

**HP 3000 Computer Systems**

# **HP 3000 HP-IB VERSION COMPUTER SYSTEMS**

**CE Handbook**



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# PREFACE

This manual contains data for the HP 3000 HP-IB version computer systems. The manual is divided into eleven sections, covering both system specific and system common information. This manual contains the following:

- Product Information
- Environmental/Installation/PM
- Configuration
- Troubleshooting
- Diagnostics
- Adjustments
- Peripherals
- Replaceable Parts
- Diagrams
- Reference
- Service Notes/IOSM's

The HP 3000 Series 37/MICRO 3000/MICRO 3000XE Computer Systems CE Handbook, P/N 30457-90039, contains the above information for the HP 3000 Series 37, MICRO 3000, and MICRO 3000XE computer systems.

# PRODUCT INFORMATION

SECTION

I

This section provides an overview of the HP 3000 Series 30, 33, 39/40/42/42XP/52, and 44/48/58 computer systems specifications and descriptions of system control panels.

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## SERIES 30 PRODUCT INFORMATION

The following is a listing of general specifications for the HP 3000 Series 30 computer.

### Processor

The CPU is centered around a largescale integrated processing unit CMOS/SOS technology with hardware-implemented stack architecture with code and data segmentation.

Word Length	16 bits
Instructions	214
Microinstruction Execution Time	5 to 7 clock periods
Physical Address Space	1 Mbyte (maximum)
Maximum Code Segment Size	16 Kwords
Maximum Data Segment Size	32 Kwords
Maximum Number of User Code Segments	63
Maximum Number of User Data Segments	256
Decimal Arithmetic	28 digits resolution
Real-Time Clock Resolution	1 ms

### Memory

Semiconductor memory with single-bit error correction and double-bit error detection.

Word Length	22 bits (16 bits for data and 6 bits for error detection/ correction)
Memory Module Size	128 Kbytes
Maximum Memory per System	1 Mbyte
Minimum Battery Backup Time	30 minutes

## Input/Output Structure

Common asynchronous bus structure with individual data channels.

Channel Types:	
General I/O Channels (for HP-IB compatible devices)	3 maximum (2 high-speed)
Maximum Number of Devices	8 per channel
Maximum Transfer Rate	1 Mbyte/second
Maximum Total Cable Length	*7 meters plus 1 meter/device load (in- cluding 2 m GIC cable)
Asynchronous Data Communication Channel (for asynchronous RS-232-C compatible devices)	4 (maximum)
Number of RS-232-C Ports	8 (4 on Main and 4 on Extender)
Data Rates	50, 75, 110, 134.5, 150, 200, 300, 600, 1200, 1800, 2400, and 9600 Baud
Maximum RS-232-C Cable Length per port	15 m (49.22 ft)

\* See Figure 3-3 for further details concerning GIC cable lengths for Series 30.

## System Control Panel

The system control panels shown in Figures 1-1 and 1-2 are modules that contain necessary circuits to perform the control and monitoring of the HP 3000 Series 30 system.

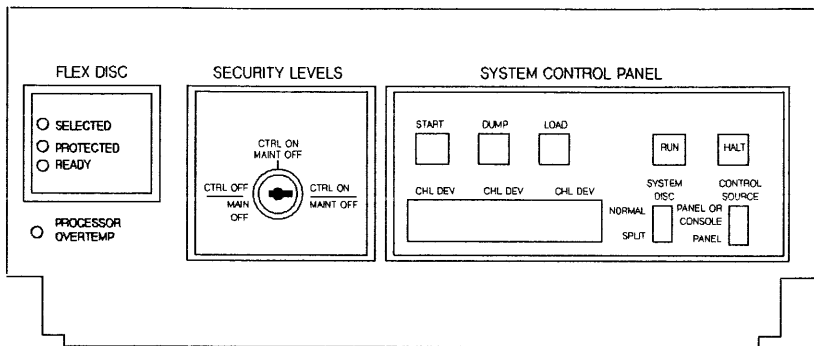


Figure 1-1. System Control Panel (Series 30 with Flexible Disc)

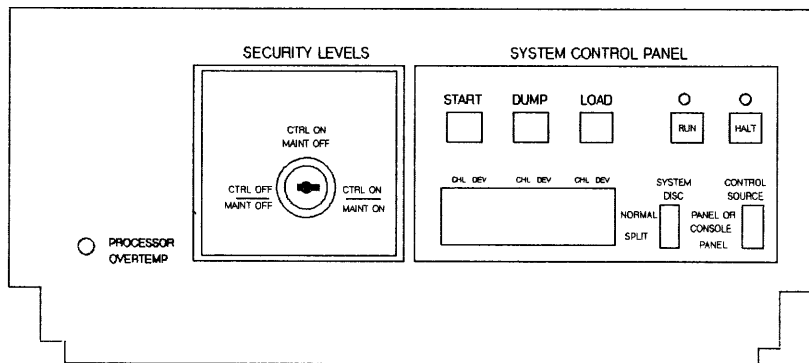


Figure 1-2. System Control Panel (Series 30 without Flexible Disc)

## SWITCH FUNCTIONS

### RUN:

Causes the system to go from halt to the run mode.

### HALT:

Causes the system to go from run to the halt mode.

### LOAD and START:

Gate out the channel and device addresses set with the thumbwheel switches, and initiate cold load or warmstart operation.

### DUMP:

Starts a memory dump. The dump program is loaded from the channel and device chosen on the thumbwheel switches.

<b>NOTE</b>
-------------

For DUMP, the device specified is the source of the dump program - not the destination of the dump.

### SYS DISC:

Configures either a fixed disc or removable disc, as the warmstart device of the system disc. With the switch at NORMAL, the warmstart microcode addresses head zero of the system disc drive. With the switch at SPLIT, the microcode addresses head two.

### CONTROL SOURCE:

When set to PANEL or CONSOLE, the keys on the system console that duplicate the System Control Panel functions are enabled. These keys are disabled when the switch is set to PANEL.

### SECURITY LEVELS:

This three-position, keylock switch provides security for the System Control Panel and the system console maintenance mode capability. The functions of the three positions are as follows:

- o CTRL OFF/MAINT OFF: Disables the console control keys, and maintenance mode capability.
- o CTRL ON/MAINT OFF: Disables only the maintenance mode.
- o CTRL ON/MAINT ON: Enables the control panel, console control keys, and maintenance mode capability.



A control panel identification chart, shown in Figure 1-3, mounted on the inside of the control panel access door provides position information for the security levels keyswitch and a location for writing I/O configuration information.

### INDICATOR LIGHTS

#### RUN, HALT, and PROCESSOR OVERTEMP:

Displays the status of the system.

- o RUN and HALT indicate the status of the SPU Run/Halt flip-flop.
- o PROCESSOR OVERTEMP will light when the card cage temperature exceeds 57.3 degrees C (135.14 degrees F).










SECURITY LEVELS			CONTROL I/O CONFIGURATION			REMARKS
<p style="text-align: center;"><b>LOCKED OFF</b></p> <p><input type="checkbox"/> CONTROL PANEL</p> <p><input type="checkbox"/> CONSOLE CONTROL</p> <p><input type="checkbox"/> MAINTENANCE</p> <p><input type="checkbox"/> MAINTENANCE MODE</p>	<p style="text-align: center;"><b>KEY SWITCH</b></p> <p style="font-size: small;">CTRL. SW. MAINT. OFF</p> <div style="text-align: center;">  </div> <hr/> <p style="font-size: small;">CTRL. SW. MAINT. OFF</p> <div style="text-align: center;">  </div> <hr/> <p style="font-size: small;">CTRL. SW. MAINT. ON</p> <div style="text-align: center;">  </div>	<p style="text-align: center;"><b>LOCKED ON</b></p> <p><input type="checkbox"/> CONTROL PANEL</p> <p><input type="checkbox"/> CONSOLE CONTROL KEYS</p> <p><input type="checkbox"/> CONTROL PANEL</p> <p><input type="checkbox"/> CONSOLE CONTROL KEYS</p> <p><input type="checkbox"/> MAINTENANCE MODE</p>	<p style="text-align: center;">START</p>  <p style="text-align: center;">CHANNEL</p> <div style="text-align: center;">  </div>  <p style="text-align: center;">DEVICE</p> <div style="text-align: center;">  </div>	<p style="text-align: center;">DUMP</p>  <p style="text-align: center;">CHANNEL</p> <div style="text-align: center;">  </div>  <p style="text-align: center;">DEVICE</p> <div style="text-align: center;">  </div>	<p style="text-align: center;">LOAD</p>  <p style="text-align: center;">CHANNEL</p> <div style="text-align: center;">  </div>  <p style="text-align: center;">DEVICE</p> <div style="text-align: center;">  </div>	<p style="font-size: small;">KEY OPER.</p> <p style="font-size: small;">DATE: _____</p>

Figure 1-3. System Control Panel Identification Chart (Series 30)

## SERIES 33 PRODUCT INFORMATION

The following is a list of general specifications for the HP 3000 Series 33 computer.

### Processor

The CPU is centered around a largescale integrated processing unit CMOS/SOS technology with hardware-implemented stack architecture with code and data segmentation.

Word Length	16 bits
Instructions	214
Microinstruction Execution Time	5 to 7 clock periods
Physical Address Space	1 Mbyte (maximum)
Maximum Code Segment Size	16 Kwords
Maximum Data Segment Size	32 Kwords
Maximum Number of User Code Segments	63
Maximum Number of User Data Segments	256
Decimal Arithmetic	28 digits resolution
Real-Time Clock Resolution	1 ms

### Memory

Semiconductor memory with single-bit error correction and double-bit error detection.

Word Length	22 bits (16 bits for data and 6 bits for error detection/ correction)
Memory Module Size	128 Kbytes
Maximum Memory per System	1 Mbyte
Minimum Battery Backup Time	30 minutes

## Input/Output Structure

Common asynchronous bus structure with individual data channels.

**Channel Types:**

General I/O Channel

4 maximum (2 high-speed)

(for HP-IB compatible devices)

Maximum Number of Devices

8 per channel

Maximum Transfer Rate

1 Mbyte/second

Maximum Total Cable Length

\*7 meters plus 1 meter/device load(including 2 m GIC cable)

**Asynchronous Data Communication**

Channel (for asynchronous RS-232-C compatible devices)

4 maximum

Number of RS-232-C ports per channel

8 (4 on Main and 4 on Extender)

Data Rates

50, 75, 110, 134.5, 150, 200, 300, 600, 1200, 1800, 2400, 4800, 9600 Baud

Maximum RS-232-C Cable Length per port

15 m (49.22 ft)

\* See Figure 3-9 for further detail concerning GIC cable lengths for Series 33.

## System Control Panel

The system control panel, shown in Figure 1-4, is a module that contains necessary circuits to perform the control and monitoring of the HP 3000 Series 33 system.

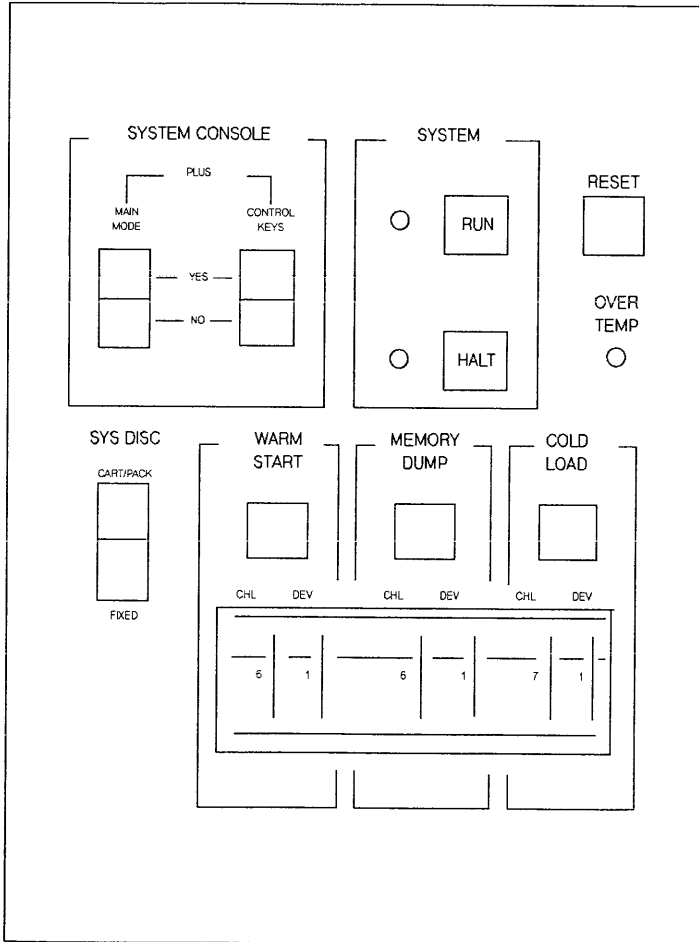


Figure 1-4. System Control Panel (Series 33)

## SWITCH FUNCTIONS

### **RUN:**

Causes the system to go from halt to the run mode. This switch has no effect if the SPU is in the run mode.

### **HALT:**

Causes the system to go from the run to the halt mode. This switch has no effect if the SPU is halted.

### **COLDLOAD, WARMSTART and MEMORY DUMP:**

The appropriate channel and device numbers for the selected function are gated out on the channel and device lines to the SPU.

<b>NOTE</b>
-------------

For DUMP, the device specified is the source of the dump program - not the destination of the dump.

### **SYS DISC:**

Configures either a fixed disc or a removable disc as the warmstart device for the system. CART/PACK causes the warmstart microcode to address head zero of the system disc. FIXED causes the microcode to address head two of the system disc.

### **MAINT MODE:**

Enables console maintenance mode.

### **CONTROL KEYS:**

Enables console front panel functions.

### **CHANNEL and DEVICE NUMBER:**

Gates out the channel and device addresses set with the thumbwheel switches and initiates cold load, warmstart, or dump operations.

## INDICATOR LIGHTS

### **RUN:**

This LED is lit when the SPU is in the run state.

### **HALT:**

This LED is lit when the SPU is halted.

### **OVERTEMP:**

This LED is lit when an overtemp condition is detected. It is turned off by a front panel reset or when the power is cycled to the system after interruption.

**SERIES 39/40/42/42XP/52 PRODUCT INFORMATION**

The following is a listing of general specifications for the HP 3000 Series 39/40/42/42XP/52 computers.

**Processor**

The CPU is centered around an HP designed microcoded processor using Schottky TTL (the 42XP/52 uses advanced Schottky) technology and hardware-implemented stack architecture with code and data segmentation.

Word Length	16 bits
Instructions	195 (39/40/42) / 197 (42XP/52)
Minor Clock Cycle Time	26.3 ns
Microinstruction Cycle Time	105.2 ns (four minor clocks) (100 ns for the 42XP/52)
Physical Address Space	16 Mbytes
Maximum Code Segment Size	16 Kwords
Maximum Data Segment Size	32 Kwords
Maximum Number of User Code/ Data Segments	MPE-dependent
Decimal Precision	28 digits
Real-Time Clock Resolution	1 ms

**Memory**

Semiconductor memory with single-bit error correction and double-bit error detection.

Word Length	39 bits (32 bits for data and 7 bits for error detection/ correction)
Error Detection	2 bits per 39-bit word
Error Correction	1 bit per 39-bit word
Memory Module Size	256 Kbytes (16K RAM chips) 1 Mbyte (64K RAM chips) 2 Mbyte (256K RAM chips - S42XP/52) 4 Mbyte (256K RAM chips - S42XP/52)
Maximum modules/controller	4x256Kbytes or 3x1Mbyte (39/40/42). Any combination of 1,2, or 4 Mbyte PCAs, not to exceed 4 PCAs or a total of 8 Mbytes (42XP/52)
Read/Write cycle time	417/543 ns
Minimum Battery Backup Time	15 minutes

## Input/Output Structure

Common asynchronous bus structure with individual data channels.

### Channel Types:

General I/O Channels  
(for HP-IB compatible devices) 4 maximum (2 high-speed)

Maximum Number of Devices 8 device loads per channel

Maximum Transfer Rate 1 Mbyte/second

Maximum External Cable Length \*7 meters plus 1 meter/device load (including 2 m GIC cable) to a max. of 15 meters

### Asynchronous Data

Communication Channel/ATP  
(for asynchronous RS-232-C compatible devices) ADCC-8 maximum (4 main, 4 extender)  
1 ATP Remote Junction Box (up to 48 direct-connect ports, or 24 modem ports per junction box)

Number of RS-232-C Ports 8 (4 on Main and 4 on Extender)

Data Rates 50, 75, 110, 134.5, 150, 200, 300, 600, 1200, 1800, 2400, and 9600 Baud. 19.2K Baud with ATP.

Maximum RS-232-C cable Length per port 15 m (49.22 ft) @ 9600 Baud

\* See Figure 3-12 for further detail concerning GIC cable lengths for Series 39/40/42/42XP/52.

## System Control Panel

The system control panel, shown in Figure 1-5, is a module that contains the necessary circuits to perform the control and monitoring of the HP 3000 Series 39/40/42/42XP/52 systems.

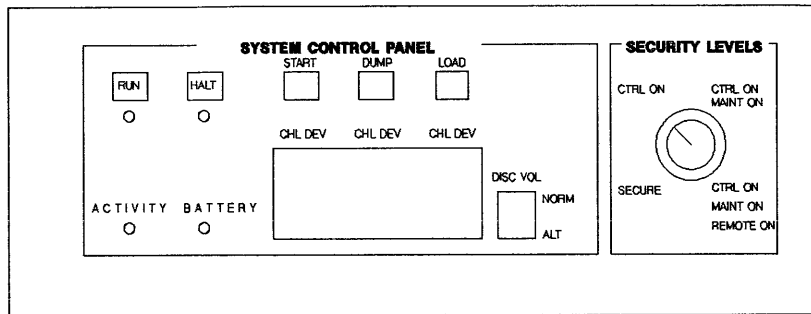


Figure 1-5. System Control Panel (Series 39/40/42/42XP/52)

### SWITCH FUNCTIONS

#### RUN:

Causes the system to go from halt to the run mode. This switch has no effect if the SPU is in the run mode.

#### HALT:

Causes the system to go from the run to the halt mode. This switch has no effect if the SPU is halted.

#### LOAD, START, and DUMP:

Reset the SPU, then perform the selected function from the device whose channel and device numbers are specified by the associated thumbwheel switches.

### NOTE

For DUMP, the device specified is the source of the dump program - not the destination of the dump.

#### CHANNEL and DEVICE NUMBER:

Gate out the channel and device addresses set into the thumbwheel switches and initiate cold load, warmstart, or dump operations.



**DISC VOL:**

Configures either a fixed disc or a removable disc as the start device for the system. **NORMAL** causes the start microcode to address head zero of the system disc. **ALT** causes the microcode to address head two of the system disc.

**SECURITY LEVELS:**

The security level control switch is a four-position keylock switch which controls the operational security of the system. A control panel identification chart, shown in Figure 1-6, mounted on the inside of the control panel access door provides position information for the security levels keyswitch and a location for writing I/O configuration information. The functions of the four positions are as follows:

- o **SECURE:** Disables the System Control Panel and the **CMP**. Maintenance functions and the remote console facility are also disabled.
- o **CTRL ON:** Enables the System Control Panel and allows use of **CMP** commands from the console with the exception of the **DISPLAY** command. Maintenance functions and the remote console facility are disabled.
- o **CTRL ON/MAINT ON:** Enables the System Control Panel and allows use of **CMP** commands from the console. Maintenance Mode capability from the console is also enabled. The remote console facility remains disabled.
- o **CTRL ON/MAINT ON/REMOTE ON:** Enables the System Control Panel, the **CMP** console control functions, maintenance capability, and the remote console capability.

**INDICATOR LEDS**

**POWER:**

A yellow **LED**, located on the nameplate, that is lit when the power supplies are on.

**REMOTE CONSOLE:**

A yellow **LED**, located on the nameplate, that is lit when the **SECURITY** switch is set to enable use of a remote console.

**RUN:**

A yellow **LED** that is lit when the **SPU** is in the run state.

**HALT:**

A red **LED** that is lit when the **SPU** is halted.

**ACTIVITY:**

A yellow **LED** that is lit when the (**ADO**) Address **DO** signal from the **IMB** is active. This **LED** provides visual indication of **IMB** activity.

**BATTERY:**

A red **LED** that is lit when memory is on battery backup.

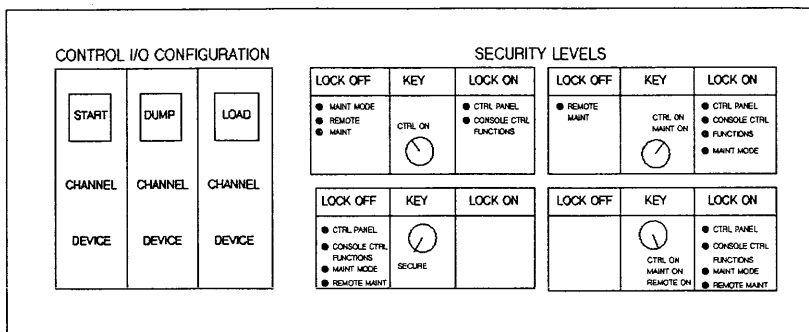


Figure 1-6. System Control Panel Identification Chart (Series 39/40/42/42XP/52)

## SERIES 44/48/58 PRODUCT INFORMATION

The following is a listing of general specifications for the HP 3000 Series 44/48/58 computers.

### Processor

The CPU is centered around a HP designed microcoded processor using Schottky TTL (the Series 58 uses advanced Schottky) technology and hardware-implemented stack architecture with code and data segmentation.

Word Length	16 bits
Instructions	214
Minor Clock Cycle Time	26 ns
Microinstruction Execution Time	105 ns (four minor clocks) 100 ns (Series 58)
Physical Address Space	16 Mbytes
Maximum Code Segment Size	16 Kwords
Maximum Data Segment Size	32 Kwords
Maximum Number of User Code Segments/Maximum Number of User Data Segments	MPE-dependent
Decimal Arithmetic	28 digits resolution
Real-Time Clock Resolution	1 ms

### Memory

Semiconductor memory with single-bit error correction and double-bit error detection.

Word Length	39 bits (32 bits for data and 7 bits for error detection/ correction)
Memory Module Size	256 Kbytes (16K RAMs) (Series 44/48) 1 Mbyte (64K RAMs) 2 Mbytes (256K RAMs) - (Series 58) 4 Mbytes (256K RAMs) - (Series 58)
Maximum Memory per System	4 Mbytes (Series 44/48) 8 Mbytes (Series 58) in combination of 1 and 2 Mbytes - 5 max. arrays
Minimum Battery Backup Time	15 minutes

## Input/Output Structure

Common asynchronous bus structure with individual data channels.

Channel Types: General I/O Channel (for HP-IB compatible devices)	5 maximum (2 high-speed)
Maximum Number of Devices	8 device loads per channel
Maximum Transfer Rate	1 Mbyte/second
Maximum Total Cable Length	*7 meters plus 1 meter per device load (to a maximum of 15 meters)
Asynchronous Data Communication Channel (for asynchronous RS-232-C compatible devices)	15 (maximum)
Maximum number of ports/system	60 (up to 120 with ATP junction box)
Number of RS-232-C ports	8 (4 on Main and 4 on Extender)
Data Rates	50, 75, 110, 134.5, 150, 200, 300, 600, 1200, 1800, 2400, 4800, 9600 Baud. 19.2k Baud with ATP
Maximum RS-232-C Cable Length per Port	15 m (49.22 ft)

\* See Figure 3-16 for further detail concerning GIC cable lengths for Series 44/48/58.

## System Control Panel

The system control panel, shown in Figure 1-7, is a module that contains necessary circuits to perform the control and monitoring of the HP 3000 Series 44/48/58 systems.

