Remove stepper PWA.

**REPLACEMENT (FIGURE 3-15)**

NOTE: If installing the 10MB Stepper PWA in 10MB with Control/Stepper PWA, proceed to Replacement procedure 3.11.3.

1.  REPLACE STEPPER PWA.
    a.  Connect flat ribbon cable (Figure 3-15).
    b.  Perform removal procedure in reverse order.
2.  RUN ALAG.



8010-128
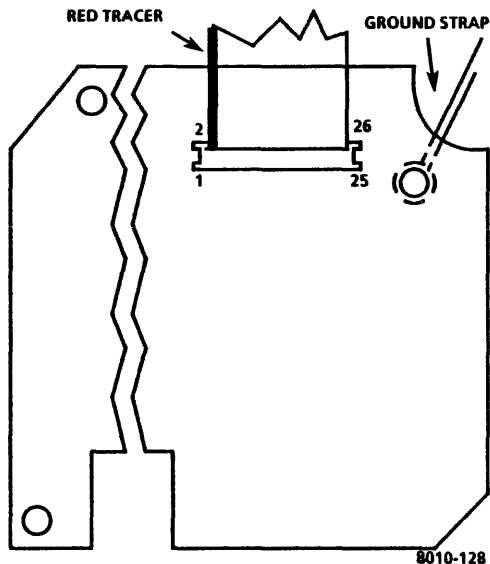
Figure 3-15  10MB Stepper PWA
Connector Locations

3.11.3  10MB CONTROL/STEPPER PWA
        REF PL 4.5

REMOVAL (FIGURE 3-16)
1.   REMOVE 10MB DISK DRIVE (3.11).

**CAUTION**
DO NOT disconnect J7 and J8 connectors by pulling on wires; use body of connectors.

2.   REMOVE CONTROL/STEPPER PWA
     a   Disconnect J3, J5, J6, J7, J8, and J9 on the Control/Stepper PWA (Figure 3-16).
     b   Remove screw located on top edge of PWA.
     c   Loosen the three plastic quarter turn studs.
     d   Remove Control/Stepper PWA.

**REPLACEMENT**

NOTE: Control/Stepper PWA replaces both Control PWA and Stepper PWA.

1.   JUMPERS MUST BE INSTALLED AS SHOWN IN FIGURE 3-11.
     a.   Remove any jumpers not shown in figure.
     b.   Add any jumpers necesary, as shown in figure.
2.   REPLACE CONTROL/STEPPER PWA.
     a.   See Figure 3-16 for correct connector locations.
     b.   Perform removal procedure in reverse order.
3.   RUN ALAG.



8010-129(1)
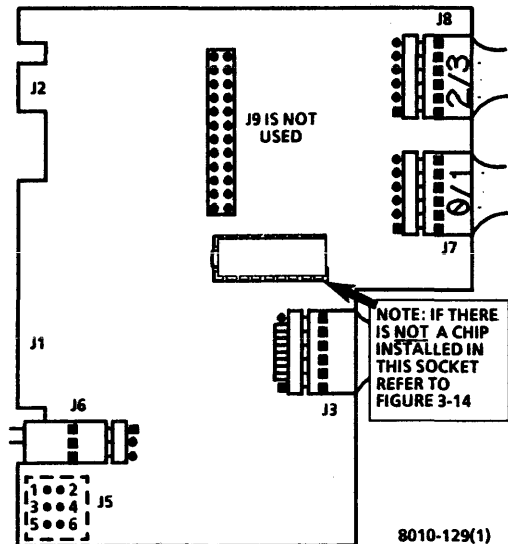
Figure 3-16  10MB Control/Stepper PWA
Connector Locations        3-23

---

### 3.11.4  10MB DRIVE BELT
REF PL 4.5

**REMOVAL**
1.   REMOVE 10MB DISK DRIVE (3.11).
2.   REMOVE DISK DRIVE COVER.
    a  Remove the three screws securing the cover to casting (Figure 3-10).
    b  Remove disk drive cover.
3.   REMOVE 10MB DRIVE BELT.
    a  Remove belt cover.

**CAUTION**

Turning the spindle in a counterclockwise direction will cause damage to head and disk surface.

    b.  Turn spindle in <u>clockwise direction only</u>, and remove belt from pulley.

**REPLACEMENT**

**CAUTION**

Turning the spindle in a counterclockwise direction will cause damage to the head and the disk surface.

1.   REPLACE 10MB DRIVE BELT.
    a  Ensure that the drive belt is installed with dull side (side with part number) to the outside.
    b  Perform removal procedure in reverse order.

---

### 3.11.5  10MB DRIVE MOTOR
REF PL 4.5

**REMOVAL**
1.   REMOVE 10MB DISK DRIVE (3.11).
2.   REMOVE DISK DRIVE BELT (3.11.4).
3.   REMOVE 10MB DRIVE MOTOR.
    a.  Remove the AC connector J4, from bracket.
    b.  Loosen screw securing the capacitor mounting bracket to casting.
    c.  Move bracket clear of the capacitor.
    d.  To ensure the correct replacement, write wire colors on side of capacitor.
    e.  Disconnect the three wires from capacitor.
    f.  Remove the four locknuts securing the drive motor to casting.
    g.  Remove the three insulating washers and ground strap.
    h.  Remove drive motor.
    i.  Remove the four insulating washers from motor mounting posts for use with new motor
4.   REMOVE PULLEY FROM MOTOR.
    a.  Loosen the two set screws.
    b.  Remove pulley from motor shaft.

**REPLACEMENT (FIGURE 3-17)**
1.   REPLACE PULLEY ONTO MOTOR.
    a.  Replace pulley on motor shaft.
    b.  Insert 0.035 inch (0.88mm) shim between pulley and motor
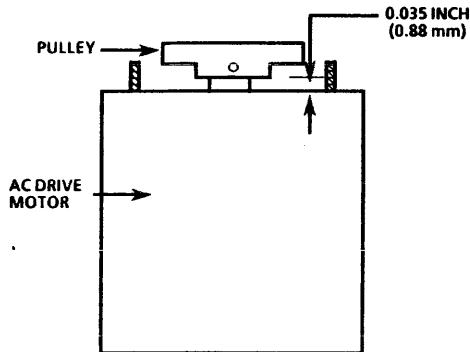
c. Ensure that one set screw is located on flat side of motor shaft.
d. Tighten both set screws.
e. Remove shim.

2. REPLACE DRIVE MOTOR.
   a. Ensure that the insulating washers are installed on each motor mounting post, except the post securing the side of belt cover.
   b. Install drive motor onto casting.

NOTE: Do not install an insulating washer on mounting post used for securing one side of belt cover.

   c. Replace the insulating washers and ground strap.
   d. Replace locknuts, but do not tighten.
   e. Verify center to center distance of 7.75 inches (19.6 cm) from spindle shaft to motor shaft.
   f. Position the motor and tighten locknuts.
   g. Replace capacitor on casting.
   h. Thread AC connector leads between capacitor and casting.
   i. Turn bracket over capacitor and tighten screw.
   j. Install AC connector J4 into bracket.
   k. Connect the three wires to capacitor, using the marks made during removal procedure.

3. REPLACE DRIVE BELT (3.11.4)
4. REPLACE 10MB DISK DRIVE (3.11).
5. RUN ALAG.

8010-132

Figure 3-17   10MB Drive Motor
Pulley Replacement

3-25

3.11.6  10MB DAMPER ASSEMBLY
REF PL 4.5

**REMOVAL (FIGURES 3-10, 3-18, 3-19)**
1.   REMOVE 10MB DISK DRIVE (3.11).
2.   REMOVE DISK DRIVE COVER.
   a   Remove the three screws securing the cover to casting (Figure 3-10).
   b   Remove disk drive cover.

**CAUTION**
AC power must be applied to drive when removing the damper. DO NOT apply system power until spindle locking bracket and screw are removed.

3   REMOVE DAMPER ASSEMBLY.
   a   Position the drive on its side with damper up.
   b   Remove spindle locking bracket and screw from disk drive.
   c   Connect AC harness connector J7 to J4 on disk drive.
   d   Switch ON system power.
   e   Remove filler screw from side of damper (Figure 3-18).
   f   Insert 0.05 inch (1.27 mm) allen wrench into hole and loosen screw (Figure 3-19).
   g   Turn damper 90 degrees and loosen second set screw.
   h   Carefully remove damper by applying upward pressure.

i.   Replace filler screw.
j.   Wipe the actuator motor clean.
k.   Switch OFF system power.



FILLER SCREW

ALLEN WRENCH
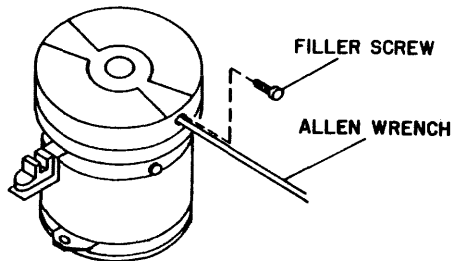
8000-021

Figure 3-18  10MB Damper Assembly
Removal

**REPLACEMENT** (FIGURES 3-10, 3-20, 3-21)

### CAUTION
Do not move damper assembly without AC power applied.



DAMPER

ALLEN SCREWS

FILLER SCREW

8000-148
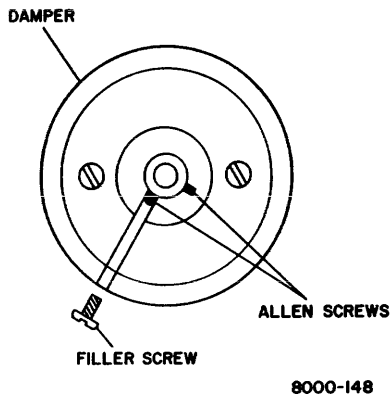
1.   REPLACE DAMPER ASSEMBLY.
   a.   Ensure that AC harness connector J7 is connected to J4 on disk drive.
   b.   Switch ON system power.
   c.   Locate new damper and align one set screw with filler screw hole
   d.   Using pliers, remove damper plug (Figure 3-20).  Be careful not to change the position of set screws.
   e.   Remove filler screw from side of new damper.
   f.   Place damper on actuator motor shaft.
   g.   Place 0.010 inch (0 25 mm) shim between damper and track 00 flag collar (Figure 3-21).
   h.   Move damper against shim and tighten set screw aligned with filler hole.
   i.   Turn damper and tighten the remaining screw.
   j.   Remove shim.
   k.   Replace filler screw.
   l.   Wipe damper clean.
   m.   Switch OFF system power.
2.   INSTALL SPINDLE LOCK
   a.   Locate spindle locking bracket and screw.

Figure 3-19  10MB Damper Assembly
Screw Locations

8000-149



8000-022(1)
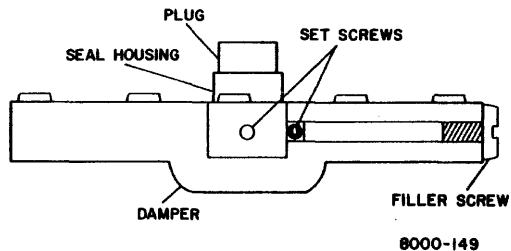
Figure 3-20  New Damper Assembly
with Plug
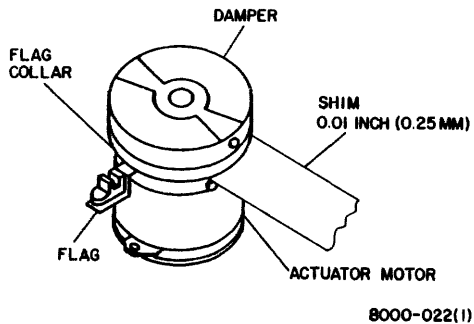
Figure 3-21  Damper Assembly
Adjustment

**CAUTION**

Turning the spindle in a counterclockwise direction will cause damage to the head and the disk surface.

b. Turn pulley in <u>clockwise direction only</u> until hole in pulley aligns with hole in belt cover.
c. Install locking bracket and screw.
3. REPLACE DISK DRIVE COVER.
a. Place cover on drive.
b. Replace the three screws securing the cover to casting (Figure 3-9).
4. REPLACE 10MB DISK DRIVE (3.11).
5. RUN ALAG.

| 3.12 IOP PWA |
| REF PL 4.2 |

REMOVAL (TABLE 3-1, FIGURE 3-21)

**CAUTION**

If system identification number (contained in ID PROM on IOP PWA) changes, it may cause system to be ignored by Ethernet Network or give an indication that the software is not configured. System Administrator <u>must</u> be notified if ID PROM is replaced.

1. SWITCH OFF SYSTEM POWER.
2. DISCONNECT AC POWER CORD FROM WALL OUTLET.
3. REMOVE FRONT COVER.
4. REMOVE IOP PWA FROM CARD CAGE.

a. Unplug harnesses from edge connectors on PWA.
b. Remove IOP PWA from card cage.

**CAUTION**

ID PROM and Boot EPROMs can be damaged by static electricity. To prevent damage, always handle by ends. DO NOT handle EPROMs by leads.

5. REMOVE ID PROM FROM IOP PWA.
a. Carefully remove ID PROM from old IOP PWA for use with new IOP PWA (Figure 3-22).

**CAUTION**

When replacing IOP PWA, Boot EPROMs may have to be exchanged from old IOP to new IOP. Refer to Table 3-1 and Figure 3-23 to ensure that replacement procedures are followed correctly.

REPLACEMENT (TABLE 3-1, FIGURE 3-22)

**CAUTION**

ID PROM and Boot EPROMs can be damaged by static electricity. To prevent damage, always handle by ends. DO NOT handle EPROMs by leads.

1. EXCHANGE ID PROMs.
a. Remove ID PROM from new IOP PWA.

| TABLE 3-1  BOOT EPROMs LEVEL | | | | |
|---|---|---|---|---|
| PART NUMBERS AND LOCATIONS | | | | LEVEL |
| U129 | U130 | U131 | U132 | |
| 537P02563 | 537P02564 | 537P02565 | 537P02278 | 2.4 |
| 537P03029 | 537P03030 | 537P03031 | 537P03032 | 3.0 |
| 537P03029 | 537P03030 | 537P03700 | 537P03032 | 3.1 |

8000-167

Table 3-1  Boot EPROMs Level

**CAUTION**
When installing ID PROM and Boot EPROMs, be careful that leads do not extend outside of socket or bend under.

  b    Locate notch in ID PROM and install ID PROM removed from old IOP PWA onto new IOP PWA (Figure 3-22).
  c    Install ID PROM removed from new IOP PWA onto old IOP PWA.

NOTE: When replacing IOP PWA, compare Boot EPROMs level to new IOP PWA. If both PWAs contain same level of Boot EPROMs, or new IOP PWA has newer level, DO NOT exchange Boot EPROMs between old and new IOP PWAs.
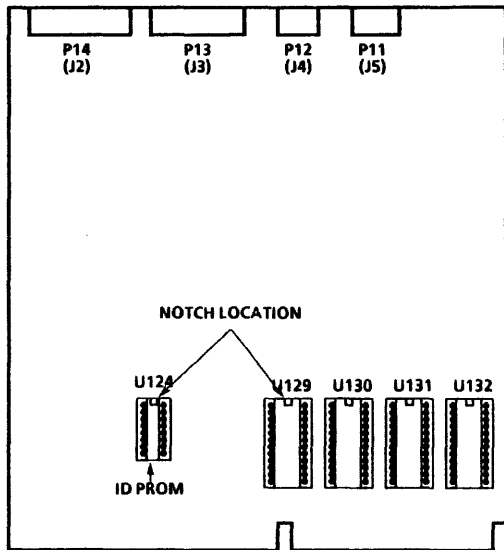


8010-133

Figure 3-22  IOP PWA

3-30

2. IF NECESSARY, EXCHANGE BOOT EPROMS.
   a. See Table 3-1 to determine Boot EPROMs level.
   b. Compare Boot EPROMs level.
   c. See Table 3-1 and Figure 3-22 for the correct installation of Boot EPROMs.
   d. Install latest level of EPROMs on new IOP PWA.
   e. Install early Boot EPROMs on faulty IOP PWA.
3. REPLACE IOP PWA.
   a. Install new IOP PWA in processor.
   b. Connect all harnesses to edge connectors on PWAs.
   c. Switch ON system power and run ALAG.
   d. Replace front cover.

| 3.13 | MCC/MSC PWA MEMORY CHIPS |
| | REF PL 4 2 |

NOTE: Use this procedure to replace failed Memory Chips (Kit # 6015968) in socketed MCC/MSC PWA, as indicated in Level 2 Check Chart 6 16.

REMOVAL (Figure 3-23)

NOTE: This procedure applies to socketed MCC/MSC PWAs only.

1. SWITCH OFF SYSTEM POWER.
2. REMOVE FRONT COVER.
3. REMOVE MEMORY CONTROL CARD (MCC/MSC) PWA FROM CARD CAGE.

**CAUTION**

Memory chips can be damaged by static electricity. To prevent damage, always handle by ends. DO NOT handle chipss by leads.

4. REMOVE CHIPS.
   a. Carefully remove chips to be replaced using small screwdriver.
   b. Alternately lift each end until chip is free from socket.

REPLACEMENT (FIGURE 3-23)

NOTE: See Figure 3-23 for chip orientation (location of notch).

1. INSERT NEW CHIPS.

**CAUTION**

Memory chips can be damaged by static electricity. To prevent damage, always handle by ends. DO NOT handle chipss by leads.

   a. Remove new chips from antistatic pad.
   b. Place pins on one side of chip partially into socket; then place pins on other side of chip into socket.
   c. If chip pins are too wide for socket, use a slight rolling motion.

**CAUTION**

When installing memory chips, be careful that leads do not extend outside of socket or bend under.

d.   When pins are aligned, firmly press chip into socket.
2.   INSTALL MCC/MSC PWA.
3.   RUN EI MEMORY FAST SINGLE BIT DIAGNOSTIC TEST,
     LOCATED IN AVAILABLE EI MEMORY TESTS IN
     DIAGNOSTIC HANDBOOK, TO VERIFY FIX.
4    REPLACE FRONT COVER.
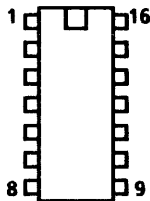


Figure 3-23  Notch Orientation

3-32

| 3.14 | 42MB DISK DRIVE |
| | PL 4.6 |

**REMOVAL** (FIGURES 3-24, 3-25)

**NOTE:** RX only. References in the following procedures to a
call for assistance or report of conditions, should be made to the
RX Technical Specialist.

**CAUTION**
Drive replacement deletes customer files.   This requires
restoration of files by customer. BEFORE replacing drive, contact
OPTS or TSC; then notify customer's System Administrator or
Network Coordinator.   Customer MUST be notified BEFORE
replacing rigid drive. It is possible that Systems Analyst will
know work around procedure, and drive will not require re-
placing. If customer will not agree to drive replacement, contact
Systems Analyst for further instructions. NEVER REPLACE DISK
DRIVE WITHOUT FIRST NOTIFYING CUSTOMER AND SYSTEMS
ANALYST.

1.   ENSURE THAT THE CORRECT DISK DRIVE REPLACEMENT
     POLICY WAS FOLLOWED.
     a.   Ensure that OPTS or TSC was contacted.
     b.   Ensure that customer approves and understands disk
          drive is to be replaced.
     c.   Ensure that Systems Analyst is notified.
2.   SWITCH OFF SYSTEM POWER.
3.   REMOVE FRONT AND RIGHT SIDE COVERS.

## CAUTION
Before removing the disk drive, spindle and actuator must be locked. Turning the spindle in a counterclockwise direction will cause damage to the head and the disk surface.

4. LOCK SPINDLE AND ACTUATOR (FIGURE 3-24, 3-25).
   a. Loosen the hex nut securing the spindle lock.
   b. Turn pulley in a <u>clockwise direction only</u>, to obtain the correct position.
   c. Turn spindle lock clockwise until it engages the holes on pulley (Figure 3-24).
   d. Tighten the hex nut to secure the spindle lock.

## CAUTION
Do not apply too much torque to the actuator lock.

   e. Using a screwdriver, turn the actuator lock clockwise until the arrow is pointing to the LOCK position (Figure 3-25).

5. REMOVE 42MB DISK DRIVE.
   a. Disconnect AC harness connector J7 from J4 on disk drive.
   b. Disconnect the signal control harness connector P1 from J1 on disk drive.
   c. Remove data transfer harness connector P2 from J2 on disk drive.

NOTE: Disk drive must be removed from processor before DC interface harness can be disconnected.
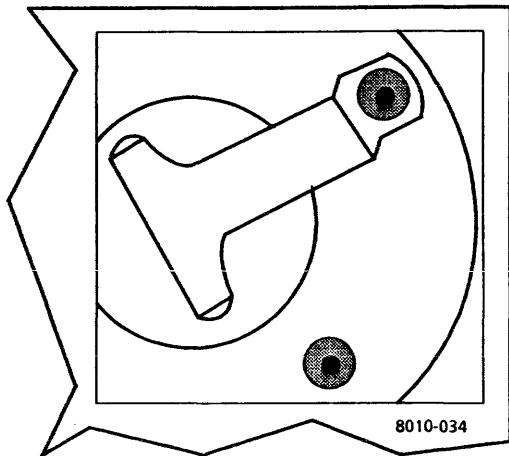


8010-034

Figure 3-24  42MB Spindle Lock
(Locked Position)                    3-33
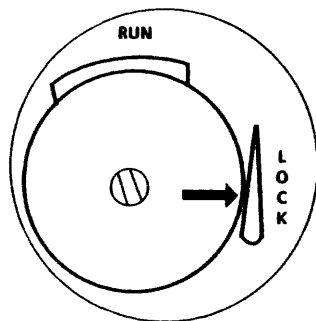
8010-036

d.   Remove the three screws securing the disk drive to
     side of processor frame.
e    Remove disk drive from processor.
f.   Disconnect DC harness connector J2 from J5 on disk
     drive.
g.   If new disk drive is being installed, remove brackets
     from old disk drive assembly.