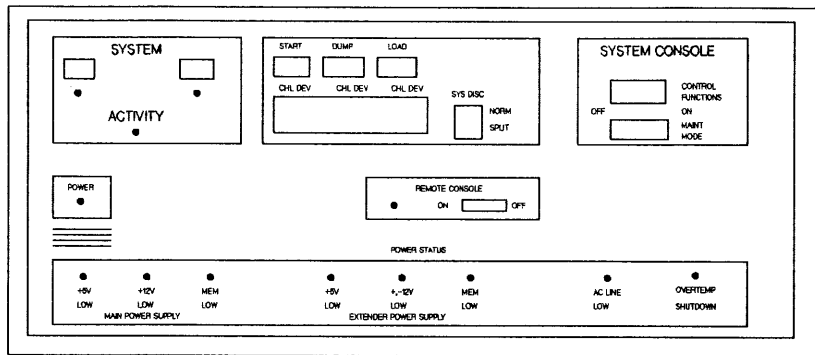


Figure 1-7. System Control Panel (Series 44/48/58)

### SWITCH FUNCTIONS

#### RUN:

Causes the system to go from halt to the run mode. This switch has no effect if the SPU is in the run mode.

#### HALT:

Causes the system to go from the run to the halt mode. This switch has no effect if the SPU is halted.

#### LOAD, START and DUMP:

The appropriate channel and device numbers for the selected function are gated out on the channel and device lines to the SPU, and a Load/Start/Dump operation initiated.

#### NOTE

For DUMP, the device specified is the source of the dump program - not the destination of the dump.

#### SYS DISC:

Configures either a fixed disc or a removable disc as the start device for the system. NORMAL causes the start microcode to address head zero of the system disc. SPLIT causes the microcode to address head two of the system disc.

#### REMOTE CONSOLE:

This switch, when ON, indicates that the remote console (the terminal connected to Channel 1, Port 1) is in parallel with the System Console. This connection can be hardwired, or made over a dial-up modem. It is usually used for maintenance and diagnostics.

**SECURITY LEVELS:**

The security level controls are the CONTROL FUNCTIONS and MAINT MODE switches. These provide for system operation, system maintenance, and modification control by enabling or disabling the CMP. The functions of the switches are as follows:

- o CONTROL FUNCTIONS: The ON position enables the CMP.
- o MAINT MODE: The ON position allows the CMP to enable the System Console Maintenance mode.

**CHANNEL and DEVICE NUMBER:**

Gates out the channel and device addresses set into the thumbwheel switches and initiates cold load, start, or dump.

**INDICATOR LEDS****POWER:**

A yellow LED that, when lit, indicates the power supplies are on. If this LED is off there may be a failure in one or more of the individual supplies, an AC power failure, or an over-temperature condition. The individual indicators show which condition is the cause of the failure.

**REMOTE CONSOLE:**

A yellow LED that is lit when the REMOTE switch is set to enable use of the remote console.

**RUN:**

A yellow LED that is lit when the SPU is in the run mode.

**HALT:**

A red LED that is lit when the SPU is halted.

**ACTIVITY:**

A yellow LED that is lit when the (ADO) Address DO signal from the IMB is active. This LED provides visual indication of IMB activity.

**OVERTEMP SHUTDOWN:**

A red LED that is lit when an over-temperature condition is detected. It is turned off when AC power is cycled to the system after interruption.

**AC LINE LOW:**

A red LED that is lit when a low AC line condition exists and has caused the power supplies to shut-down. Memory is backed up by the battery for a minimum of 15 minutes.

**INDIVIDUAL SUPPLY INDICATORS:**

Each of these red LEDs indicates the failure of their respective supplies. The indicating LED will be lit when a failure occurs and will remain on to provide an aid in troubleshooting. The power supply indicators are as follows:

**MAIN POWER SUPPLY**

+5V LOW  
+/- 12V LOW  
MEM LOW

**EXTENDER POWER SUPPLY**

+5V LOW  
+/- 12V LOW  
MEM LOW



# ENVIRONMENTAL/INSTALLATION/PM

SECTION

II

This section describes environmental, installation and preventive maintenance requirements for the HP 3000 Series 30, 33, 39/40/42/42XP/52 and 44/48/58 computer systems.

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## SERIES 30 SPECIFICATIONS

The following is a listing of environmental specifications for the Series 30.

### Environmental Data

The environmental data includes physical requirements, electrical requirements and DC supply voltages and currents.

#### PHYSICAL REQUIREMENTS

##### Dimensions:

Height	83.6 cm (36-7/8 in.)
Depth	62 cm (24 in.)
Width	44.3 cm (17-7/16 in.)
Weight (uncrated)	117.9 kg (260 lbs), approx.
Weight (shipping)	145.15 kg (320 lbs)

##### Environment:

Temperature	35 deg C (95 deg F), Maximum
Operating	20 to 30 deg C (68 to 86 deg F), Optimum
	15 deg C (59 deg F), Minimum
Non-Operating (Shipping/ Storage)	-40 to 75 deg C (-40 to 167 deg F)
Maximum Rate of Temperature Change	.167 deg C/min (.301 deg F/min)

##### Humidity:

Operating (non-condensing with wet bulb not to exceed 2.5 deg C)	80 %, Maximum 40 to 60 %, Optimum 30 %, Minimum
Non-Operating (Shipping/Storage)	5% to 80%

##### Altitude:

Operating	3080 m (10,000 ft)
Non-operating	15,200 m (50,000 ft)

## ELECTRICAL REQUIREMENTS

<b>System Power:</b>	
Frequency	49.5 to 50.5 Hz or 59.5 to 60.5 Hz
Voltages	100 or 120 VAC at 60 Hz and 220 or 240 VAC at 50 Hz
Current (at full load)	5 A for 120 VAC, 2.5 A for 240 VAC
Harmonic Distortion Content	Less than 10 percent
Circuit Breaker Rating	15 A
Power Connection	Power cord supplied with both 50-Hz and 60-Hz models. Connectors meet requirements of each locale.

## DC Supply Voltages and Currents:

+5 Volts	50 A
+12 Volts	10 A
-12 Volts	10 A
+5M Volts	5.0 A
+12M Volts	3.5 A
-12M Volts	0.38 A

## PCA POWER CONSUMPTION

P.C.A.	Current Drain (Amperes)						Total Power (Watts)
	+5V	+12V	-12V	+5M	+12M	-12M	
GIC	4.18	0.044	-	-	-	-	21.43
ADCC-Main	2.09	0.099	0.066	-	-	-	12.43
ADCC-Extender	1.65	0.099	0.055	-	-	-	10.098
CPU	3.84	0.15	-	-	-	-	21.00
Firmware							
(w/COBOL and decimal)	2.1	-	-	-	-	-	10.5
(fully loaded)	5.3	-	-	-	-	-	16.5
BIC	3.52	-	-	-	-	-	17.60
Maint. I/F	3.40	0.10	-	-	-	-	18.20
Memory Cntlr	2.53	-	-	0.462	-	-	14.96
Memory Array (Active)	0.374	-	-	0.341	0.293	0.0385	7.553
Front Panel	0.30	-	-	-	-	-	1.50
INP	2.44	0.50	0.12	0.24	0.36	0.008	25.26
7902 Cntlr	2.42	0.154	0.088	-	-	-	15.004
7902 Drive	0.55	0.88	0.88	-	-	-	21.95

## Installation

Refer to HP 3000 Series 30 Installation Manual, P/N 30080-90001.

## Preventive Maintenance

Refer to HP 3000 System Support Log, P/N 03000-90117.

## SERIES 33 SPECIFICATIONS

The following is a listing of environmental specifications for the HP 3000 Series 33.

### Environmental Data

The environmental data includes physical requirements, electrical requirements and DC supply voltages and currents.

#### PHYSICAL REQUIREMENTS

##### Dimensions:

Height	82.5 cm (32.5 in.)
Depth	72.39 cm (28.5 in.)
Width	173.36 cm (62.25 in.)
Weight (uncrated)	321.34 kg (710 lbs.)
Weight (shipping)	363.2 kg (800 lbs.)

##### Environment:

Temperature	
Operating (with Flexible Disc)	15 to 35 deg C (59 to 95 deg F)
Maximum Rate of Temperature Change	.167 deg C (.301 deg)/min. (linear)

##### Humidity:

Operating	20% to 80% RH (Maximum wet bulb temperature 25 deg C (77 deg F)) Non-condensing
Non-Operating	5% to 80%

##### Altitude:

Operating	3080 m (10,000 ft)
Non-Operating	15,200 m (50,000 ft)

### ELECTRICAL REQUIREMENTS

<b>System Power:</b>	
Frequency	49.5 to 50.5 Hz or 59.5 to 60.5 Hz
Voltages	200 to 240 VAC in 10 volt steps (+4%, -10% per step)
Current (at full load)	13A @ 200VAC, less all peripherals
Circuit Breaker Rating	25A
Power Connection	Power cord supplied with 60-Hz models. No power cord supplied with 50-Hz models.

#### DC Supply Voltages and Currents:

+5 Volts	50 A
+12 Volts	10 A
-12 Volts	10 A
+5M Volts	5.0 A
+12M Volts	3.5 A
-12M Volts	0.38 A

## PCA POWER CONSUMPTION

P.C.A.	Current Drain (Amperes)						Total Power (Watts)
	+5V	+12V	-12V	+5M	+12M	-12M	
GIC	4.18	0.044	-	-	-	-	21.43
ADCC-Main	2.09	0.099	0.066	-	-	-	12.43
ADCC-Extender	1.65	0.099	0.055	-	-	-	10.098
CPU	3.84	0.15	-	-	-	-	21.00
Firmware							
(w/COBOL and decimal)	2.1	-	-	-	-	-	10.5
(fully loaded)	5.3	-	-	-	-	-	16.5
BIC	3.52	-	-	-	-	-	17.60
Maint. I/F	3.3	0.10	-	-	-	-	18.20
Memory Cntlr	2.53	-	-	0.462	-	-	14.96
Memory Array (Active)	0.374	-	-	0.341	0.293	0.0385	7.553
Front Panel	0.29	-	-	-	-	-	1.50
INP	3.08	0.50	0.12	0.24	0.36	0.008	25.26
7902 Cntlr	2.42	0.154	0.088	-	-	-	15.004
7902 Drive	0.55	0.88	0.88	-	-	-	21.95

**Installation**

Refer to HP 3000 Series 33 Installation Manual, P/N 30070-90021.

**Preventive Maintenance**

Refer to HP 3000 System Support Log, P/N 03000-90117.

## SERIES 39/40/42/42XP/52 SPECIFICATIONS

The following is a listing of environmental specifications for the HP 3000 Series 39/40/42/42XP/52.

### Environmental Data

The environmental data includes physical requirements, electrical requirements and DC supply voltages and currents.

#### PHYSICAL REQUIREMENTS

##### Dimensions:

Height	101.6 cm (40.0 in.)
Depth	61 cm (24.0 in.)
Width	56.9 cm (22.4 in.)
Weight (uncrated)	86 kg (190 lbs)
Weight (shipping)	113 kg (250 lbs)

##### Environment:

Temperature Operating	10 to 40 deg C (50 to 104 deg F) 20 to 30 deg C (68 to 86 deg F), Optimum
Non-Operating (Shipping/ Storage)	-40 to +75 deg C (-40 to +158 deg F)
Maximum Rate of Temperature Change	.167 deg C (.301 deg F)/min

##### Humidity:

Non-condensing	20% to 80% RH
Optimum	40% to 60% RH

##### Altitude:

Operating	To 4572 m (15,000 ft)
Non-operating	To 15.24 km (50,000 ft)

## ELECTRICAL REQUIREMENTS

**System Power:**

Frequency	47 to 63 Hz
Voltages	120 VAC at 60 Hz and 220 or 240 VAC at 50 Hz
Current (at full load)	9 A for 120 VAC, 5 A for 240 VAC
Harmonic Distortion Content	Less than 10 percent
Fuse Rating	15 A @ 120V
Power Connection	Power cord supplied with both 50-Hz and 60-Hz models. Connectors meet requirements of each locale.

**DC Supply Voltages and Currents:**

+5 Volts	8.5 A
+12 Volts	5 A
-12 Volts	5 A
+5M Volts	8.1 A
+12M Volts	4.4 A
-12M Volts	0.38 A



## PCA POWER CONSUMPTION (Series 39/40/42/42XP/52 and 44/48/58)

(See Notes for differences in current drain for PCAs)

\*Current Drain (Amperes)

PCA	+5V	+12V	-12V	+5M	+12M	-12M	Notes
GIC	4.37	0.05	-	-	-	-	-
ADCC-Main	2.19	0.10	0.07	-	-	-	-
ADCC-Extender	1.73	0.10	0.06	-	-	-	-
CMP	2.07	0.05	0.05	0.09	-	-	-
CMP-2	2.15	-	-	0.07	-	-	-
PCS (8K PROM)	8.92	-	-	-	-	-	A,B
ALU	8.35	-	-	-	-	-	-
ALU-F	12.25	-	-	-	-	-	-
CTL (4K PROM)	11.80	-	-	-	-	-	A,B
CPS/CPS-E**	9.89	-	-	-	-	-	A,B
CPS-F	6.35	-	-	-	-	-	-
Memory Cntlr	5.21	-	-	0.66	-	-	-
42XP/52/58 M Ctlr	4.69	-	-	0.63	-	-	-
Memory Arrays							
256 Kb Active	0.74	-	-	0.67	1.54	0.02	C
256 Kb Standby	0.74	-	-	0.67	0.36	0.02	C
1MB Active	0.74	-	-	2.49	-	-	E
1MB Standby	0.74	-	-	1.34	-	-	E
2MB Active	0.71	-	-	2.26	-	-	-
2MB Standby	0.71	-	-	0.83	-	-	-
2MB EMAlI Active	0.71	-	-	2.37	-	-	-
2MB EMAlI Standby	0.71	-	-	0.94	-	-	-
4MB EMAlI Active	0.71	-	-	2.84	-	-	-
4MB EMAlI Standby	0.71	-	-	1.41	-	-	-
INP (30020A)	2.55	0.58	0.12	0.67	0.21	0.02	F
INP (30020B)	2.9	0.15	0.21	0.53	-	-	G
Line Printer Interface	2.30	0.03	-	-	-	-	-
ATPs							
SIB	4.60	-	-	-	-	-	-
AIB	4.00	-	-	-	-	-	H
Direct Connect Motherboard with 3 RS-422 Miniboards	-	-	-	-	-	-	H
Direct Connect Motherboard with 3 RS-232 Miniboards	-	.08	.07	-	-	-	H
Modem Motherboard with 6 RS-232 Modem Miniboards	.88	.63	.56	-	-	-	H

\*All main current values specified are measured +15%, and all memory current values specified are measured +10%, unless otherwise specified.

\*\*CPS-E replaces either the CPS PCA or the PCS and CTL PCAs. Refer to Figure 3-11 for Series 39/40/42 configuration details, Figure 3-11a for Series 42XP/52, Figure 3-14 for Series 44/48, and Figure 3-14a for Series 58.

**NOTES:**

- A. Current values for this board are derived by measuring current without PROMs loaded, adding the typical current values specified for the PROMs, and then adding 15%. To estimate current with deleted PROM rows, subtract .828 Amps per 1K row deleted.
- B. Current values for this board are calculated typical +15%.
- C. Current values shown for +12M and -12M are for non-active memory arrays. The one array board which is active will draw 1.54 Amps from +12M and .018 from -12M.
- E. Current values shown are for non-active memory arrays. The one that is active will increase its +5M current requirement from 1.34A to 2.49A.
- F. Source - INP (30020A) IMS.
- G. Source - INP (30020A) IMS.
- H. Source - LYNX project interface specifications 9/30/82.

## Installation

Refer to the HP 3000 Series 39/40/42 Installation Manual, P/N 30170-90002, the HP 3000 Series 52/58 Upgrade Installation Manual, P/N 30477-90010, or the HP 3000 Series 52 Installation Manual, P/N 30179-90007.

## Preventive Maintenance

Refer to HP 3000 System Support Log, P/N 03000-90117.

## SERIES 44/48/58 SPECIFICATIONS

The following is a listing of environmental specifications for the HP 3000 Series 44/48/58.

### Environmental Data

The environmental data includes physical requirements, electrical requirements and DC supply voltages and currents.

#### PHYSICAL REQUIREMENTS

##### Dimensions:

Height	72.5 cm (28.5 in.)
Depth	79.4 cm (31.25 in.)
Width	183.5 cm (72.25 in.)
Weight (uncrated)	321.34 kg (710 lbs)
Weight (shipping)	363.2 kg (800 lbs) approx.

##### Environment:

Temperature Operating*	0 to 50 deg C (32 to 122 deg F)
Recommended Operating**	20 to 25.5 deg C (68 to 78 deg F)
Non-operating (without flexible disc)	-40 to 75 deg C (-40 to 167 deg F)
Maximum Rate of Temperature Change	.167 deg C/minute (.301 deg F/minute)

##### Min/Max Relative Humidity

Operating*	20% to 95% RH 10 deg C (77 deg F) (non-condensing)
Recommended Operating**	40% to 60% RH (non-condensing)
Non-operating	5% to 80%

##### Altitude:

Operating	4600 m (15,000 ft)
Non-operating	15,300 m (50,000 ft)

\* Operation at either the minimum or maximum values must not exceed 48 hours.

\*\* These specifications reflect peripheral considerations, and so are tighter than SPU specifications.

## ELECTRICAL REQUIREMENTS

**System Power:**

Frequency	49.5 to 50.5 Hz or 59.5 to 60.5 Hz
Voltages	200 to 240 VAC in 10 volt steps (+4%, -10% per step)
Current (at full load)	60Hz: 8.3A @ 208VAC, single card cage, less all peripherals  50Hz: 8.1A @ 220VAC, single card cage, less all peripherals  60Hz: 13.1A @ 208VAC, dual card cage, less all peripherals  50Hz: 12.4A @ 220VAC, dual card cage, less all peripherals
Power (at full load): Single card cage	60Hz=1280 Watts, 50Hz=1400 Watts
Dual card cage	60Hz=2160 Watts, 50Hz=2220 Watts
Circuit Breaker Rating	24A
Power Connection	Power cord supplied with 60-Hz models. No power cord supplied with 50-Hz models.

## DC Supply Voltages and Currents:

+5 Volts	8.5 A
+12 Volts	5 A
-12 Volts	5 A
+5M Volts	8.1 A
+12M Volts	4.4 A
-12M Volts	0.38 A

## PCA POWER CONSUMPTION

Refer to Series 39/40/42/42XP/52 of this section for Series 44/48/58 PCA Power Consumption.

**Installation**

Refer to the HP 3000 Series 44/48 Installation Manual, P/N 30090-90002 or to the HP 3000 Series 58 Installation Manual, P/N 30477-90013.

**Preventive Maintenance**

Refer to HP 3000 System Support Log, P/N 03000-90117.

# CONFIGURATION

SECTION

III

The configuration data presented in this section provides both hardware and I/O software data required to operate a standard configuration HP 3000 Series 30,33,39/40/42/42XP/52 and 44/48/58 computer system. The hardware data contains card cage assignments, cable routing and connections, and channel and device assignments. I/O software data consists of a list of I/O drivers required to support an I/O device. Refer to HP 3000 System Configuration Guide, part number 5953-7573 for additional information on system configuration.

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## SERIES 30 SYSTEM CONFIGURATION

The Series 30 configuration section provides the following hardware data: card cage assignments, cable routing and connections, and channel and device assignments.

### Hardware Configuration

The Series 30 standard card cage configuration is shown in Figure 3-1.

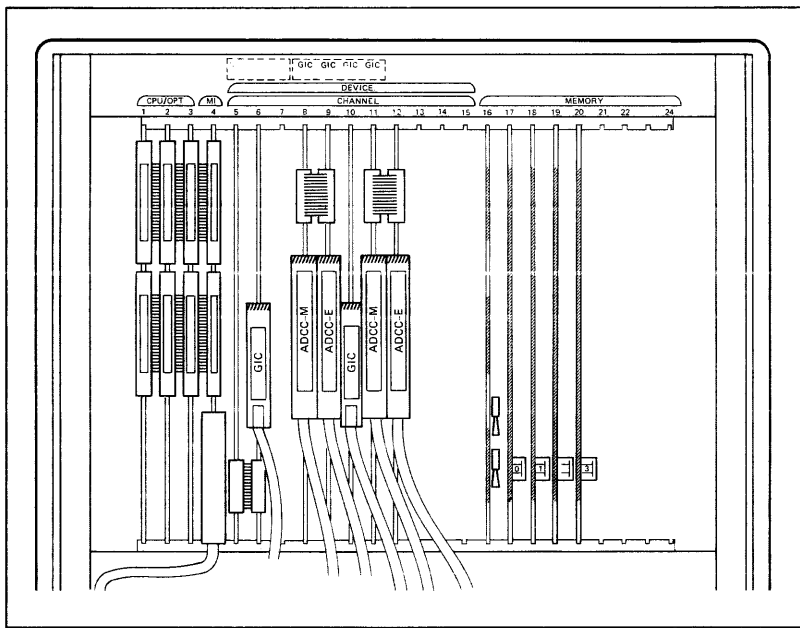


Figure 3-1. PCA Slot Assignments (Series 30)

## NOTE

If no FDU is installed, do not install a GIC in slot 5. Slot 5 does not contain the connections required for DMA operation.

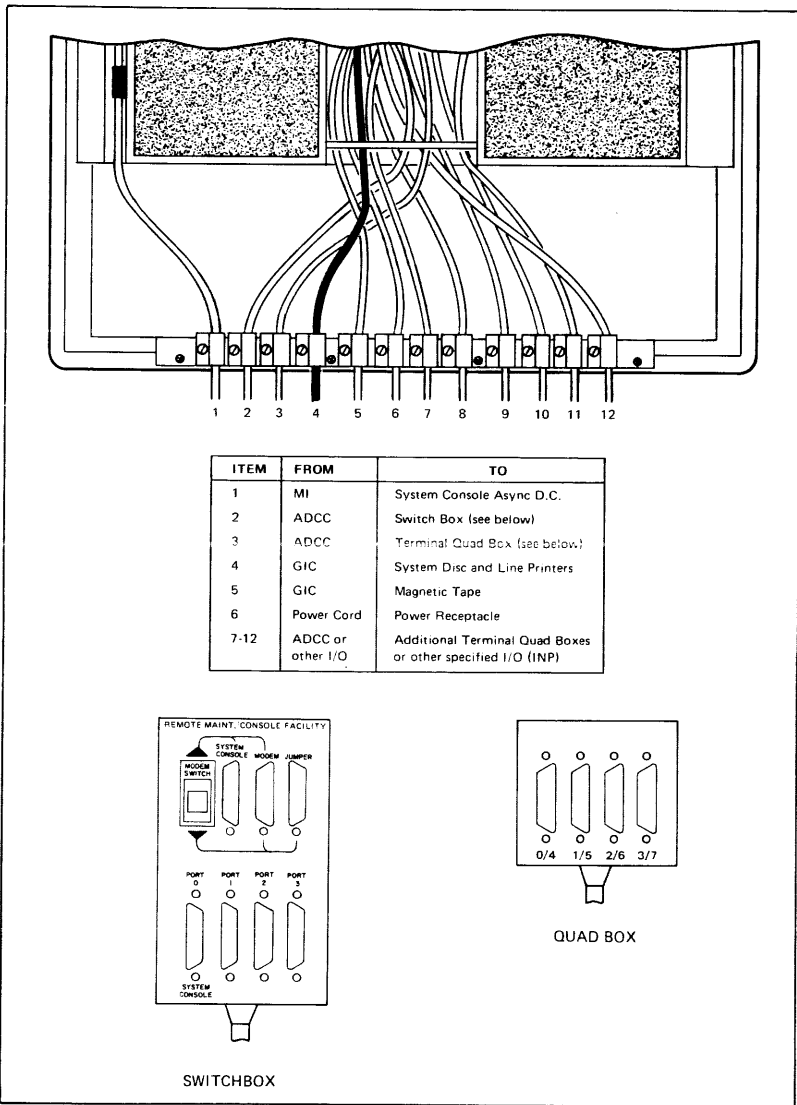
## System Cabling

The system cables consist of standard configuration cables that are internal and external to the system. Internal cables consist of standard cables that are located in the card cage, as listed in Table 3-1. External cables consist of standard configuration cables that interface the HP 3000 Series 30 to peripherals as shown in Figures 3-2 and 3-3.

Table 3-1. Internal Cables (Series 30)

CABLE PART NO.	FROM		TO	
	CONN REF	SLOT	CONN REF	SLOT
30000-93056 (TOP FRONTPLANE CONNECTOR)	J1 CPU	CPU 1	J1 CPU	CPU 2
	J1 CPU	CPU 2	J1 CPU	CPU 3
	J1 CPU	CPU 3	J1 CPU	MI 4
30000-93056 (MIDDLE FRONTPLANE CONNECTOR)	J2 CPU	CPU 1	J2 CPU	CPU 2
	J2 CPU	CPU 2	J2 CPU	CPU 3
	J2 CPU	CPU 3	J2 CPU	MI 4
31265-60003 (ADCC-M-TO- ADCC-E)	J1 ADCC-M	8	J1 ADCC-E	9
5061-2504 (MI TO CON- SOLE)	J3 MI	MI 4	CONSOLE	
5061-2503 (GIC TO TAPE DRIVE)	J2 GIC	GIC 13	TAPE DRIVE	

Series 30 System Configuration



147003-07

Figure 3-2. Cable Routing Area (Series 30)



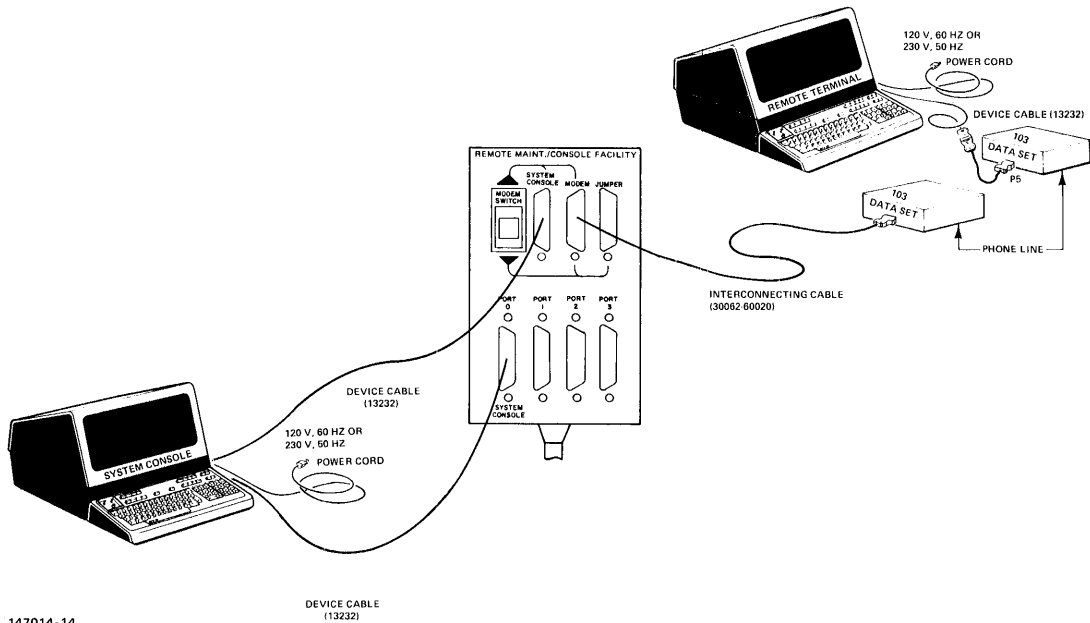


Figure 3-3. Remote Maintenance/Console Facility Modem Connections (Series 30)

## Channel and Device Assignments

Shown below are the recommended channel and device numbers for peripherals and peripheral interfaces. The channel and device assigned numbers are according to priority. Priority increases as the assigned number decreases.

CHANNEL	PERIPHERAL	CHANNEL	DEVICE	SLOT	DRT
1st ADCC-M	Console	1	0	8	8
	Term 1-3		1-3		9-11
ADCC-Ext	Term 4-7		4-7	9	12-15
2nd ADCC-M	Term 8-11	2	0-3	12	16-19
ADCC-Ext	Term 12-15		4-7	13	20-23
3rd ADCC-M	Term 16-19	3	0-3	14	24-27
ADCC-Ext	Term 20-23		4-7	15	28-31
4th ADCC-M (See note 1)	Term 24-27	4	0-3	10	32-35
ADCC-Ext	Term 28-31		4-7	11	36-39
1st GIC	7906/7920/7925 Controller	6	1	6	49
	7902A Controller		2		50
	INP		3		51
	2608 or 2631		4		52
	2608 or 2631		5		53
2nd GIC	7970E/7971	5	1	7	41

### NOTES:

1. The assignments for the 4th ADCC-M and ADCC-Ext are applicable as shown if installed. When GICs are installed in slots 10 and 11 instead of ADCCs, then channel 4 is not used and slots 10 and 11 are assigned channel numbers 7 and 8, respectively. Assigning channels in this manner precludes reassigning channel and DRT numbers if boards are changed.
2. Slot assignments for ADCCs are immaterial, the slot assignments shown here are given as an arbitrary convention to avoid confusion.

## System I/O Verification Using IOMAP From DUS Tape

The IOMAP utility has three purposes:

1. It provides a display of the system physical I/O configuration.
2. It checks out the basic hardware I/O system.
3. It provides Identify, Remote Selftest, and HP-IB Loopback device tests.

The following is an example of an IOMAP display:

```

IOMAP                SYSTEM I/O CONFIGURATION
-----
>Control panel switch settings: Channel=7 Device=1
>System console is device 0 on channel 1
-----
Channel 1 ID=!1      Async. Data Comm. Channel (ADCC)
  Devices 0-3 ID=!4080  Devices on ADCC MAIN    (CODE= 1,2).
  Devices 4-7 ID=!4080  Devices on ADCC EXTEND  (CODE= 1,2).
-----
Channel 2 ID=!1      Async. Data Comm. Channel (ADCC)
  Devices 0-3 ID=!4080  Devices on ADCC MAIN    (CODE= 1,2).
-----
Channel 5 ID=!0      General I/O Channel (GIC)
  Device 1 ID=!183     7970E/7971 MAG TAPE
-----
Channel 6 ID=!0      General I/O Channel (GIC)
  Device 1 ID=!2       7906/7920/7925 Disc Subsystem  (CODE=2).
  Device 2 ID=!81     7902A/9895A Flexible Disc Unit
  Device 3 ID=!2002   2631 Serial Printer
-----
Explanation of '(CODE= )'
  1 implies: NO LOOPBACK Capability.
  2 implies: NO SELFTEST Capability.
-----

```

## System Startup Procedures

To execute system startup, perform the following procedure:

### DISC-BASED SYSTEM STARTUP

#### WARMSTART/COOLSTART:

- a. Set the WARMSTART switches to the proper channel and device numbers.
- b. Press the WARMSTART button.
- c. Press "CR" on the console.
- d. Select WARMSTART/COOLSTART option.

### FLEXIBLE DISC-BASED SYSTEM STARTUP

#### COLDSTART/RELOAD/UPDATE:

- a. Set the COLDLOAD switches to the proper channel and device numbers.
- b. Press the COLDLOAD button.
- c. Press "CR" on the console.
- d. Select COLDSTART/RELOAD/UPDATE option.

### MAGNETIC TAPE-BASED SYSTEM STARTUP

#### COLDSTART/RELOAD/UPDATE:

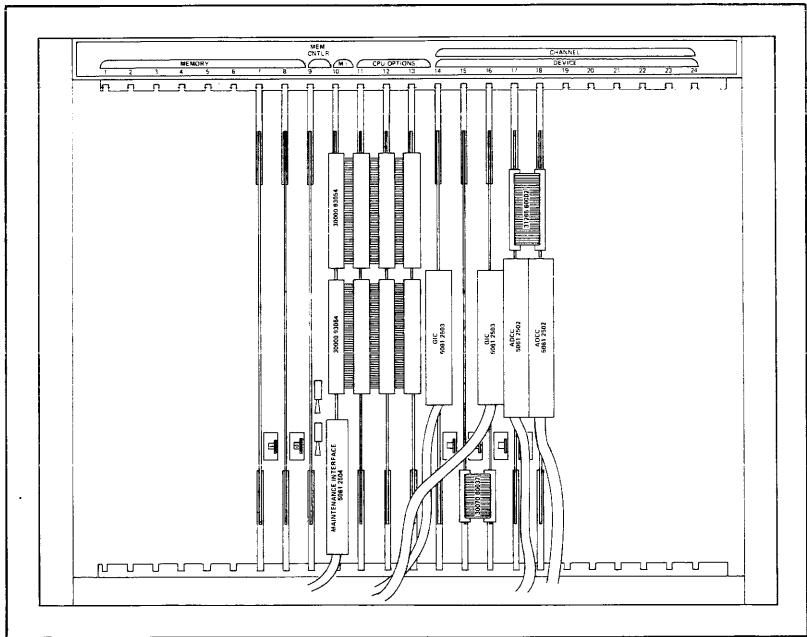
- a. Set the COLDLOAD switches to the proper channel and device numbers.
- b. Press the COLDLOAD button.
- c. Press "CR" on the console.
- d. Select COLDSTART/RELOAD/UPDATE option.

## SERIES 33 SYSTEM CONFIGURATION

The Series 33 configuration section provides the following hardware data: card cage assignments, cable routing and connections, and channel and device assignments.

### Hardware Configuration

The Series 33 standard card cage configuration is shown in Figure 3-4.



147018-02

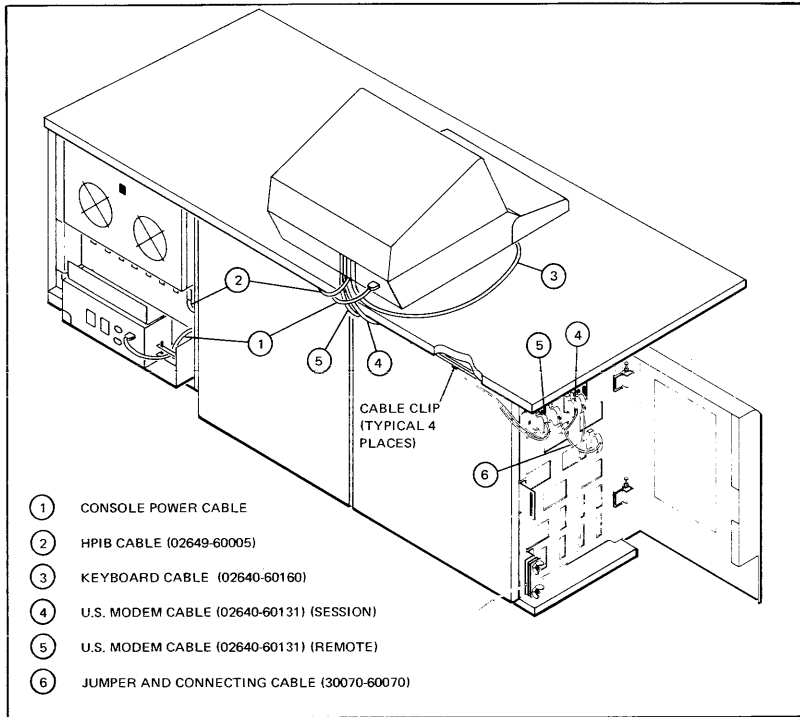
Figure 3-4. PCA Slot Assignments (Series 33)

## System Cabling

The system cables consist of standard configuration cables that are internal and external to the system. Internal cables consist of standard cables that are located in the card cage, as listed in Table 3-2. External cables consist of standard configuration cables that interface the HP 3000 Series 33 to peripherals, as shown in Figure 3-5 through 3-8.

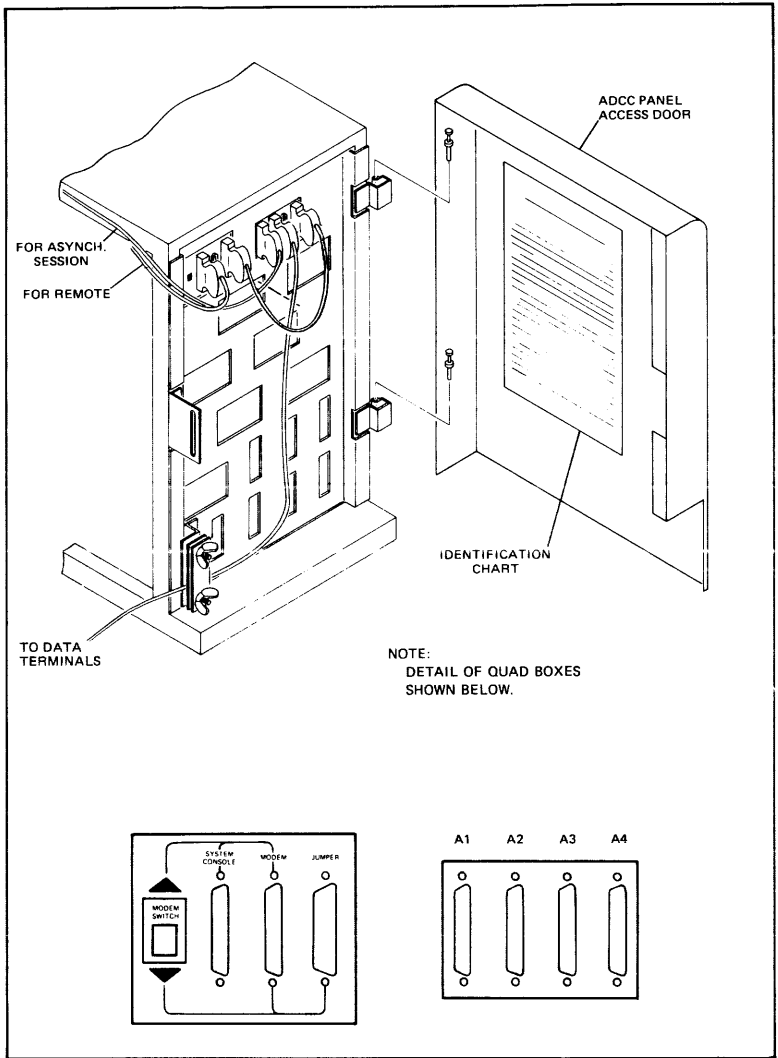
Table 3-2. Internal Cables (Series 33)

CABLE PART NO.	FROM		TO	
	CONN REF	SLOT	CONN REF	SLOT
30000-93054 (TOP FRONTPLANE CONNECTOR)	J1 MI	MI 10	J1 CPU	CPU 11
	J1 CPU	CPU 11	J1 CPU	CPU 12
	J1 CPU	CPU 12	J1 CPU	CPU 13
30000-93054 (MIDDLE FRONTPLANE CONNECTOR)	J2 CPU	MI 10	J2 CPU	CPU 11
	J2 CPU	CPU 11	J2 CPU	CPU 12
	J2 CPU	CPU 12	J2 CPU	CPU 13
31265-60002 (ADCC-M TO ADCC-E)	J1 ADCC-M	17	J1 ADCC-E	18
5061-2504 (MI TO JUNC)	J3 MI	MI 10	JUNC PNL	
5061-2503 (GIC TO JUNC)	J2 GIC	14	JUNC PNL	
5061-2502 (ADCC-M TO JUNC)	J2 ADCC-M	17	JUNC PNL	
5061-2502 (ADCC-E TO JUNC)	J2 ADCC-E	18	JUNC PNL	



147018-03

Figure 3-5. Panel-to-Console Cable Routing (Series 33)



147018-04

Figure 3-6. Processor Terminal Panel and RS-232-C Cable Routing (Series 33)



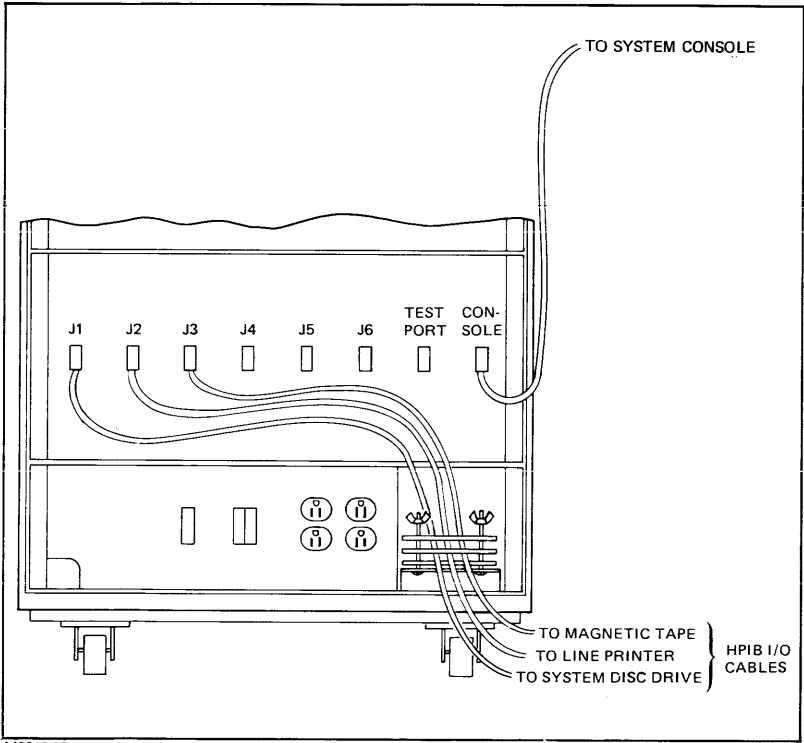


Figure 3-7. Processor I/O Panel and HP-IB Cable Routing (Series 33)

MAY 87  
3-14

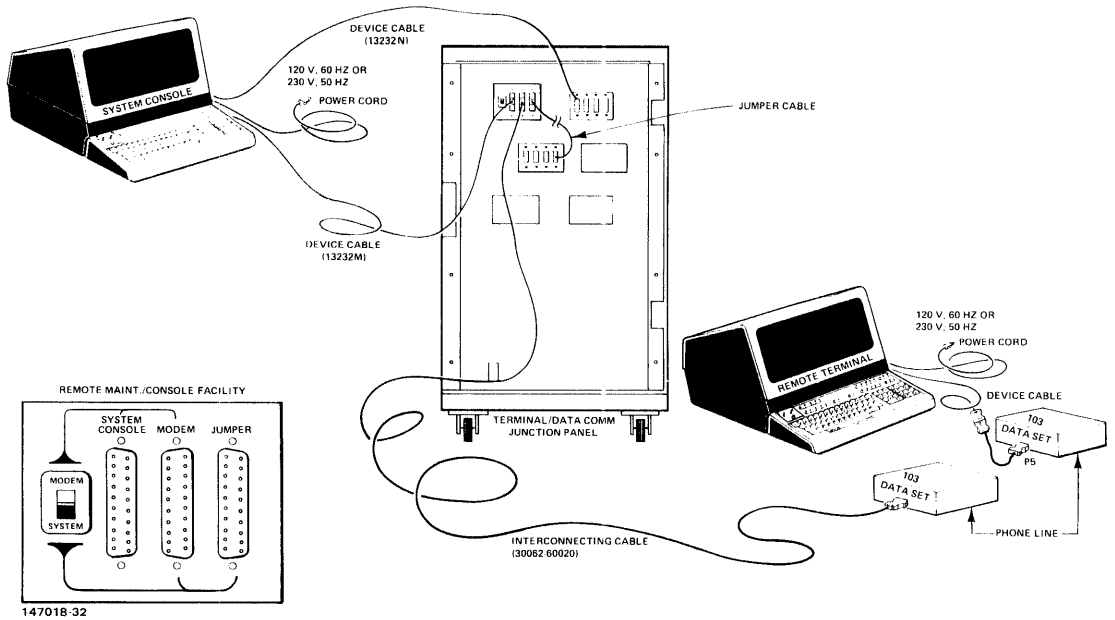


Figure 3-8. Remote Maintenance/Console Facility Modem Connections (Series 33)

## Channel and Device Assignments

Shown below is the recommended channel and device number for peripherals and peripheral interfaces. The channel and device assigned numbers are according to priority. Priority increases as the assigned number decreases.

CHANNEL	PERIPHERAL	CHANNEL	DEVICE	SLOT	DRT	PANEL
1st ADCC-M	Console	1	0	A17	8	A1
	Term 1-3		1-3		9-11	A2-A4
ADCC-Ext	Term 4-7		4-7	A18	12-15	B1-B4
2nd ADCC-M	Term 8-11	2	0-3	N/A	16-19	C1-C4
ADCC-Ext	Term 12-15		4-7		20-23	D1-D4
3rd ADCC-M	Term 16-19	3	0-3	N/A	24-27	E1-E4
ADCC-Ext	Term 20-23		4-7		28-31	F1-F4
4th ADCC-M	Term 24-27	4	0-3	N/A	32-35	G1-G4
ADCC-Ext	Term 28-31		4-7		36-39	H1-H4
1st GIC	7906/7920/7925 Controller	6	1	A14	49	J1
2nd GIC	7902 Controller	7	1	A16	57	J2
	2608 or 2631		2 or 3		58 or 59	
3rd GIC	7970E/7971	5	1	A19	41	J3

## System I/O Verification Using IOMAP From DUS Tape

The IOMAP utility has three purposes:

1. It provides a display of the system physical I/O configuration.
2. It checks out the basic hardware I/O system.
3. It provides Identify, Remote Selftest, and HP-IB Loopback device tests.

The following is an example of an IOMAP display:

```
IOMAP                SYSTEM I/O CONFIGURATION
-----
>Control panel switch settings: Channel=7 Device=1
>System console is device 0 on channel 1
-----
Channel 1 ID=!1      Async. Data Comm. Channel (ADCC)
  Devices 0-3 ID=!4080 Devices on ADCC MAIN (CODE= 1,2).
  Devices 4-7 ID=!4080 Devices on ADCC EXTEND (CODE= 1,2).
-----
Channel 2 ID=!1      Async. Data Comm. Channel (ADCC)
  Devices 0-3 ID=!4080 Devices on ADCC MAIN (CODE= 1,2).
-----
Channel 5 ID=!0      General I/O Channel (GIC)
  Device 1 ID=!183   7970E/7971 MAG TAPE
-----
Channel 6 ID=!0      General I/O Channel (GIC)
  Device 1 ID=!2     7906/7920/7925 Disc Subsystem (CODE=2).
-----
Channel 7 ID=!0      General I/O Channel (GIC)
  Device 1 ID=!81    7902A Flexible Disc Unit (Double-sided)
  Device 2 ID=!2002 2631 Serial Printer
-----
Explanation of '(CODE= )'
  1 implies: NO LOOPBACK Capability.
  2 implies: NO SELFTEST Capability.
-----
```

## System Startup Procedures

To execute system startup, perform the following procedure:

### DISC-BASED SYSTEM STARTUP

#### WARMSTART/COOLSTART:

- a. Set the WARMSTART switches to the proper channel and device numbers.
- b. Press the WARMSTART button.
- c. Press "CR" on the console.
- d. Select WARMSTART/COOLSTART option.

### FLEXIBLE DISC-BASED SYSTEM STARTUP

#### COLDSTART/RELOAD/UPDATE:

- a. Set the COLDLOAD switches to the proper channel and device numbers.
- b. Press the COLDLOAD button.
- c. Press "CR" on the console.
- d. Select the COLDLOAD/RELOAD/UPDATE option.