**REPLACEMENT** (FIGURE 3-26, 3-27, AND 3-28)

#### CAUTION
**New disk drive jumpers must be configured BEFORE installation.**

1.   JUMPERS <u>MUST BE</u> INSTALLED AS SHOWN IN FIGURE 3-26.
     a.   Remove any jumpers not shown in figure.
     b.   Add any jumpers necessary, as shown in figure.

#### CAUTION
**Do not apply power while the spindle is locked.**

2.   REPLACE 42MB DISK DRIVE.
     a.   If new disk drive is being installed, remove brackets
          from old disk drive, and install on new disk drive.
     b.   Connect DC harness connector J2 to J5 on disk drive.
     c.   Place disk drive in processor.
     d.   Ensure that harnesses are not pinched between
          frame and disk drive
     e.   Replace the three screws securing the disk drive to
          frame, but <u>DO NOT</u> tighten screws.

**Figure 3-25   42MB Actuator Lock
(Locked Position)**
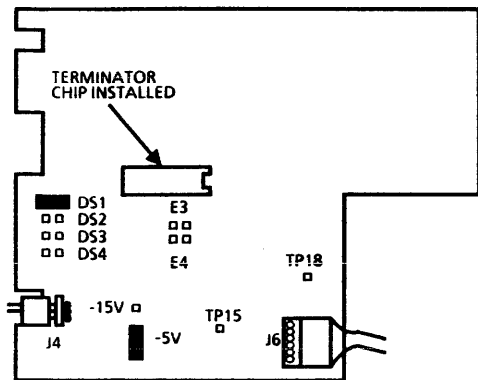
8010-067

**CAUTION**
Disk drive <u>must</u> be lifted up when tightening the three screws.

    f.   Lift disk drive up, away from the two support brackets at bottom of processor frame.
    g.  While supporting the disk drive away from the support brackets, tighten the two top screws.
    h.  Tighten bottom screw.
    i.   Connect the signal control harness connector P1, to J1 on disk drive.
    j.   Connect data transfer harness connector P2 to J2 on disk drive.
    k.  Connect processor AC harness connector J7 to J4 on disk drive.
3.  UNLOCK SPINDLE AND ACTUATOR (FIGURE 3-27, 3-28).
    a.  Loosen the hex nut securing the spindle lock.
    b.  Turn the spindle lock counterclockwise until it is clear of the pulley.
    c.  Ensure that the lock is clear of the pulley, then tighten the nut.

Figure 3-26  Jumper Locations for 42MB
Control PWA
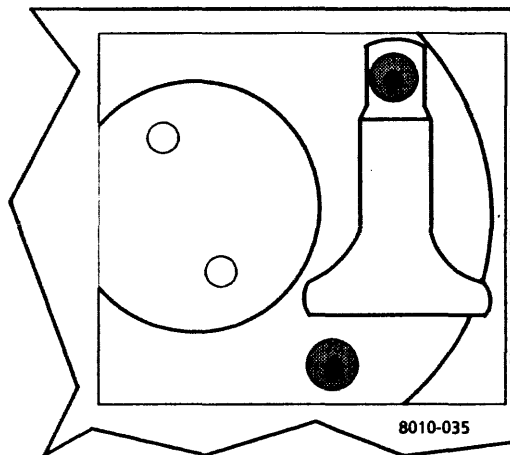
8010-035



8010-037

Figure 3-27   42MB Spindle Lock
(Unlocked Position)
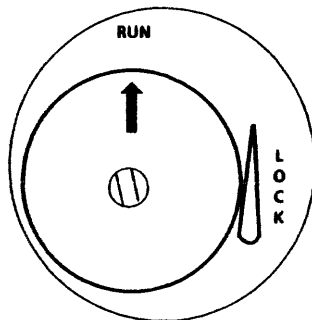
Figure 3-28   42MB Actuator Lock
(Run Position)

NOTE: The 42MB disk drives have bad page error maps from the OEM supplier (the Original Equipment Manufacturer of the drive) and Xerox. Refer to Figures 3-29 for a sample of the error maps. Refer to Figure 3-13 for a flow chart on preparing the drive for software

4. CHECK THE AVAILABILITY OF XEROX ERROR MAPS. IF THE MAP DOES NOT EXIST (FIGURE 3-29), PROCEED TO STEP 12.
   a. Remove map from the right side of drive.
   b. If the map does not exist, proceed to step 12.
5. RUN ALAG AND VERIFY A SUCCESSFUL COMPLETION.
   a. If ALAG completes successfully, proceed to step 6.
   b. If ALAG fails while PV Scavenger is running, proceed to step 6.
   c. If ALAG does not complete and an MP Code other than 1499, is displayed, see MP Code List.
   d. If *physical volume needs froward conversion Warnings* is displayed on the screen, proceed to step 13.

```
┌─────────────────────────────────────────────┐
│              XEROX ERROR MAP                  │
│                                               │
│ XX Megabyte Storage Device                    │
│ Serial number: A12102                         │
│ Date: 22-Jan-82                               │
│                    Bad Page  Manual   Media   │
│ Page   Cyl HD Sec  Table     Entry    Scan    │
│ 3908   017 03 16     X                        │
│ 14420  064 03 00               X              │
│                                               │
│ Number of bad pages: 2                        │
└─────────────────────────────────────────────┘
```

```
┌─────────────────────────────────────────────┐
│            42MB OEM ERROR MAP                 │
│                                               │
│ QUANTUM® Q2000 MEDIA DEFECT REPORT            │
│                                               │
│                    SERIAL NUMBER 34592        │
│                                               │
│                     ERROR       ERROR         │
│                     DISPLACEMENT LENGTH        │
│ CYLINDER  HEAD      IN BYTES    IN BITS        │
│                                               │
│ 345/ 159    7       549/ 225     1/ 1         │
│ 346/ 15A    7       549/ 225     5/ 5         │
│ 347/ 15B    5       1033/ 409    1/ 1         │
│                                               │
│ NOTE: NUMBERS ARE IN DECIMAL/HEXADECIMAL      │
└─────────────────────────────────────────────┘
```

Figure 3-29  Sample of OEM and Xerox Error Maps

**CAUTION**

The following steps contain instructions that will destroy customer files. <u>DO NOT</u> logon with Analyst privileges, or perform these steps, unless service manual procedures instruct you to do so. Performing these exercises on disk drives containing any customer files will DESTROY ALL CUSTOMER INFORMATION.

6   LOGON WITH ANALYST PRIVILEGES.
   a   Refer to 8000 NS Diagnostics Handbook for detailed instructions.
7   RUN DISK EXERCISER FOR 10 PASSES TO DETERMINE THE CONDITION OF THE HARDWARE.
   a   Refer to the 8000 NS Diagnostics Handbook on how to run Disk Exerciser.
   b   If an error is detected other than a Header CRC, Label CRC, or Data CRC, perform Level 1 Checkout in the 8000 Processor Service Manual.
   c   If no error is detected, or the error is a Header CRC, Label CRC, or Data CRC, continue with step 8.
8   RUN DESTRUCTIVE SCAN FOR 2 PASSES, WITH 2 RETRIES.
   a   Refer to 8000 NS Diagnostics Handbook for detailed instructions.
   b   If bad pages are detected while Destructive Scan is running, record and save to use later.

**CAUTION**

When performing the next step, <u>RESTORE</u> the Bad Page Table.

9   FORMAT DISK DRIVE, RESTORING OLD BAD PAGE TABLE.
   a   Refer to 8000 NS Diagnostics Handbook for detailed instructions.
10   VERIFY BAD PAGE TABLE CONTAINS <u>ALL</u> PAGES ON XEROX ERROR MAP AND PAGES RECORDED DURING DESTRUCTIVE SCAN.
   a   Compare Bad Page Table on the display to Xerox error map, and pages recorded during Destructive Scan.
   b   If <u>all</u> pages are in the Bad Page Table, proceed to step 16.

**NOTE:** When entering bad pages from the 42MB OEM Vendor error map, ensure that the decimal number is used. In other words, use the number to the left of the slash sign.

11   MANUALLY ENTER BAD PAGES NOT IN BAD PAGE TABLE, THEN PROCEED TO STEP 16.
   a   Refer to 8000 NS Diagnostics Handbook for detailed instructions.
   b   After entering bad pages, proceed to Step 16.
12   RUN ALAG AND VERIFY A SUCCESSFUL COMPLETION.
   a   If ALAG completes successfully, proceed to step 13.
   b   If ALAG fails while PV Scavenger is running, continue with step 13.
   c   If ALAG does not complete and an MP Code other than 1499 is displayed, see MP Code List.

d. If *physical volume needs forward conversion Warnings* is displayed on the screen, proceed to step 13.

**CAUTION**

The following steps contain instructions that will destroy customer files. **DO NOT** logon with Analyst privileges, or perform these steps, unless service manual procedures instruct you to do so. Performing these exercises on Disk Drives containing any customer files will **DESTROY ALL CUSTOMER INFORMATION.**

NOTE: If you cannot logon (system locked up), perform an Alternate Boot 0002, and press the **BREAK** or **STOP** key when Fault Analysis begins.

13. LOGON ON WITH ANALYST PRIVILEGES.
   a Refer to 8000 NS Diagnostics Handbook for detailed instructions.
14. RUN NEW DISK CHECKOUT FOR 10 PASSES TO DETERMINE THE CONDITION OF THE HARDWARE.
   a Refer to the 8000 NS Diagnostics Handbook for detailed instructions.
   b. If an error is detected other than a Header CRC, Label CRC, or Data CRC while Destructive Exerciser is running, perform Level 1 Checkout in the 8000 Processor Service Manual.
   c. If no error is detected while Destructive Exerciser is running, or the error is a Header CRC, Label CRC, or Data CRC, continue with next step.

d. When *Do you wish to reconstruct the bad page table at this time (Y/N): Y* is displayed, press return.
e. When *Do you wish to perform a media scan (Y/N):* is displayed, type y and press return.
f. When *Pass count (1-1000): 10* is displayed, type 2 and press return.
g. When *Retry Count (0-20): 2* is displayed, press return.
h. If bad pages are detected while media scan is running, record and save to use later.
i. If *Do you wish to test the bad pages (Y/N):* is displayed, type n and press return.
j. When *Do you wish to manually enter bad pages (Y/N):* is displayed, type y and press return.
k. If Xerox error map was dated 11-30-82 or before, proceed to step 15.
l. Select Page Format and enter bad pages from Xerox error map and bad pages detected during media scan.
m. Proceed to step 16.

NOTE: When entering bad pages from the 42MB OEM Vendor error map, ensure that the decimal number is used. In other words, use the number to the left of the slash sign.

15. MANUALLY ENTER BAD PAGES FROM OEM MAP AND MEDIA SCAN.
   a. Refer to the 8000 NS Diagnostics Handbook for detailed instructions.
16. RUN ALAG AND VERIFY A SUCCESSFUL COMPLETION.
17. RETURN ERROR MAPS TO PLASTIC POUCH.

18. REPLACE COVERS.
19. INFORM SYSTEM ADMINISTRATOR TO PARTITION DISK, INSTALL SYSTEM SOFTWARE, AND RESTORE FILES.

---

**3.14.1  42MB CONTROL PWA**
PL 4 6

---

**REMOVAL**
1. REMOVE 42MB DISK DRIVE (3 14).

**CAUTION**
Do not disconnect J4 and J6 connectors by pulling on wires; use body of connectors.

2. REMOVE 42MB CONTROL PWA.
   a. Note the orientation of J4 and J6 connectors, then disconnect from 42MB Control PWA.
   b. Remove the four screws holding the PWA to the drive.
   c. Gently lift the PWA off the Transducer Connector at the narrow end of the PWA.

**REPLACEMENT (FIGURE 3-26)**
1. INSTALL JUMPERS AS SHOWN IN FIGURE 3-26.
   a. Remove any jumpers not shown in figure.
   b. Add any jumper necessary, as shown in figure.

2. REPLACE 42MB CONTROL PWA.
   a. Perform removal procedure in reverse order.
3. RUN ALAG.

---

**3.14.2  POWER TRANSISTOR ASSEMBLY**
PL 4.6

---

**REMOVAL**
1. REMOVE 42MB DISK DRIVE (3.14)
2. REMOVE POWER TRANSISTOR ASSEMBLY.
   a. Disconnect J6 from 42MB Control PWA.
   b. Remove cover from drive.
   c. Remove the drive belt guard from drive.
   d. Remove cable ties holding power transistor leads.
   e. Remove AC connector J4 from power transistor mounting bracket
   f. Remove screw holding power transistor mounting bracket, then carefully remove power transistor assembly.

**REPLACEMENT**
1. REPLACE POWER TRANSISTOR ASSEMBLY.
   a. Perform removal procedure in reverse order.

### 3.14.3  42MB DRIVE BELT
PL 4.6

**REMOVAL**
1.   REMOVE 42MB DISK DRIVE (3.14).

**CAUTION**

Do not turn spindle in a counterclockwise direction. Damage to the media or head may occur.

2   REMOVE 42MB DRIVE BELT.
   a   Remove cover from drive.
   b   Unlock the spindle.
   c   Turn spindle in <u>clockwise direction only,</u> and remove belt from pulley.

**REPLACEMENT**

**CAUTION**

Do not turn spindle in a counterclockwise direction. Damage to the media or head may occur.

1.   REPLACE 42MB DRIVE BELT.
   a.   Perform removal procedure in reverse order.

### 3.14.4  42MB DRIVE MOTOR
PL 4.6

**REMOVAL**
1.   REMOVE 42MB DISK DRIVE (3.14).
2.   REMOVE 42MB DRIVE MOTOR.
   a.   Place 42MB Disk Drive on a soft pad such as a piece of foam.
   b.   Remove cover from drive.
   c.   Remove belt guard and clamp securing drive motor capacitor.
   d.   Remove cable ties holding drive motor leads.
   e.   Remove AC power connector J4 from power transistor assembly bracket.
   f.   Remove spindle lock from pulley.

**CAUTION**

Do not turn spindle in a counterclockwise direction. Damage to the media or head may occur.

   g.   Turn spindle clockwise and remove drive belt.
   h.   Remove ground wire from drive motor.
   i.   Remove the three drive motor nuts, then remove the motor.

**REPLACEMENT**
1.   INSTALL 42MB DRIVE MOTOR.
   a.   Place drive motor onto casting and secure with the three nuts. Do not tighten the nuts completely.

*

b. Route the motor leads, then secure in place with cable ties.
c. Install AC power connector J4 onto power transistor assembly bracket.
d. Position drive motor capacitor and secure with clamp.

**CAUTION**

Do not turn spindle in a counterclockwise direction. Damage to the media or head may occur.

e. Install drive belt.
f. Install a jumper at E4 on the Control PWA (Figure 3-26).
g. Connect AC and DC power harnesses to drive.
h. Place the disk drive in a horizontal position with the Control PWA down.
i. Unlock actuator by moving lock to the RUN position.
j. Switch on processor power and allow disk drive 30 minutes to reach normal operating temperature.
k. After the disk drive has been operating for 30 minutes, switch off processor power then remove jumper from E4.
l. Connect the negative lead of a DMM (600T1616) to TP18 and the positive lead to TP15 on the Control PWA (Figure 3-26).
m. Adjust the DMM to read DC voltage on the 2V scale.
n. Tighten the drive motor nuts, then observe the meter reading. The meter should be within -0.45V to +0.40V. It may be necessary to loosen the nuts and

tighten them in different patterns in order to acheive the reading.
o. After the correct reading has been obtained, switch off processor power then disconnect the AC and DC harnesses from from drive.
P. Move actuator lock to the LOCK position.
q. Install spindle lock
r. Install belt guard

2. INSTALL 42MB DISK DRIVE.
a. Refer to procedure 3 14 (Steps 1 to 3, inclusive) for detailed steps.

CHAPTER 4   PARTS IDENTIFICATION

PROCESSOR SERVICE MANUAL

# USO/XC ONLY

**4**

| PL 4.1 PROCESSOR MECHANICAL PARTS |

| ITEM | PART NO. | DESCRIPTION |
|------|----------|-------------|
| 1 | 2P81938 | Cover, Top |
| 2 | 29P80410 | Nut, Speed |
| 3 | 2S81969 | Cover, Rear (includes item 9) |
| 4 | 3P1454 | Clip, Quarter Turn Receptacle |
| 5 | 26P80475 | Stud, Castor Locking |
| 6 | 17P80207 | Castor, Rear |
| 7 | 2S81967 | Cover, Side (includes item 9) |
| 8 | 17P80199 | Castor, Front |
| 9 | 601S920 | Kit, Quarter Turn Hardware |
| 10 | - - | Stud, Quarter Turn (P/O item 9) |
| 11 | - - | Spring, Ejector (P/O item 9) |
| 12 | - - | Washer, Nylon (P/O item 9) |
| 13 | - - | Retainer, Split Ring (P/O item 9) |
| 14 | NSC: 91P81325 | Label, Logo |
| 15 | 2S81968 | Cover, Front (includes 9, 14) |
| 16 | 127P80410 | Fan B1/B2, Processor (**TAG 23**) |
|  | 127P1275 | Fan B1/B2, Processor (alt ) |
| 17 | NSC: 2P82087 | Plate, Fan Cover |
| 18 | NSC: 101P81003 | Guide, PWA |
| 19 | - - | Label, High Voltage (RX only) |
| 20 | - - | Label, Tag Matrix (RX only) |
| 21 | - - | Clamp, Cable (RX only) |

A    112W27110    Sems Screw (6-32 x 3/4)

NSC:    Call the Network Support Center to obtain parts.

☐    Removal and Replacement 3.1, 3.2
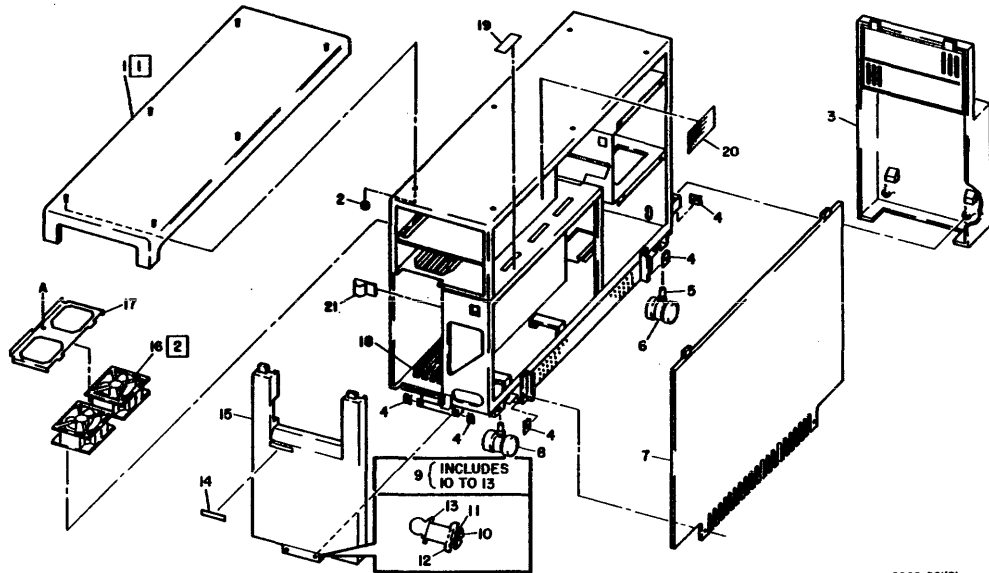
8000-001(2)

Figure 4-1  Processor Mechanical Parts

| PL 4.2   PROCESSOR PRINTED WIRING ASSEMBLIES (PAGE 1 OF 4) |

| ITEM | PART NO. | DESCRIPTION |
|---|---|---|
| 1 | 140S82692 | PWA, Maintenance Panel (Includes TAG 2) |
| 2 | 110S80553 | Switch, On/Off |
| 3 | 140S82902 | Backplane (includes 4, 5, 6) (TAG 17) |
| 4 | 29P80498 | Keybar |
| 5 | 152S81109 | Harness W4, Backplane |
| 6 | 152S81235 | Harness W5, Voltage Test |
| 7 | 140S26500 | PWA, IOP (Slot 1) (Includes TAGs 1, 5, 11, 12, and 22) |
| 8 | 140S27740 | PWA, OPT (Slot 2) (TAG 26) (Includes TAG 3) |
| 9 | 140S24713 | PWA, CP (Slot 3) (TAG 4) |
|  | 140S26730 | PWA, CP (Slot 3) (TAG 25) (alt.) (Includes TAG 4) |
|  | XSIS: 140S06291 | PWA, CPE-FP (Slot 3) (TAG 27) (Note 3) |
| 10 | 140S24757 | PWA, HSIO (Slot 4) (TAG 21) (Includes TAG 8) (Note 4) |
|  | 140S26230 | PWA, HSIO-L (Slot 4) |
| 11 | Tables 4-1, 4-2 | PWA, MCC (Slot 5) (Notes 1, 2) |
| 12 | Tables 4-1, 4-2 | PWA, MSC (Slot 6) (Notes 1, 2) |

**NOTE 1:** Use for a repair part only

**NOTE 2:** MCC-XS and MSC-XS PWAs contains IC sockets. Use the 8000 Memory PWA Repair Kit 601S968 to repair the PWA, if possible, before ordering a replacement PWA.