### MAGNETIC TAPE-BASED SYSTEM STARTUP

#### COLDSTART/RELOAD/UPDATE:

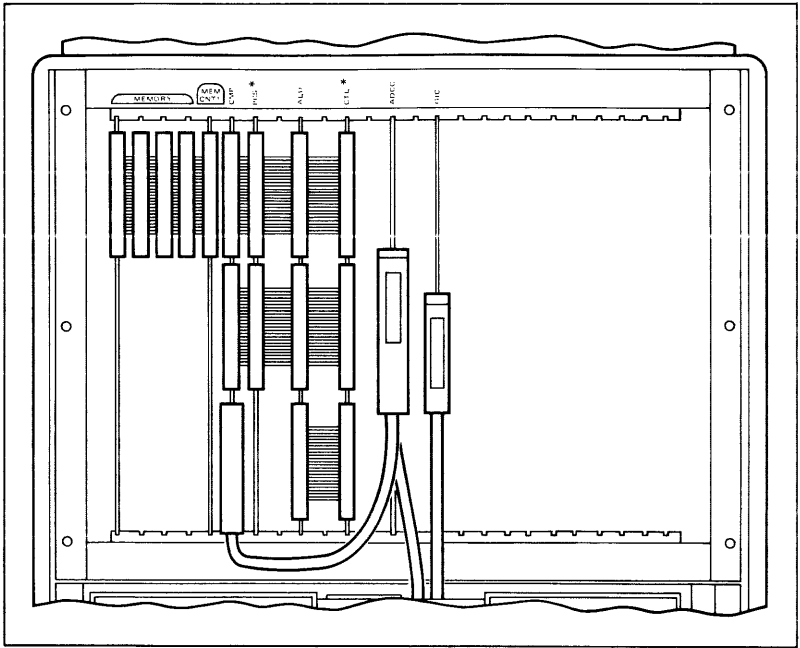
- a. Set the COLDLOAD switches to the proper channel and device numbers.
- b. Press the COLDLOAD button.
- c. Press "CR" on the console.
- d. Select the COLDLOAD/RELOAD/UPDATE option.

## SERIES 39/40/42/42XP/52 SYSTEM CONFIGURATION

The Series 39/40/42/42XP/52 configuration section provides the following hardware data: card cage assignments, cable routing and connections, and channel and device assignments.

### Hardware Configuration

The Series 39/40/42 standard card cage configuration is shown in Figure 3-9. The Series 42XP/52 card cage configuration is shown in Figure 3-10.



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Figure 3-9. PCA Slot Assignments (Series 39/40/42)

\*For Series 39/40/42 computer systems the PCS and CTL can be replaced by a CPS or CPS-E. The CPS or CPS-E will occupy the PCS (#7) slot, while the CTL (#11) slot will remain empty.

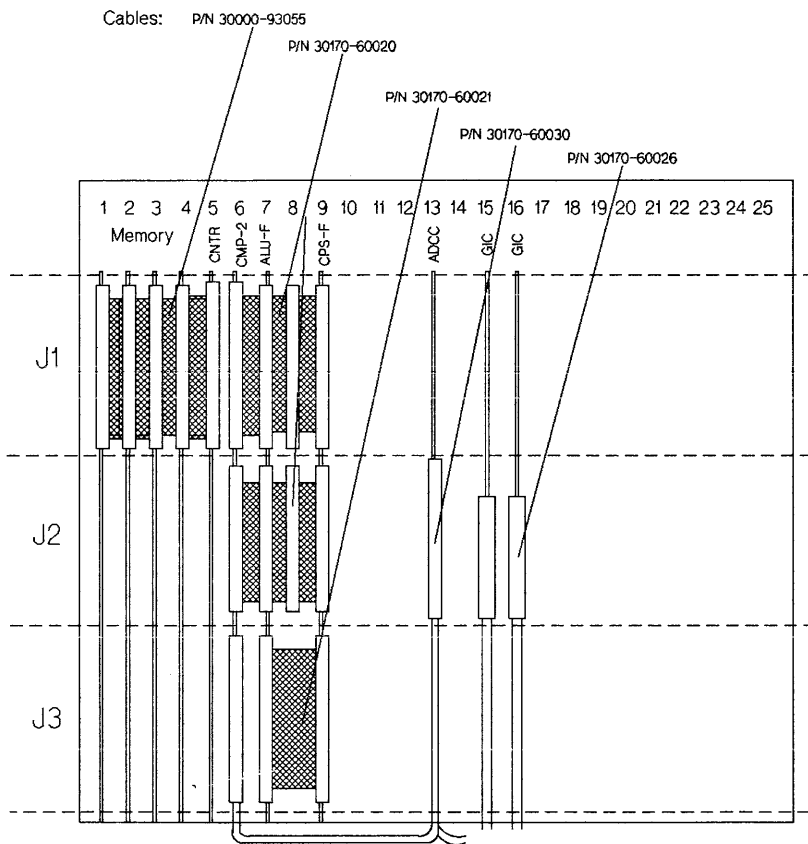


Figure 3-10. PCA Slot Assignments (Series 42XP/52)

## System Cabling

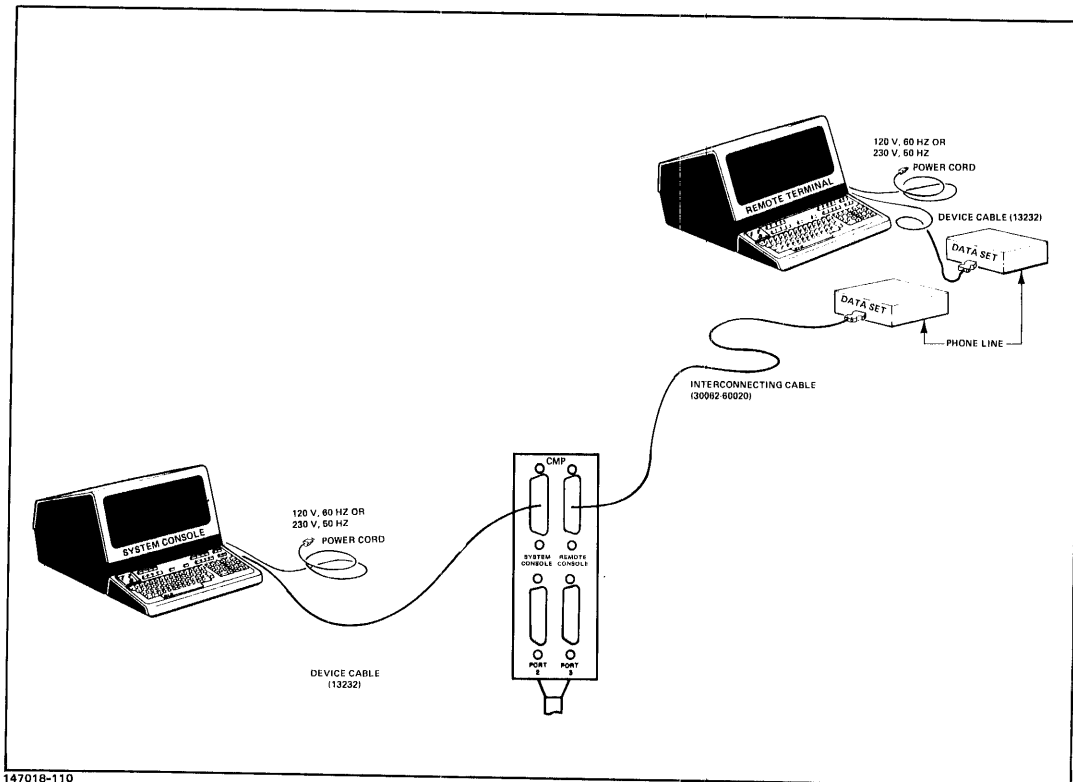
The system cables consist of standard configuration cables that are internal and external to the system. Internal cables consist of standard cables that are located in the card cage, as listed in Table 3-3. External cables consist of standard cables that interface the HP 3000 Series 39/40/42 to peripherals, as shown in Figure 3-11.

Series 42XP/52 internal cable part numbers are shown in Figure 3-10.

Table 3-3. Internal Cables (Series 39/40/42)

CABLE PART NO.	FROM		TO	
	CONN REF	SLOT	CONN REF	SLOT
30000-93055 (MEMORY FRONTPLANE CONNECTOR)	J1 MEM	MEM 1	J1 MEM	MEM 2
	J1 MEM	MEM 2	J1 MEM	MEM 3
	J1 MEM	MEM 3	J1 MEM	MEM 4
	J1 MEM	MEM 4	J1 MEM CNTRL	MEM 5
30170-60020 (TOP FRONTPLANE CONNECTOR)	J1 CMP	CMP 6	J1 CPU PCS	CPU 7
	J1 CPU PCS	CPU 7	J1 CPU ALU	CPU 9
	J1 CPU ALU	CPU 9	J1 CPU CPS	CPU 11
30170-60020 (MIDDLE FRONTPLANE CONNECTOR)	J2 CMP	CMP 6	J2 CPU PCS	CPU 7
	J2 CPU PCS	CPU 7	J2 CPU ALU	CPU 9
	J2 CPU ALU	CPU 9	J2 CPU CPS	CPU 11
30170-60021 (BOTTOM FRONTPLANE CONNECTOR)	J3 CPU	CPU 9	J3 CPU	CPU 11
30170-60030 (CMP-ADCC TO FRONTPLANE CONNECTOR)	J3 CMP	CMP 6	J2 ADCC-M	13
	J2 ADCC-M	17	JUNC BOX	
30170-60026 (GIC TO JUNC)	J2 GIC	17	JUNC BOX	





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Figure 3-11. Remote Maintenance/Console Facility Modem Connections  
(Series 39/40/42/42XP/52)

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Series 39/40/42/42XP/52 System Configuration

## Channel and Device Assignments

Shown below is the recommended channel and device number for peripherals and peripheral interfaces. The channel and device assigned numbers are according to priority. Priority increases as the assigned number decreases.

CHANNEL	PERIPHERAL	CHANNEL	DEVICE	SLOT	DRT
1st ADCC-M	Console	1	0	13	8
	Term 1-3		1-3		9-11
ADCC-Ext	Term 4-7		4-7	14	12-15
2nd ADCC-M	Term 8-11	2	0-3	N/A	16-19
ADCC-Ext	Term 12-15		4-7	N/A	20-23
3rd ADCC-M	Term 16-19	3	0-3	N/A	24-27
ADCC-Ext	Term 20-23		4-7	N/A	28-31
4th ADCC-M	Term 24-27	4	0-3	N/A	32-35
ADCC-Ext	Term 28-31		4-7	N/A	36-39
1st GIC	System Disc	11	1	15	89
2nd GIC	Backup Device	9	1	16	73
3rd GIC	Cartridge Tape	12	0	N/A	
	INP	12	1-4	N/A	
	Line Printer	12	5-7	N/A	
	9895A	12	0	N/A	
Alternate	2680	13	1	N/A	105

## System I/O Verification Using IOMAP From DUS Tape

The IOMAP utility has three purposes:

1. Provides a display of the system physical I/O configuration.
2. Checks out the basic hardware I/O system.
3. Provides the Identify, Remote Selftest, and HP-IB Loopback device tests.

The following is an example of an IOMAP display:

```

IOMAP                SYSTEM I/O CONFIGURATION
-----
>Control panel switch settings: Channel=9 Device=1
>System console is device 0 on channel 1
-----
Channel 1 ID=!1      Async. Data Comm. Channel (ADCC)
  Devices 0-3 ID=!4080  Devices on ADCC MAIN    (CODE= 1,2).
  Devices 4-7 ID=!4080  Devices on ADCC EXTEND  (CODE= 1,2).
-----
Channel 2 ID=!1      Async. Data Comm. Channel (ADCC)
  Devices 0-3 ID=!4080  Devices on ADCC MAIN    (CODE= 1,2).
-----
Channel 9 ID=!0      General I/O Channel (GIC)
  Device 1 ID=!183     7970E/7971 MAG TAPE
-----
Channel 11 ID=!0     General I/O Channel (GIC)
  Device 1 ID=!2       7906/7920/7925 Disc Subsystem (CODE=2).
-----
Channel 12 ID=!0     General I/O Channel (GIC)
  Device 2 ID=!2002    2631 Serial Printer
-----
Explanation of '(CODE= )'
  1 implies: NO LOOPBACK Capability.
  2 implies: NO SELFTEST Capability.
-----

```

## System Startup Procedures

To execute system startup, perform the following procedure:

### DISC-BASED SYSTEM STARTUP

#### WARMSTART/COOLSTART:

- a. Set the START switches to the proper channel and device numbers.
- b. Press the START button or type START after the CMP prompt.
- c. Press "CR" on the console.
- d. Select WARMSTART/COOLSTART option.

### MAGNETIC TAPE-BASED SYSTEM STARTUP

#### COLDSTART/RELOAD/UPDATE:

- a. Set the LOAD switches to the proper channel and device numbers.
- b. Press the LOAD button or type LOAD after the CMP prompt.
- c. Press "CR" on the console.
- d. Select COLDSTART/RELOAD/UPDATE option.

## SERIES 44/48/58 SYSTEM CONFIGURATION

The Series 44/48/58 configuration section provides the following hardware data: card cage assignments, cable routing and connections, and channel and device assignments.

### Hardware Configuration

The Series 44/48 standard card cage configuration is shown in Figure 3-12. The Series 58 card cage configuration is shown in Figure 3-13.

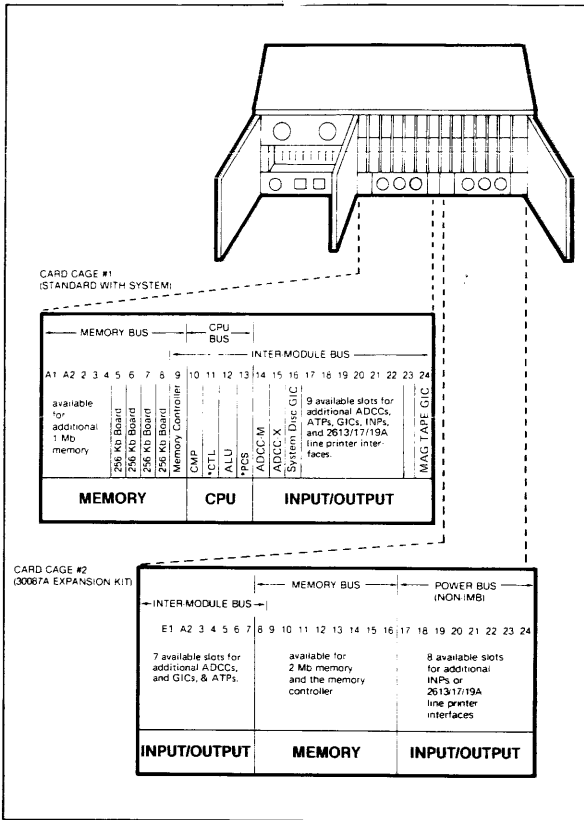


Figure 3-12. PCA Slot Assignments (Series 44/48)

\* For Series 44/48 Computer Systems the PCS and CTL can be replaced by a CPS or CPS-E. The CPS or CPS-E will occupy the CTL slot, while the PCS will remain empty.

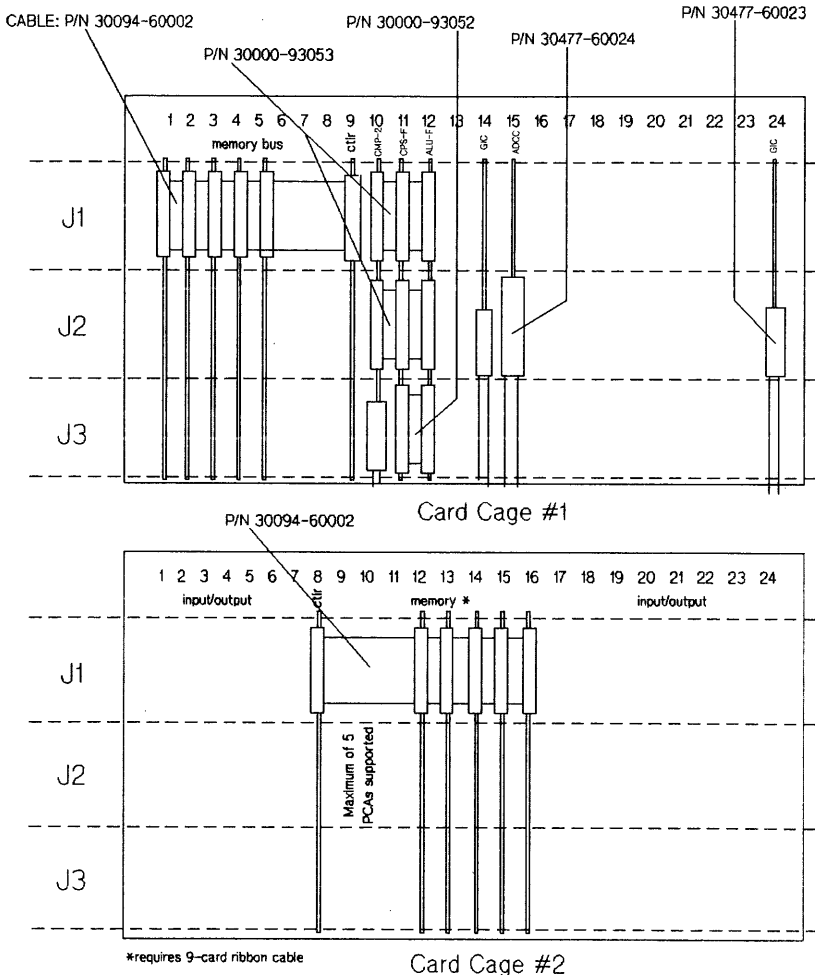


Figure 3-13. PCA Slot Assignments (Series 58)

**NOTE**

If no INP PCAs (P/N 30020-60009) are installed in card cage 2, install all of the memory PCAs in card cage 2.

If any INP PCAs (P/N 30020-60009) and associated GICs are installed in card cage 2, install all of the memory PCAs in card cage 1.

## Configuration Restrictions for I/O

The following configuration restrictions apply to I/O portions of the card cages:

1. ADCC Main and ADCC Extender cards must be adjacent to each other.
2. ATP/SIB and ATP/AIB cards must be adjacent to each other.
3. Two standard GICs and an ADCC Main are required in the configuration.
4. In card cage one, Slots 14 through 24 support I/O cards including those cards for the ATP, ADCC, GIC, DSN/INP, and 261X LPI.
5. In card cage two, slots 1 through 7 and 17 through 24 support I/O cards.

## Junction Panels

The Series 44/48/58 has two junction panels, one on the side and one on the rear of the system. The side junction panel consists of eight full blank panels (1-8) and the rear junction panel consists of four full blank panels (9-12). Each full blank panel is further divided to accommodate GICs, INPs, ADCCs, ATP/AIBs, and LPIs. (See Figure 3-14).

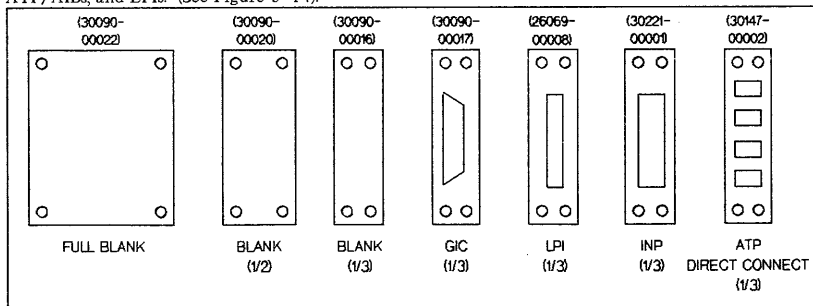


Figure 3-14. Junction Mounting Panels (Series 44/48/58)

## System Cabling

The system cables consist of standard configuration cables that are internal and external to the system. Internal cables consist of standard cables that are located in the Series 44/48/58 card cage, as listed in Table 3-4. The internal cables for the Series 58 are shown in Figure 3-13. External cables consist of standard configuration cables that interface the HP 3000 Series 44/48/58 to peripherals and are shown in Figure 3-15.

Table 3-4. Internal Cables (Series 44/48/58)

CABLE PART NO.	FROM		TO	
	CONN REF	SLOT	CONN REF	SLOT
30000-93056 (MEMORY FRONTPLANE CONNECTOR)	J1 MEM J1 MEM	MEM 5 MEM 7	J1 MEM J1 MEM CNTRL	MEM 7 MEM 9
30000-93054 (TOP FRONTPLANE CONNECTOR)	J1 CMP J1 CPU ALU	CMP 10 CPU 11	J1 CPU ALU J1 CPU CPS	CPU 11 CPU 12
30000-93054 (MIDDLE FRONTPLANE CONNECTOR)	J2 CMP J2 CPU ALU	CMP 10 CPU 11	J2 CPU ALU J2 CPU ALU	CPU CPU
30000-93052 (BOTTOM FRONTPLANE CONNECTOR)	J3 CPU ALU	CPU 11	J3 CPU CPS	CPU 12
31265-60002 (GIC-M/GIC-E FRONTPLANE CONNECTOR)	J1 GIC MAIN	GIC 14	J1 GIC EXT	GIC 15
30477-60024 (CMP-ADCC-JUNC CONNECTOR)	J3 CMP J2 ADCC	CMP 10 ADCC 15	J2 ADCC JUNC PNL	ADCC 15 (REAR)
30477-60023 (GIC TO JUNC)	J2 GIC	GIC 14	JUNC PNL	(SIDE)
30477-60023 (GIC TO JUNC) (S 33)	J2 GIC	GIC 24	JUNC PNL	(SIDE)



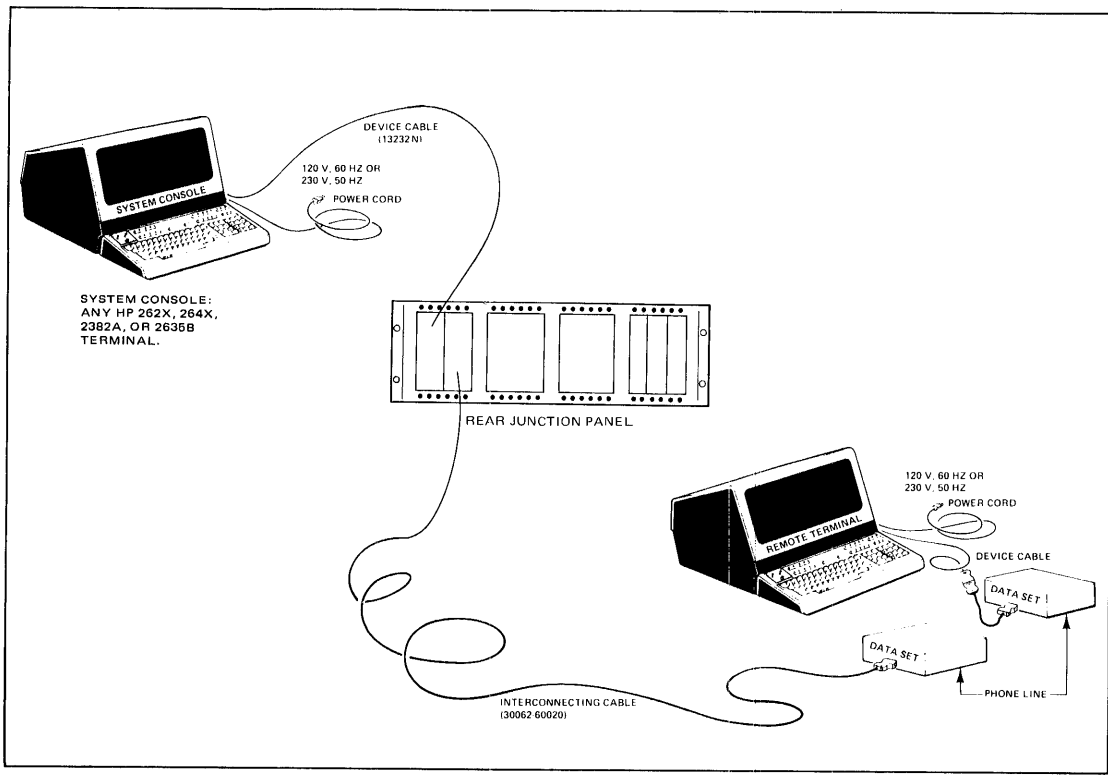


Figure 3-15. Remote Maintenance/Console Facility Modem Connections  
(Series 44/48/58)

Series 44/48/58 System Configuration

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## Channel and Device Assignments

Shown below is the recommended channel and device number for peripherals and peripheral interfaces. The channel and device assigned numbers are according to priority. Priority increases as the assigned number decreases.

CHANNEL(s)	DEVICE #(s)	SUGGESTED DEVICE TYPE
1-8	0-7	Terminals
9	1	Tape Drive
10	1	Tape Drive
11	0	System Disc
	1	Disc Drive
	2-4	INPs
	5-7	Line Printers
12	0	Flexible Disc Drives (9895 Only)
	1-3	INPs
	4-7	Line Printer
13	1	2680 Printer

<b>NOTE</b>
-------------

9895A Flexible Disc Drive must not be on GIC with system disc.

## System I/O Verification Using IOMAP From DUS Tape

The IOMAP utility has three purposes:

1. Provides a display of the system physical I/O configuration.
2. Checks out the basic hardware I/O system.
3. Provides Identify, Remote Selftest, and HP-IB Loopback device tests.

The following is an example of an IOMAP display:

```

IOMAP                SYSTEM I/O CONFIGURATION
-----
>Control panel switch settings: Channel=9 Device=1
>System console is device 0 on channel 1
-----
Channel 1 ID=!1      Async. Data Comm. Channel (ADCC)
  Devices 0-3 ID=!4080 Devices on ADCC MAIN (CODE= 1,2).
  Devices 4-7 ID=!4080 Devices on ADCC EXTEND (CODE= 1,2).
-----
Channel 2 ID=!1      Async. Data Comm. Channel (ADCC)
  Devices 0-3 ID=!4080 Devices on ADCC MAIN (CODE= 1,2).
-----
Channel 9 ID=!0      General I/O Channel (GIC)
  Device 1 ID=!183   7970E/7971 MAG TAPE
-----
Channel 11 ID=!0     General I/O Channel (GIC)
  Device 1 ID=!2     7906/7920/7925 Disc Subsystem (CODE=2).
-----
Channel 12 ID=!0     General I/O Channel (GIC)
  Device 2 ID=!2002  2631 Serial Printer
-----
Explanation of '(CODE= )'
  1 implies: NO LOOPBACK Capability.
  2 implies: NO SELFTEST Capability.
-----

```

## System Startup Procedures

To execute system startup, perform the following procedure:

### DISC-BASED SYSTEM STARTUP

#### WARMSTART/COOLSTART:

- a. Set the START switches to the proper channel and device numbers.
- b. Press the START button or type START after the CMP prompt.
- c. Press "CR" on the console.
- d. Select WARMSTART/COOLSTART option.

### MAGNETIC TAPE-BASED SYSTEM STARTUP

#### COLDSTART/RELOAD/UPDATE:

- a. Set the LOAD switches to the proper channel and device numbers.
- b. Press the LOAD button or type LOAD after the CMP prompt.
- c. Press "CR" on the console.
- d. Select COLDSTART/RELOAD/UPDATE option.

## GENERAL I/O CHANNEL DEVICE LOADING

Each General I/O Channel (GIC) supports a maximum of eight electrical device loads. The number of peripherals which may be connected to a GIC is determined by the peripherals HP-IB device load and speed. Tables 3-5 and 3-6 list the GIC requirements for peripherals and peripheral accessories for Series 30, 33, 39/40/42/42XP/52 and 44/48/58.

Table 3-5. GIC Requirements For Peripherals

HP Peripherals	Peripheral Speed	HP-IB Electrical Device Loads	Internal Device Cable Length (Meters)
Cartridge Tape in		1- Requires Dedicated GIC	0
7911P/12P/14P/14TD/14ST	Low		
7911P/12P Disc Drive	High	1	1
7914P/14TD/14TS Disc Drive	High	1	1
7906M/20M/25M Master Disc Drive	High	1	1
7933H/7935H Disc Drive	High	1	0
7936H/37H	High	1	0
7957A/58A	High	1	0
7970E/7971A/7914TD Master 1/2" Tape Drive	Low	1- Requires Dedicated GIC	0
*7974A/7914ST 1/2" Tape Drive	High	Shipped w/1 (Variable from 1 to 3)	1
9144A/7914CT (tape portion)	High	1	
7976 1/2" Tape Drive	High	Shipped w/2 (Variable from 1 to 4)	2
*7978A 1/2" Tape Drive	High	Shipped w/1 (Variable from 1 to 3)	0
2563A Line Printer	High	Shipped w/1 (Variable from 1 to 7)	1
*2565A Line Printer	High	1	0
*2566A Line Printer	High	1	0
2611A/13A/17A/19A Line Printer Interface Card (26069A)	Low	1	1
2608A Line Printer	Low (Do not mix with high)	1	0
2608S Line Printer	High (Do not mix w/7906/20/25)	Shipped w/2 (Variable from 1 to 7)	1
2680A/2688A* Page Printer	High	Shipped w/4 (Variable from 1 to 8)	1
INP Card (30020A/B)	Low	1	1
30106A (Opt. 333) Card Reader	Low	1- Requires Dedicated GIC	0
9895A (Opt. 010) Flexible Disc Drive	Low	1	1

\* Not supported on Series 30 and 33.

In addition to the limit of eight electrical device loads per GIC, other rules for loading GICs on Series 3X, 4X, and 5X are:

1. The maximum allowed length of the HP-IB cable which connects devices to a GIC is 7 meters plus 1 meter per device load (2 meters are internal to the SPU) to a maximum of 15 meters. In a large configuration there should be limitations on where devices can be placed around a system. Increasing the number of GICs on a system can increase cabling flexibility.
2. A maximum of six devices can be attached to a GIC controlling two high-speed peripherals.
3. An HP 2608A and high-speed peripheral can not be attached to the same GIC.
4. Unless other restrictions apply, low-speed peripherals can share a GIC with high-speed devices.
5. Some low-speed devices require a dedicated GIC to which no other devices may be attached.
6. The HP 2608S line printer can share a GIC with all high-speed devices except the 7906M, 7920M, and 7925M family of disc drives.
7. It is not recommended that the same GIC be used for connecting the main system backup tape drive and the system disc (LDEV1). System performance may be degraded with such a configuration when the tape drive is in use.
8. Multiple peripherals may be connected to HP-IB as long as the sum of HP-IB electrical device loads required does not exceed eight (and so long as the combination does not violate other configuration constraints).
9. Low-speed peripherals (except 2608A, Linus, 7970) can be attached to any GIC. A 2608A and high-speed peripherals can not be attached to the same GIC. In addition, it is recommended that separate GICs be used for connecting 7974/76/78s and the system disc. Otherwise, system performance may be degraded.
10. The internal HP-IB cabling length between the GIC and the outside of the system is two meters.
11. For Series 58s, the first GIC must be in slot 14 to reduce RFI.

Table 3-6. GIC Requirements for Peripheral Accessories

Peripheral Accessories	HP-IB Electrical Device Loads	Internal Device Cable Length (Meters)
26075A Multiple System Access Selector	0	0.5
37203A HP-IB Extender	0	2
26069A HP-IB-to-Differential Translator	1	1

In addition to electrical device loads and internal device cable lengths per peripheral accessories, other rules for peripheral accessories are:

1. The HP 26075A can only be used to share an HP 2680A or an HP 7976A between SPUs. No other peripherals can be used with the HP 26075A.
2. HP-IB Extender supported on the Series 39/40/42/42XP/52 and 44/48/58 only.
  - Only with HP 2688A
  - GIC with Extender is a low-speed GIC.
  - Up to two HP-IB Extender pairs supported on a system (each must have a dedicated GIC).
  - HP 2688A can be placed up to 250 meters from the HP 3000 system.
  - Each Extender pair supports (2) HP 2688As.



## SOFTWARE CONFIGURATION

Tables 3-7 and 3-8 list supported peripherals for HP 3000 Series 30, 33, 39/40/42/42XP/52 and 44/48/58. Table 3-9 lists the device default configuration. Tables 3-10 through 3-27 list information requested in the configuration dialogue when configuring peripherals.

Table 3-7. HP 3000 Supported Peripherals  
(See Notes for differences in support on MPE-V/P and MPE-V/E)

HP Devices	30	33	39/40/42/XP/52	44/48/58	Notes
Maximum High Speed GICs	2	2	2	2	1,10
Maximum GICs	3	4	4	5	
Maximum INPs	3	7	3	7	
Discs:					
7920/7925M	1	1	2	2	2
7920/7925S	7	7	7	14	
7933H/7935H	3	3	8	8	2
7936H/7937H	0	0	8	8	2
7957A/7958A	0	0	4	4	2
7914	0	0	8	8	2
7911/7912	3	3	4	4	2
7906M	1	1	1	1	2
7906S	7	7	6	7	2
Maximum Disc Drives	8	8	8	16	
Tapes:					
7970E-(Master)	1	1	1	2	3
7970E-(Slave)	3	3	3	6	11
7974A	0	0	4	4	2
7976A	1	1	2	2	2,4
7978A/9144	0	0	4	4	2,12
Maximum 1/2" Mag Tape Drives	4	4	4	8	
Maximum Integrated Tape Cartridge	1	1	1	1	3,6
Line Printers:					
2563A	2	2	4	4	2
2565A	0	0	4	4	2
2566A	0	0	4	4	2
2608A	2	2	2	2	5
2608S	2	2	2	2	7
2611A/13A/17A/19A	2	2	2	4	
Maximum Line Printers	2	2	2	4	
Page Printers:					
2680A	2	2	2	2	2
2688A	0	0	2	2	2
Maximum Page Printers	2	2	2	2	
Serial Connected Printers:					
2687A (RS-232/422) ADCC	0	0	1	1	8,9
2687A (RS-232/422) ATP	0	0	2	2	8,9
2631B	4	4	8	8	9
2932A/33A/34A	0	0	8	8	
2563A (RS-232) ADCC	0	0	1	1	2
2563A (RS-232) ATP	0	0	3	3	2

Table 3-7. HP 3000 Supported Peripherals (Con't.)

HP Devices	30 33	39/40/42/XP/52	44/48/58	Notes
Other Devices: 9895A-010 Flexible Disc Drive	1	1	1	
30106A Card Reader	1	1	1	3

## NOTES:

- Maximum of six high-speed device controllers per GIC. The number of controllers may be further limited by cable lengths and loads.
- High-speed devices only.
- Requires a dedicated GIC only.
- The minimum main memory requirement for use of the 7976A is as follows:  
1 drive 512 Kbytes  
2 drives 768 Kbytes
- Cannot share a GIC with any high speed device (exception applies only to Series 30).
- The integrated tape cartridge is only supported on the Series 39/40/42/42XP/52 for systems with less than 132 Mbytes of disc storage.
- High speed device cannot be on the same GIC as a 792X disc.
- The 2687A cannot be a "System" printer.
- These maximums are not additive.
- The 2608S line printer can share a GIC with all high-speed devices except the 7906M, 7920M, and 7925M disc drives.
- Connected to a master.
- Backup limit of 220 Mbytes as a coldload device.

Table 3-8. HP 3000 Supported Peripheral Accessories

HP Devices	30 33	39/40/42/42XP/52	44/48/58	Notes
26075A Multiple System Access Selector	0	0	1	1
37203A HP-IB Extender	0	0	2	2,3
26069A HP-IB-to-Differential Translator	2	2	2	4

## NOTES:

- Only with HP 2680 and HP 7976.
- Only with HP 2688.
- Requires a dedicated GIC only.
- Refer to Section 7 for further detail on the translator.

DEFDATA.PUB.SYS is a table that contains the device defaults for SYSDUMP and INITIAL. DEFDATA is loaded on the system during a cold load (UPDATE, COLDSTART, RELOAD). Table 3-9 lists the device defaults from DEFDATA that a user of SYSDUMP or INITIAL will see.

Table 3-9. Device Defaults (DEFDATA.PUB.SYS), G.01.00 [TDelta1]

LIST DEVICE DEFAULTS?									
Y									
DEVICE NAME	ID CODE	C H	T Y	SUB TYPE	REC OUTPUT			DRIVER NAME	DEVICE CLASSES
					WIDTH	DEV	MODE		
					A P	TERMINAL			
					N E	TYPE	SPEED		
HP2563	!2101	0	32	9	66	0	S	HIOCIPR0	LP
HP2565	!2101	0	32	9	66	0	S	HIOCIPR0	LP
HP2566	!2101	0	32	9	66	0	S	HIOCIPR0	LP
HP2608A	!2001	0	32	4	66	0	S	HIOLPRT0	LP
HP2608S	!2101	0	32	9	66	0	S	HIOCIPR0	LP
HP2613	!200A	0	32	2	66	0	S	HIOLPRT2	LP
HP2617	!200A	0	32	2	66	0	S	HIOLPRT2	LP
HP2619	!200A	0	32	2	66	0	S	HIOLPRT2	LP
HP2680	!2004	0	32	8	66	0	S	HIOPPRT0	LP
HP2688	!2004	0	32	8	66	0	S	HIOPPRT0	LP
HP2893	!0101	0	8	0	40	0		HIOCRDR0	CARDRDR
HP7902	!0081	0	2	0	128	0		HIOFLOP0	FLOP
HP7906BP	!FF02	0	0	12	128	0		HIOMDSC1	DISC
HP7906FP	!FF02	0	0	11	128	0		HIOMDSC1	DISC
HP7906RP	!FF02	0	0	10	128	0		HIOMDSC1	DISC
HP7911	!0204	0	3	1	128	0		HIOMDSC2	DISC
HP7912	!0208	0	3	2	128	0		HIOMDSC2	DISC
HP7914	!020A	0	3	4	128	0		HIOMDSC2	DISC
HP7920	!FF03	0	0	8	128	0		HIOMDSC1	DISC
HP7925	!FF04	0	0	9	128	0		HIOMDSC1	DISC
HP7933	!0212	0	3	8	128	0		HIOMDSC2	DISC
HP7935	!0212	0	3	8	128	0		HIOMDSC2	DISC
HP7936	!0215	0	3	9	128	0		HIOMDSC2	DISC
HP7937	!0214	0	3	10	128	0		HIOMDSC2	DISC
HP7945	!0220	0	3	5	128	0		HIOMDSC2	DISC
HP7957	!022A	0	3	11	128	0		HIOMDSC2	DISC
HP7958	!022B	0	3	12	128	0		HIOMDSC2	DISC
HP7970	!0183	0	24	0	128	0		HIOAPE0	TAPE
HP7974	!0174	0	24	3	128	0		HIOAPE2	TAPE
HP7976	!0176	0	24	1	128	0		HIOAPE1	TAPE
HP7978	!0178	0	24	2	128	0		HIOAPE2	TAPE
HP9140	!0240	0	3	0	128	0		HIOCTAP0	CTAPE SDISC
HP9144	!0260	0	3	3	128	0		HIOCTAP1	CTAPE SDISC
HP9895	!0081	0	2	0	128	0		HIOFLOP0	FLOP
HPLPADCC	!0010	0	32	14	19 240	66	0 S	HIOASLP2	LP
HPLPATP	!000F	0	32	14	19 240	66	0 S	HIOASLP0	LP
HPPCLADCC	!0010	0	32	14	??*960	66	0 S	HIOASLP2	LP
HPPCLATP	!000F	0	32	14	??*960	66	0 S	HIOASLP0	LP
HPTERMADCC	!0010	0	16	0	10 960	40	& JAID	HIOTERM2	TERM
HPTERMATP	!000F	0	16	0	10 960	40	& JAID	HIOTERM1	TERM
HIGHEST DRT = 111 (MIN=8, MAX=127)?									

Table 3-10. Absolute Minimum and Maximum Configuration Settings for MPE V/P

CONFIGURATOR DIALOGUE	UNIT OF MEASURE	MINIMUM VALUE	MAXIMUM VALUE
MAX# OF OPEN SPOOLFILES=XXX.?	---	0	255
CST=XXX.?	ENTRIES	128*	192
EXTENDED CST=XXX.?	ENTRIES	32*	8191
DST=XXXX.?	ENTRIES	128*	1024
PCB=XXX.?	ENTRIES	24*	256
DISC REQUEST TABLE=XXX.?	ENTRIES	32	256
I/O QUEUE=XXX.?	ENTRIES	20	256
TERMINAL BUFFERS=XXX.?	BUFFERS	32	256 <sup>1</sup>
SYSTEM BUFFERS=XXX.?	BUFFERS	8	253
SWAP TABLE=XXX.?	ENTRIES	128	2048
PRIMARY MESSAGE TABLE=XXX.?	WORDS	10	255
SPECIAL REQUEST TABLE=XXX.?	WORDS	10	255
ICS=XXX.?	WORDS	128*	2048
UCOP REQUEST QUEUE=XXX.?	ENTRIES	1*	256
TIMER REQUEST LIST=XXX.?	---	1*	128
BREAKPOINT TABLE=XXX.?	ENTRIES	4	1024
MAX# OF USER LOGGING PROCESSES	PROCESS	2	64
MAX# OF USERS PER PROCESS	PROCESS	1	128
# OF RINS=YYY.?	---	5	1024
#OF GLOBAL RINS USED=YYY.MAX=XXXX.?	---	0	1024
#OF SECONDS TO LOGON=XXX.?	SECONDS	10	600
MAX# OF CONCURRENT SESSIONS=XXX.?	SESSIONS	1	96
MAX# OF CONCURRENT RUNNING JOBS=XXX.?	JOBS	1	30
DEFAULT JOB CPU TIME LIMIT=XXXXX.?	---	0	32767
LOG FILE RECORD SIZE (SECTORS)=X.?	SECTORS	1	8
LOG FILE SIZE (RECORDS)=XXXXX.?	---	16	32767
VIRTUAL MEMORY=XXXXX.?	SECTORS	1024	2
DIRECTORY USED=XXX.MIN=384 MAX=XXXX.?	SECTORS	384	6000
MAX# SPOOLFILES KILOSECTORS=XXXXXX.?	KILO- SECTORS	0	262143
#SECTORS PER SPOOLFILE EXTENT=XXXX.?	SECTORS	128	(%777777D) <sup>3</sup>
MAX CODED SEGMENT SIZE=XXXXX.?	WORDS	8000*	32767 <sup>4</sup>
MAX STACK SIZE=XXXXX.?	WORDS	1200*	16384
MAX EXTRA DATA SEG SIZE=XXXXX.?	WORDS	0	32767
MAX# OF CODE SEGMENTS/PROCESS=XXX.?	---	0*	63
MAX# EXTRA DATA SEGMENTS/ PROCESS=XXX.?	---	0	255
STD STACK SIZE=XXXX.?	WORDS	1200	4096

\*MPE, subsystems, and utilities may require values larger than these minimum values to function.

1. Base value on 6 times the number of concurrent terminal users.
2. Maximum value allowed is 65535 sectors for LDEV 1.
3. Depends on number and size of discs and planned spooling load.
4. Maximum spool file size is 32 times the number of sectors per extent. Choose value according to anticipated size of largest spool file; 384 usually adequate.

Table 3-11. Absolute Minimum and Maximum Configuration Settings for MPE V/E

CONFIGURATOR DIALOGUE	UNIT OF MEASURE	MINIMUM VALUE	MAXIMUM VALUE
MAX# OF OPEN SPOOLFILES=XXX.?	---	0	1024
CST=XXX.?	ENTRIES	128*	192/2048**
EXTENDED CST=XXX.?	ENTRIES	32*	8191**
DST=XXXX.?	ENTRIES	128*	4096
PCB=XXX.?	ENTRIES	24*	1024
DISC REQUEST TABLE=XXX.?	ENTRIES	32	900
I/O QUEUE=XXX.?	ENTRIES	20	1300
TERMINAL BUFFERS=XXX.?	BUFFERS	32	256 <sup>1</sup>
SYSTEM BUFFERS=XXX.?	BUFFERS	8	253
SWAP TABLE=XXX.?	ENTRIES	128	5400
PRIMARY MESSAGE TABLE=XXX.?	WORDS	10	1023
SECONDARY MESSAGE TABLE=XXX.?	WORDS	10	1023
SPECIAL REQUEST TABLE=XXX.?	WORDS	10	2048
ICS=XXX.?	WORDS	128*	4096
UCOP REQUEST QUEUE=XXX.?	ENTRIES	1*	1024
TIMER REQUEST LIST=XXX.?	---	1*	1023
BREAKPOINT TABLE=XXX.?	ENTRIES	4	1024
MAX# OF USER LOGGING PROCESSES	PROCESS	2	64
MAX# OF USERS PER PROCESS		1	256
# OF RINS=YYY.?	---	5	1024
#OF GLOBAL RINS USED=YYY.MAX=XXXX.?	---	0	1024
#OF SECONDS TO LOGON=XXX.?	SECONDS	10	600
MAX# OF CONCURRENT RUNNING PROGRAMS=XXX.?	JOBS	1	512
MAX# OF CONCURRENT SESSIONS=XXX.?	SESSIONS	1	500
MAX# OF CONCURRENT RUNNING JOBS=XXX.?	JOBS	1	500
DEFAULT JOB CPU TIME LIMIT=XXXXX.?	---	0	32767
LOG FILE RECORD SIZE (SECTORS)=X.?	SECTORS	1	8
LOG FILE SIZE (RECORDS)=XXXXX.?	---	16	32767 <sup>2</sup>
VIRTUAL MEMORY=XXXXX.?	SECTORS	1024	
DIRECTORY USED=XXX.MIN=384 MAX=XXXX.?	SECTORS	384	6000
MAX# SPOOLFILES KILOSECTORS=XXXXXX.?	KILO-SECTORS	0	262143
#SECTORS PER SPOOLFILE EXTENT=XXXX.?	SECTORS	128	(%777777D) <sup>3</sup>
MAX CODED SEGMENT SIZE=XXXXX.?	WORDS	8000*	32767 <sup>4</sup>
MAX STACK SIZE=XXXXX.?	WORDS	1200*	16384
MAX EXTRA DATA SEG SIZE=XXXXX.?	WORDS	0	32767
MAX# OF CODE SEGMENTS/PROCESS=XXX.?	---	0*	63/255**
MAX# EXTRA DATA SEGMENTS/ PROCESS=XXX.?	---	0	255
STD STACK SIZE=XXXX.?	WORDS	1200	4096

\*MPE, subsystems, and utilities may require values larger than these minimum values to function.

\*\*The expansion of these tables, requires new microcode for the Series 39/40/42/42XP, and 44/48/58.

1. Base value on 6 times the number of concurrent terminal users.
2. Maximum value allowed is 65535 sectors for LDEV 1.
3. Depends on number and size of discs and planned spooling load.
4. Maximum spool file size is 32 times the number of sectors per extent. Choose value according to anticipated size of largest spool file; 384 usually adequate.

The following is a summary of the tables which contain software configuration information for HP-IB peripherals.