**NOTE 3:** CPE-FP and MCC-P2 PWAs requires special handling. To obtain parts, call XSIS 1108 Service Support. East Coast: (703) 527-3703 (Intelnet 8*444-6456), West Coast: (818) 351-2351 EXT. 2540 (Intelnet 8*844-2540).

**NOTE 4:** Tag 21 is _mandatory_ with 42MB Disk Drive.

### TABLE 4-1 MEMORY OPTIONS MATRIX

| PWA Part Number | Memory Options By Product Code and Size | | | | Slot No. |
|---|---|---|---|---|---|
|  | T84 384K Bytes | T84* 384K Bytes | T85 512K Bytes | T85* 512K Bytes |  |
| 140S24731 (MCC) | X |  |  |  | 5 |
| 140S25750 (MCC-X) |  |  | X |  | 5 |
| 140S26310 (MCC-XS1) |  |  |  | X | 5 |
| 140S26311 (MCC-XS2) |  | X |  |  | 5 |
| 140S24721 (MSC) | X |  |  |  | 6 |

### TABLE 4-2 MEMORY OPTIONS MATRIX (Continued)

| PWA Part Number | Memory Options By Product Code and Size | | | | | Slot No. |
|---|---|---|---|---|---|---|
|  | G55 768K Bytes | G56 1024K Bytes | G57 1280K Bytes | G58 1536K Bytes | XSIS 3584K Bytes |  |
| 140S26310 (MCC-XS1) | X | X | X | X |  | 5 |
| 140S27190 (MSC-XS1) | X |  |  |  |  | 6 |
| 140S27191 (MSC-XS2) |  | X |  |  |  | 6 |
| 140S27192 (MSC-XS3) |  |  | X |  |  | 6 |
| 140S27193 (MSC-XS4) |  |  |  | X |  | 6 |
| XSIS: 140S07070 (MCC-P2) (TAG 28) (Note 3) |  |  |  | X | X | 5 |

* Single PWA configuration or socketed version.
XSIS:   Call Xerox Special Information Systems group to obtain parts. Refer to Note 3.

8000-002(4)
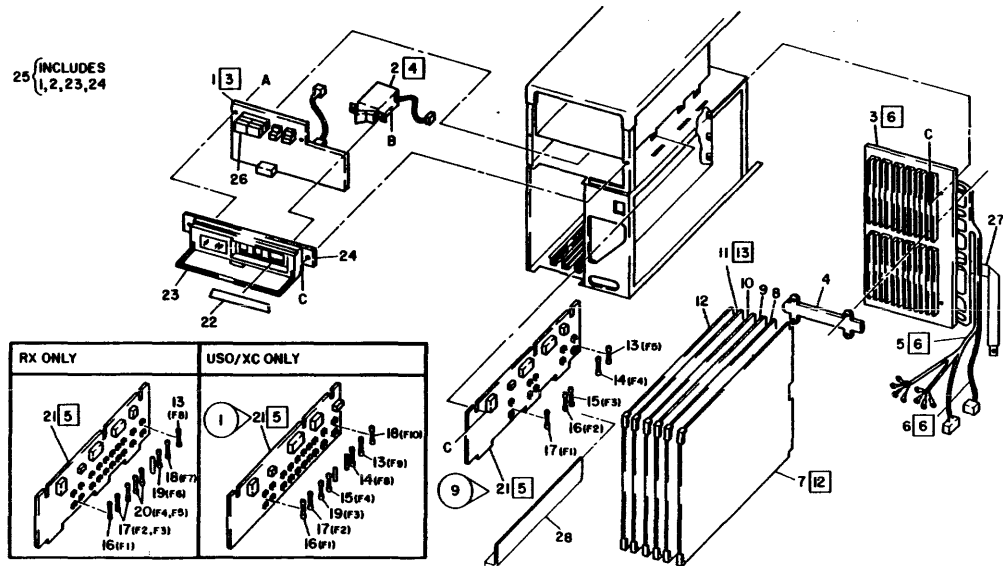
Figure 4-2  Processor Printed Wiring Assemblies (Page 2)

| PL 4.2  PROCESSOR PRINTED WIRING ASSEMBLIES (PAGE 3 OF 4) |

☐ Removal and Replacement

| ITEM | PART NO. | DESCRIPTION |
|------|----------|-------------|
| 13 | 708W4801 | Fuse, 3A Slo Blo |
| 14 | 708W1101 | Fuse, 0.5A |
| 15 | 708W38901 | Fuse, 15A Ceramic |
| 16 | 708W1301 | Fuse, 0.75A |
| 17 | 708W801 | Fuse, 0.25A |
| 18 | 708W5001 | Fuse, 4A Slo Blo |
| 19 | 708W1401 | Fuse, 1A |
| 20 | - - | Fuse, 8A Ceramic (RX only) |
| 21 | 140S82762 | PWA, AC Distribution (TAG 9) |
|  | 140S82709 | PWA, AC Distribution (alt.) (TAG 9) |
| 22 | NSC: 91P81434 | Label, Maintenance Panel |
| 23 | 101P81020 | Cover, Maintenance Panel |
| 24 | 101S81131 | Housing, Maintenance Panel |
| 25 | 101S81070 | Assembly, Maintenance Panel |
| 26 | 707W1731 | Display, 7-Segment |
| 27 | - - | Wire, Flat Ground (RX only) |
| 28 | - - | Shield, Safety (RX only) |
| A | 112W39610 | Sems Screw (8-32 x 3/8) |
| B | 151W19402 | Screw (6-20 x 1/4) |
| C | 112W24610 | Sems Screw (6-32 x 3/8) |

NSC: Call the Network Support Center to obtain parts.

8000-002(4)
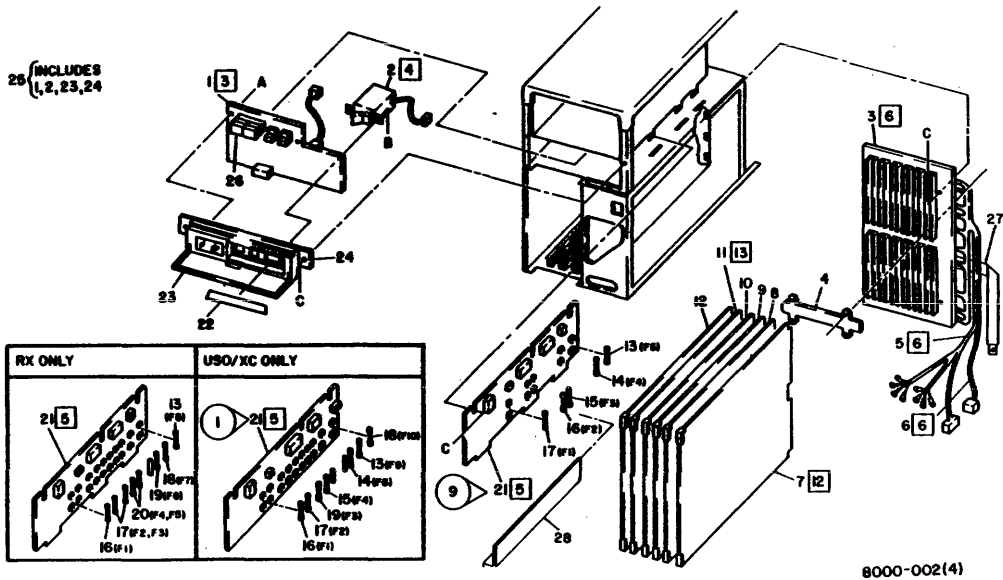
Figure 4-3  Processor Printed Wiring Assemblies (Page 4)

| PL 4.3 POWER SUPPLY, TRANSFORMER, AND FILTER |

| ITEM | PART NO. | DESCRIPTION |
|------|----------|-------------|
| 1 | - - | Power Supply Assembly (RX only) |
| 2 | NSC: 101S10130 | Chassis, Power Supply |
| 3 | 117S10065 | Harness W3, Power Supply Interconnect (TAG 1) |
| 4 | 127P80412 | Fan B1, Power Supply (TAG 23) |
| 5 | 140S06354 | PWA, A2 (includes item 6) (Includes TAG 1) |
| 6 | 708W2101 | Fuse F1, 6A |
| 7 | 140S12235 | PWA, A1 (includes 10, 11, 12) (Includes TAGs 1, 10, 12, 13, and 14) |
| 8 | NSC: 27P80114 | Nut, Speed |
| 9 | NSC: 26P80454 | Screw |
| 10 | 708W1504 | Fuse F7, 15A |
| 11 | 708W17001 | Fuse F1/F2/F5/F6, 8A |
| 12 | 708W2001 | Fuse F3/F4, 5A |
| 13 | - - | Capacitor (ref only) |
| 14 | - - | Clamp, Capacitor (RX only) |
| 15 | - - | Boot, Capacitor (RX only) |
| 16 | 142P10047 | Filter FL1, Line |
| 17 | 105S10246 | Transformer T1 |

| A | 220W10504 | Nut (4-40) |
|---|-----------|------------|
| B | 112W39610 | Sems Screw (8-32 x 3/8) |
| C | 158W36510 | Screw (8-32 x 5/16) |
| D | 112W66710 | Sems Screw (10-32 x 7/16) |
| E | 112W24610 | Sems Screw (6-32 x 3/8) |
| F | 113W17002 | Screw (4-40 x 5/8) |

NSC:  Call the Network Support Center to obtain parts.

Removal and Replacement 3.7, 3.8, 3.9

8000-003(2)
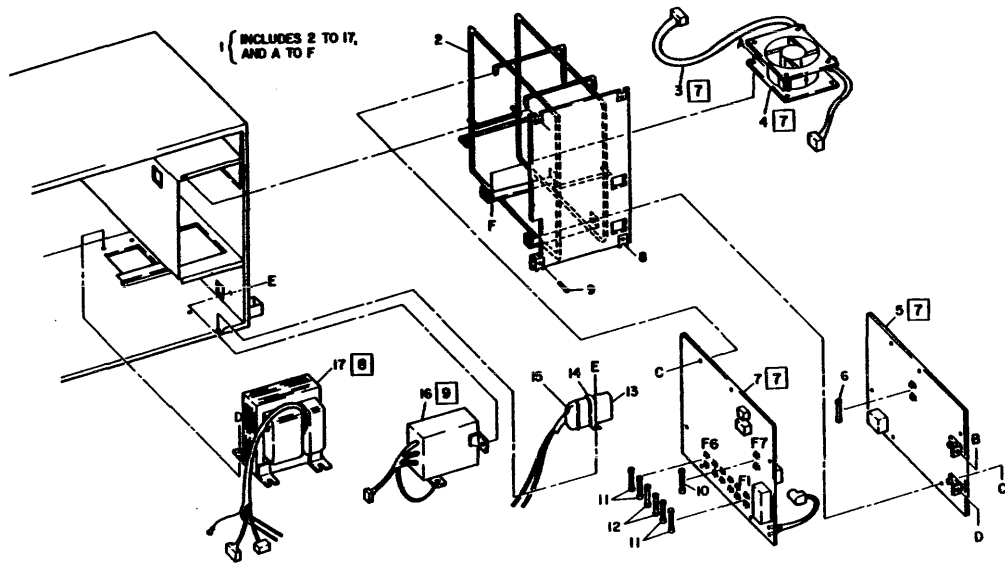
Figure 4-4  Power Supply, Transformer, and Filter

| PL 4.4  FLOPPY DISK DRIVE |

| ITEM | PART NO. | DESCRIPTION |
|------|----------|-------------|
| 1 | - - | Drive Assembly, Floppy Disk (RX only) |
| 2 | - - | Bracket, Left (ref only) |
| 3 | 82P80642 | Drive, Floppy Disk |
| 4 | - - | Clamp, Cable (RX only) |
| 5 | - - | Bracket, Right (ref only) |
| 6 | 23P80122 | Belt, 60Hz Floppy Drive |
| 7 | NSC: 56P80141 | Bezel, Floppy Drive (TAG 7) |
| 8 | 95S87633 | EI Fixed Diagnostic Disk (Level OS 5.0) |
|   | 95S87645 | EI Removable Diagnostic Disk (Level OS 5.0) |
| A | 112W39610 | Sems Screw (8-32 x 3/8) |
| B | 135W22601 | Cap Screw (8-32 x 3/8) |
| C | 135W16401 | Cap Screw (4-40 x 5/16) |

NSC:  Call the Network Support Center to obtain parts.

☐  Removal and Replacement 3.10
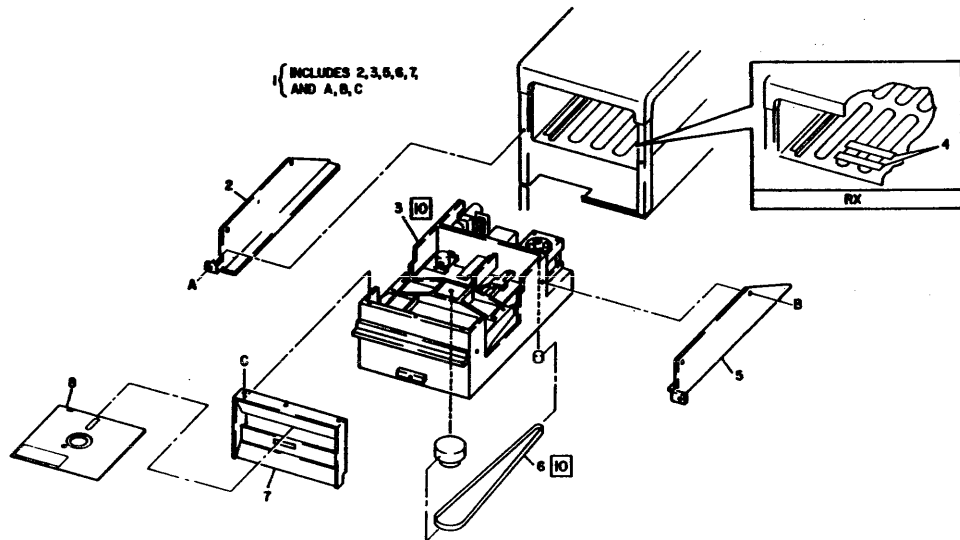
**Figure 4-5  Floppy Disk Drive**

| PL 4.5 10MB DISK DRIVE |
|---|

**NOTE 1:** Control/Stepper PWA 76S20231 replaces <u>both</u> the Control PWA and the Stepper PWA.

**NOTE 2:** The 10MB PWA Interconnect Harness is used only on the two-PWA configuration of disk drives.

| ITEM | PART NO. | DESCRIPTION |
|---|---|---|
| 1 | 82P80661 | Drive, 10MB Disk (includes 2, 4, 6 to 13) |
| 2 | 76S20204 | Motor, 60Hz Drive |
| 3 | - - | Bracket, Top (ref only) |
| 4 | 76S20208 | Lock, Spindle |
| 5 | - - | Bracket, Bottom (ref only) |
| 6 | - - | PWA, Stepper (Note 1) |
| 7 | 76S20209 | Harness, 10MB PWA Interconnect (Note 2) |
| 8 | 76S20205 | Belt, 60Hz Drive |
| 9 | 76S20211 | Damper Assembly |
| 10 | 76S20210 | Spring, Ground |
| 11 | 76S20202 | PWA, Control (Note 1) |
|  | 76S20231 | PWA, Control/Stepper (Note 1) |
| 12 | 152S81253 | Harness W11, 10/42MB Data Transfer |
| 13 | 152S81254 | Harness W12A, 10MB Signal Control |
| 14 | - - | Pulley, 60 Hz Belt (FX only) |
| A | 220W10904 | Self-Locking Nut (8-32) |
| B | 113W22303 | Screw (8-32 x 1/4) |
| C | 112W26610 | Sems Screw (6-32 x 3/8) |
| D | 112W24410 | Sems Screw (6-32 x 1/14) |
| E | 112W36510 | Sems Screw (8-32 x 5/16) |

☐ Removal and Replacement 3.11

8000-005

Figure 4-6  10MB Disk Drive

| PL 4.6 42MB DISK DRIVE |
|---|

| ITEM | PART NO. | DESCRIPTION |
|------|----------|-------------|
| 1 | 82P20081 | Drive, 42MB Disk (includes 2, 3, 6 to 9 |
| 2 | 127S80397 | Motor, 60Hz Drive (includes item 6) |
| 3 | - - | Lock, Spindle (ref only) |
| 3 | - - | Bracket, Top (ref only) |
| 5 | - - | Bracket, Bottom (ref only) |
| 6 | - - | Pulley, 60Hz Drive Motor (RX and Siemens only) |
| 7 | 23P80140 | Belt, 60HZ Drive |
| 8 | 107S80438 | Transistor, Power Assembly |
| 9 | 140S83042 | PWA, Control |
| 10 | 152S81253 | Harness W11, 10/42MB Data Transfer |
| 11 | 152S25390 | Harness W12B, 42MB Signal Control |
| A | 220W10904 | Self-Locking Nut (8-32) |
| B | 113W22303 | Screw (8-32 x 3/16) |
| C | 112W26610 | Sems Screw (6-32 x 3/8) |
| D | - - | Screw (8-32 x 1/4) |
| E | - - | Screw (8-32 x 3/8) |
| F | - - | Setscrew (8-32 x 3/16) |

Removal and Replacement 3.14
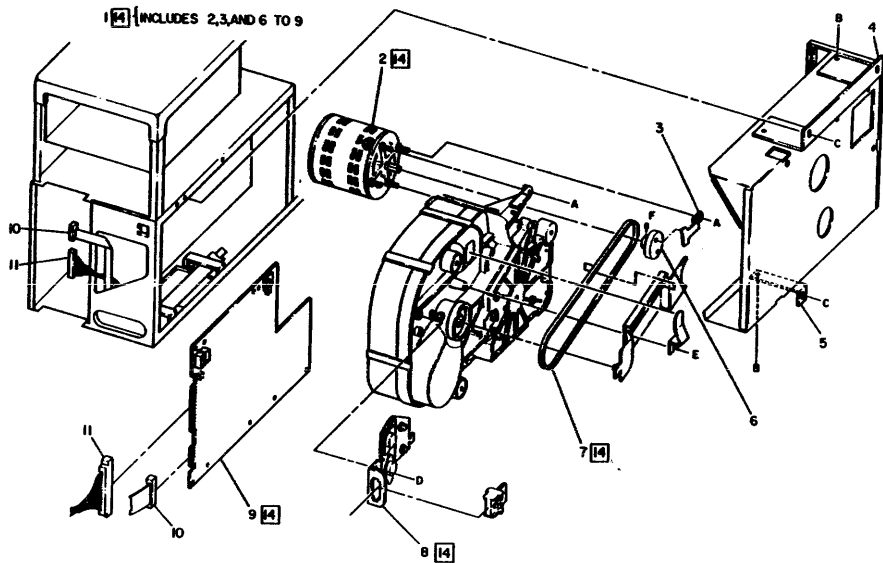
8000-443

Figure 4-7  42MB Disk Drive

| PL 4.7 PROCESSOR HARNESSES (PAGE 1 OF 4) |

| ITEM | PART NO. | DESCRIPTION |
|------|----------|-------------|
| 1 | 117S22542 | Cable W18, B1 LSEP Interface (Note 1) |
|   | 117S22580 | Cable W19, B2 LSEP Interface (Note 1) |
| 2 | 152S24802 | Cable W17, Printer Interface (Note 2) |
| 3 | NSC: 15S23722 | Plate, COMM Connector |
| 4 | 152S24802 | Cable W16, RS-232-C/RS-366 Interface (Note 2) |
| 5 | 117P80598 | Cord, AC Power |
| 6 | 152S24750 | Harness W15, COMM (Note 3) |
| 7 | 152S81150 | Harness W7, MP Display |
| 8 | 152S81108 | Harness W6, Processor AC (alt.) |
|   | 152S25190 | Harness W6, Processor AC (TAG 18) |
| 9 | 152S81173 | Harness W8, MP PWA |
| 10 | 152S81153 | Harness W10, Floppy Disk Drive |
| 11 | 152S81272 | Harness W13, 10/42MB DC Interface (TAG 1) |
| 12 | XSIS: 152S03143 | Harness W20, Parallel Port (TAG 27) (Note 4) |
| 13 | XSIS: 15P08318 | Plate, Parallel/ COMM Connector (Note 4) |
| | | |
| A | 112W24610 | Sems Screw (6-32 x 3/8) |
| B | 259W10702 | Washer (No. 6) |
| C | 261W10402 | Lockwasher (No. 6) |
| D | 258W10902 | Lockwasher (No. 8) |
| E | 201W10902 | Hex Nut (8-32) |

F    112W39610     Sems Screw (8-32 x 3/8)

NSC:   Call the Network Support Center to obtain parts.

XSIS:   Call Xerox Special Information Systems group to obtain parts. Refer to Note 4.

**NOTE 1:** Interface cables for B1 LSEP and B2 LSEP cannot be interchanged

**NOTE 2:** Interface Cable 152S24801 (for RS-232-C/RS-366 or Printer) is included in Harness Installation Kit 73S80401.

**NOTE 3:** Use for a repair part only. Do not use for installation of Communications option.

**NOTE 4:** Parallel Port Harness and Plate requires special handling. To obtain parts, call XSIS 1108 Service Support. East Coast: (703) 527-3703 (Intelnet 8*444-6456), West Coast: (818) 351-2351 EXT. 2540 (Intelnet 8*844-2540).