<u>TABLE NO.</u>	<u>TITLE</u>
3-12	Asynchronous Data Communication Controller (ADCC) for Terminals
3-13	Advanced Terminal Processor (ATP) for Terminals
3-14	Terminal Types Supported by MPE V/P and V/E
3-15	Printer Port Speeds for the ATP and ADCC
3-16	Terminal Line Speeds for the ATP and ADCC
3-17	Terminal Subtypes for Device Type 16
3-18	Serial Application Printer
3-19	Serial Spooled Printer
3-20	Line Printer
3-21	HP 2608S, 2563A Line Printer
3-22	HP 2680A, 2688 Laser Printing System
3-23	Card Reader
3-24	Nine-Channel Magnetic Tape Unit
3-25	Integrated Cartridge Tape Unit
3-26	HP 9895 Flexible Disc
3-27	Disc

Table 3-12. Asynchronous Data Communication Controller (ADCC) Drivers  
(HIOTERM0,HIOTERM2)

CONFIGURATOR STEP NO.	CONFIGURATOR DIALOGUE	USER RESPONSE
12	TYPE?	<u>16</u>
13	SUB TYPE?	Refer to Table 3-16.
14 (MPEV/P)	TERM TYPE?	Refer to Table 3-13
14 (MPEV/E)	ENTER [TERM TYPE#], [DESCRIPTOR FILENAME]?	Refer to Table 3-13 for terminal types, and to the Workstation Configurator Reference Manual (30239-90001) for information on creating a user-defined terminal type.
15	SPEED IN CHARACTERS PER SECOND?	Refer to Table 3-15.
30	RECORD WIDTH?	<u>40</u>
31	OUTPUT DEVICE?	<u>1dev#</u>
32	ACCEPT JOB/SESSIONS?	<u>YES</u>
33	ACCEPT DATA?	<u>YES</u>
34	INTERACTIVE?	<u>YES</u>
35	DUPLICATIVE	<u>YES</u>
36	INITIALLY SPOOLED?	<u>NO</u>
38	DRIVER NAME?	<u>HIOTERM0 (MPE V/P)</u> <u>HIOTERM2 (MPE V/E)</u>
43	DEVICE CLASSES?	<u>devclass [,devclass...]</u>



Table 3-13. Advanced Terminal Processor (ATP) Driver (HIOTERM1)

CONFIGURATOR STEP NO.	CONFIGURATOR DIALOGUE	USER RESPONSE
12	TYPE?	<u>16</u>
13	SUB TYPE?	Refer to Table 3-16. For MPE V/E, any invalid sub types entered, defaults to subtype 0.
14 (MPE V/P)	TERM TYPE?	Refer to Table 3- <del>14</del>
14 (MPE V/E)	ENTER [TERM TYPE#], [DESCRIPTOR FILENAME]?	Refer to Table 3-13 for terminal types, and to the Workstation Configurator Reference Manual (30239-90001) for information on creating a user-defined terminal type.
15	SPEED IN CHARACTERS PER SECOND?	Refer to Table 3-15.
30	RECORD WIDTH?	<u>40</u>
31	OUTPUT DEVICE?	<u>ldev#</u>
32	ACCEPT JOB/SESSION?	<u>YES</u>
33	ACCEPT DATA?	<u>YES</u>
34	INTERACTIVE?	<u>YES</u>
35	DUPLICATIVE?	<u>YES</u>
36	INITIALLY SPOOLED?	<u>NO</u>
38	DRIVER NAME?	<u>HIOTERM1</u>
43	DEVICE CLASSES?	<u>devclass[,devclass...]</u>

Table 3-14. Terminal Types Supported by MPE V/P and V/E

TERMINAL TYPES	DESCRIPTION
4	HP 2600A or Datapoint 3300 Keyboard Display Terminal (10/15/30/60/120/240 cps). This terminal type is only supported by the ADCC for MPE V/P.
6	HP 2762A/B (General Electric Terminet 300 or 1200), or Data Communications terminal, Model B (10/15/30/120 cps) with Paper Tape Reader/Punch, Option 2. Note this terminal must be equipped for ECHO PLEX.
10	For HP devices. If ATP hardware is installed, 1920 cps is also possible.
12	HP 2645K Katakana/Roman Data Terminal.
13	Message switching network or other computer.
14	Multipoint Terminal.
15	HP 2635A Printing Terminal. 8-bit protocol (for second character set).
16	HP 2635A Printing Terminal. 7-bit protocol (standard character set).
18	For non-HP devices. Only provides XON/XOFF protocol data-handling. All application printers.
19	HP 2631B or HP 2631B-compatible Remote Spooled Printers.
20	8-bit Remote Spooled Printer (not supported with subtype 15).
21	Remote Spooled Printer with embedded escape sequences allowed. HP 2631B or 2631B-compatible printers.
22	8-bit Remote Spooled Printer with embedded escape sequences allowed (not supported with subtype 15). Specific to HP 2631B or 2631B-compatible printers with 8-bit data, no parity.

For further information refer to the Fundamental Communications Handbook (5957-4634).

Table 3-15. Printer Port Speeds for the ATP and ADCC

Line Speed	Chars/Sec	ATP	ADCC
110	10	Y	N
150	15	N	Y
300	30	Y	Y
600	60	Y	Y
1200	120	Y	Y
2400	240	Y	Y
4800	480	Y	Y
9600	960	Y	Y
19200	1920	Y	N

Table 3-16. Terminal Line Speeds for the ATP and ADCC

LINE SPEED	CHARS/SEC	ATP SENSED	ADCC HIOTERM2 SENSED/SPECIFIED	ADCC HIOTERM0 SENSED/SPECIFIED
110	10	Y	N / N	N / N
150	15	N	N / Y	Y / Y
300	30	Y	Y / Y	Y / Y
600	60	Y	Y / Y	N / Y
1200	120	Y	Y / Y	Y / Y
2400	240	Y	Y / Y	Y / Y
4800	480	Y	Y / Y	N / Y
9600	960	Y	Y / Y	N / Y
19200	1920	Y	N / N	N / N

Table 3-17. Terminal Subtypes for Device Type 16

SUBTYPE	DESCRIPTION
0	Directly connected terminals requiring speed sensing. Not recommended for use with modems.
1	Asynchronous full duplex modems. Compatible with Bell 103, 202T, 212A, and CCITT V.21 modems requiring speed sensing. ATP and ADCC (HIOTERM2) require Data Set Ready (RS-232-C "CC", CCITT 107) and Data Carrier Detect (RS-232-C "CF", CCITT 109) to be ON.
2	Asynchronous half duplex modems with reverse channels (such as Bell 202S and CCITT V.23 modems). Speed sensing is performed and "Data Rate Select" (RS232C "CH"-CCITT 111) is set ON. Not available on HP 4X. "Data Set Ready" and "Data Carrier Detect" on the ADCC must be set ON.
3	Identical to subtype 2 except that "Data Rate Select" is set OFF. Not available on HP 4X/6X. "Data Set Ready" and "Data Carrier Detect" on the ADCC is set ON.
4	Identical to subtype 0 except that automatic speed sensing is disabled. This subtype is intended for operation with leased-line full duplex modems which can be configured to operate without control signals (i.e., 202T). (Not supported for MPE V/E.)
5	Identical to subtype 1 except that automatic speed sensing is disabled. (Not supported for MPE V/E.)
9	ATP only — Asynchronous CCITT modem that requires monitoring circuit 108 (clear to send); otherwise identical to subtype 1.

Table 3-18. Serial Application Printer Drivers (HIOTERM0,HIOASLP2,HIOASLP0)

CONFIGURATOR STEP NO.	CONFIGURATOR DIALOGUE	USER RESPONSE
12	TYPE?	<u>32</u>
13	SUB TYPE?	<u>14</u> Subtype 14 is direct connect. <u>15</u> Subtype 15 is modem connect.
14 (MPE V/P)	TERM TYPE?	<u>18</u>
14 (MPE V/E)	ENTER [TERM TYPE#], [DESCRIPTOR FILENAME]?	<u>18</u> (terminal type). Refer to the Workstation Configurator Reference Manual (30239-90001) for information on creating a user-defined terminal type.
15	SPEED IN CHARACTERS PER SECOND?	Refer to Table 3-15.
30	RECORD WIDTH?	<u>40</u>
31	OUTPUT DEVICE?	<u>0</u>
32	ACCEPT JOB/SESSION?	<u>NO</u>
33	ACCEPT DATA?	<u>NO</u>
34	INTERACTIVE?	<u>NO</u>
35	DUPLICATIVE?	<u>NO</u>
36	INITIALLY SPOOLED?	<u>NO</u>
38	DRIVER NAME?	<u>HIOTERM0</u> ADCC (MPE V/P) <u>HIOASLP2</u> ADCC (MPE V/E) <u>HIOASLP0</u> ATP (MPE V/E)
43	DEVICE CLASSES?	devclass[,devclass...]

Table 3-19. Serial Spooled Printer Drivers (HIOTERM0, HIOASLP2, HIOASLP0)

CONFIGURATOR STEP NO.	CONFIGURATOR DIALOGUE	USER RESPONSE
12	TYPE?	<u>32</u>
13	SUB TYPE?	<u>14</u> or <u>15</u> Sub-type 14 is direct connect. Sub-type 15 is modem connect.
14 (MPE V/P)	TERM TYPE?	<u>19</u> , <u>20</u> , <u>21</u> , or <u>22</u> (Refer to Table 3-13.)
14 (MPE V/E)	ENTER [TERM TYPE], [DESCRIPTOR FILENAME]?	<u>19</u> , <u>20</u> , <u>21</u> , or <u>22</u> (terminal types). Refer to the Workstation Configurator Reference Manual (30239-90001) for information on creating a user-defined terminal type.
15	SPEED IN CHARACTERS PER SECOND?	Refer to Table 3-16.
30	RECORD WIDTH?	<u>66</u>
32	ACCEPT JOB/SESSION?	<u>NO</u>
33	ACCEPT DATA?	<u>NO</u>
34	INTERACTIVE?	<u>NO</u>
35	DUPLICATIVE?	<u>NO</u>
36	INITIALLY SPOOLED?	<u>YES</u>
37	INPUT OR OUTPUT?	<u>IN</u> or <u>OUT</u>
38	DRIVER NAME?	<u>HIOTERM0</u> ADCC (MPE V/P) <u>HIOASLP2</u> ADCC (MPE V/E) <u>HIOASLP0</u> ATP (MPE V/E)
43	DEVICE CLASSES?	<u>devclass[, devclass...]</u>

Table 3-20. Line Printer Drivers (HIOLPRT0,HIOLPRT1,HIOLPRT2)

CONFIGURATOR STEP NO.	CONFIGURATOR DIALOGUE	USER RESPONSE
12	TYPE?	<u>32</u>
13	SUB TYPE?	<u>4</u> -HP2608A <u>5</u> - HP2631A/B <u>2</u> - HP261X
30	RECORD WIDTH?	<u>66</u>
31	OUTPUT DEVICE?	<u>0</u>
32	ACCEPT JOB/SESSION?	<u>NO</u>
33	ACCEPT DATA?	<u>NO</u>
34	INTERACTIVE?	<u>NO</u>
35	DUPLICATIVE?	<u>NO</u>
36	INITIALLY SPOOLED?	<u>NO</u> or <u>YES</u>
38	DRIVER NAME?	<u>HIOLPRT0</u> - HP2608A <u>HIOLPRT1</u> - HP2631A/B <u>HIOLPRT2</u> - HP261X
43	DEVICE CLASSES?	<u>devclass[,devclass...]</u>

Table 3-21. HP2608S, 2563A Line Printer Driver (HIOCIPR0)

CONFIGURATOR STEP NO.	CONFIGURATOR DIALOGUE	USER RESPONSE
12	TYPE?	<u>32</u>
13	SUBTYPE?	<u>9</u> - feature access <u>13</u> - transparency
30	RECORD WIDTH?	<u>66</u>
31	OUTPUT DEVICE?	<u>0</u>
32	ACCEPT JOB/SESSION?	<u>NO</u>
33	ACCEPT DATA?	<u>NO</u>
34	INTERACTIVE?	<u>NO</u>
35	DUPLICATIVE?	<u>NO</u>
36	INITIALLY SPOOLED?	<u>YES</u> or <u>NO</u>
38	DRIVER NAME?	<u>HIOCIPR0</u>
43	DEVICE CLASSES?	<u>devclass[,devclass...]</u>

Table 3-22. HP2680A, 2688A Laser Printing System Driver (HIOPPRT0)

CONFIGURATOR STEP NO.	CONFIGURATOR DIALOGUE	USER RESPONSE
12	TYPE?	<u>8</u>
13	SUB TYPE?	<u>0</u>
30	RECORD WIDTH?	<u>66</u>
31	OUTPUT DEVICE?	<u>0</u>
32	ACCEPT JOB/SESSION?	<u>NO</u>
33	ACCEPT DATA?	<u>NO</u>
34	INTERACTIVE?	<u>NO</u>
35	DUPLICATIVE?	<u>NO</u>
36	INITIALLY SPOOLED?	<u>YES</u>
37	INPUT OR OUTPUT?	<u>IN</u> or <u>OUT</u>
38	DRIVER NAME?	<u>HIOPPRT0</u>
43	DEVICE CLASSES?	<u>devclass[,devclass...]</u>



Table 3-23. Card Reader Driver (HIODRDO)

CONFIGURATOR STEP NO.	CONFIGURATOR DIALOGUE	USER RESPONSE
12	TYPE?	<u>8</u>
13	SUB TYPE?	<u>0</u>
30	RECORD WIDTH?	<u>40</u>
31	OUTPUT DEVICE?	<u>ldev</u> or <u>devclass</u> of listing device
32	ACCEPT JOB/SESSION?	<u>YES</u>
33	ACCEPT DATA?	<u>YES</u>
34	INTERACTIVE?	<u>NO</u>
35	DUPLICATIVE?	<u>NO</u>
36	INITIALLY SPOOLED?	<u>NO</u> or <u>YES</u>
38	DRIVER NAME?	<u>HIODRDO</u>
43	DEVICE CLASSES?	<u>devclass[,devclass...]</u>

Table 3-24. Nine-Channel Magnetic Tape Unit Drivers  
(HIOTAPE0,HIOTAPE1, HIOTAPE2)

CONFIGURATOR STEP NO.	CONFIGURATOR DIALOGUE	USER RESPONSE
12	TYPE?	<u>24</u>
13	SUB TYPE?	<u>0</u> or <u>8</u> (auto-reply) HP7970E <u>1</u> or <u>9</u> (auto-reply) HP7976A <u>3</u> or <u>11</u> (auto-reply) HP7974A <u>2</u> or <u>10</u> (auto-reply) HP7978
30	RECORD WIDTH?	<u>128</u>
31	OUTPUT DEVICE?	<u>0</u>
32	ACCEPT JOB/SESSION?	<u>YES</u> or <u>NO</u>
33	ACCEPT DATA?	<u>YES</u> or <u>NO</u>
34	INTERACTIVE?	<u>NO</u>
35	DUPLICATIVE?	<u>NO</u>
36	INITIALLY SPOOLED?	<u>NO</u>
38	DRIVER NAME?	<u>HIOTAPE0</u> - HP7970E <u>HIOTAPE1</u> - HP7976A <u>HIOTAPE2</u> - HP7974A, 7978
43	DEVICE CLASSES?	<u>devclass[,devclass...]</u>

Table 3-25. Integrated Cartridge Tape Unit Driver (HIOCTAP0)

CONFIGURATOR STEP NO.	CONFIGURATOR DIALOGUE	USER RESPONSE		
		HP 9140A	HP 9144A	HP 35401A
12	TYPE?	<u>3</u>	<u>3</u>	<u>3</u>
13	SUB TYPE?	<u>0</u>	<u>3</u>	<u>6</u>
30	RECORD WIDTH?	<u>128</u>	<u>128</u>	<u>128</u>
31	OUTPUT DEVICE?	<u>0</u>	<u>0</u>	<u>0</u>
32	ACCEPT JOB/SESSION?	<u>NO</u>	<u>NO</u>	<u>NO</u>
33	ACCEPT DATA?	<u>NO</u>	<u>NO</u>	<u>NO</u>
34	INTERACTIVE?	<u>NO</u>	<u>NO</u>	<u>NO</u>
35	DUPLICATIVE?	<u>NO</u>	<u>NO</u>	<u>NO</u>
36	INITIALLY SPOOLED?	<u>NO</u>	<u>NO</u>	<u>NO</u>
38	DRIVER NAME?	<u>HIOCTAP0</u>	<u>HIOCTAP1</u>	<u>HIOCTAP2</u>
43	DEVICE CLASSES?	<u>devclass[,devclass...]</u>		

Table 3-26. HP9895 Flexible Disc Driver (HIOFLOP0)

CONFIGURATOR STEP NO.	CONFIGURATOR DIALOGUE	USER RESPONSE
12	TYPE?	<u>2</u>
13	SUB TYPE?	<u>0</u>
30	RECORD WIDTH?	<u>128</u>
31	OUTPUT DEVICE?	<u>0</u>
32	ACCEPT JOB/SESSION?	<u>NO</u>
33	ACCEPT DATA?	<u>NO</u>
34	INTERACTIVE?	<u>NO</u>
35	DUPLICATIVE?	<u>NO</u>
36	INITIALLY SPOOLED?	<u>NO</u>
38	DRIVER NAME?	<u>HIOFLOP0</u>
43	DEVICE CLASSES?	<u>devclass1,devclass...</u>

Table 3-27. Disc Drivers (HIOMDSC1, HIOMDSC2)

CONFIGURATOR STEP NO.	CONFIGURATOR DIALOGUE	USER RESPONSE
12	TYPE?	<u>0</u> - HP7906A, 792X <u>3</u> - HP791X, 793X, 794X, 795X
13	SUB TYPE?	<u>10</u> HP7906 (removable platter) <u>11</u> HP7906 (fixed platter) <u>12</u> HP7906 (both platters) <u>1</u> HP7911 <u>2</u> HP7912 <u>4</u> HP7914 <u>5</u> HP7945 <u>8</u> HP7920, 7933, 7935 <u>9</u> HP7925, 7936 <u>10</u> HP7937 <u>11</u> HP7957 <u>12</u> HP7958
30	RECORD WIDTH?	<u>128</u>
31	OUTPUT DEVICE?	<u>0</u>
32	ACCEPT JOB/SESSION?	<u>NO</u>
33	ACCEPT DATA?	<u>NO</u>
34	INTERACTIVE?	<u>NO</u>
35	DUPLICATIVE?	<u>NO</u>
36	INITIALLY SPOOLED?	<u>NO</u>
38	DRIVER NAME?	HIOMDSC1 - HP7906A, 792X HIOMDSC2 - HP791X, 793X
43	DEVICE CLASSES?	<u>devclass1,devclass...</u>

## MEMORY ADD-ON

The following is a list of possible memory add-on configurations to existing HP 3000 Series 39/40/42 and 44/48 Computer Systems. The memory configurations are divided into two tables, one for the Series 39/40/42 and one for the Series 44/48 (refer to Tables 3-28 and 3-29).

Table 3-28. Memory Add-On Configurations (Series 39/40/42)

MEMORY ARRAY COUNT		CONNECTOR LENGTH	TOTAL MEMORY	CARD CAGE				
1 Mb	256 Kb	(Slots)	(Mb)	Controller Memory Arrays				
				A1	A2	A3	A4	A5
0	1	5	0.25	1/4 0				A
0	2	5	0.50	1/4 0	1/4 1			A
0	3	5	0.75	1/4 0	1/4 1	1/4 2		A
0	4	5	1.00	1/4 0	1/4 1	1/4 2	1/4 3	A
1	0	5	1.00	1 0				M
1	2	5	1.50	1 0	1/4 4	1/4 5		A
2	0	5	2.0	1 0	1 1			M
3	0	5	3.0	1 0	1 1	1 2		M

Memory  
Size (Mb)  
Switch  
Setting

A = responds to addresses in first 2 MBs

B = responds to addresses in second 2 MBs

M = responds to all addresses in 0-4 MB range

\*\*Three MBs only supported on Series 39 and S42

Table 3-31. Series 42XP with 6 MB of Memory (two 2 MB PCAs).

Card Cage Slot Number	Memory PCA Size	Address Switch Setting
1	2 MB	0
2	2 MB	1
3	1 MB	4
4	1 MB	5

Table 3-32. Series 42XP with 6 MB of Memory (three 2 MB PCAs).

Card Cage Slot Number	Memory PCA Size	Address Switch Setting
1	2 MB	0
2	2 MB	1
3	2 MB	2
4	MUST BE EMPTY	N/A

## Series 52/58 Memory Add-on

1. Use Table 3-33 for Series 52 systems. Use Table 3-34 for Series 58 systems. Determine which slot corresponds with the left end of the ribbon connector being used. Beginning with this slot, fill the card cage from left to right with the memory arrays. Table 3-34 is a dual-purpose table. It contains configuration information for Series 58 first and second card cage configurations.

**NOTE**

Table 3-34 shows the slot assignments for the maximum ribbon connector length. If you are using a seven-slot ribbon connector in the first card cage, place the left-most memory array in slot A4 in the first card cage or in slot E14 in the second card cage.

2. Set the thumbwheel of ALL memory arrays as indicated in Table 3-33 or Table 3-34. For each memory configuration, the first row of numbers in the CARD CAGE columns indicates the memory on the PCA in that slot. The second row of numbers in the CARD CAGE columns shows how the memory arrays should be configured.

**NOTE**

If no INP PCAs (P/N 30020-60009) are installed in card cage 2, install all of the memory PCAs in card cage 2.

If any INP PCAs (P/N 30020-60009) and associated GICs are installed in card cage 2, install all of the memory PCAs in card cage 1.



Table 3-33. Series 52 Memory Configuration

MEMORY ARRAY					CONN- ECTOR LENGTH (SLOTS)	TOTAL MEM (MB)	CARD CAGE (SERIES 52)							
30173- 60001 2MB	30478- 60001 2MB	30479- 60001 4MB	30161- 60001 1MB				A1	A2	A3	A4	A5	A6	A7	A8
0	0	0	4	7	4	1	1	1	1					
0	0	1	0	7	4	0	1	2	3					
0	0	1	1	7	5	4	1							
0	0	1	2	7	6	0	4							
0	0	1	3	7	7	4	1	1	1					
0	0	2	0	7	8	0	4	5	6					
0	1	0	2	7	4	4	4							
0	1	0	3	7	5	0	4							
0	1	1	0	7	6	2	1	1						
0	1	1	1	7	7	0	2	3						
0	1	1	2	7	8	2	1	1	1					
0	2	0	0	7	4	0	2	3	4					
0	2	0	1	7	5	2	4							
0	2	0	2	7	6	0	2							
0	2	1	0	7	8	2	2							
0	3	0	0	7	6	0	2							
0	3	0	1	7	7	2	2	1						
0	3	0	2	7	8	0	2	4						
0	4	0	0	7	8	2	2	1	1					
1	0	0	2	7	4	0	2	4	5					
1	0	0	3	7	5	2	2	4						
						0	2	4						
						0	2	4						
						0	2	4	6					
						0	2	4	6	7				
						0	2	4	6	7				
						a	1	1						
						0	2	3						
						a	1	1	1					
						0	2	3	4					

a = 2 MB Memory PGA (P/N 30173-60001)

Table 3-33. Series 52 Memory Configuration (continued)

MEMORY ARRAY				CONN- ECTOR LENGTH (SLOTS)	TOTAL MEM (MB)	CARD CAGE (SERIES 52)										
30173- 60001	30478- 60001	30479- 60001	30161- 60001			2MB	2MB	4MB	1MB	A1	A2	A3	A4	A5	A6	A7
1	0	1	0	7	6	a	4									
						0	2									
1	0	1	1	7	7	a	4	1								
						0	2	6								
1	0	1	2	7	8	a	4	1	1							
						0	2	6	7							
1	1	0	0	7	4	a	2									
						0	2									
1	1	0	1	7	5	a	2	1								
						0	2	4								
1	1	0	2	7	6	a	2	1	1							
						0	2	4	5							
1	2	0	0	7	6	a	2	2								
						0	2	4								
1	2	0	1	7	7	a	2	2	1							
						0	2	4	6							
1	3	0	0	7	8	a	2	2	2							
						0	2	4	6							
2	0	0	0	7	4	a	a									
						0	1									
2	0	0	1	7	5	a	a	1								
						0	1	4								
2	0	0	2	7	6	a	a	1	1							
						0	1	4	5							
2	1	0	0	7	6	a	a	2								
						0	1	4								
2	1	0	1	7	7	a	a	2	1							
						0	1	4	6							
2	2	0	0	7	8	a	a	2	2							
						0	1	4	6							
3	0	0	0	7	6	a	a	a								
						0	1	2								
3	0	0	1	7	7	a	a	a	1							
						0	1	2	6							
3	1	0	0	7	8	a	a	a	2							
						0	1	2	6							
4	0	0	0	7	8	a	a	a	a							
						0	1	2	3							

a = 2 MB Memory PCA (P/N 30173-60001)

Table 3-34. Series 58 Memory Configuration

MEMORY ARRAY				CONN- ECTOR LENGTH (SLOTS)	TOTAL MEM (MB)	CARD CAGE 1 (SERIES 58C)								CARD CAGE 2 (SERIES 58A/B)												
30173- 60001	30478- 60001	30479- 60001	30161- 60001			2MB	2MB	4MB	1MB	A1	A2	A3	A4	A5	A6	A7	A8	E9	E10	E11	E12	E13	E14	E15	E16	
0	4	0	0	7	8	2	2	2	2										2	2	2	2				
						0	2	4	6										6	4	2	0				
1	0	0	2	7	4	a	1	1													1	1	a			
						0	2	3													3	2	0			
1	0	0	3	7	5	a	1	1	1											1	1	1	a			
						0	2	3	4											4	3	2	0			
1	0	0	4	7	6	a	1	1	1	1									1	1	1	1	a			
						0	2	3	4	5									5	4	3	2	0			
1	0	1	0	7	6	a	4															4	a			
						0	2																2	0		
1	0	1	1	7	7	a	4	1													1	4	a			
						0	2	6													6	2	0			
1	0	1	2	7	8	a	4	1	1											1	1	4	a			
						0	2	6	7											7	6	2	0			
1	1	0	0	7	4	a	2															2	a			
						0	2																2	0		
1	1	0	1	7	5	a	2	1													1	2	a			
						0	2	4														4	2	0		
1	1	0	2	7	6	a	2	1	1											1	1	2	a			
						0	2	4	5											5	4	2	0			
1	1	0	3	7	7	a	2	1	1	1										1	1	1	2	a		
						0	2	4	5	6										6	5	4	2	0		
1	1	0	4	7	8	a	2	1	1	1	1									1	1	1	2	a		
						0	2	4	5	6	7									7	6	5	4	2	0	
1	2	0	0	7	6	a	2	2													2	2	a			
						0	2	4														4	2	0		
1	2	0	1	7	7	a	2	2	1											1	2	2	a			
						0	2	4	6											6	4	2	0			
1	2	0	2	7	8	a	2	2	1	1										1	1	2	a			
						0	2	4	6	7										7	6	4	2	0		
1	3	0	0	7	8	a	2	2	2												2	2	2	0		
						0	2	4	6												6	4	2	0		
2	0	0	0	7	4	a	a																a	a		
						0	1																	0	1	
2	0	0	1	7	5	a	a	1														1	a	a		
						0	1	4														4	1	0		
2	0	0	2	7	6	a	a	1	1												1	1	a	a		
						0	1	4	5													5	4	1	0	
2	0	0	3	7	7	a	a	1	1	1											1	1	1	a	0	
						0	1	4	5	6											6	5	4	1	0	
2	0	0	4	7	8	a	a	1	1	1	1										1	1	1	a	a	
						0	1	4	5	6	7										7	6	5	4	1	0

a = 2 MB Memory PCA (P/N 30173-60001)

Table 3-34. Series 58 Memory Configuration (continued)

MEMORY ARRAY				CONN- ECTOR LENGTH (SLOTS)	TOTAL MEM (MB)	CARD CAGE 1 (SERIES 58C)								CARD CAGE 2 (SERIES 58A/B)									
30173- 60001	30478- 60001	30479- 60001	30161- 60001			2MB	2MB	4MB	1MB	A1	A2	A3	A4	A5	A6	A7	A8	E9	E10	E11	E12	E13	E14
0	0	0	4	7	4	1	1	1	1											1	1	1	1
0	0	1	0	7	4	0	1	2	3											3	2	1	0
0	0	1	1	7	5	4	1															1	4
0	0	1	2	7	6	0	4															4	0
0	0	1	3	7	7	4	1	1	1												1	1	4
0	0	1	4	7	8	0	4	5	6											6	5	4	0
0	0	2	0	7	8	4	1	1	1	1										1	1	1	4
0	0	2	0	7	8	0	4	5	6	7										7	6	5	4
0	1	0	2	7	4	4	4															4	0
0	1	0	3	7	5	2	1	1													1	1	2
0	1	0	4	7	6	0	2	3													3	2	0
0	1	0	4	7	6	2	1	1	1												4	3	2
0	1	1	0	7	6	0	2	3	4	5											1	1	2
0	1	1	1	7	7	2	4														5	4	3
0	1	1	2	7	8	0	2	6														1	4
0	2	0	0	7	4	2	4	1	1												7	6	2
0	2	0	1	7	5	0	2															2	2
0	2	0	2	7	6	2	2	1														1	2
0	2	0	3	7	7	0	2	4														4	2
0	2	0	4	7	8	2	2	1	1													1	2
0	2	1	0	7	8	0	2	4	5	6												5	4
0	3	0	0	7	6	2	2															1	2
0	3	0	1	7	7	0	2	4														4	2
						2	2	1														1	2
						0	2	4	6													6	4

a = 2 MB Memory PCA (P/N 30173-60001)

Table 3-34. Series 58 Memory Configuration (continued)

MEMORY ARRAY					CONN- ECTOR LENGTH (SLOTS)	TOTAL MEM (MB)	CARD CAGE 1 (SERIES 58C)								CARD CAGE 2 (SERIES 58A/B)							
30173- 60001 2MB	30478- 60001 2MB	30479- 60001 4MB	30161- 60001 1MB				A1	A2	A3	A4	A5	A6	A7	A8	E9	E10	E11	E12	E13	E14	E15	E16
0	3	0	2	7	8	2	2	2	1	1						1	1	2	2	2		
						0	2	4	6	7						7	6	4	2	0		
2	1	0	0	7	6	a	a	2										2	a	a		
						0	1	4										4	1	0		
2	1	0	1	7	7	a	a	2	1								1	2	a	a		
						0	1	4	6								6	4	1	0		
2	1	0	2	7	8	a	a	2	1	1						1	1	2	a	a		
						0	1	4	6	7						7	6	4	1	0		
2	2	0	0	7	8	a	a	2	2								2	2	a	a		
						0	1	4	6								6	4	1	0		
3	0	0	0	7	6	a	a	a										a	a	a		
						0	1	2										2	1	0		
3	0	0	1	7	7	a	a	a	1								1	a	a	a		
						0	1	2	6								6	2	1	0		
3	0	0	2	7	8	a	a	a	1	1						1	1	a	a	a		
						0	0	1	2	6	7					7	6	2	1	0		
3	1	0	0	7	8	a	a	a	2								2	a	a	a		
						0	1	2	6								6	2	1	0		
4	0	0	0	7	8	a	a	a	a								a	a	a	a		
						0	1	2	3								3	2	1	0		

a = 2 MB Memory PCA (P/N 30173-60001)

# TROUBLESHOOTING

SECTION

IV

Troubleshooting data presented in this section is designed to assist the user with diagnostic and repair functions affecting the HP 3000 Series 30,33,37, 39/40/42/42XP/52 and 44/48/58. Also included are system halt and error messages.

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## Troubleshooting

# LISTLOG5

Utility program used to print the contents in sequential order of any MPE log file record types existing on the system.

Default output to line printer

To output to terminal

```
.FILE LOGLIST=$STDLIST
```

To run program

```
.RUN LISTLOG5.PUBSYS
```

```
LIST LOG FILE PROGRAM VERSION 00.00 2/20/76
ENTER FIRST AND LAST LOG FILE TO BE ANALYZED
FIRST?2842
LAST?2842          (Note: Do not enter latest File)
ENTER EVENTS TO BE PRINTED
TYPE NO.  EVENT
 0 LOG FAILURE
 1 SYSTEM UP
 2 JOB INITIATION
 3 JOB TERMINATION
 4 PROCESS TERMINATION
 5 FILE CLOSE
 6 SYSTEM SHUTDOWN
 7 POWER FAILURE
 8 SPOOLING LOG RECORD
 9 LINE DISCONNECTION
10 LINE CLOSE
11 I/O ERRORS
12 PRIVATE VOLUMES
13 PRIVATE VOLUMES
14 TAPE LABELS
15 CONSOLE LOG
16 PROGRAM FILE EVENT
17 CALL PROGRESS SIGNALS
18 DCE PROVIDED INFO
46 MAINTENANCE REQUEST
ENTER EVENT NUMBERS SEPARATED BY COMMAS
11
DO YOU WANT TO PURGE LOG FILES?NO
DO YOU WISH TO RUN AGAIN (Y OR N)?NO

END OF PROGRAM
```

:RUN LISTLOG5.PUBSYS

ENTER FIRST AND LAST LOG FILE TO BE ANALYZED

FIRST? \_\_\_\_\_ (Enter nnnn from above)

LAST? \_\_\_\_\_ (If no new logs have been opened after number nnnn,  
LAST will also be nnnn, so just enter <CR>.)

ENTER EVENTS TO BE PRINTED

TYPE NO.	EVENT
0	LOG FAILURE
:	:
:	:
11	I/O ERRORS
:	:

ENTER EVENT NUMBERS SEPARATED BY COMMAS. A CARRIAGE RETURN ASSUMES ALL EVENTS WILL BE EVALUATED.

11 (An entry of 11 is shown, since we are only interested in I/O errors.)

The Listlog5 output will be directed to the line printer; ensure that the line printer is online.

DO YOU WANT TO PURGE LOG FILES? NO

(If the previous FREE5 listing indicated the disc was getting low on space - less than 15% free - you may wish to enter YES to purge the log files. Never purge log files without the customer's OK.)

DO YOU WISH TO RUN AGAIN (Y OR N?) N

END OF PROGRAM

Examine LISTLOG5 printout for Disc and/or Tape errors.



## MEMORY ERROR LOGGING UTILITY

The memory logging utility is used to examine the error history of memory. The utility consists of the following:

- o Memory error logging process (MEMLOGP)
- o Memory error log analysis program (MEMLOGAN)
- o Memory error logging internal update program (MEMTIMER)

### Memlogan

MEMLOGAN (MEMLOGAN.PUBSYS) is the utility that reads and interprets the error information logged and kept in the MEMLOG file. Refer to Table 4-1 for an example of the Memlog Error Printout Format. To run the program enter:

```
:FILE OUT;DEV=LP  
:RUN MEMLOGAN.PUBSYS
```

<b>NOTE</b>
-------------

If an additional error is encountered by MEMLOGAN, the program will print the appropriate error information and then terminate.

Table 4-1. MEMLOGAN Format (Series 30,33, 39/40/42/42XP/52 and 44/48/58)

ADDRESS			ERROR TYPE			ERROR
CONTROLLER	BOARD	ROW	TYPE	BIT	CHIP	COUNT
controller	board	row	type	bit	chip	cnt

VALUES:

*controller* The memory controller where the error occurred, shown as CONTROLLER A or CONTROLLER B. The Series 30 and 39/40/42/42XP/52/58 have only one controller (A).

*board* The memory module board on which the error occurred.

*row* The row designation on the board in which the failing chip is located.

*type* Type of error detected, as follows:

CHECK *Check bit error.*

DATA *Data bit error.*

MULTIPLE BIT ERROR *Error is more than one bit.*

FORCED D.E.W. *Forced Double Error Write. Parity error on the data transmitted to memory.*

MISSING ARRAY BOARD *Non-responding array board.*

*bit* If *type* = CHECK, *bit* is the failing check bit. If *type* = DATA, *bit* refers to the failing data bit.

*chip* Chip on which error occurred, in format:

$U_n$

Variable *n* is a digit indicating the chip number.

*count* The number of logging intervals during which this error was detected at least once. This value does not represent the number of times that an error was actually detected.

## Memlogan (Continued)

### Use of Parameters

PARM=0; Causes the current contents of MEMLOG to be printed on the output device. The contents of the file will not be changed. This is the default PARM value.

PARM=1; Causes the current contents of MEMLOG to be printed on the output device after which the file is reset to a no-error state. All previously logged errors are deleted from the log file.

<b>NOTE</b>
-------------

When a system is initialized for the first time or the memory size is changed, MEMLOGAN should be run with PARM=1 as soon as the system is up and running. This will ensure a clean MEMLOG file and that subsequent error counts are valid. Also, use PARM=1 if the power has been down for any reason.

PARM=2; Causes the current contents of MEMLOG to be printed on the output device after which the file is deleted from the system. (This is the only way to remove the MEMLOG file from the system and normally only the system manager would use the PARM value).

## Memtimer

MENTIMER (MENTIMER.PUB.SYS) is the utility program which allows the user to modify the interval of time between successive memory log updates. To run the program enter:

```
:RUN MENTIMER;PARM=n
```

n=logging interval in seconds

Default period is 60 minutes.

To return logging to the default interval (60 minutes), enter:

```
:RUN MENTIMER;PARM=3600
```

## WORKOUT 2/WORKSER

WORKOUT2 is an online program that exercises both disc and tape drives. WORKOUT2 can open 64 disc files and four tape files. It writes 512 records to disc and/or tape, writes a file mark, and rewinds or resets to the beginning of the disc or tape files. WORKOUT2 then reads records, comparing the read and write buffers and reporting any errors. (WORKOUT2 writes 4095-word records.) If the SORT option is invoked, the program sorts the first and last disc file. WORKOUT2 requires the following parameters: Cap=IA,BA;Maxdata=%75000.

WORKSER is very similar to WORKOUT2, but is designed for serial devices (cartridge tapes, tapes, and discs used as serial devices). WORKSER is the preferred exerciser for cartridge tapes.

WORKSER can open 64 disc files, and only one tape file. It writes 8192-word records until the end of the tape, writes a file mark, and rewinds. The program then reads the tape, comparing read/write buffers and reporting any errors. Run the program just as you would run WORKOUT2, substituting "WORKSER" for "WORKOUT2".

In the following example, entries made by the operator are underlined. Pressing the "RETURN" key in response to questions selects the default answer.

To initiate the WORKOUT2 program, enter:

```
:RUN WORKOUT2[ ;PARAM=]
```

Three options are available but not mandatory when running WORKOUT2:

```
;PARAM=1
```

Eliminates comparing data buffers after each READ.

```
;PARAM=2
```

Causes END OF PASS messages to be displayed at the System Console as well as with \$STDLIST.

```
;PARAM=3
```

Accomplishes both of the above.

```
NUMBER OF DISC FILES?2 (Default is 0.)
```

Assuming sufficient space was shown during "RUN FREE5" enter any number from 0-64. WORKOUT2 will attempt to open that number of files. Each work file requires approximately 10,000 sectors.

```
LDN FOR FILE #1?1 (Default is 0.)
```

```
LDN FOR FILE #2?1 (Default is 0.)
```

The above example assumes that only the system disc is currently online. If more discs are present, specify any appropriate LDEV number from 0-255. When zero is entered, WORKOUT2 spreads its files over all devices in class DISC.

```
IS A SORT TO BE DONE? NO (Default is NO.)
```

## Troubleshooting

This question is only asked if the answer to "NUMBER OF DISC FILES?" above was 2 or greater. A "YES" answer causes file 1 to be sorted and written to file n; where "n" is the last file specified. For example, if you specified 2 disc files above and answered this question with "Y" the program would write to file 1, read back the data, sort it, then write it to file 2. Doing a sort significantly lengthens the program run time.

NUMBER OF TAPE FILES? 1 (if a tape unit is available; default is 0)

Enter a number from 0-4.

NUMBER OF PASSES? 1 (Default is 0)

Any number from 0-32767 may be entered. The default value of 0 causes the program to terminate immediately.

?TIME/SESSION #/PIN #/LDEV #FOR "WRKTAPE1" ON TAPE(NUM)?

=REPLY PIN#,LDEV#

This question and its reply are displayed only if the answer to NUMBER OF TAPE FILES? was greater than 0. Be sure you have mounted a "scratch" tape or one whose contents you do not mind losing.

<time> START

WORKOUT2 now attempts to open the files. If all files are successfully opened, no message appears. If any file cannot be opened, a message to that effect appears. Each pass is followed by a message telling how many files were successfully opened.

<time> END OF PASS 1 FILES: DISC=2, TAPE= 1  
TAPE #RETRY#  
1 7

END OF PROGRAM

**FREE5**

FREE5 details the contiguous free space on each mounted disc volume and the total free space on each disc volume, and the total free space in the system. HP recommends 15% free space on each disc. This utility does not list private volumes. Use VINIT to list private volumes.

```
:FILE FREE5OUT;DEV=LP
:RUN FREE5.PUB.SYS

VOLUME=MH7925U0
LARGEST FREE AREA=26112

  SIZE  COUNT  SPACE  AVERAGE
>100000  0      0       0
>10000   1     26112   26112
>1000    2     8836    4418
>100     14    3062     218
>10      100   3118     31
>1       318   844       2
TOTAL FREE SPACE=41972
```

```
*****
```

```
VOLUME=MH7920U1
LARGEST FREE AREA=82
  SIZE  COUNT  SPACE  AVERAGE
>100000  0      0       0
>10000   0      0       0
>1000    0      0       0
>100     0      0       0
>10      26     985     37
>1       242   547       2
TOTAL FREE SPACE=1532
```

```
*****
```

```
SYSTEM TOTAL FREE SPACE=43504
```

```
END OF PROGRAM
```

## SADUTIL

SADUTIL is a stand-alone utility program used to recover files from a down system, and to perform other disc operations. Refer to MPE System Utilities Manual P/N 30000-90044 or P/N 32033-90008. SADUTIL performs the following functions:

- o When used with RECOVER5 utility, recreates disc files.
- o Recovers MPE files that have become logically inoperable because of a catastrophic condition (invalid system file directory, or bad code-load information).
- o Requires no special MPE capability.

The following is a list of SADUTIL commands:

CLID	Rewrites the Cold Load IDs on all discs.
CONF	Initiates the device configuration dialogue for the configuration of additional devices.
COPY	Copies the contents of one disc pack to another.
EDIT	Modifies the contents of a disc volume.
FIND	Scans a system disc for file labels.
OUTM	Sets the output mode of print functions to printer or console.
PDSK	Prints an octal or ASCII dump of any given area of a specified disc volume.
PDTT	Prints the Defective Track Table of a specified disc volume.
PFIL	Prints descriptions of files contained in the system file directory.
PVOL	Prints information contained in the volume label of a specified disc volume.
SAVE	Retrieves files from disc and copies them to magnetic tape. Can not be used with private volumes.
STOP	Terminates the SADUTIL program.

## LOGICAL/PHYSICAL SECTOR ADDRESS CONVERSION

The following examples convert a logical sector address into a physical sector address:

### 7906A DISC DRIVE

-----

The HP 7906A Disc Drive has 48 sectors per track per head and 144 sectors per cylinder.

CYLINDER	HEAD
-----	-----
192 ) LOGICAL SECTOR ADDRESS	48 ) REMAINDER A
REMAINDER A	REMAINDER B=SECTOR

### 7920A DISC DRIVE

-----

The HP 7920A Disc Drive has 48 sectors per track per head and 240 sectors per cylinder.

CYLINDER	HEAD
-----	-----
240 ) LOGICAL SECTOR ADDRESS	48 ) REMAINDER A
REMAINDER A	REMAINDER B=SECTOR

### 7925A DISC DRIVE

-----

The HP 7925A Disc Drive has 64 sectors per track per head and 576 sectors per cylinder.

CYLINDER	HEAD
-----	-----
576 ) LOGICAL SECTOR ADDRESS	64 ) REMAINDER A
REMAINDER A	REMAINDER B=SECTOR



## SYSTEM FRONT PANEL TEST PROCEDURE (SERIES 30 AND 33)

The following procedure is a description of the system front panel test.

### TO TEST THUMBWHEEL SWITCHES

Load Maintenance Mode Program, then:

1. Micro Halt the processor.
2. Press and hold WARMSTART, MEMORY DUMP, or COLD LOAD switch on System Front Panel.
3. Using keyboard - type RIR 27041771777.
4. Examine TOSA for channel and device number.

### TO TEST SWITCHES

Load maintenance Mode Program, then:

1. Micro Halt the processor.
2. Press and hold RESET, MEMORY DUMP, WARMSTART, or COLD LOAD switch on system front panel.
3. Using keyboard - type RIR 37621770777.
4. Examine SP5:

Bit 3 = Reset  
Bit 4 = Memory Dump  
Bit 5 = Cold Load or Warmstart

## FAILURE MESSAGES (SERIES 39/40/42/42XP/52 AND 44/48/58)

The following is a summary of failure messages on the Series 39/40/42/42XP/52 and 44/48/58.

- A. **HALT:** Front Panel Halt or Reset - Result of depressing the front panel HALT button or issuing a HALT with the CMP.
- B. **HALT nn:** Halt main instruction executed by MPE; nn is halt instruction parameter printed in decimal.
- C. **SYSTEM HALT CONDITIONS nn:** For a list of System Halt Conditions refer to System Halt Conditions of this section.
- D. **HARDWARE FAILURE nn:**

This message will occur if a failure appears during CPU selftest as executed during a load/start operation. See the CMP/Selftest Diagnostic Manual P/N 30070-60068 to interpret CMP error messages.

- E. **SYSTEM FAILURE #enum:**

STATUSsnum

DELTAPpnum

When a system failure occurs, a message appears on the System Console in the above format, where:

enum is the error number that identifies the type error.

snum is the code segment number from which the system failure was called.

pnum is the program counter (Delta-P) offset into code segment.

Refer to System Operations and Resource Management Manual P/N 32033-90005, supplied to System Managers, for the names of the modules in which the failure was detected, the cause of errors, and what action should be taken in response to the messages.

## **SYSTEM HALT CONDITIONS (SERIES 30, 33, 39/40/42/42XP/52 and 44/48/58)**

If the CPU microcode detects an unacceptable condition, the result will be a system halt. On the Series 30 and 33 system the halt number is stored in the NIR and can be determined by observing the LEDs on the BIC PCA. On the Series 39/40/42/42XP/52 and 44/48/58 systems the halt number is reported, in decimal, by the CMP to the System Console.

1. STT violation with source segment number <2.
2. Absence Trap on ICS.
3. Trace or absence trap with segment number <2.
4. Stack overflow on ICS.
5. System CST Length = 0.
6. LOAD/START/DUMP Channel Program Timeout.
7. LOAD/START/DUMP Bootstrap Channel Program Checksum Error.
8. LOAD/START/DUMP Bootstrap Channel Program Abort.
9. PSEB Instruction Found and QI - 18 = 0.

## MAINTENANCE MODE ERROR MESSAGES (SERIES 30 and 33)

The following error messages describe the corrective action to be taken for maintenance mode error messages. Refer to Figures 4-2 and 4-3 for an illustration of hardware and software displays.

### ERROR MESSAGES

Error messages are printed out as follows:

\*<message> ERROR <error number>

Message	Meaning
UPDATE FAILED	During the screen update an error was encountered.
COMMAND FAILED	During execution of the last command entered, an error was encountered.
INVALID COMMAND	An error was found in the command.

Error #	Meaning
1	Invalid command
2	Data needed to execute the command but no data <expression> was supplied. (i.e., the command should be of the form: <register name>=<expression>.)
3	Data not allowed for this command. (i.e., no <expression> is needed.)
4	Invalid character in the expression or improper form. Some common reasons for this error are: <ol style="list-style-type: none"> <li>A non-valid octal digit (8 or 9) was found.</li> <li>Adjacent operators found such as '+-7' or '10.+8'. Note that '.' is interpreted as an operation (multiply by 2**15).</li> <li>Symbols such as */&amp;#\$, etc. were found.</li> </ol>
5	Illegal symbolic name in an expression.
6	CPU must be microhalted to execute the command.
7	The CPU register cannot be set. The register is not a true register. (BASE, PADD, and XC are examples of unsettable registers.)
8	Unimplemented instruction.