8000-006(4)
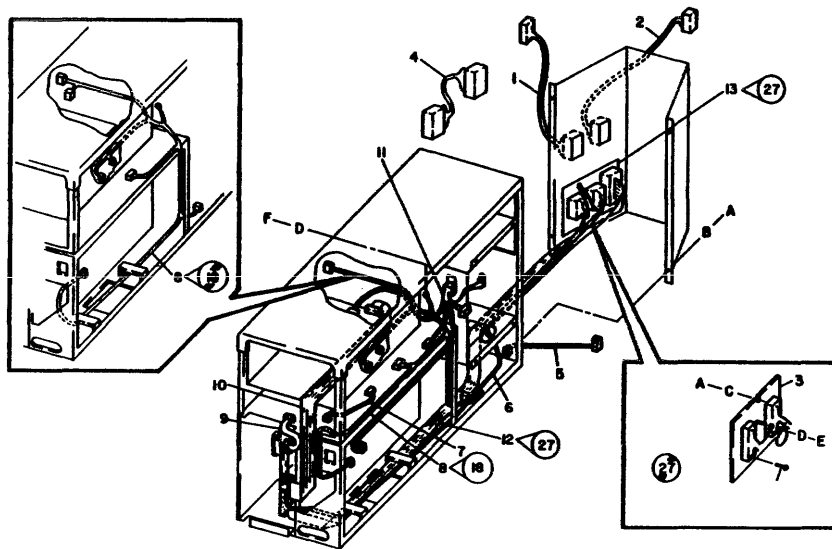
Figure 4-8  Processor Harnesses (Page 2)

| PL 4.7 PROCESSOR HARNESSES (PAGE 3 OF 4) |

| ITEM | PART NO. | DESCRIPTION |
|------|----------|-------------|
| 12 | 601S60061 | Kit, Connector Mounting Conversion (Note 3) |
| 13 | - - | Screw (P/O item 12) |
| 14 | - - | Washer, Flat (P/O item 12) |
| 15 | - - | Lockwasher (P/O item 12) |
| 16 | - - | Washer, Flat (P/O item 12) |
| 17 | - - | Nut (P/O item 12) |
| 18 | NSC: 30S84055 | Panel, WS/Server Connector |
| 19 | 152S24592 | Harness W14, 29MB Interface (TAG 16) (Includes TAG 1) |
|  | 152S81278 | Harness W14, 29MB Interface (TAG 1) |
| 20 | NSC: 15S23721 | Plate, 29MB Connector |
| 21 | 152S81285 | Harness W9A, Processor Signal (includes item 18) |
|  | 152S81313 | Harness W9A, WS/Server Signal (includes item 18) |
| 22 | 152S24471 | Harness W9B, LFS Signal (includes item 23) |
| 23 | - - | Panel, LFS Connector (ref only) |

| A | 112W24610 | Sems Screw (6-32 x 3/8) |
|---|-----------|-------------------------|
| B | 259W10702 | Washer (No. 6) |
| C | 261W10402 | Lockwasher (No. 6) |
| D | 258W10902 | Lockwasher (No. 8) |
| E | 201W10902 | Hex Nut (8-32) |

NSC: Call the Network Support Center to obtain parts.

NOTE 3: Connector Mounting Conversion Kit includes three slide-lock mounting kits and three screw-lock mounting kits.

8000-250(1)
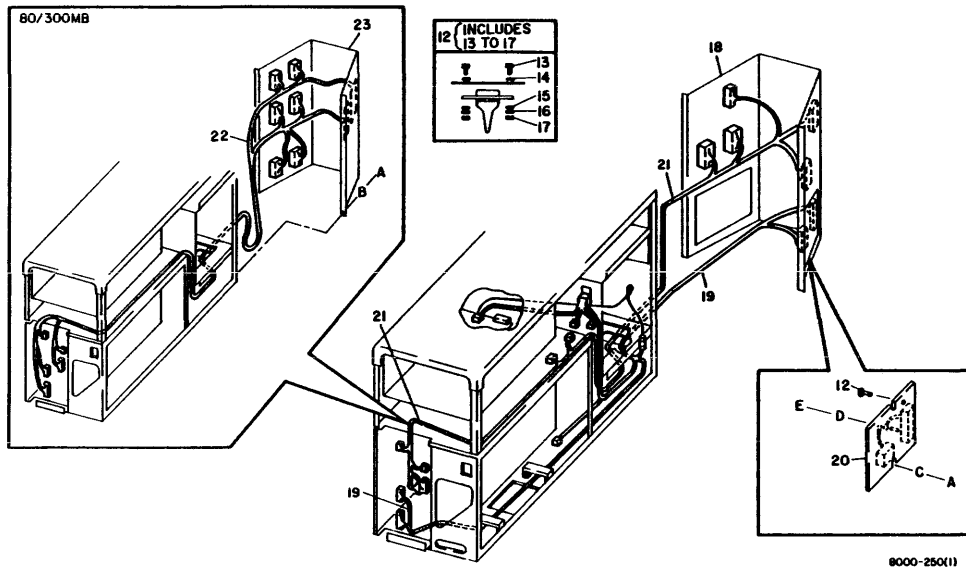
Figure 4-9  Processor Harnesses (Page 4)

4-19

## CHAPTER 5  DISPLAY QUALITY

## PROCESSOR SERVICE MANUAL

REFER TO APPROPRIATE SERVICE MANUAL

**5**

CHAPTER 6  TROUBLESHOOTING

PROCESSOR SERVICE MANUAL

6

LEVEL 01 NETWORK SYSTEMS TROUBLESHOOTING

Figure 6-1 provides a Level 01 Troubleshooting Flowchart to assist in determining where to start troubleshooting a problem on a large network.

The most important step in Level 01 Troubleshooting is to obtain as much information as possible before troubleshooting in any one area. The System Administrator can identify specific types of network failures. The System Administrator is the best source of information about network problems.

After you have obtained and made an analysis of all available information, use the flowchart (Figure 6-1) to determine where to start troubleshooting.

**NOTE:** The Level 01 Flowchart was designed with dependency upon the System Administrator to provide necessary information for answers to questions in the chart. If the System Administrator is not available, use the Information Gathering Checks to obtain the information needed to complete the Level 01 Flowchart.
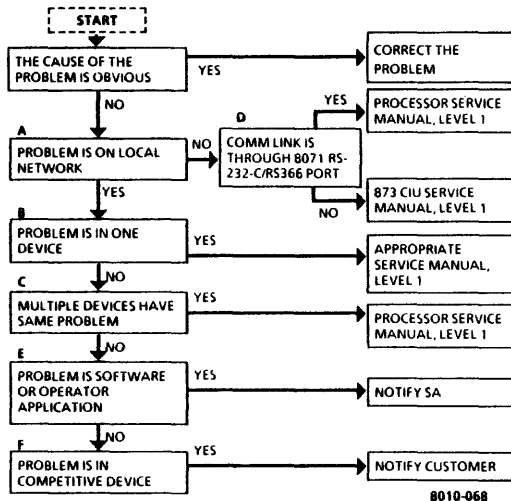
Figure 6-1 Level 01 Troubleshooting Flowchart

| HOW TO USE INFORMATION GATHERING CHECKS |

The Information Gathering Checks are labeled to match the decision blocks of the Level 01 Troubleshooting Flowchart (Figure 6-1). For example, if there is not enough information to determine an answer to Block A, use Check A in the Information Gathering Checks

The Checks provide assistance in one or more of the following ways

o Definitions are provided for names used in decision blocks.

o Examples are provided to explain statements within the decision blocks.

o Additional steps are provided to assist in obtaining necessary information.

o Some quick, basic steps are provided that may correct the problem.

| INFORMATION GATHERING CHECKS |

**A   Problem is on Local Network**

o If problem involves any communications off the local Ethernet, this statement should be answered "NO".

o Any problem unique to just one workstation or server is considered to be on the local net.

o Obtain site plan from System Administrator to verify that service or device is on local net.

o From Clearinghouse, list services to verify that the service being accessed is available and started.   Ensure that service is registered to the proper processor ID number.

**B   Problem is in One Device**

o A device is a Workstation (8010, 860, 820) or Server.

o Problem is considered to be on one device, if all other workstations and servers are functioning.

o The following are examples of what can be done to isolate problem to one workstation or server:

o If a service cannot be accessed from a workstation, try accessing it from a second workstation.

o If second workstation cannot access a service, try accessing a service that is installed on a second server.

The above checks will tell you if the problem is in just one workstation, just one server, or the problem is in more than one device.

**C   Multiple Devices Have Same Problem**

o Examples of Check C include:
  o More than one system cannot reach a service.
  o More than one system fails with same MP Code.

o If multiple devices have same problem, troubleshooting should be performed from the server.

**D   Communications Link is through 8071 RS-232-C/RS-366 Port**

o Obtain Port Fact Sheet and Site Plan from System Administrator to determine if port is on an 8071 or on an 873. If port is on an 873, answer "NO" to this statement.

o Obtain port name, and perform a "Test Port" using that name. The Display will show whether the port is on an 873 CIU or on the local 8000 port (8071).

**E   Problem is in Software or Operator Application**

o TBS

**F   Problem is in Competitive Device**

o TBS

INTRODUCTION TO PROCESSOR TROUBLESHOOTING

Steps required for isolation of 8000 Processor faults are provided in sequence below.

1 Using the Network Systems Troubleshooting Flowchart (Figure 6-1), perform Level 01 Troubleshooting.
2 Perform the Level 1 Checkout Procedure. Level 1 Checkout includes preparation for diagnostics and performance of 8000 diagnostics. Instructions for using diagnostics are provided in the 8000 Network Systems Diagnostics Handbook.
3 Perform any Level 2 Check Chart procedures indicated by Level 1 Checkout.
4 USO only. If corrective action does not correct the problem, ask for assistance from the Regional Engineering Specialist (RES). Additional assistance is available from the Network Support Center (NSC) in Dallas.

   RX only. Any call for assistance (CSER/NSE/NSE/ANALYST) should be made to the Technical Specialist.

Check Charts are designed to include dependency on specific visible indications. If specific indications occur, several areas of the system are eliminated as a cause of failure. As a result, the Level 1 Checkout must be performed in the specified sequence provided in the procedure. If an indication is not observed and later a failure occurs, the dependent Check Charts will not be valid. Since Level 1 eliminates areas that cause a failure, the remaining areas can be checked quickly.

Use the appropriate amount of time (determined by branch management) to troubleshoot a problem. Then, if a correction cannot be made, ask for assistance from the RES. For USO, the last step for correcting a problem is to obtain assistance from the NSC in Dallas. Telephone number for the NSC is provided below.

NSC     1-800-672-8010

---

**LEVEL 1 CHECKOUT EXPLANATION**

Figure 6-2 provides a sample of the format of a Level 1 Checkout procedure. An explanation of the three columns is provided below.



**8000-156(1)**

**Figure 6-2 Sample Level 1 Checkout**

1   The PROCEDURE column describes the actions required to perform the step.

2   In the INDICATIONS column, statements marked with letters describe indications of the correct operation. Statements marked with an asterisk symbol (*) and the word IF describe indications of incorrect conditions requiring the access of Level 2 Check Charts.
Check and verify the indications in the sequence provided. If the sequence is not observed, the Level 2 Access will not be valid for the correct isolation of faults.

3.  The LEVEL 2 ACCESS column identifies the number of the appropriate Level 2 Check Chart procedure for corrective action for conditions described below:
    a.  One of the indications does not occur.
    b.  An incorrect indication occurs.

Level 1 Checkout provides appropriate references to diagnostic procedures or other appropriate service manuals.

| LEVEL 2 CHECK CHART EXPLANATION |

Figure 6-3 provides a sample of the format of a Level 2 Check Chart. Content of the various sections is described below.



8000-157(1)

Figure 6-3 Sample Level 2 Check Chart

1   Within section 1 is the number and name of the Level 2 Check Chart.

2.  The STEP column provides the number sequence of steps in the check chart. Since some steps may not be required, the check charts provide reference to the required steps for isolation of a fault.

3   The PROCEDURE column describes any required preparations. AC voltage tolerances are specified within the procedure. DC voltage tolerances are in the Voltage

Tolerance Chart (Figure 6-4) which will be printed on the lower, outside corner of the page. All AC voltages are identified with VAC, and all DC voltages are identified with V. Negative DC voltages include the negative symbol (-); the positive symbol ( + ) is not used. **Always switch off system power if it is necessary to connect or disconnect plugs or remove or install PWAs.** If a required preparation can cause an electrical shock, the procedure will specify instructions to switch off power

| VOLTAGE TOLERANCES | | |
|---|---|---|
| **Voltage** | **Xerox 600T860** | **Digital Meter** |
| 5.2V | 4.8 to 5.6 | 5.02 to 5.38 |
| -5.2V | -4.8 to -5.6 | -5.02 to -5.38 |
| -12V | -11.0 to -13.0 | -11.4 to -12.6 |
| 12V | 11.0 to 13.0 | 11.4 to 12.6 |
| 24V | 22.0 to 26.0 | 22.8 to 25.2 |

. 8010-010

Figure 6-4 Voltage Tolerance Chart

4.  The TEST POINT column identifies how and where to check the procedure statement. If a voltage reading is required, the first point is for the RED ( + ) lead, and the second point is for the BLACK (-) lead. If no second point is provided, the BLACK lead must be connected to RTN on the test connector on the front of the Processor. **Do not connect the lead to frame ground.** Chapter 7 provides component or plug/jack location diagrams to assist in locating the test points

5. If the voltage or visible indication was CORRECT (or occurred as specified), the CORRECT INDICATION column provides instructions to continue troubleshooting, to replace a component, or to perform an adjustment.

6. If the voltage or visible indication was INCORRECT (or did not occur as specified), the INCORRECT INDICATION column provides instructions to continue troubleshooting, to replace a component, or to perform an adjustment.

| STEP | PROCEDURE | INDICATIONS | LEVEL 2 ACCESS |
|---|---|---|---|

LEVEL 1 CHECKOUT

PREPARATION

1. Check for an obvious problem (loose connections, broken part), and repair (Chapter 3, appropriate service manual).

2. \*IF multiple devices have same problem, locate conditions from the Indications column:

    a. More than one device has MP Code of 0322. — 6.11

    b. If more than one workstation cannot access a service, ensure service is started; then, continue with Level 1 Checkout on server in question.

POWER

3. Ensure system power is ON, and look for conditions in the Indications column.

    a. Processor card cage fans operate. — 6.01
    b. Processor power supply fan operates. — 6.02
    c. Floppy drive spindle is turning. — 6.03
    d. With 29MB Disk Console, disk console fan operates. — 6.04
    e. With 10MB/42MB Disk Drives, disk drive spindle is turning. — 6.19
    f. Voltage from AC Dist. PWA P3-13 to 15 is: — 6.01.1
        <u>USO</u> is 103 to 127 VAC
        <u>RX</u> is 193 to 264 VAC

| STEP | PROCEDURE | INDICATIONS | LEVEL 2 ACCESS |
|---|---|---|---|
| 4. | Check for **ALL** voltages between test connector on front of Processor to RTN (Figure 6-5). | a. 5.2V<br>b. -5.2V<br>c. -12V<br>d. 12V<br>e. 24V | Continue<br>Continue<br>Continue<br>Continue<br>Continue |
| | | * IF All DC voltages are incorrect, | 6.05 |
| | | * IF One or more voltages are incorrect, | 6.06 |
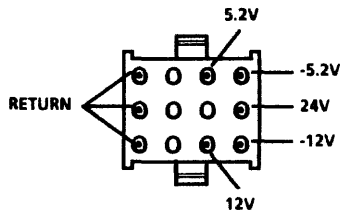


8010-009

Figure 6-5 Test Connector

| VOLTAGE TOLERANCES | | |
|---|---|---|
| **Voltage** | **Xerox 600T860** | **Digital Meter** |
| 5.2V | 4.8 to 5.6 | 5.02 to 5.38 |
| -5.2V | -4.8 to -5.6 | -5.02 to -5.38 |
| -12V | -11.0 to -13.0 | -11.4 to -12.6 |
| 12V | 11.0 to 13.0 | 11.4 to 12.6 |
| 24V | 22.0 to 26.0 | 22.8 to 25.2 |

| STEP | PROCEDURE | INDICATIONS | LEVEL 2 ACCESS |
|------|-----------|-------------|----------------|
| 5. | Check for 5V from bottom of R4 to mounting nut of transistor on MP PWA (Figure 6-6). | Xerox 600T860 Meter is 4.6 to 5.4V; Digital Meter is 4.82 to 5.18V. | 6.05.1 |

**RIGHT SIDE OF MP PWA (BEHIND FRONT COVER)**



R4 (BOTTOM) TO GROUND                    8010-003

Figure 6-6  MP 5V Test Point                    6-11

| STEP | PROCEDURE | INDICATIONS | LEVEL 2 ACCESS |
|------|-----------|-------------|----------------|

| DIAGNOSTIC SEQUENCE |

| STEP | PROCEDURE | INDICATIONS | LEVEL 2 ACCESS |
|------|-----------|-------------|----------------|
| 6. | Record MP Code displayed or reported by operator, then run ALAG. | a. Within 3 seconds, MP displays *8888*. | Continue |
| | | * IF MP remains dark, | 6.08 |
| | | * IF MP displays any other code prior to 8888, | 6.09 |
| | | * IF MP remains or cycles on 0001 to 0005, inclusive (Pre-Tag 11) or 0000 to 0010, inclusive (Tag 11), | 6.09 |
| | | b. <u>Server Terminals only.</u> On CRT, *This is the Boot Diagnostics Version 6.0. This confirms that the System Administrator Display is operational* is displayed at Test 0301. | 6.10 |
| 7. | <u>Without Tag 28 only.</u> After Test 0316 <u>completes</u>, type a z, and make a note of the number that appears on MP. This is the amount of memory in K Bytes that the system can access in the Processor. | a. Number appearing on MP is same as amount of memory installed in Processor. | 6.16.2 |
| 8. | <u>8010 Workstation.</u> <u>During</u> Test 0319, a moving dandelion is on the display. | | Display/Keyboard Service Manual, 6.01 |

NOTE: IF <u>Standalone Workstation - MP Code 0322</u>, this a normal result. Press **SKIP/NEXT** when MP Code 0322 occurs to continue ALAG.

| STEP | PROCEDURE | INDICATIONS | LEVEL 2 ACCESS |
|------|-----------|-------------|----------------|
| 9. | Microcode Diagnostics complete, and El Disk Mesa Diagnostics begins. | a. <u>80/300MB System.</u> Within 3.5 minutes, MP displays *2200*. | See MP Code List |
| | * IF 8037 LFS, go to 80/300MB Disk Console Service Manual, Level 1. | | |
| | | b. <u>10/29/42MB System.</u> Within 3.5 minutes, El Disk Fault Analysis passes (display shows *1199* for 10MB, *1799* for 29MB, or *1499* for 42MB), and *Examining PV* begins. | |
| | | * IF MP Code, | See MP Code List |
| | | * IF display shows a Fault Message, | See Table 6-2 |
| | | c. PV Scavenger runs. | |
| | | * IF display shows a Fault Message, | See Table 6-2 |
| | | * IF PV Scavenger runs longer than 10 minutes, | 6.26 |
| | | d. *List New Bad Pages* posts no bad pages. | 6.26 |
| | * IF MP Code was recorded in Step 6, or reported by operator, | | 6.23 |
| 10. | Use Table 6-1 to continue fault isolation. | | |

| Table 6-1 Fault Isolation ||
|---|---|
| Problem | Reference |
| 1. Large Format Display Failure/Quality | 8000 Series Display/Keyboard Service Manual, Level 2 Check Chart 6.01 |
| 2. Server Terminal Failures | Level 2 Check Chart 6.10 |
| 3  Workstation Keyboard Failures | 8000 Series Display/Keyboard Service Manual, Level 2 Check Chart 6.11 |
| 4  Workstation Mouse Failures | Level 2 Check Chart 6.22 |
| 5. Ethernet Failures | Ethernet Service Manual, Level 1 Checkout |
| 6  Character Printer (P1) Failure | Level 2 Check Chart 6.13 |
| 7  P1 Print Quality | P1/1730 and 40 CPS Printers Service Manual, Level 1 Checkout |
| 8  Low Speed Electronic Printer Problem | Level 2 Check Chart 6.15 |
| 9  Facsimile Print Service Problem | Level 2 Check Chart 6.29 |
| 10. RS-232-C COMM Failure | Level 2 Check Chart 6.14 |
| 11. RS-366 Auto-Dialer Failure | Level 2 Check Chart 6.12 |
| 12. Intermittent Problem | Level 2 Check Chart 6.23 |
| 13. Rigid Drive Subsystem Suspect | Level 2 Check Chart 6.26 |
| 14. Cannot set RTC to correct time. | Tag 2 Processors - Check Chart 6.28  Pre-Tag 2 Processors - Install Tag 2 |
| 15. XSIS 1108 System Suspect | Level 2 Check Chart 6.31 |

| Table 6-2 Display Messages | |
| --- | --- |
| **Display Message** | **Action** |
| Please reconstruct bad page table | Logon using **xerox** and **wizard** for name and password. Run Media Scan (non-destructive) and record the bad pages. Run the destructive mode of the **Reconstruct BPT** command (refer to the Diagnostics Handbook), but <u>do not run internal media scan option (destructive mode)</u>. Enter the pages from the OEM error Map along with any other bad pages from the customer's records and those previously recorded. Once pages are entered, return to Step 6 of the Level 1 Checkout. |
| Physical volume has irreparable damage | Check Chart 6.26 |
| Please set the local time parameters | Follow screen messages to set the time parameters. |
| Please reinstall software | (Analyst/System Administrator function - call NSC). |
| Physical volume needs forward conversion | (Analyst/System Administrator function - call NSC). |
| Real Time Clock Failure | Execute EI Utility Tests 0 and 1, and repair according to MP Code. |

| MP CODE LIST |

| HOW TO USE MP CODE LIST |

The MP Code List contains procedures for the four-digit codes that will be displayed on the Maintenance Panel (MP). The MP Codes can represent status or a fault.

1   The MP Code List contains three columns:

NOTE: The DESCRIPTION column has been moved to the Diagnostic Handbook.

   a   CODE - This column lists the MP Codes numerically. If a code is a status code, an "S" will follow the code. If a status code (other than 8000) remains on the display for an extended period of time, treat it as a fault code and refer to the procedure indicated with the asterisk symbol (*).

   b   CONF - This column lists a percentage indicating a confidence level for the replacement part to correct the fault.

   c   FRU/PROCEDURE - This column lists the suspected parts, called Field Replaceable Unit (FRU). If possible, this column also will contain a procedure (indicated by an asterisk "*") that will assist in further isolation of the FRUs.

NOTE: The MP Code List does not usually list harnesses as FRUs. However, defective harnesses and loose connectors cause fault indications (Fault Codes). Always check for harness or connector problems when a fault is indicated.

2.   To use the MP Code List, perform the following:

   a.   Look up the MP Code in MP Code List. MP Codes are listed in numerical sequence.

NOTE: When the MP Codes are listed as xxxx - yyyy, this indicates MP Codes xxxx to yyyy, inclusive.

   b.   If a procedure is listed (indicated by an asterisk "*"), perform the procedure before replacing any FRU.
   c.   If a procedure is not present, or if it does not assist in the isolation, replace the FRUs in the order listed.

3.   Verify the repair by running the appropriate diagnostics associated with the original fault. It is not necessary to run all of ALAG when verifying a repair.

| FAULT REPORTING |

There are four ways that the 8000 Processor reports fault codes; they are:

1.   Flashing code
2.   Code remains on MP for an extended period of time (Status Codes can be Fault Codes)
3.   MP Code on the display (El Disk - Mesa Only)
4.   MP cycles on two or more codes

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|

| UNDEFINED MP CODES |

XXXX      * Perform Check Chart 6.24 for any MP Code that cannot be found in MP Code List, or is not legible on MP.

| SYSTEM RESET |

0000 S      Pre-Tag 11.
     * Reboot. If code remains on MP, perform Check Chart 6.09.

| ALTERNATE BOOT SELECTION - MP CODES 0001 TO 0010, INCLUSIVE |

0000 S      Tag 11. Release ALT B Switch to select.
     * Reboot. If code remains on MP or cycles on *0000* to *0010*, inclusive after ALT B Switch is released, perform Check Chart 6.09.

0001 - 0002 S      Release ALT B Switch to select.
     * Reboot. If code remains on MP or cycles on *0001* to *0005*, inclusive (Pre-Tag 11) or *0000* to *0010*, inclusive (Tag 11) after ALT B Switch is released, perform Check Chart 6.09.

0003 S      Tag 11. Release ALT B Switch to select.
     * Reboot. If code remains on MP or cycles on *0001* to *0010*, inclusive after ALT B Switch is released, perform Check Chart 6.09.
     Pre-Tag 11. Not implemented.

0004 - 0005 S      Release ALT B Switch to select.
     * Reboot. If code remains on MP or cycles on *0001* to *0005*, inclusive (Pre-Tag 11) or *0000* to *0010*, inclusive (Tag 11) after ALT B Switch is released, perform Check Chart 6.09.

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| 0006 - 0010 S | | <u>Tag 11.</u> Release ALT B Switch to select. |
| | | * Reboot. If code remains on MP or cycles on *0000* to *0010*, *inclusive* after ALT B Switch is released, perform Check Chart 6.09. |

**PREBOOT DIAGNOSTICS - MP CODES 0010 TO 0099, INCLUSIVE**

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| 0010 | | <u>Pre-Tag 11.</u> |
| | | * Reboot. If failure recurs, run ALAG. Repair according to new MP Code. |
| | 70% | CP PWA |
| | 20% | HSIO PWA |
| | 9% | IOP PWA (Procedure 3.12) |
| | 1% | OPT PWA |
| 0020 S | | <u>Pre-Tag 11.</u> |
| | | * Reboot. If failure recurs, run ALAG. Repair according to new MP Code. |
| | 97% | CP PWA |
| | 2% | IOP PWA (Procedure 3.12) |
| | 1% | OPT PWA |
| 0060 - 0063 | | * Reboot from floppy disk. If failure recurs, disconnect J14 from the IOP PWA, and run ALAG. If MP proceeds to *0081*, check/replace floppy drive harness, then floppy disk drive. If MP stops on codes *0060* to *0063*, inclusive, replace IOP PWA (Procedure 3.12). |
| 0064 | | * Set switch 2 on IOP PWA to ON position |
| | 100% | IOP PWA (Procedure 3.12) |

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| 0065 - 0075 | * | Reboot from floppy disk. If failure recurs, disconnect J14 from the IOP PWA, and run ALAG. If MP proceeds to *0081*, check/replace floppy drive harness, then floppy disk drive. If MP stops on codes *0065* to *0075*, inclusive, replace IOP PWA (Procedure 3.12). |
| 0076 S | | <u>Tag 11.</u> |
| | * | Insert head cleaning disk, then press ALT B Switch to select. If MP does not go to *0077* for 15 seconds, replace IOP PWA (Procedure 3.12) then MP PWA. |
| 0077 S | | <u>Tag 11.</u> |
| | | Heads will load and remain loaded for 15 seconds, then heads will unload and MP will return to *0076*. If *0077* remains on MP, replace IOP PWA (Procedure 3.12). |
| 0081 | * | Is floppy disk inserted in drive correctly? Is floppy drive door closed? Is floppy drive harness connected? |
| | 50% | Floppy Disk Drive |
| | 45% | IOP PWA (Procedure 3.12) |
| | 5% | Floppy Disk Drive Harness |
| 0082 | * | Is floppy disk inserted in drive? |
| | 50% | Floppy Disk Drive |
| | 45% | IOP PWA (Procedure 3.12) |
| | 5% | Floppy Disk Drive Harness |
| 0083 | | <u>Tag 11.</u> |
| | * | Is floppy disk drive harness connected? Is Switch 2 on IOP PWA in the ON position? |
| | 50% | Floppy Disk Drive |
| | 45% | IOP PWA (Procedure 3.12) |
| | 5% | Floppy Disk Drive Harness |

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| 0087 - 0092 | <u>Tag 11.</u> | |
| | 50% | Floppy Disk Drive |
| | 40% | IOP PWA (Procedure 3.12) |
| | 10% | Floppy Disk Drive Harness |
| 0099 S | * | Reboot. If code remains on MP, perform Check Chart 6.24. |

| DIAGNOSTIC/OPERATING SYSTEM SOFTWARE LOAD SEQUENCE - MP CODES 0100 TO 0299, INCLUSIVE |
|---|

| 0100 - 0142 | * Reboot. If failure recurs, perform Check Chart 6.27. |
|---|---|
| 0149 | NOTE: If 29/42/80/300MB system, this code will remain on MP up to 1.5 minutes after power is switched on. |
| | * If 29/42MB system, ensure Actuator Lock is removed (29MB) or in RUN position (42MB). |
| | * Reboot. If failure recurs, perform Check Chart 6.27. |
| 0150 - 0287 | * Reboot. If failure recurs, perform Check Chart 6.27. |

| BOOT DIAGNOSTICS - MP CODES 0300 TO 0399, INCLUSIVE |
|---|

| 0301 | <u>8000 Server Terminal.</u> |
|---|---|
| | * Is Server Terminal power switched on?  Check harness or cable connections from Processor to Server Terminal (MODEM Connector).  Reboot. If test fails again, perform Check Chart 6.10. |

| 0301 | <u>8010 Workstation.</u> | |
|------|------|------|
| | * Check harness or cable connections from 8000 Processor to workstation keyboard | |
| | 60% | Keyboard |
| | 25% | IOP PWA (Procedure 3.12) |
| | 10% | Keyboard Cable |
| | 5% | Processor Signal Harness |

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| 0302 | * | Remove all PWAs except the IOP PWA. Reboot. If test 0302 fails, replace IOP PWA (Procedure 3.12). If test 0302 passes, replace in order: |
|  | 90% | CP PWA |
|  | 4% | HSIO PWA |
|  | 3% | MCC PWA |
|  | 2% | OPT PWA |
|  | 1% | Backplane |
| 0303 | 90% | CP PWA |
|  | 3% | HSIO PWA |
|  | 3% | IOP PWA (Procedure 3 12) |
|  | 2% | MCC PWA |
|  | 2% | OPT PWA |
| 0304 | * | Remove all PWAs except IOP and CP PWAs. Reboot. If test 0304 passes, replace removed PWAs, one at a time, and reboot. Replace last PWA installed when test 0304 fails. If test 0304 fails while PWAs are removed, replace in order: |
|  | 90% | CP PWA |
|  | 5% | HSIO PWA |
|  | 5% | IOP PWA (Procedure 3.12) |
| 0305 | * | Remove OPT, MCC, and MSC PWAs. Reboot. If test 0305 passes, replace removed PWAs, one at a time, and reboot. Replace last PWA installed when test 0305 fails. If test 0305 fails while PWAs are removed, replace in order: |
|  | 83% | CP PWA |
|  | 15% | HSIO PWA |
|  | 2% | IOP PWA (Procedure 3.12) |
| 0306 | * | Remove OPT,MCC and MSC PWAs. Reboot. If test 0306 passes, replace removed PWAs, one at a time, and reboot. Replace last PWA installed when test 0306 fails. If test 0306 fails while PWAs are removed, replace in order: |
|  | 83% | CP PWA |
|  | 15% | HSIO PWA |
|  | 2% | IOP PWA (Procedure 3.12) |

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| 0307 - 0308 | | * Remove OPT,MCC and MSC PWAs, and reboot. If test proceeds past *0307*, replace the removed PWAs, one at a time, and reboot. Replace last PWA installed when test 0307 fails. If test stops with *0307* displayed while PWAs are removed, replace in order listed: |
| | 83% | CP PWA |
| | 15% | HSIO PWA |
| | 2% | IOP PWA (Procedure 3.12) |
| 0309 - 0310 | | * Remove OPT,MCC and MSC PWAs, and reboot. If test proceeds past original failed test, replace the removed PWAs, one at a time, and reboot. Replace last PWA installed when original test fails. If test stops with original failing test number displayed while PWAs are removed, replace in order listed: |
| | 83% | CP PWA |
| | 15% | IOP PWA (Procedure 3.12) |
| | 2% | HSIO PWA |
| 0311 - 0312 | | * Remove OPT,MCC and MSC PWAs, and reboot. If test proceeds past original failed test, replace the removed PWAs, one at a time, and reboot. Replace last PWA installed when original test fails. If test stops with original failing test number displayed while PWAs are removed, replace in order listed: |
| | 83% | IOP PWA (Procedure 3.12) |
| | 15% | CP PWA |
| | 2% | HSIO PWA |
| 0313 - 0316 | | * Remove OPT and MSC PWAs, and reboot. If test proceeds past original failed test, replace the removed PWAs, one at a time, and reboot. Replace last PWA installed when original test fails. If test stops with original failing test number displayed while PWAs are removed, replace in order listed: |
| | 73% | CP PWA |
| | 11% | MCC PWA |
| | 10% | HSIO PWA |
| | 6% | IOP PWA (Procedure 3.12) |

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| 0317 | | * <u>Tag 28</u>. Press the ALT B Switch to continue testing.<br>* <u>Without Tag 28</u>. Remove OPT and MSC PWAs, and reboot. If test proceeds past original failed test, replace the removed PWAs, one at a time, and reboot. Replace last PWA installed when original test fails. If test stops with original failing test number displayed while PWAs are removed, replace in order listed: |
| | 73% | CP PWA |
| | 13% | MCC PWA |
| | 10% | HSIO PWA |
| | 4% | IOP PWA (Procedure 3.12) |
| 0318 | | * <u>Tag 28</u>. Perform Check Chart 6.31 to isolate failure.<br>* <u>Without Tag 28</u>. Run ALAG. When test fails on *0318*, hold ALT B Switch until *0326* completes, then release switch before MP reaches *0600*. When EI Memory fails (MP displays *0699*), perform Check Chart 6.16 to isolate fault. |
| 0319 | 30% | HSIO PWA |
| | 30% | Large Format Display Assembly |
| | 20% | MCC PWA |
| | 19% | CP PWA |
| | 1% | IOP PWA (Procedure 3.12) |
| 0320 | 40% | CP PWA |
| | 40% | HSIO PWA |
| | 18% | OPT PWA |
| | 1% | MCC PWA |
| | 1% | IOP PWA (Procedure 3.12) |
| 0321 | 70% | CP PWA |
| | 15% | HSIO PWA |
| | 6% | IOP PWA (Procedure 3.12) |
| | 5% | OPT PWA |
| | 4% | MCC PWA |

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| 0322 | * | Perform Check Chart 6.11. If <u>Standalone Workstation</u>, press SKIP/NEXT to continue testing. |
| 0323 | * | Reboot. If test fails on *0323* again, replace in order listed: |
| | 48% | Maintenance Panel PWA |
| | 47% | IOP PWA (Procedure 3.12) |
| | 5% | MP PWA Harness |
| 0324 | * | Reboot. If failure recurs, replace IOP PWA, and notify System Administrator that machine ID number has been changed. Do not change ID PROM on new IOP PWA. The ID PROM on old IOP PWA is causing the 0324 error |
| 0325 - 0326 | 60% | CP PWA |
| | 30% | IOP PWA (Procedure 3.12) |
| | 8% | HSIO PWA |
| | 1% | OPT PWA |
| | 1% | MCC PWA |
| 0327 | 50% | IOP PWA (Procedure 3.12) |
| | 48% | Mouse Assembly |
| | 2% | Keyboard Assembly |
| 0380 - 0383 | * | Perform Check Chart 6.10. |
| 0399 S | * | Type the appropriate key on the keyboard to select the Extended Isolation test desired: |

    a  -  Load Mesa Software Files
    b  -  Load and execute Boot Diagnostics
    m  -  Load EI Memory Diagnostics
    d  -  Load EI Disk Microcode
    u  -  Load EI Utility Diagnostics
    p  -  Load P1 Printer Diagnostics

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|

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| EI UTILITY DIAGNOSTICS - MP CODES 0400 TO 0499, INCLUSIVE |

These codes are displayed on MP when Extended Isolation (EI) Utility Tests are running. If a fault occurs, the MP will cycle on two codes (the test number and an error code). Always access the failing test number in MP Code List for repair, not the error code.

| 0400 | | 48% | MP PWA |
|------|--|-----|--------|
| | | 47% | IOP PWA (Procedure 3.12) |
| | | 5% | MP Harness |

| 0401  0407 | * Run test again. If test fails again, replace in order: |

|  |  | 48% | MP PWA |
|--|--|-----|--------|
|  |  | 47% | IOP PWA (Procedure 3.12) |
|  |  | 5%  | MP Harness |

| 0408 - 0412 | * Perform Check Chart 6.15 to isolate LSEP port failure. |

| 0413-0419 | * Perform Check Chart 6.14 to isolate RS-232-C port failure. |

| 0420 - 0424 | * Perform Check Chart 6.12 to isolate RS-366 port failure. |

| 0425 - 0429 | * Perform Check Chart 6.13 to isolate Character Printer/Server Terminal port failure. |

| 0430 | * Replace IOP PWA and notify System Administrator that machine ID number has been changed. Do not change ID PROM on new IOP PWA. The ID PROM on old IOP PWA is causing the error. |

| 0431S | Indicates that EI Utility Ethernet Trim Pot Adjustment test is running. |

| 0432 - 0435 | Manufacturing use only. |

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| 0436 - 0438 | * | Perform Check Chart 6.17 to isolate floppy disk failure. |
| 0439 - 0440 |  | Manufacturing use only. |
| 0441 - 0444 | * | Perform Check Chart 6.17 to isolate floppy disk failure. |
| 0445 - 0451 | * | Perform Check Chart 6.17 to isolate floppy disk failure. |
| 0499 S | * | Type an s then the appropriate number (see below) and a return on the keyboard to select EI Utility test desired: |

   0 - Read Real Time Clock Test
   1 - Set Real Time Clock Test
   2 - LSEP Port Test
   3 - 19.2K Baud RS-232-C Internal Loopback Test
   4 - 9.6K Baud RS-232-C Port Test
   5 - 56K Baud RS-232-C Port Test
   6 - 300 Baud RS-232-C Cable or Async Modem Loopback Test
   7 - 1200 Baud RS-232-C Cable or Async Modem Loopback Test
   8 - All RS-232-C Synchronous Modem Test
   9 - RS-232-C Loopback Test for Secondary Channels (Not used at this time)
   10 - RS-366 Port Test
   11 - Character Printer/Server Terminal Port Test
   12 - Host PROM Checksum Test
   13 - Ethernet Trim Pot Adjustment
   14 - LSEP Video Test (Manufacturing Use Only)
   15 - Initialize/Restore/Read Floppy Test
   16 - Manufacturing use only
   17 - Initialize/Restore/Read/Report Checksum Floppy Test

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|

**CAUTION**
**The following test is DESTRUCTIVE TO DATA ON THE FLOPPY DISK - WRITES OVER FLOPPY DISK FILES.**

31  Initialize/Format/Write/Read and Check Data Floppy Test

| IOP OPERATIONAL SOFTWARE EXECUTION - MP CODES 0500 TO 0599, INCLUSIVE |

The MP will display these codes when the IOP Operational Software detects an error (except *0500* which is normally a status code). If a code remains on MP for more than two minutes, you can assume it is a fault code.

0500-0502  * Reboot. If *0500* remains on MP for more than two minutes, a Real Time Clock failure is indicated. Replace in order listed:

    50%    IOP PWA (Procedure 3.12)
    45%    MP PWA
    5%    MP Harness

0505  * Reboot. If failure recurs, run ALAG, then repair according to new MP code.

0506 - 0508  * Reboot. If failure recurs, run ALAG and repair according to new MP code. If diagnostics do not show a fault, a software problem is suspected.

0509 - 0510  * Reboot. If failure recurs, run ALAG, then repair according to new MP code.

0511 - 0512  * Reboot. If failure recurs, run ALAG, then repair according to new MP code.

    55%    IOP PWA (Procedure 3.12)
    45%    CP PWA

| CODE | CONF | FRU/PROCEDURE |
|---|---|---|
| 0513 - 0520 | * | Reboot. If failure recurs, run ALAG, then repair according to new MP code. |
| | 80% | CP PWA |
| | 10% | IOP PWA (Procedure 3.12) |
| | 10% | OPT PWA |
| 0565 - 0571 | * | Reboot. If failure recurs, run ALAG, then repair according to new MP code. |
| | 55% | IOP PWA (Procedure 3.12) |
| | 45% | CP PWA |
| 0572 | * | Reboot. If failure recurs, set the time. Reboot. If test fails again, replace in order listed: |
| | 48% | MP PWA |
| | 47% | IOP PWA (Procedure 3.12) |
| | 5% | MP PWA Harness |
| 0576 | * | Reboot. If failure recurs, run ALAG, then repair according to new MP code. |
| | 55% | IOP PWA (Procedure 3.12) |
| | 45% | CP PWA |
| 0580 - 0582 | * | Reboot. If failure recurs, run ALAG, then repair according to new MP code. If diagnostics do not show a failure, a software problem is suspected. |
| | 55% | IOP PWA (Procedure 3.12) |
| | 45% | CP PWA |
| 0583 - 0584 | * | Reboot. If failure recurs, clean floppy drive heads then try a new floppy disk. If failure recurs, run Floppy On-Line Diagnostics, and repair according to new MP code. |
| 0585 | * | Reboot. If failure recurs, replace IOP PWA (Procedure 3.12). |

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|

0586 - 0587      * Reboot. If failure recurs, clean floppy drive heads then try a new floppy disk  If failure recurs, run Floppy On-Line Diagnostics, and repair according to new MP code.

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**EI MEMORY DIAGNOSTICS - MP CODES 0600 TO 0699, INCLUSIVE**

These codes are displayed on MP when Extended Isolation (EI) Memory tests are running. If a fault occurs in EI Memory during ALAG, the MP will go to *0699*. If a fault occurs while running EI Memory outside of ALAG, the MP will cycle on two codes (the failing test number followed by an error code). Always access the failing test number in MP Code List for repair data, not the error code.

0600 - 0614      * <u>Tag 28</u> Perform Check Chart 6.31 to isolate failure.
             * <u>Without Tag 28</u> Perform Check Chart 6.16 to isolate failure.

0699      * <u>Tag 28</u> If *0699* occurs during ALAG, perform Check Chart 6.31, otherwise type an s, then the appropriate number (see below), then a return on the keyboard to select the desired test:
             * <u>Without Tag 28</u>. If *0699* occurs during ALAG, perform Check Chart 6.16, otherwise type an s, then the appropriate number (see below), then a return on the keyboard to select the desired test:

       0 - All Single Bit Error Tests
       1 - Fast Single Bit Error Tests
       2 - All Double Bit Error Tests
       3 - Fast Double Bit Error Tests
       4 - Single Bit Trap/ECC Test
       5 - Single Bit Refresh Test

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**EI DISK MICROCODE DIAGNOSTICS - MP CODES 0700 TO 0799, INCLUSIVE**

These codes are displayed on MP when Extended Isolation (EI) Disk Microcode tests are running. If a failure is detected, the MP will cycle on two codes (the failing test number and an error code). Always access the failing test number in MP Code List for repair data, not the error code.

0700      * Perform Check Chart 6.20.

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| 0701 | * | Check disk drive for loose or defective belt or pulley. If belt and pulley are good, replace drive motor. If problem still exists, call NSC. |
| 0702 | * | Press the **STOP** key (8010 Workstation) or the **BREAK** key (Server Terminal). When MP displays *0799*, type an a to enter Fault Analysis. Press the **STOP** or **BREAK** key immediately after Fault Analysis begins. If MP will not display *0799* or typing an a does not initiate Fault Analysis, perform an Alternate Boot 0002 with Diagnostic Floppy Disk inserted to initiate Fault Analysis. After stopping Fault Analysis, perform Check Chart 6.26. |
| 0703 | * | Press the **STOP** key (8010 Workstation) or the **BREAK** key (Server Terminal). When MP displays *0799*, type an a to run Fault Analysis then, repair according to new MP code. If Fault Analysis ran successfully (MP = 1199 or 1499), run ALAG. If MP Code repeats, replace disk drive damper assembly. If problem still exists, call for assistance. |
| 0704 | * | Perform Check Chart 6.02.1 in 29MB Disk Drive Service Manual. |
| 0705 | * | Check disk drive for loose or defective belt or pulley. If belt and pulley are good, replace drive motor. If problem still exists, call NSC |
| 0706 - 0708 | * | Press the **STOP** key (8010 Workstation) or the **BREAK** key (Server Terminal). When MP displays *0799*, type an a to enter Fault Analysis. Press the **STOP** or **BREAK** key immediately after Fault Analysis begins. If MP will not display *0799* or typing an a does not initiate Fault Analysis, perform an Alternate Boot 0002 with Diagnostic Floppy Disk inserted to initiate Fault Analysis. After stopping Fault Analysis, perform Check Chart 6.26. |
| 0709 | * | Press the **STOP** key (8010 Workstation) or the **BREAK** key (Server Terminal). When MP displays *0799*, type an a to run Fault Analysis then, repair according to new MP code. If Fault Analysis ran successfully (MP = 1199 or 1499), run ALAG. If MP Code repeats, replace disk drive damper assembly. If problem still exists, call for assistance. |
| 0710- 0715 | * | Press the **STOP** key (8010 Workstation) or the **BREAK** key (Server Terminal) When MP displays *0799*, type an a to run Fault Analysis, then repair according to new MP code. If MP will not display *0799* or typing an a does not initiate Fault Analysis, perform an Alternate Boot 0002 with Diagnostic Floppy Disk inserted to initiate Fault Analysis. |

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| 0716 - 0737 | * | Go to 80/300MB Disk Console Service Manual, Level 1. |
| 0738 | * | Perform Check Chart 6.20. |
| 0739 | * | Check disk drive for loose or defective belt or pulley. If belt and pulley are good, replace drive motor. If problem still exists, call NSC. |
| 0740 | * | Press the STOP key (8010 Workstation) or the BREAK key (Server Terminal). When MP displays *0799*, type an a to enter Fault Analysis. Press the STOP or BREAK key immediately after Fault Analysis begins. If MP will not display *0799* or typing an a does not initiate Fault Analysis, perform an Alternate Boot 0002 with Diagnostic Floppy Disk inserted to initiate Fault Analysis. After stopping Fault Analysis, perform Check Chart 6.26. |
| 0741 | * | Press the STOP key (8010 Workstation) or the BREAK key (Server Terminal). When MP displays *0799*, type an a to run Fault Analysis then, repair according to new MP code. If Fault Analysis ran successfully (MP = 1499), run ALAG. If MP Code repeats, replace the disk drive (procedure 3.14 - See CAUTION preceding replacement procedure). |

### CAUTION
Some EI Disk Microcode tests are DESTRUCTIVE TO DATA ON THE RIGID DISK. Only tests 0 to 7, inclusive, can be run without destroying rigid disk data.

| 0799 | * | Type an s, then the appropriate number and a return on the keyboard to select desired test (see below): |

    0 - 10/29MB Ready Test
    1 - 10MB Index/Recal/Seek/Read/Verify Test
    2 - 29MB Index/Sector/Recal/Seek/Read/Verify Test
    3 - 80/300MB Disk Logic Test for Unit #1
    4 - 80/300MB Disk Logic Test for Unit #2
    5 - 80/300MB Disk Logic Test for Unit #3
    6 - 80/300MB Disk Logic Test for Unit #4
    7 - 42MB Index/Recal/Seek/Read/Verify Test

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
|      | 24 - | 80/300MB Data Wrap Around Test (DESTRUCTIVE TEST - WRITES OVER CUSTOMER FILES) |
|      | 26 - | 29MB Data Wrap Around Test (DESTRUCTIVE TEST - WRITES OVER CUSTOMER FILES) |
|      | 31 - | 10MB Data Wrap Around Test (DESTRUCTIVE TEST - WRITES OVER CUSTOMER FILES) |

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| EI PRINTER DIAGNOSTICS - MP CODES 0800 TO 0899, INCLUSIVE |

These codes are displayed on MP when EI Printer Diagnostic tests are running. If a failure is detected, the MP will cycle on two codes (the failing test number and an error code). Always access the failing test number in MP Code List for repair data, not the error code.

| 0800 - 0817S | Codes reflect status only and correspond to the P1 Printer Tests listed below (i.e., MP Code 0800 = Test 0, MP Code 0817 = Test 17, etc.). |
|--------------|---------------|
| 0818 S | Code reflects status only and corresponds to the Local Ink-Jet Printer Test Pattern Test listed below. |
| 0899 | \* Type an **s**, then the appropriate number and a return on the keyboard to select desired test (see below): |

    0 - Initialize Printer Test
    1 - Auto-Diagnostics/Print Wheel Amplitude Test (Will not run with an APF option.)
    2 - Restore Print Wheel Test
    3 - Print Wheel Phasing Test
    4 - Ribbon Lift Test - Up
    5 - Ribbon Lift Test - Down
    6 - Ribbon Height Adjustment Test
    7 - Ribbon Snag Test
    8 - Platen Height Adjustment Test
    9 - Paper Feed Gear Backlash Test
    10 - Hammer Energy Matrix Test
    11 - Ribbon Advance Exerciser Test
    12 - Print Wheel Motor 180° Oscillation Test

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| | 13 - | Print Wheel Motor 3.75° Oscillation Test |
| | 14 - | Carriage Exerciser 8 inch Oscillation Test |
| | 15 - | Carriage Exerciser 1 inch Oscillation Test |
| | 16 - | Print Quality Test |
| | 17 - | APF Exerciser Test |
| | 18 - | Runs Tests 0 to 10, inclusive |
| | 19 - | Runs Tests 11 to 16, inclusive |
| | 23 - | Local Ink-Jet Printer Test Pattern Test |

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| CP OPERATING SYSTEM SOFTWARE EXECUTION - MP CODES 0900 TO 0999, INCLUSIVE |

These codes are displayed when the CP Operating System Software is being executed or detects an error  If a code remains on MP for more than two minutes, you can assume it is a fault code.

| 0900 - 0913 | * | Reboot. If code remains on MP, run ALAG, then repair according to new MP code. If ALAG passes, install software. If MP code was 0902 and problem recurs, replace MCC PWA. |
| 0915 | * | Reboot. If code remains on MP, run ALAG, then repair according to new MP code. If ALAG passes, install software. If software cannot be installed, ensure software floppy disks are good, then clean floppy drive read/write heads. If problem still exists, check jumpers on floppy disk drive, then replace floppy disk drive, then IOP PWA (Procedure 3.12). |
| 0916 | * | Reboot. If code remains on MP, run ALAG, then repair according to new MP code  If ALAG passes, install software. |
| 0917S | | Indicates that machine is being remote debugged. |
| 0918-0936 | * | Reboot  If code remains on MP, run ALAG, then repair according to new MP code  If ALAG passes, install software. If MP code was 0920 or 0935, and problem recurs, replace MCC PWA |

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| 0937 | * | Set Time of Day Clock on Clearinghouse or Communications Server, then reboot. If code remains on MP, run ALAG, then repair according to new MP code. |
| 0938 - 0990 | * | Reboot. If code remains on MP, run ALAG, then repair according to new MP code. If ALAG passes, ask customer to install software. |

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**EI DISK MESA DIAGNOSTICS - 10MB DRIVE - MP CODES 1000 TO 1199, INCLUSIVE**

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These codes are displayed on MP when the Extended Isolation (EI) Disk Mesa (Fault Analysis) diagnostics are running on the 10MB rigid disk drive. The number displayed on MP is the current test. If a failure occurs, the MP code is displayed on the screen with the message *Loop on Error (Y/N)*. A fault can also be reported by the MP alternating the test number with *1191, 1192,* or *1193*, in which case 1191, 1192, or 1193 should be accessed in MP Code List for repair.

**CAUTION**

Drive replacement deletes customer files. This requires a restoration of the files by the customer. BEFORE replacing a drive, contact your RES or NSC; then notify the person at the customer's office who is responsible for their files (System Administrator or Network Coordinator). The customer **MUST** be notified **BEFORE** replacing a rigid drive. The Analyst must also be notified. **NEVER REPLACE A DRIVE WITHOUT NOTIFYING THE CUSTOMER AND ANALYST FIRST.**

| | | |
|------|------|---------------|
| 1000 - 1010 | * | If code remains on MP, run ALAG, then repair according to new MP code. |
| | 40% | HSIO PWA |
| | 40% | CP PWA |
| | 20% | IOP PWA (Procedure 3.12) |
| 1011 - 1018 | * | Check Chart 6 20 must be used to isolate failure to a FRU. |
| | 50% | Control (Control/Stepper) PWA |
| | 40% | HSIO PWA |
| | 10% | 10MB Drive (See CAUTION preceding MP Code 1000.) |

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| 1030 S | | * If code remains on MP, run ALAG, then repair according to new MP code. |
| | 40% | HSIO PWA |
| | 40% | CP PWA |
| | 20% | IOP PWA (Procedure 3.12) |
| 1031 | | * Check Chart 6.21 must be used to isolate failure to a FRU. |
| | 40% | Control (Control/Stepper) PWA |
| | 30% | Stepper PWA |
| | 20% | HSIO PWA |
| | 10% | 10MB Drive (See CAUTION preceding MP Code 1000.) |
| 1040 S | | * If code remains on MP, run ALAG, then repair according to new MP code. |
| | 40% | HSIO PWA |
| | 40% | CP PWA |
| | 20% | IOP PWA (Procedure 3.12) |
| 1041 - 1042 | | * Check Chart 6.21 must be used to isolate failure to a FRU. |
| | 40% | Control (Control/Stepper) PWA |
| | 30% | Stepper PWA |
| | 20% | HSIO PWA |
| | 10% | 10MB Drive (See CAUTION preceding MP Code 1000.) |
| 1070 S | | * If code remains on MP, run ALAG, then repair according to new MP code. |
| | 40% | HSIO PWA |
| | 40% | CP PWA |
| | 20% | IOP PWA (Procedure 3.12) |

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| 1071 | * | Perform Check chart 6.25. |
| | 50% | Control (Control/Stepper) PWA |
| | 40% | HSIO PWA |
| | 10% | 10MB Drive (See CAUTION preceding MP Code 1000.) |
| 1072 | * | Replace Control (Control/Stepper) PWA, then HSIO PWA. If 1072 recurs, have Customer install software, and if necessary, run File Check. If problem still exists, drive should be replaced. (See CAUTION preceding MP Code 1000.) |
| | 50% | Control (Control/Stepper) PWA |
| | 40% | HSIO PWA |
| | 10% | 10MB Drive (See CAUTION preceding MP Code 1000.) |
| 1080 - 1090 | * | If code remains on MP, run ALAG, then repair according to new MP code. |
| | 40% | HSIO PWA |
| | 40% | CP PWA |
| | 20% | IOP PWA (Procedure 3.12) |
| 1091 | * | Perform Check Chart 6.25. |
| | 50% | Control (Control/Stepper) PWA |
| | 40% | HSIO PWA |
| | 10% | 10MB Drive (See CAUTION preceding MP Code 1000.) |
| 1100 S | * | If code remains on MP, run ALAG, then repair according to new MP code. |
| | 40% | HSIO PWA |
| | 40% | CP PWA |
| | 20% | IOP PWA (Procedure 3.12) |

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| 1102 | * | Perform Check chart 6.25. |
| | 40% | Control (Control/Stepper) PWA |
| | 30% | Stepper PWA |
| | 20% | HSIO PWA |
| | 10% | 10MB Drive (See CAUTION preceding MP Code 1000.) |
| 1110 S | * | If code remains on MP, run ALAG, then repair according to new MP code. |
| | 40% | HSIO PWA |
| | 40% | CP PWA |
| | 20% | IOP PWA (Procedure 3.12) |
| 1113 | * | Check Chart 6.21 must be used to isolate failure to a FRU. |
| | 40% | Control (Control/Stepper) PWA |
| | 30% | Stepper PWA |
| | 20% | HSIO PWA |
| | 10% | 10MB Drive (See CAUTION preceding MP Code 1000.) |
| 1120 S | * | Replace the following PWAs in order. If problem still exists, drive requires formatting. (This is an Analyst function. If Analyst cannot be reached, contact your NSE or the NSC.) |
| | 40% | HSIO PWA |
| | 40% | CP PWA |
| | 20% | IOP PWA (Procedure 3.12) |
| 1121 | * | Replace the following PWAs in order. If problem still exists, drive requires formatting. (This is an Analyst function. If Analyst cannot be reached, contact your NSE or the NSC.) |
| | 50% | Control (Control/Stepper) PWA |
| | 50% | HSIO PWA |

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| 1140 S | | * If code remains on MP, run ALAG, then repair according to new MP code. |
| | 40% | HSIO PWA |
| | 40% | CP PWA |
| | 20% | IOP PWA (Procedure 3.12) |
| 1141 - 1143 | | * Perform Check Chart 6.25. |
| | 50% | Control (Control/Stepper) PWA |
| | 40% | HSIO PWA |
| | 10% | 10MB Drive (See CAUTION preceding MP Code 1000.) |
| 1150 S | | * If code remains on MP, run ALAG, then repair according to new MP code. |
| | 40% | HSIO PWA |
| | 40% | CP PWA |
| | 20% | IOP PWA (Procedure 3.12) |
| 1151 | | * Perform Check Chart 6.25. |
| | 50% | Control (Control/Stepper) PWA |
| | 40% | HSIO PWA |
| | 10% | 10MB Drive (See CAUTION preceding MP Code 1000.) |

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| 1191 | * | **CAUTION:** Do not perform anything that causes 10MB Drive to read or write. This can possibly destroy data on the disk. Replace <u>ALL</u> of the listed FRUs at once except the drive. Then retry diagnostics. If diagnostics fail again, replace drive. **(See CAUTION preceding MP Code 1000.)** |
| | 40% | Control (Control/Stepper) PWA |
| | 30% | Stepper PWA |
| | 20% | HSIO PWA |
| | 10% | 10MB Drive **(See CAUTION preceding MP Code 1000.)** |
| 1192 | | **NOTE:** This code can also appear on a 29MB drive. |
| | * | Replace the following PWAs in order. If problem still exists, perform Check Chart 6.30. |
| | 40% | Control (Control/Stepper) PWA |
| | 30% | Stepper PWA (10MB) or Actuator PWA (29MB) |
| | 30% | HSIO PWA |
| 1193 | | **NOTE:** This code can also appear on a 29MB drive. |
| | * | Rerun ALAG, then repair according to new MP code. |
| 1196 - 1198 | | **NOTE:** These codes can also appear on a 29MB drive. |
| | * | Record all codes displayed on MP and call the NSC. |
| 1199 S | | Fault Analysis has completed successfully. |

| CODE | CONF | FRU/PROCEDURE |
|------|------|----------------|

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| EI DISK MESA DIAGNOSTICS - 42MB DRIVE - MP CODES 1300 TO 1499, INCLUSIVE |
|---|

These codes are displayed on MP when the Extended Isolation (EI) Disk Mesa (Fault Analysis) diagnostics are running on the 42MB rigid disk drive. The number displayed on MP is the current test. If a failure occurs, the MP code is displayed on the screen with the message *Loop on Error (Y/N):*. A fault can also be reported by the MP alternating the test number with *1491, 1492,* or *1493,* in which case 1491, 1492, or 1493 should be accessed in MP Code List for repair.

**CAUTION**

Drive replacement deletes customer files. This requires a restoration of the files by the customer. BEFORE replacing a drive, contact your RES or NSC; then notify the person at the customer's office who is responsible for their files (System Administrator or Network Coordinator). The customer **MUST** be notified **BEFORE** replacing a rigid drive. **NEVER REPLACE A DRIVE WITHOUT NOTIFYING THE CUSTOMER AND ANALYST FIRST.**

| | | |
|------|------|----------------|
| 1300 - 1310 | * | If code remains on MP, run ALAG, then repair according to new MP code. |
| | 40% | HSIO PWA |
| | 40% | CP PWA |
| | 20% | IOP PWA (Procedure 3.12) |
| 1314 - 1318 | * | Check Chart 6 20 must be used to isolate failure to a FRU. |
| | 50% | Control PWA |
| | 40% | HSIO PWA |
| | 10% | 42MB Drive (See CAUTION preceding MP Code 1300.) |
| 1330 S | * | If code remains on MP, run ALAG, then repair according to new MP code. |
| | 40% | HSIO PWA |
| | 40% | CP PWA |
| | 20% | IOP PWA (Procedure 3.12) |

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| 1331 | | *Check Chart 6.21 must be used to isolate failure to a FRU. |
| | 40% | Control PWA |
| | 30% | Power Transistor Assembly |
| | 20% | HSIO PWA |
| | 10% | 42MB Drive (See CAUTION preceding MP Code 1300.) |
| 1340 S | | * If code remains on MP, run ALAG, then repair according to new MP code. |
| | 40% | HSIO PWA |
| | 40% | CP PWA |
| | 20% | IOP PWA (Procedure 3.12) |
| 1341 - 1342 | | * Check Chart 6.21 must be used to isolate failure to a FRU. |
| | 40% | Control PWA |
| | 30% | Power Transistor Assembly |
| | 20% | HSIO PWA |
| | 10% | 42MB Drive (See CAUTION preceding MP Code 1300.) |
| 1370 S | | * If code remains on MP, run ALAG, then repair according to new MP code |
| | 40% | HSIO PWA |
| | 40% | CP PWA |
| | 20% | IOP PWA (Procedure 3.12) |
| 1371 | | * Perform Check chart 6.25. |
| | 50% | Control PWA |
| | 40% | HSIO PWA |
| | 10% | 42MB Drive (See CAUTION preceding MP Code 1300.) |

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| 1372 | | * Replace Control PWA, then HSIO PWA. If 1372 recurs, have Customer install software, and if necessary, run File Check. If problem still exists, drive should be replaced. (See CAUTION preceding MP Code 1300.) |
| | 50% | Control PWA |
| | 40% | HSIO PWA |
| | 10% | 42MB Drive (See CAUTION preceding MP Code 1300.) |
| 1380 - 1390 | | * If code remains on MP, run ALAG, then repair according to new MP code. |
| | 40% | HSIO PWA |
| | 40% | CP PWA |
| | 20% | IOP PWA (Procedure 3.12) |
| 1391 | | * Perform Check chart 6.25. |
| | 50% | Control PWA |
| | 40% | HSIO PWA |
| | 10% | 42MB Drive (See CAUTION preceding MP Code 1300.) |
| 1400 S | | * If code remains on MP, run ALAG, then repair according to new MP code |
| | 40% | HSIO PWA |
| | 40% | CP PWA |
| | 20% | IOP PWA (Procedure 3.12) |
| 1402 | | * Perform Check chart 6.25. |
| | 40% | Control PWA |
| | 30% | Power Transistor Assembly |
| | 20% | HSIO PWA |
| | 10% | 42MB Drive (See CAUTION preceding MP Code 1300.) |

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| 1410 S | | * If code remains on MP, run ALAG, then repair according to new MP code. |
| | 40% | HSIO PWA |
| | 40% | CP PWA |
| | 20% | IOP PWA (Procedure 3.12) |
| 1413 | | * Check Chart 6.21 must be used to isolate failure to a FRU. |
| | 40% | Control PWA |
| | 30% | Power Transistor Assembly |
| | 20% | HSIO PWA |
| | 10% | 42MB Drive (See CAUTION preceding MP Code 1300.) |
| 1420 S | | * Replace the following PWAs in order. If problem still exists, drive requires formatting. (This is an Analyst function. If Analyst cannot be reached, contact your NSE or the NSC.) |
| | 40% | HSIO PWA |
| | 40% | CP PWA |
| | 20% | IOP PWA (Procedure 3.12) |
| 1421 | | * Replace the following PWAs in order. If problem still exists, drive requires formatting. (This is an Analyst function. If Analyst cannot be reached, contact your NSE or the NSC.) |
| | 50% | Control PWA |
| | 50% | HSIO PWA |
| 1440 S | | * If code remains on MP, run ALAG, then repair according to new MP code. |
| | 40% | HSIO PWA |
| | 40% | CP PWA |
| | 20% | IOP PWA (Procedure 3.12) |

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| 1441 - 1443 | | * Perform Check Chart 6.25. |
| | 50% | Control PWA |
| | 40% | HSIO PWA |
| | 10% | 42MB Drive (See CAUTION preceding MP Code 1300.) |
| 1450 S | | * If code remains on MP, run ALAG, then repair according to new MP code. |
| | 40% | HSIO PWA |
| | 40% | CP PWA |
| | 20% | IOP PWA (Procedure 3.12) |
| 1451 | | * Perform Check Chart 6.25. |
| | 50% | Control PWA |
| | 40% | HSIO PWA |
| | 10% | 42MB Drive (See CAUTION preceding MP Code 1300.) |
| 1491 | | * **CAUTION:** Do not perform anything that causes 42MB Drive to read or write. This can possibly destroy data on the disk. Replace <u>ALL</u> of the listed FRUs at once except the drive. Then retry diagnostics. If diagnostics fail again, replace drive. (See CAUTION preceding MP Code 1300.) |
| | 40% | Control PWA |
| | 30% | Power Transistor Assembly |
| | 20% | HSIO PWA |
| | 10% | 42MB Drive (See CAUTION preceding MP Code 1300.) |

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| 1492 | * | Replace the following PWAs in order.  If problem still exists, perform Check Chart 6.30. |
|      | 40%  | Control PWA |
|      | 30%  | Power Transistor Assembly |
|      | 30%  | HSIO PWA |
| 1493 | * | Rerun ALAG, then repair according to new MP code. |
| 1496 - 1498 | * | Record all codes displayed on MP and call the NSC. |
| 1499 S | | Fault Analysis has completed successfully. |

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|

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| EI DISK MESA DIAGNOSTICS - 29MB DRIVE - MP CODES 1600 TO 1799, INCLUSIVE |
|---|

These codes are displayed on MP when the Extended Isolation (EI) Disk Mesa (Fault Analysis) diagnostics are running on the 29MB rigid disk drive  The number displayed on MP is the current test. If a failure occurs, the MP code is displayed on the screen with the message *Loop on Error (Y/N):*. A fault can also be reported by the MP alternating the test number with *1791, 1792,* or *1793,* in which case 1791, 1792, or 1793 should be accessed in MP Code List for repair.

**CAUTION**

Drive replacement deletes customer files. This requires a restoration of the files by the customer. **BEFORE** replacing a drive, contact your RES or NSC; then notify the person at the customer's office who is responsible for their files (System Administrator or Network Coordinator). The customer <u>MUST</u> be notified <u>BEFORE</u> replacing a rigid drive. The Analyst must also be notified. <u>NEVER REPLACE A DRIVE WITHOUT NOTIFYING THE CUSTOMER AND ANALYST FIRST.</u>

1600 - 1610    * If code remains on MP, run ALAG, then repair according to new MP code.

      40%    HSIO PWA
      40%    CP PWA
      20%    IOP PWA (Procedure 3.12)

1611 - 1614    * Check Chart 6.01 in 29MB Disk Console Service Manual must be used to isolate fault to a FRU.

      40%    Control PWA
      40%    HSIO PWA
      10%    R/W PWA
      10%    29MB Drive (See CAUTION preceding MP Code 1600.)

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| 1615 | | * Verify that RY jumper on the Control PWA is present and positioned correctly. If good, perform Check Chart 6.01 in 29MB Disk Console Service Manual. |
| | 40% | Control PWA |
| | 40% | HSIO PWA |
| | 10% | R/W PWA |
| | 10% | 29MB Drive (See CAUTION preceding MP Code 1600.) |
| 1616 - 1618 | | * Check Chart 6.01 in 29MB Disk Console Service Manual must be used to isolate fault to a FRU. |
| | 40% | Control PWA |
| | 40% | HSIO PWA |
| | 10% | R/W PWA |
| | 10% | 29MB Drive (See CAUTION preceding MP Code 1600.) |
| 1630 S | | * If code remains on MP, run ALAG, then repair according to new MP code. |
| | 40% | HSIO PWA |
| | 40% | CP PWA |
| | 20% | IOP PWA (Procedure 3.12) |
| 1631 | | * Check Chart 6.01 in 29MB Disk Console Service Manual must be used to isolate fault to a FRU. |
| | 40% | Control PWA |
| | 30% | Actuator PWA |
| | 20% | HSIO PWA |
| | 10% | 29MB Drive (See CAUTION preceding MP Code 1600.) |

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| 1640 S | | * If code remains on MP, run ALAG, then repair according to new MP code. |
| | 40% | HSIO PWA |
| | 40% | CP PWA |
| | 20% | IOP PWA (Procedure 3.12) |
| 1641 - 1642 | | * Check Chart 6.01 in 29MB Disk Console Service Manual must be used to isolate fault to a FRU. |
| | 40% | Control PWA |
| | 30% | Actuator PWA |
| | 20% | HSIO PWA |
| | 10% | 29MB Drive (See CAUTION preceding MP Code 1600.) |
| 1670 S | | * If code remains on MP, run ALAG, then repair according to new MP code. |
| | 40% | HSIO PWA |
| | 40% | CP PWA |
| | 20% | IOP PWA (Procedure 3.12) |
| 1671 - 1672 | | * Check Chart 6.01 in 29MB Disk Console Service Manual must be used to isolate fault to a FRU. |
| | 35% | Control PWA |
| | 25% | VFO PWA |
| | 20% | R/W PWA |
| | 10% | HSIO PWA |
| | 10% | 29MB Drive (See CAUTION preceding MP Code 1600.) |
| 1680 S | | * If code remains on MP, run ALAG, then repair according to new MP code. |
| | 40% | HSIO PWA |
| | 40% | CP PWA |
| | 20% | IOP PWA (Procedure 3.12) |

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| 1681 | 40% | HSIO PWA |
|      | 40% | CP PWA |
|      | 20% | IOP PWA (Procedure 3.12) |
| 1690 S | * If code remains on MP, run ALAG, then repair according to new MP code. | |
|      | 40% | HSIO PWA |
|      | 40% | CP PWA |
|      | 20% | IOP PWA (Procedure 3.12) |
| 1691 | * Check Chart 6.01 in 29MB Disk Console Service Manual must be used to isolate fault to a FRU. | |
|      | 40% | Control PWA |
|      | 40% | HSIO PWA |
|      | 10% | R/W PWA |
|      | 10% | 29MB Drive (See CAUTION preceding MP Code 1600.) |
| 1700 S | * If code remains on MP, run ALAG, then repair according to new MP code. | |
|      | 40% | HSIO PWA |
|      | 40% | CP PWA |
|      | 20% | IOP PWA (Procedure 3.12) |
| 1702 | * Check Chart 6.01 in 29MB Disk Console Service Manual must be used to isolate fault to a FRU. | |
|      | 35% | Control PWA |
|      | 25% | VFO PWA |
|      | 20% | R/W PWA |
|      | 10% | HSIO PWA |
|      | 10% | 29MB Drive (See CAUTION preceding MP Code 1600.) |

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| 1710 S | | * If code remains on MP, run ALAG, then repair according to new MP code. |
| | 40% | HSIO PWA |
| | 40% | CP PWA |
| | 20% | IOP PWA (Procedure 3.12) |
| 1713 | | * Check Chart 6.01 in 29MB Disk Console Service Manual must be used to isolate fault to a FRU. |
| | 40% | Control PWA |
| | 30% | Actuator PWA |
| | 20% | HSIO PWA |
| | 10% | 29MB Drive (See CAUTION preceding MP Code 1600.) |
| 1720 S | | * Replace the following PWAs in order. If problem recurs, drive requires formatting. (This is an Analyst function. If Analyst cannot be reached, contact your NSE or the NSC.) |
| | 40% | HSIO PWA |
| | 40% | CP PWA |
| | 20% | IOP PWA (Procedure 3.12) |
| 1721 | | * Perform Check Chart 6.25 |
| | | * Replace the following PWAs in order. If problem recurs, drive requires formatting. (This is an Analyst function. If Analyst cannot be reached, contact your NSE or the NSC.)  . |
| | 30% | Control PWA |
| | 20% | VFO PWA |
| | 20% | R/W PWA |
| | 30% | HSIO PWA |

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| 1740 S | * | If code remains on MP, run ALAG, then repair according to new MP code. |
| | 40% | HSIO PWA |
| | 40% | CP PWA |
| | 20% | IOP PWA (Procedure 3.12) |
| 1741 - 1743 | * | Check Chart 6.01 in 29MB Disk Console Service Manual must be used to isolate fault to a FRU. |
| | 35% | Control PWA |
| | 25% | VFO PWA |
| | 20% | R/W PWA |
| | 10% | HSIO PWA |
| | 10% | 29MB Drive (See CAUTION preceding MP Code 1600.) |
| 1750 S | * | If code remains on MP, run ALAG, then repair according to new MP code. |
| | 40% | HSIO PWA |
| | 40% | CP PWA |
| | 20% | IOP PWA (Procedure 3.12) |
| 1751 | 35% | Control PWA |
| | 25% | VFO PWA |
| | 20% | R/W PWA |
| | 10% | HSIO PWA |
| | 10% | 29MB Drive (See CAUTION preceding MP Code 1600.) |

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| 1791 | | * **CAUTION:** Do not perform anything that causes 29MB Drive to read or write. This can possibly destroy data on the disk. Replace ALL of the listed FRUs at once except the drive. Then retry diagnostics. If diagnostics fail again, replace drive. (See CAUTION preceding MP Code 1600.) |
| | 35% | Control PWA |
| | 25% | VFO PWA |
| | 20% | R/W PWA |
| | 10% | HSIO PWA |
| | 10% | 29MB Drive (See CAUTION preceding MP Code 1600.) |
| 1792 | | * Replace the following PWAs in order. If problem recurs, perform Check Chart 6.30 |
| | 30% | VFO PWA |
| | 25% | Actuator PWA |
| | 25% | Control PWA |
| | 20% | HSIO PWA |
| 1793 | | * Rerun ALAG, then repair according to new MP code. |
| 1799 S | | This code indicates successful completion of Fault Analysis. |

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**SERVER TERMINAL KEYBOARD ON-LINE DIAGNOSTICS - MP CODES 2000 TO 2190, INCLUSIVE**

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These codes are displayed on MP when the Server Terminal On-Line Diagnostic Test is running.

| | | |
|------|------|---------------|
| 2000 - 2190 | | * Refer to **HOW TO RUN ON-LINE DIAGNOSTICS FROM THE SERVER TERMINAL** in the *DIAGNOSTICS HANDBOOK*. |
| 2200 - 2799 | | * Perform Level 1 Checkout Procedure in the 80/300MB Disk Console Service Manual. |

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|

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**FLOPPY DISK DRIVE ON-LINE DIAGNOSTICS - MP CODES 3000 TO 3886, INCLUSIVE**

These codes are displayed on MP when the Floppy Disk Drive On-Line Diagnostic Test is running.

3000 S — This code will be displayed while running Floppy Disk Drive On-Line Diagnostics.

3001 - 3886 — * If MP code is included in the list below, perform Check Chart 6.17.

| 3001 | 3009 | 3021 | 3029 | 3051 | 3079 | 3101 | 3129 | 3151 | 3179 | 3201 | 3229 | 3251 | 3279 |
| 3301 | 3329 | 3351 | 3379 | 3401 | 3429 | 3451 | 3479 | 3501 | 3529 | 3551 | 3579 | 3601 | 3629 |
| 3651 | 3679 | 3701 | 3729 | 3751 | 3779 | 3801 | 3829 | 3851 | 3779 | | | | |

* If MP code is not included in the list above, clean floppy drive heads, then try Floppy Disk Drive On-Line Diagnostics using a new diagnostic disk. If failure recurs, replace in order listed:

- 48% ~~Floppy Disk Drive~~
- 47% IOP PWA (Procedure 3.12)
- 5% Floppy Drive Harness

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**ETHERNET ON-LINE DIAGNOSTICS - MP CODES 4200 TO 4203, INCLUSIVE**

These codes may be displayed on MP when the Ethernet On-Line Diagnostic Test is running.

4200 - 4201 S — May be displayed momentarily during test.

4202 S — Packet was not echoed successfully, and a ? is displayed on the screen. Refer to Ethernet Service Manual, Check Chart 6.01 for pass/fail criteria.

4203 S — May be displayed momentarily during test.

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|

| RS-232-C COMMUNICATIONS PORT ON-LINE DIAGNOSTICS - MP CODES 4500 TO 4598, INCLUSIVE |

| 4500 S | | RS-232-C Test has been selected from On-Line Menu. |
| 4501 | | * <u>8071.</u> Perform Check Chart 6.14.<br>* <u>873.</u> Perform Level 1 Checkout Procedure in 873 CIU Service Manual. |
| 4510 S | | RS-232-C Echo Test has started. |
| 4520 | | * <u>8071.</u> Perform Check Chart 6.14.<br>* <u>873.</u> Perform Level 1 Checkout Procedure in 873 CIU Service Manual. |
| 4527 S | | Dialer Test has started. |
| 4528 S | | Dialer Test is running. |
| 4529 S | | User canceled Dialer Test. |
| 4540 S | | RS-232-C Echo Test is completing and rigid disk space is being recovered. |
| 4545 S | | First test frame was successfully sent and received. |
| 4598 S | | RS-232-C On-Line Test completed Receive process. |
| 4599 S | | RS-232-C On-Line Test completed Send process. |

| LSEP ON-LINE DIAGNOSTICS - MP CODES 5500 TO 5558, INCLUSIVE |

| 5550 S | | Test completed successfully. |
| 5551 - 5558 | | * Perform Check Chart 6.15. |

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|

### APPLICATIONS MODE FAILURE - MP CODES 7000 TO 7004, INCLUSIVE

The MP will display these codes when there is a failure during applications mode.

7001
* Perform the following:
  1. Load Master Disk #1 and perform an Alternate Boot 0002.
  2. Select *Start System Error Analysis*.
  3. Select *Startup System* (normal startup).
  4. If failure occurs, see MP Code List.

7002 - 7004
* Reboot. If fault recurs, run ALAG, then repair according to new MP code. If diagnostics pass, ask customer to install software.

### FILE CHECK - MP CODES 7500 TO 7504, INCLUSIVE

7500 S
This status code indicates the File Check Program is running. When File Check completes, the MP will go to *8000* and the screen will go to the bouncing square.

7501
* Press and hold the F key and the C key simultaneously, and wait for *7502* to display on MP, then release F and C keys.

7502
* Release F and C keys. System will run File Check.

7503
* Retry File Check operation. If *7503* recurs, install software (**DO NOT PARTITION DISK**), then retry File Check.

7504
* System root file missing. <u>On New Install Only.</u> Press and hold the I key and the V key simultaneously (may have to hold as long as 30 seconds). <u>If Not New Install.</u> Reboot and force File Check (holding down F and C keys).

### 8010 WORKSTATION SOFTWARE PROBLEM CODES

7505
* Configuration is not set. Use Configuration Utility Disk to set configuration.

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| 7508 | * | Need to Convert Volume. Hold down the C and V keys (for "convert volume") to confirm scavenging. |
| 7511 | * | Most likely a software problem. Reboot. If problem still exists, run ALAG and repair according to new MP code. If ALAG passes and problem still exists, ask the customer to run a File Check. If problem recurs, install software. If *7511* occurs during software installation, perform Check Chart 6.26. If problem still exists after installing software, call the NSC. |
| 7512-7513 | * | Most likely a software problem. Reboot. If problem still exists, run ALAG and repair according to new MP code. If ALAG passes and problem still exists, ask the customer to run a File Check. If problem recurs, install software. If problem still exists, call the NSC. |
| 7516 | * | Run ALAG and repair according to new MP code. If ALAG passes and problem still exists, ask the customer to install software, then run File Check. |
| 7520-7530 | * | Most likely a software problem. Reboot. If problem still exists, run ALAG and repair according to new MP code. If ALAG passes and problem still exists, call the NSC. |
| 7531 | * | Unrecoverable Disk Error. Reboot. If problem still exists, run ALAG and repair according to new MP code. If ALAG passes and problem still exists perform Check Chart 6.26. |

**CUSTOMER LANGUAGE CONFIGURATION CODES**

| | | |
|------|------|---------------|
| 7601-7603 | * | Attempt to run a Japanese, Chinese, or Extended Language option without product factoring selected. Use Customer Configuration Utility Disk to set configuration. |

**OTHER MP CODES**

| | | |
|------|------|---------------|
| 8000 S | | Status only  Applications software is loaded and running. |

| CODE | CONF | FRU/PROCEDURE |
|------|------|---------------|
| 8888 | | * If any segment on MP is not lighted, perform Check Chart 6.09. |
| 9158 | | * Run ALAG and repair according to new MP code. If *9158* occurs during ALAG, check all harnesses or connectors, and clean edge connectors on processor and rigid drive PWAs. If *9158* recurs, test subsystem that was being accessed when *9158* occurred. Call NSC for assistance. |
| | 75% | Software |
| | 25% | Hardware |

| STEP | PROCEDURE | TEST POINT | INDICATION CORRECT | INCORRECT |
|------|-----------|------------|---------|-----------|

**6.01 INOPERATIVE CARD CAGE FANS**

| STEP | PROCEDURE | TEST POINT | CORRECT | INCORRECT |
|------|-----------|------------|---------|-----------|
| 1. | Floppy Disk Drive Motor is turning. | Visual | Replace in order: Inoperative Fan or Fans Processor AC Harness | Step 2 |
| 2. | Disconnect AC Power Cord. Voltage at wall outlet is: <br> <u>USO</u> is 103 to 127 VAC <br> <u>RX</u> is 193 to 264 VAC | ACH to ACN | Step 3 | Notify Customer of power needs. |



ACN (LONGER SLOT) NEUTRAL

ACH (SHORTER SLOT) HOT

GND (HOLE)

8010-001

Figure 6-7  USO AC Outlet at Wall

| STEP | PROCEDURE | TEST POINT | CORRECT | INCORRECT |
|------|-----------|------------|---------|-----------|
| 3. | Connect AC Power Cord. Voltage between F4 **(Tag 1)** or F3 **(Tag 9)** and J3-13 on AC Distribution PWA (Figure 6-8) is: <br> <u>USO</u> is 103 to 127 VAC <br> <u>RX</u> is 193 to 264 VAC | Bottom of F4 **(Tag 1)** or F3 **(Tag 9)** to J3-13 | <u>USO</u>, Step 5 - <u>RX</u>, Step 4 | Step 7 |

| STEP | PROCEDURE | TEST POINT | INDICATION CORRECT | INDICATION INCORRECT |
|------|-----------|------------|---------|-----------|
| 4. | <u>RX only.</u> Voltage between F5 and J3-15 on AC Distribution PWA (Figure 6-8) is 193 to 264 VAC | Bottom of F5 to J3-15 | Step 5 | Step 7 |
| 5. | Voltage between F4 (**Tag 1**) or F3 (**Tag 9**) and J3-13 on AC Distribution PWA (Figure 6-8) is:<br><u>USO</u> is 103 to 127 VAC<br><u>RX</u> is 193 to 264 VAC | Top of F4 (**Tag 1**) or F3 (**Tag 9**) to J3-13 | <u>RX</u>, Step 6<br><u>USO</u>, Replace in order:<br>AC Distribution PWA<br>Processor AC Harness | Replace F4 (**Tag 1**) or F3 (**Tag 9**). If fuse opens again, refer to Chain 1.1 BSD to isolate problem. |
| 6. | <u>RX only.</u> Voltage between F5 and J3-15 is 193 to 264 VAC | Top of F5 to J3-15 | Replace in order:<br>AC Distribution PWA<br>Processor AC Harness | Replace F5. If fuse opens again, refer to Chain 1.1 BSD to isolate problem. |
| 7. | Disconnect J1 from AC Distribution PWA (Figure 6-8). Voltage is:<br><u>USO</u> is 103 to 127 VAC<br><u>RX</u> is 193 to 264 VAC | AC Distribution PWA, P1-1 to 2 | Replace On/Off Switch | Step 8 |
| 8. | Connect J1 and disconnect J3 from AC Distribution PWA (Figure 6-8). Voltage at J3 is:<br><u>USO</u> is 103 to 127 VAC<br><u>RX</u> is 193 to 264 VAC | AC Distribution PWA, J3-13 to 15 | Replace AC Distribution PWA | Step 9 |
| 9. | Connect J3 and disconnect AC power cord from Processor. Voltage at AC power cord is:<br><u>USO</u> is 103 to 127 VAC<br><u>RX</u> is 193 to 264 VAC | AC power cord 1 to 3 | Step 10 | Replace AC power cord |

8010-002(1)

Figure 6-8  AC Distribution PWAs
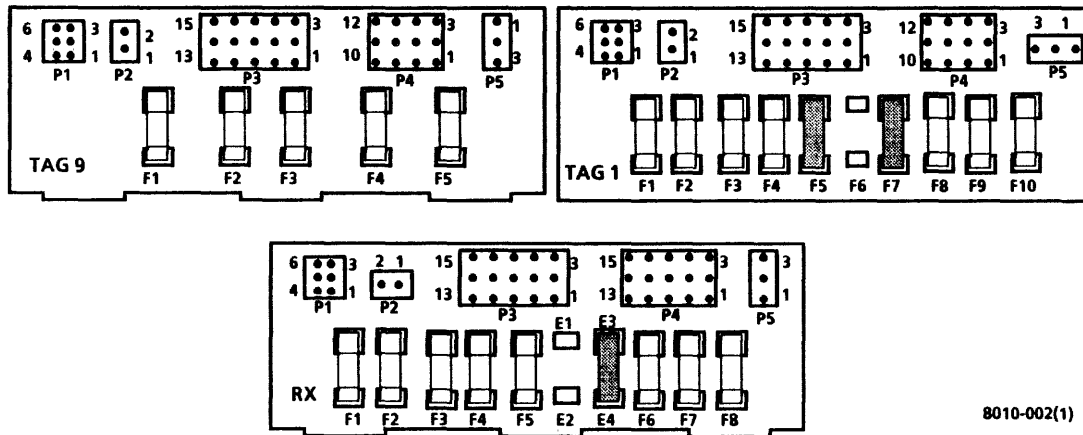
| STEP | PROCEDURE | TEST POINT | INDICATION CORRECT | INCORRECT |
|------|-----------|------------|---------|-----------|
| 10. | Connect AC power cord and disconnect J2/P1 from Line Filter. Voltage at Line Filter is: <br> <u>USO</u> is 103 to 127 VAC <br> <u>RX</u> is 193 to 264 VAC | Line Filter J2-1 to 3 | Replace Processor AC Harness | Replace Line Filter |

### 6.01.1 LOSS OF AC POWER

| STEP | PROCEDURE | TEST POINT | CORRECT | INCORRECT |
|------|-----------|------------|---------|-----------|
| 1 | Disconnect AC power cord from wall outlet (Figure 6-7). Voltage at wall outlet is: <br> <u>USO</u> is 103 to 127 VAC <br> <u>RX</u> is 193 to 264 VAC | ACH to ACN | Step 2 | Notify customer of power needs. |
| 2. | Connect AC power cord to wall outlet, and disconnect it from Processor. Voltage at power cord is: <br> <u>USO</u> is 103 to 127 VAC <br> <u>RX</u> is 193 to 264 VAC | AC power cord 1 to 3 | Step 3 | Replace AC power cord |
| 3. | Connect AC power cord and disconnect J2/P1 from Line Filter. Voltage at Line Filter is: <br> <u>USO</u> is 103 to 127 VAC <br> <u>RX</u> is 193 to 264 VAC | Line Filter J2-1 to 3 | Replace Processor AC Harness | Replace Line Filter |

### 6.02 INOPERATIVE POWER SUPPLY FAN

| STEP | PROCEDURE | TEST POINT | CORRECT | INCORRECT |
|------|-----------|------------|---------|-----------|
| 1. | Voltage at power supply is: <br> <u>USO</u> is 103 to 127 VAC <br> <u>RX</u> is 193 to 264 VAC | PS P1-13 to 15 | Replace PS Fan, then Step 3 | Step 2 |

| STEP | PROCEDURE | TEST POINT | INDICATION CORRECT | INDICATION INCORRECT |
|---|---|---|---|---|
| 2. | Disconnect AC power cord. Fuse F4 **(Tag 1)** or F3 **(Tag 9)** on AC Distribution PWA (Figure 6-8) is good. | Visual | Replace AC Distribution PWA | Replace fuse. If fuse opens again, refer to Chain 1.1 BSD to isolate problem. |
| 3 | Check for continuity through thermal breaker S1 on A1 PWA. | P1-15 to 19 | - - - | Reset Thermal Breaker S1 on A1 PWA. |

**6.03 INOPERATIVE FLOPPY DRIVE MOTOR**

| STEP | PROCEDURE | TEST POINT | INDICATION CORRECT | INDICATION INCORRECT |
|---|---|---|---|---|
| 1. | Disconnect J9 from Floppy Drive. Voltage at J9 is: <br> <u>USO</u> is 103 to 127 VAC <br> <u>RX</u> is 193 to 264 VAC | J9-1 to 3 | Step 2 | Step 3 |
| 2. | Floppy Drive Belt is on pulley. | Visual | Replace Floppy Drive | Replace Floppy Drive Belt |
| 3. | Voltage on AC Distribution PWA J3 (Figure 6-8) is: <br> <u>USO</u> is 103 to 127 VAC <br> <u>RX</u> is 193 to 264 VAC | J3-2 to 8 | Replace Processor AC Harness | Replace AC Distribution PWA |

**6.04 LOSS OF 29MB RIGID DISK DRIVE AC POWER**

| STEP | PROCEDURE | TEST POINT | INDICATION CORRECT | INDICATION INCORRECT |
|---|---|---|---|---|
| 1. | Remove the left side panel from 29MB Disk Console. Disc drive motor is turning. | Visual | 29MB Disk Console Service Manual, Level 2, Check Chart 6.02.2 | Step 2 |

| STEP | PROCEDURE | TEST POINT | INDICATION | |
|------|-----------|------------|------------|--|
| | | | CORRECT | INCORRECT |
| 2 | Voltage at Processor is:<br>USO is 103 to 127 VAC<br>RX is 193 to 264 VAC | Processor J1-10 to 12 | 29MB Disk Console Service Manual, Level 2, Check Chart 6.02.2 | Step 3 |
| 3 | Voltage at AC Distribution PWA (Figure 6-8) is:<br>USO is 103 to 127 VAC<br>RX is 193 to 264 VAC | AC Distribution PWA J3-3 to 9 | Check J7/ P7 connection then replace Processor AC Harness | Replace AC Distribution PWA |

### 6.05 DC VOLTAGE FAULT ISOLATION

| STEP | PROCEDURE | TEST POINT | INDICATION | |
|------|-----------|------------|------------|--|
| | | | CORRECT | INCORRECT |
| 1 | All DC Voltages are incorrect. | Visual | Step 2 | Check Chart 6.6 |
| 2. | AC Distribution PWA F4 (Tag 1) or F3 (Tag 9) (Figure 6-8) is good. | Visual | Step 3 | Replace fuse. If fuse opens again, refer to Chain 1.1 BSD to isolate problem. |

## WARNING
**Voltages are present in power supply for two (2) minutes after power is removed.**

| 3 | Switch off power. Disconnect AC power cord. Wait 2 minutes. Disconnect P1 from power supply. Continuity is present through thermal breaker on A1 PWA | A1 PWA J1-15 to 19 | Step 4 | Step 5 |

| STEP | PROCEDURE | TEST POINT | INDICATION CORRECT | INCORRECT |
|------|-----------|------------|---------|-----------|
| 4. | Continuity is present between transformer and AC Distribution PWA. | Power supply P1-19 to AC Distribution PWA P2-9 (P2/P4 connector) | Replace in order: A1 PWA A2 PWA | Replace transformer |
| 5 | Remove power supply and reset thermal breaker on A1 PWA. Continuity is present through A1 thermal breaker. | P1-15 to 19 | - - - | Replace A1 PWA |

6.05.1 MP 5V MISSING

| STEP | PROCEDURE | TEST POINT | CORRECT | INCORRECT |
|------|-----------|------------|---------|-----------|
| 1 | Switch off power. Disconnect AC power cord. Disconnect ribbon cable from front of MP. Connect AC power cord and switch on power. Voltage is: 600T860 Meter is 4.6 to 5.4V Digital Meter is 4.82 to 5.18V | Bottom of R4 to transistor nut on MP PWA (Figure 6-9) | Replace IOP PWA | Step 2 |

### WARNING
Voltage is present on AC Distribution PWA fuses F1 and F2 (USO) or F1, F2, and F3 (RX) while the Processor is connected to wall outlet. Before removing fuses F1 or F2 (USO), or F1, F2, or F3 (RX), disconnect Processor power cord from wall outlet.

| STEP | PROCEDURE | TEST POINT | CORRECT | INCORRECT |
|------|-----------|------------|---------|-----------|
| 2 | Connect ribbon cable. AC Distribution PWA fuses F1 and F2 (USO) or F1, F2, and F3 (RX) are good. | Visual | Step 3 | Replace defective fuse. If fuse opens again, refer to Chain 1.1 BSD to isolate problem. |

| STEP | PROCEDURE | TEST POINT | INDICATION CORRECT | INCORRECT |
|---|---|---|---|---|
| 3. | Disconnect J2 from AC Distribution PWA. Voltage is 11 to 16 VAC. | AC Distribution PWA P2-1 to 2 | Check/replace MP Display Harness | Replace AC Distribution PWA |
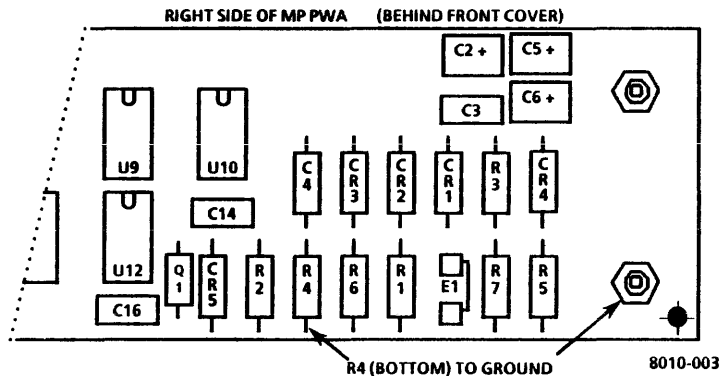


Figure 6-9  MP 5V Test Point

| STEP | PROCEDURE | TEST POINT | INDICATION CORRECT | INDICATION INCORRECT |
|------|-----------|------------|---------|-----------|

**6.06 A2 PWA LOADING ISOLATION**

1. Voltage at Test Connector on front of Processor is 5.2V. — Test Connector 5.2V pin to Return — Check Chart 6.07 — Step 2
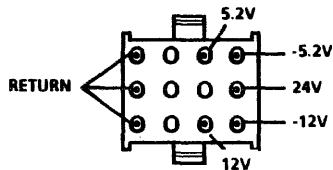


Figure 6-10  Power Supply Test Connector

8010-009

2. <u>All</u> of the following transformer outputs are good: — Power Supply P1/J1, Pins: — Step 3 — Replace Transformer

   26 to 32 VAC — 1 to 13
   21 to 27 VAC — 2 to 13
   15 to 20 VAC — 3 to 13

| VOLTAGE TOLERANCES | | |
|--------|-------------|-------------|
| Voltage | Xerox 600T860 | Digital Meter |
| 5.2V | 4.8 to 5.6 | 5.02 to 5.38 |
| -5.2V | -4.8 to -5.6 | -5.02 to -5.38 |
| -12V | -11.0 to -13.0 | -11.4 to -12.6 |
| 12V | 11.0 to 13.0 | 11.4 to 12.6 |
| 24V | 22.0 to 26.0 | 22.8 to 25.2 |

| STEP | PROCEDURE | TEST POINT | INDICATION CORRECT | INCORRECT |
|------|-----------|------------|---------|-----------|
| 3. | AC Distribution PWA fuse F4 **(Tag 1)** or F3 **(Tag 9)** is good. | Visual | Step 4 | Replace fuse. If fuse opens again, refer to Chain 1.1 BSD to isolate problem. |
| 4. | Switch off power. Disconnect the three lugs from power supply + 5VDC terminal. Switch on power. Voltage is 5.2V. | Power Supply + 5VDC to 5V RTN | Step 6 | Step 5 |
| 5. | A2 power supply fuse F1 is good. | Visual | Replace A2 PWA | Replace fuse. If fuse opens again, replace A2 PWA. |

NOTE: The four orange wires (on two lugs) across top left side of power supply go to backplane. The two orange wires (on one lug) from under left side of the power supply go to disk drives.

| STEP | PROCEDURE | TEST POINT | INDICATION CORRECT | INCORRECT |
|------|-----------|------------|---------|-----------|
| 6. | Switch off power. Connect lugs routed to backplane from power supply + 5VDC terminal. Switch on power. Voltage is 5.2V. | Power Supply + 5VDC to 5V RTN | Step 13 | Step 7 |

| VOLTAGE TOLERANCES | | |
|---------|---------------|--------------|
| **Voltage** | **Xerox 600T860** | **Digital Meter** |
| 5.2V | 4.8 to 5.6 | 5.02 to 5.38 |
| -5.2V | -4.8 to -5.6 | -5.02 to -5.38 |
| -12V | -11.0 to -13.0 | -11.4 to -12.6 |
| 12V | 11.0 to 13.0 | 11.4 to 12.6 |
| 24V | 22.0 to 26.0 | 22.8 to 25.2 |

| STEP | PROCEDURE | TEST POINT | INDICATION CORRECT | INCORRECT |
|------|-----------|------------|---------|-----------|
| 7. | Pull all PWAs away from backplane, and disconnect P13 from IOP PWA. Voltage is 5.2V. | Power Supply + 5VDC to 5V RTN | Step 8 | Replace backplane |
| 8. | Install one PWA. Voltage is 5.2V. | Power Supply + 5VDC to 5V RTN | Step 9 | Replace PWA last installed |
| 9 | All PWAs are installed. | Visual | Step 10 | Repeat Step 8 |
| 10. | Connect P13 to IOP PWA, and disconnect Keyboard Cable from Processor J5. Voltage is 5.2V. | Power Supply + 5VDC to 5V RTN | Step 11 | Replace Processor Signal Harness |
| 11. | Connect Keyboard Cable P1 to Processor J5, and disconnect J1 from Keyboard PWA. Voltage is 5 2V. | Power Supply + 5VDC to 5V RTN | Replace keyboard | Step 12 |
| 12. | Connect J1 to Keyboard PWA, and disconnect Mouse J1 from Keyboard. Voltage is 5.2V. | Power Supply + 5VDC to 5V RTN | Replace Mouse | Replace Keyboard Cable |
| 13. | Connect remaining lug to power supply + 5VDC terminal Disconnect J5 from Floppy Disk Drive. Voltage is 5.2V. | Power Supply + 5VDC to 5V RTN | Replace floppy drive | Step 14 |

| VOLTAGE TOLERANCES | | |
|---------|-----------|--------------|
| Voltage | Xerox 600T860 | Digital Meter |
| 5.2V | 4.8 to 5.6 | 5.02 to 5.38 |
| -5.2V | -4.8 to -5.6 | -5.02 to -5.38 |
| -12V | -11.0 to -13.0 | -11.4 to -12.6 |
| 12V | 11.0 to 13.0 | 11.4 to 12.6 |
| 24V | 22.0 to 26.0 | 22.8 to 25.2 |

| STEP | PROCEDURE | TEST POINT | INDICATION CORRECT | INCORRECT |
|------|-----------|-----------|---------|-----------|
| 14. | Connect J5 to Floppy Disk Drive. 10MB or 42MB Disk Drive is installed. | Visual | Step 15 | Check 29MB Interface Harness in-line fuse. If open, replace. If good, do 29MB Disk Console Service Manual, Level 2, Check Chart 6.09. |
| 15. | Disconnect J2 from 10/42MB Disk Drive. Voltage is 5 2V. | Power Supply + 5VDC to 5V RTN | If Control/Stepper PWA is installed, replace Control/Stepper PWA; otherwise go to Step 16. | Replace 10/42MB DC Interface Harness |
| 16 | Connect J2 to 10/42MB Disk Drive. Disconnect PWA Interconnect Harness from Control PWA. Voltage is 5 2V. | Power Supply + 5VDC to 5V RTN | Step 17 | Replace Control PWA. |
| 17. | Connect PWA Interconnect Harness to Control PWA, and disconnect it from Stepper PWA (10MB) or Pwr Transistor Ass'y (42MB). Voltage is 5.2V. | Power Supply + 5VDC to 5V RTN | Replace Stepper PWA or Power Transistor Assembly | Replace PWA Intercon- nect Harness |

| VOLTAGE TOLERANCES | | |
|--------|--------------|--------------|
| Voltage | Xerox 600T860 | Digital Meter |
| 5.2V | 4.8 to 5.6 | 5.02 to 5.38 |
| -5.2V | -4.8 to -5.6 | -5.02 to -5.38 |
| -12V | -11.0 to -13.0 | -11.4 to -12.6 |
| 12V | 11.0 to 13.0 | 11.4 to 12.6 |
| 24V | 22.0 to 26.0 | 22.8 to 25.2 |

| STEP | PROCEDURE | TEST POINT | INDICATION | |
|------|-----------|------------|------------|------|
| | | | CORRECT | INCORRECT |

| 6.07 A1 PWA LOADING ISOLATION |
|---|

**NOTE:** Disconnecting J2 and J3 from the power supply disables the Voltage Test Connector at front of Processor. When J2 and J3 are disconnected from the power supply, voltage measurements will be taken at J2 and J3 on the power supply using the 5V RTN lug on the power supply for the ground lead.

1. Disconnect J2 and J3 from the power supply. Measure voltage in question at power supply test point indicated below:

   | | |
   |---|---|
   | -5 2V | J2-6 |
   | -12V | J2-3 |
   | 12V | J2-1 |
   | 24V | J3-4 |

   Voltage in question is within tolerance.

   Power Supply pin indicated below:     Step 3                 Step 2
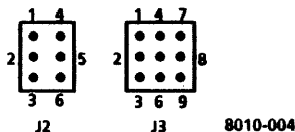


Figure 6-11  Power Supply Jacks

8010-004

| VOLTAGE TOLERANCES | | |
|---|---|---|
| **Voltage** | **Xerox 600T860** | **Digital Meter** |
| 5.2V | 4.8 to 5.6 | 5.02 to 5.38 |
| -5.2V | -4.8 to -5.6 | -5.02 to -5.38 |
| -12V | -11.0 to -13.0 | -11.4 to -12.6 |
| 12V | 11.0 to 13.0 | 11.4 to 12.6 |
| 24V | 22 0 to 26.0 | 22.8 to 25.2 |

| STEP | PROCEDURE | TEST POINT | INDICATION CORRECT | INDICATION INCORRECT |
|------|-----------|------------|---------------------|----------------------|
| 2. | <u>All</u> of the following transformer outputs are good: | Power Supply P1/J1, Pins: | Step 4 | Replace Transformer |
| | 26 to 32 VAC | 1 to 9 | | |
| | 26 to 32 VAC | 2 to 9 | | |
| | 15 to 20 VAC | 3 to 8 | | |
| | 15 to 20 VAC | 4 to 8 | | |
| | 8 to 14 VAC | 5 to 7 | | |
| | 8 to 14 VAC | 6 to 7 | | |
| 3 | Connect J2 and J3 to power supply. Measure the following voltages: | Test Connector to Return (Figure 6-10) | | |
| | a   -5.2V | | Step 3b | Step 5 |
| | b   -12V | | Step 3c | Step 6 |
| | c   12V | | Step 3d | Step 6 |
| | d   24V | | Return to Level 1 | Step 16 |

## WARNING
**Voltage is present in power supply for two (2) minutes after power is removed.**

| 4 | Disconnect AC Power Cord. Wait 2 minutes. Remove power supply. A1 PWA fuses are good. | Visual | Replace A1 PWA | Replace defective fuse. If fuse opens again, replace A1 PWA. |

| | VOLTAGE TOLERANCES | |
|--------|----------------|--------------|
| **Voltage** | **Xerox 600T860** | **Digital Meter** |
| 5.2V | 4.8 to 5.6 | 5.02 to 5.38 |
| -5.2V | -4.8 to -5.6 | -5.02 to -5.38 |
| -12V | -11.0 to -13.0 | -11.4 to -12.6 |
| 12V | 11.0 to 13.0 | 11.4 to 12.6 |
| 24V | 22.0 to 26.0 | 22.8 to 25.2 |

| STEP | PROCEDURE | TEST POINT | INDICATION CORRECT | INCORRECT |
|------|-----------|------------|-----------|-----------|
| 5 | Disconnect J3 from power supply. -5.2V is within tolerance. | Test Connector -5V pin to return | Connect J3, then Step 16 | Connect J3, then Step 6 |
| 6 | Disconnect J21 from front of OPT PWA and J41 from front of HSIO PWA. Pull all PWAs away from backplane. Voltage in question is within tolerance. | Test Connector to return | Step 7 | Replace backplane |
| 7 | Install one PWA. Voltage in question is within tolerance. | Test Connector to return | Step 8 | Replace PWA last installed. |
| 8 | All PWAs are installed. | Visual | Step 9 | Repeat Step 7 |
| 9 | Voltage in question is ± 12V. | Visual | Connect J21 to OPT PWA and J41 to HSIO PWA, then Step 10 | Step 13 |
| 10 | System is attached to the Ethernet. | Visual | Step 11 | Step 13 |

| VOLTAGE TOLERANCES | | |
|--------|--------------|--------------|
| Voltage | Xerox 600T860 | Digital Meter |
| 5.2V | 4.8 to 5.6 | 5.02 to 5.38 |
| -5.2V | -4.8 to -5.6 | -5.02 to -5.38 |
| -12V | -11.0 to -13.0 | -11.4 to -12.6 |
| 12V | 11.0 to 13.0 | 11.4 to 12.6 |
| 24V | 22.0 to 26.0 | 22.8 to 25.2 |

| STEP | PROCEDURE | TEST POINT | INDICATION CORRECT | INCORRECT |
|------|-----------|------------|---------|-----------|
| 11. | Disconnect transceiver cable at rear of Processor. Voltage in question is within tolerance. | Test Connector to return | Step 12 | Replace Processor Signal Harness |
| 12. | Connect transceiver cable at rear of Processor. Disconnect cable at Ethernet transceiver. Voltage in question is within tolerance. | Test Connector to return | Replace Ethernet Transceiver | Replace Ethernet Transceiver Cable |
| 13. | System has Large Format Display installed. | Visual | Step 14 | Return to Step 3 |
| 14. | Disconnect display cable from rear of Processor. Voltage in question is within tolerance. | Test Connector to return | Step 15 | Replace Processor Signal Harness |
| 15. | Connect display cable to Processor, and disconnect display cable at J1/P1 inside of the Large Format Display. Voltage in question is within tolerance. | Test Connector to return | Replace the monitor assembly | Replace display cable |
| 16. | Disconnect J5 from Floppy Disk Drive. Voltage in question is within tolerance. | Test Connector to return | Replace floppy drive | Step 17 |
| 17. | Connect J5 to Floppy Disk Drive. 10MB or 42MB Disc Drive is installed. | Visual | Step 18 | Step 21 |

| VOLTAGE TOLERANCES | | |
|---------|-------------|-------------|
| Voltage | Xerox 600T860 | Digital Meter |
| 5.2V | 4.8 to 5.6 | 5.02 to 5.38 |
| -5.2V | -4.8 to -5.6 | -5.02 to -5.38 |
| -12V | -11.0 to -13.0 | -11.4 to -12.6 |
| 12V | 11.0 to 13.0 | 11.4 to 12.6 |
| 24V | 22.0 to 26.0 | 22.8 to 25.2 |