## Troubleshooting

### ERROR MESSAGE (CONTINUED)

Error #	Meaning
30	Maintenance Interface (MI) does not respond during a GET STATUS operation.
31	Maintenance Interface does not respond during a GET MAINTENANCE INTERFACE operation.
32	MI does not respond during a REGISTER READ operation.
33	PHI FIFO OVERFLOW. Non-responding device(s) on the HP-IB.
34	Spurious data byte in the inbound FIFO of the PHI.
35	Timeout waiting for HP-IB commands to be transmitted by the PHI to the MI.
60	Timeout on a single step instruction.
70	IMB not available to do a memory read or memory write.
71	IMB timeout on a memory read.
72	IMB timeout on a memory write.



## CPU SELFTEST ROM ERROR CODES (SERIES 30 AND 33)

The CPU selftest verifies each ROM chip on the CPU processor and firmware boards (each parity code that is burned into a ROM chip is compared against the parity actually found).

### ROM ERROR CODES

#### Processor Board

Error*	ROM	Error*	ROM	Error*	ROM
30(300)	U-131	40(400)	U-133	50(500)	U-135
31(310)	U-141	41(410)	U-143	51(510)	U-145
32(320)	U-151	42(420)	U-153	52(520)	U-155
33(330)	U-161	43(430)	U-163	53(530)	U-165
34(340)	U-132	44(440)	U-134	54(540)	U-137
35(350)	U-142	45(450)	U-144	55(550)	U-147
36(360)	U-152	46(460)	U-154	56(560)	U-157
37(370)	U-162	47(470)	U-164	57(570)	U-167

#### Firmware Board

Error*	ROM	Error*	ROM	Error*	ROM
100(001)	U-23	104(041)	U-93	110(101)	U-24
101(011)	U-33	105(051)	U-103	111(111)	U-34
102(021)	U-73	106(061)	U-123	112(121)	U-74
103(031)	U-83	107(071)	U-133	113(131)	U-84
114(141)	U-94	120(201)	U-25	124(241)	U-95
115(151)	U-104	121(211)	U-35	125(251)	U-105
116(161)	U-124	122(221)	U-75	126(261)	U-125
117(171)	U-134	123(231)	U-85	127(271)	U-135
130(301)	U-27	134(341)	U-97		
131(311)	U-37	135(351)	U-107		
132(321)	U-77	136(361)	U-127		
133(331)	U-87	137(371)	U-137		

\* Notation is shown for contents of NIR and LED display.  
 Example: 100(001) = NIR(LED display), in octal.

**REMOTE MAINTENANCE/CONSOLE ERRORS (SERIES 30 AND 33)**

The only errors recognized are data communication errors from the remote to the local terminal:

1. **PARITY ERROR** - If a character parity error is detected, or the input buffer is full, the character will be ignored and a rubout will be echoed to the remote terminal.
2. **MODEM NOT READY** - (Transmit lamp on terminal blinks slowly) - Modem is not presenting signals CLEAR TO SEND (CB) and CARRIER DETECT (CF), either because it is not connected or it is not in data mode with another modem.
3. **MODEM READY** - (Transmit lamp on terminal blinks rapidly) - The above condition has been corrected.
4. **DATACOMM CARD REMOVED** - (Transmit lamp on terminal does not blink) The HP 3000/33 system console is not equipped with a data communication card or the data communication card is not configured to address %17.
5. **DATACOMM CARD INSTALLED** - Above condition was corrected.

Refer to Figures 4-1 and 4-2 for an illustration of hardware and software displays.



# DIAGNOSTICS

SECTION

V

This section provides mini-operating instructions for diagnostics, selftests, etc., that may be used with the Series 30, 33, 39/42/42XP/52 and 44/48/58 computer systems. For detailed information refer to the HP 3000 HP-IB Computer Systems Diagnostic Manual Set, P/N 30070-60068.

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## **SERIES 30 and 33 MICRODIAGNOSTICS**

Series 30 and 33 microdiagnostics are loaded through the Maintenance Interface (MI) COLDLOAD Selftest cartridge tape.

### **Maintenance Interface Diagnostic**

To execute the Series 30 and 33 Maintenance Interface (MI) diagnostic, perform the following procedure:

- a. Perform an MPE shutdown.
- b. Run console Selftest.
- c. Reset console, using RESET TERMINAL key.
- d. Set REMOTE key to local (up) position.
- e. Insert MI COLDLOAD Selftest cartridge tape and press READ key.
- f. Answer STANDARD TEST (Y OR N)?.

### **COLDLOAD Selftest**

To execute the Series 30 and 33 COLDLOAD Selftest diagnostic, perform the following procedure:

- a. Set COLDLOAD thumbwheel switches on the system front panel to the coldload device you wish to test. Make sure they match the physical device settings.
- b. Place REMOTE key in the local position and the CAPS LOCK key in the down position.
- c. Press the terminal reset key to reset the terminal.
- d. Insert cartridge that contains the COLDLOAD Selftest and press the READ key twice to execute only the COLDLOAD Selftest.
- e. When the prompt (>) is returned, enter GO to begin test.

## Maintenance Mode

To execute Series 30 and 33 maintenance mode, perform the following procedure:

- a. Insert the Maintenance Mode cartridge tape (HP P/N 30070-10402) into the left tape slot.
- b. Set the REMOTE key to the up position to place the console in the local mode, shown in Figure 5-1.
- c. On the system front panel, set the MAINT MODE switch to the YES position.
- d. Press the READ key on the system console.

The message 'MAINTENANCE PANEL' will appear on the display and the left cartridge tape unit light will blink to indicate that the program is being loaded. Upon completion of loading the Maintenance Panel hardware display will form on the screen. Refer to Section IV (Maintenance mode error messages) for an illustration of the hardware and software displays.

If the message 'MAINTENANCE PANEL IS DISABLED' appears on the display, then if the MAINT MODE switch on the system front panel is set to NO, set switch to YES and press key f8.

Refer to Section IV for a list of maintenance error messages.

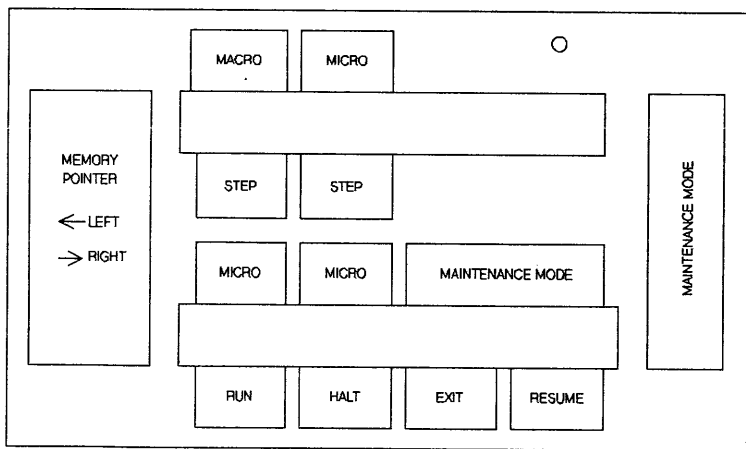


Figure 5-1. Special Keys (Series 30 and 33)

## CPU Selftest

To execute Series 30 and 33 CPU Selftest, perform the following procedure:

- a. Press the HALT switch on the system front panel.
- b. On the Bus Interface Controller (BUS INTFC), press CPU TEST switch.
- c. The (\*) LED will light and remain lit until the SYSTEM RESET switch on the system front panel is pressed. (Refer to Section IX for a layout of the Bus Interface Controller.)
- d. The nine LEDs (A-I), will light briefly, all turn off briefly, and then each will turn on sequentially, beginning with the most significant bit (A) and ending with the least significant bit (I).
- e. The upper LEDs flicker while selftest runs. If all tests pass, all LEDs, except the (\*) LED, will be off. If any test fails, the LEDs display the number of the failed test.
- f. To rerun Selftest, again press the CPU TEST switch.

### Continuous Looping

For continuous looping, hold CPU TEST switch in. To restart Selftest after test halts on failure, release switch and again press.

The two test points next to the CPU TEST switch may be jumpered to permit continuous looping until first failure.

### Operation From Maintenance Mode

- a. Use HARDWARE DISPLAY mode for the Maintenance Mode.
- b. Press PROGRAM HALT (CNTRL O) soft key.
- c. Press MICROHALT soft key.
- d. Set the starting address in the RAR to %10000.  
**\*\* RAR % 10000 \*\***
- e. Press the MICRORUN key to start execution.
- f. The RUN LED on the system front panel will flash for approximately one second.
- g. The test will take approximately five seconds to execute, and one of the two microcode halt instructions (pass or fail) will be reached. If a fail code is reached, the LEDs will display the error code, otherwise the pass code (000) will be displayed.
- h. Use the breakpoint feature to locate the failing instruction subset.

## SELFTTEST SUMMARY

Hardware Tested	NIR Register (Octal)	BIC LEDs (Octal)	Test Description
PCU chip	10	100	TAV, IEV, Stackbit
	11	110	Skip on Immediate, DBUS, INDR; LINK
	12	120	AV, BV, SAVEA, SAVB; JMP, JMPL, JSB, RSR
	13	130	CIR, Mapper, ATTN
RALU chip	14	140	Registers
	15	150	Extended Register
	16	160	ALU
	17	170	Shift Logic, Link Logic
RASS chip	20	200	Counter, STAO,3 (PRV,ROP), F1
	21	210	Comparators, BV Logic, ISRO-13, ATTN
	22	220	PADD Logic, CIR
	23	230	Registers
	24	240	STA-7 (Overflow, Carry, Condition Code)
BUS INTFC	25	250	ISR, Skip-on-Test, Int Sync Reg, ATTN
	26	260	CPUDOIT, CPUDONE, Timeout, Float State of IMB
	27	270	Freeze Logic
ROM*			CRC for each ROM on Processor and Firmware boards. See ROM error codes
MEM CNTRL	60	600	Controller Handshake, IMB path to NIR
MEM MODULE	61	610	16K array row 3 (00.140000 to 00.177777)
	62	620	16K array row 2 (00.100000 to 00.137777)
	63	630	16K array row 1 (00.040000 to 00.077777)
	64	640	16K array row 0 (00.000000 to 00.037777)

\*Refer to Section IV for a list of ROM error codes.

## Remote Maintenance/Console Facility

To execute Series 30 and 33 remote maintenance/console facility, perform the following procedure:

<b>NOTE</b>
-------------

The Remote Maintenance/Console facility is designed to use only Bell 212 or compatible modems (the modem communication is full duplex). The on-site modem should have answer capability while the remote site modem should have originate capability.

- a. Insert the Remote Maintenance/Console facility cartridge tape in the correct slot in the system console terminal. Be sure the remote terminal PARITY switch is set to EVEN and the BAUD RATE switch is set to 1200.
  1. The default condition of the console after terminal reset is:  
  
    READ left tape  
    WRITE right tape
  2. To change conditions:  
  
    press GOLD key  
    press FROM (read) Right tape  
    press TO (write) Display
- b. Set the system console REMOTE key to the local (up) position.
- c. Depress the READ key on the system console. The software responds by outputting the message:

MODEM NOT READY

- d. Open the door to the Terminal/Data Comm. Junction Panel and set the Remote Maintenance/Console facility switch, shown in Figure 5-2, to the SYSTEM CONSOLE/MODEM position.
- e. Set the REMOTE key to the remote (down) position.
- f. Establish a data communication connection between the remote site and the system console.

**NOTE**

The system console transmit LED should be blinking to indicate the Remote Maintenance/Console facility is operating and the local modem is responding.

- g. When communications have been established, both terminals should respond with:

**MODEM READY**

You may now operate the system.

To terminate the Remote Maintenance/Console facility, perform the following steps:

- h. Press the RESET TERMINAL key twice in rapid sequence.

**NOTE**

The transmit LED should now stop blinking to indicate that Remote Maintenance/Console facility is no longer active.

- i. Open the door to the Terminal/Data Comm. Junction Panel and set the Remote Maintenance/Console facility switch to the MODEM/JUMPER position.

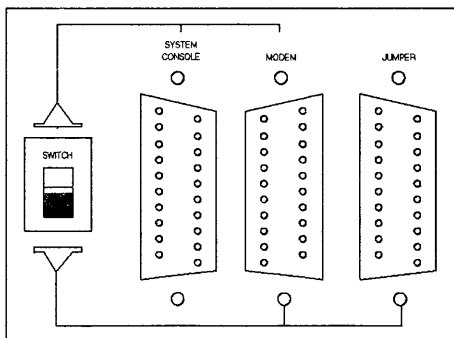


Figure 5-2. Remote Maintenance/Console Facility Switch

## Diagnostics

### CONSOLE FRONT PANEL KEYS

The remote implementation of the console front panel controls keys (RUN, HALT, WARMSTART, MEMORY DUMP, COLDLOAD and DISPLAY STATUS) are employed through use of "ESC /" as follows:

DISPLAY STATUS	- ESC / 0
RUN	- ESC / 1
HALT	- ESC / 2
WARMSTART	- ESC / 4
MEMORY DUMP	- ESC / 5
COLD LOAD	- ESC / 6

### TERMINAL-TO-TERMINAL COMMUNICATION

To perform terminal-to-terminal communication, precede message with "ESC ?". The message will not be transmitted to the computer system.

Example: (ESC ?) THIS IS A TEST (cr,lf)

**Refer to Section IV for a list of remote maintenance error messages.**



## SERIES 39/40/42/42XP/52 AND 44/48/58 MICRODIAGNOSTIC

Series 39/40/42/42XP/52 and 44/48/58 microdiagnostics reside in memory and include CMP commands, CMP Maintenance Mode, CMP/System Selftest and CMP IOMAP.

### CMP Commands

The following list gives the commands accepted by the CMP operating system. CMP Maintenance Display commands are not included (refer to CMP Maintenance Mode manual, P/N 30090-90007).

- HELP -** This command lists the CMP commands. In Maintenance Mode it also lists the Maintenance Display commands.
- HALT -** This command causes the CPU RUN/HALT flip-flop to be set to HALT. It performs the same function as the HALT switch on the system control panel.
- RUN -** This command causes the CPU RUN/HALT flip-flop to be set to RUN. It performs the same function as the RUN switch on the system control panel.
- DUMP -** This command causes a dump to be performed by the dump device by reading the soft dump facility from the disc whose channel and device numbers are specified in the control panel DUMP thumbwheel switches. If the system is in the RUN state the message "IS IT OK TO ABORT THE SYSTEM?" will be displayed. The user must enter YES to perform the dump.
- LOAD -** This command causes a COLDLOAD to be performed from the COLDLOAD device specified by the control panel LOAD thumbwheel switches. If the system is in RUN state the message "IS IT OK TO ABORT THE SYSTEM?" will be displayed. The user must enter YES to perform the load.
- START -** This command causes a warmstart to be performed from the start device specified by the control panel START thumbwheel switches. If the system is in RUN, the message "IS IT OK TO ABORT THE SYSTEM?" will be displayed. The user must enter YES to perform the start.
- SELFTEST -** This command initiates the CMP/SYSTEM SELFTEST. If the CPU is in RUN, the message "IS IT OK TO ABORT THE SYSTEM?" will be displayed after the CMP portion of the test. The user must enter YES to allow the SYSTEM portion of the test to continue. Refer to the CMP/System Selftest manual (P/N 30090-90005) for more information on selftest.
- SHUTTEST -** This command tests the power fail and overtemp shutdown circuitry on the CMP and in the power supply. It causes the message 'Cycle Power To Restart System' to be displayed and then pulls PWF- low on the backplane. This should cause all power to be shut off in the system except the memory supply.

When the system shuts down the following conditions should be present:

The Overtemperature LED should be ON.

The Power LED should be OFF.

The Memory LED on the backplane should be ON.

To bring the system back up after this test, cycle the main power breaker of the system. When power is cycled, the LOG function should log as its last entry POWERFAIL/AUTORESTART. If the log is cleared at this time there may be a battery problem. If the test fails the CMP will display the message "Test Failed".

**DCTEST -** This command causes the RS-232C signals on the CMP to be tested. A special test adapter (30090-60052) must be installed between J3 of the CMP and the CMP cable. The CMP can not be in remote mode while performing this test. See CMP/SYSTEM SELFTEST Manual P/N 30090-90005 for more information.

**LOG -** This command causes a display or log of actions performed or detected by the CMP. The items displayed in the log are:

Display On	DISPLAY command entered
Dump	DUMP command entered
Halt	CPU went to halt
HALT Command	The HALT command was used
IOMAP	IOMAP command entered
Load	LOAD command entered
Power On	Power-on reset to CMP when battery power was 1
Powerfail/Reset	A powerfail occurred or the PON signal went low without loss of memory backup power
Run	CPU went to RUN
Selftest OK	CMP/SYSTEM SELFTEST passed
Selftest Failed	CMP/SYSTEM SELFTEST failed
Shuttest	Power shutdown test performed
Shuttest Failed	Power shutdown test failed
Start	START command entered

These events are listed along with the elapsed time (excluding power off time) since the event occurred. The last 63 events are shown in the event log. This log is retained during a power failure, since it is stored in memory which is on battery backup.

An example event log is shown below.

Days	Hrs	Min	Event Log (Since Event Occurred)
2	23	05	Power On
	3	20	Overtemp Shutdown
	3	20	Powerfail/Reset
	2	25	Halt
	2	20	Start Failed
	2	05	Halt
	2	03	Load Failed
	1	51	Halt
	1	50	COLDLOAD
	1	50	Selftest Failed
		03	Load

**DISPLAY -** This command causes the maintenance display to appear on the screen. See the **CMP MAINTENANCE MODE Manual P/N 30090-90007** for more information.

**SPEED -** This command allows the user to change baud rates when MPE is not running. The receive and transmit baud rates are specified in the command (see command syntax below). The receive and transmit baud rates must be identical, to be compatible with MPE and the ADCC. This command is identical to the MPE speed command.

**:SPEED -** This command allows the user to change baud rates when MPE is running. It is identical to the standard **SPEED** command but allows the **CMP** and **MPE** to be set to the same speed simultaneously.

**IOMAP -** This command causes the current system configuration to be displayed. The memory size, control panel switches, and all channels and devices in the system are identified. See **IOMAP mini-operating procedure** of this section for further information.

Invalid command names will cause the message 'INVALID COMMAND, USE HELP FOR INFO' to be displayed.

Most commands are used alone, the following are examples of some commands that may be used alone or with parameters:

**SELFTEST** [test option]  
where (test option) is a decimal number

**IOMAP** [0]  
where [0] will cause **IOMAP** to loop

**SPEED** (rate),(rate) or **:SPEED** (rate),(rate)  
where (rate) is any valid baud rate

## CMP Maintenance Mode

To execute CMP Maintenance Mode, perform the following procedure:

- Set the MAINTENANCE MODE switch, on the system front panel, to ON.
- Enter the DISPLAY command or enter a Control B character and then the DISPLAY command if the CPU is running.
- Enter either the HW or SW command to select the desired mode. Default is SW mode.
- Enter appropriate Maintenance Mode Display command(s), or enter Help for a list of commands.

Note that uppercase letters in the MITROC area of the Maintenance Display indicate set values. Lowercase letters indicate reset values.

```

RA 2024 PB 000C      MAINTENANCE DISPLAY 1.0      MIR EC8A0571AFF
RB 1A4F P 0AB3      DL 1B0A ABNK 0000 CSAR 1861
RC 31FA PL 10AF     DB 1C58 BBNK 0001 UBUS 0000
RD 0006 PBNK 0000   Q 2A91 DBNK 0000 HALT MHALT
R4 0403 R16 0000 R28 0008 SM 3554 SBNK 0001 PARITY UPDATE OFF
R5 0000 R17 2698 R29 0020 Z 3A99 TIMEOUT DISABLED
R6 29F7 R18 0001 R30 FFFF SWCH 0231
R7 29F7 R19 0503 R31 36B8 STA 44DE
R8 000F R20 10AF R32 0023 SIR 200E
R9 00FF R21 0200 R33 0000 SRR 1A5B
R10 0100 R22 0000 R34 A000 CIR 2138
R11 10A3 R23 36E8 R35 0002 CTR 0003
R12 2429 R24 0020 R36 FFFF SPO E974
R13 3555 R25 0024 R37 000A X 0000
R14 0000 R26 0020 R38 FFCF SR 0004
R15 0000 R27 3555 R39 4000 OPND 0003

      m i t r o c e l
      CSRQ irq nrld ddn ics ss

      f1 f2 f3 f4
      MODE: HW
      STOPBP STOP
      IMB: 000403 OPCODE:
      BP 000000 BPTYPE:
  
```

4X MAINTENANCE DISPLAY MODE EXAMPLE

```

-> DISPLAY      MULTI BIT PARITY ERROR
  HW
  HARDCOPY < FOR NO MEMORY
  MHALT LOCK TERMS & PRINTRS > !74 < FAILURE CODE VIA RIGHT BYTE OF SPO >
  RESET !0000 < FAILING BANK VIA DBANK >
  CSAR E005 < 1805 FOR CPS > !0403 < FAILING ADDRESS VIA R4 & IMB >
  MRUN < WAIT FOR PROG HALT > !0003 < DIFFERENCE IN OPND >
  MHALT < FOR VALID DISPLAY > 4 < BIT 21 ROW 0 BAD! >
  !0100 < SHOWS MULTI BIT P.E. >
  
```

C232283B

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Figure 5-3. Maintenance Display Format

## CMP/System Selftest

To execute the Series 39/40/42/42XP/52 and 44/48/58 CMP/System Selftest, perform the following procedure:

- a. If the system is running, halt all current jobs/sessions and perform an MPE SHUTDOWN to ensure the system will halt without damaging files on disc.
- b. You will receive a CMP prompt (->). Enter SELFTEST, and if the system control panel FUNCTION switch is not set to disable the CMP, the testing should begin. If testing does not begin, check the FUNCTION switch setting, set it to enable CMP and re-enter the CMP "SELFTEST" command.

A parameter may be used with the SELFTEST command. The parameter is a decimal number and is assigned the following meaning:

PARAMETER	OPERATION
(NONE)	Perform system selftest excluding CMP RS-232 loopback.
0	Loop the entire system selftest excluding RS-232 loopback.
2	Loop the RAM test.
4	Loop the ROM test.
6	Loop the UART test.
8	Loop the CMP-CPU Interface test.
10	Loop the CPU test.
12	Loop the System Control Panel test.
14	Loop the ADCC test.
16	Loop the GIC test.

Looping of a test will continue until the user types a character on the console keyboard. Any character from the console will stop the specified test(s) from looping.

For an interpretation of the CMP test LEDs, see the CMP PCA diagram in Section 9.

## CMP-IOMAP

To invoke the IOMAP microdiagnostic, the CMP must be enabled and the CMP command IOMAP entered. This will cause the current configuration of the system to be displayed. Entering IOMAP 0 will cause IOMAP to loop until the user types any character at the console. The following is a sample of an IOMAP display.

```
->IOMAP
I/O CONFIGURATION
1024KB MEMORY
START 11 0
DUMP 11 0
LOAD 9 1
CHL=01 ID#8011 ADCC/EXTENDER
CHL=02 ID#8001 ADCC
CHL=09 ID#0000 GIC
  DEVICE#01 ID#0183 7970E/7971
CHL=10 ID#0000 GIC
  DEVICE#01 ID#2001 2608
CHL=11 ID#0000 GIC
  DEVICE# 0 ID#0002 DISC(S)
  DEVICE#01 ID#4002 INP
  DEVICE#03 ID#2003 2617
```

Channel numbers are shown in decimal. An ID# of 8001 indicates an ADCC without an extender and an ID# of 8011 indicates an ADCC with an extender. If the channel ID code is neither an ADCC nor a GIC, then ??? is printed.

If the ID code of a device on a GIC does not match any device known to the CMP, ??? is printed instead of the device type.

## DIAGNOSTIC/UTILITY SYSTEM (DUS) PROGRAMS (SERIES 30, 33, 39/40/42/42XP/52 AND 44/48/58)

The Diagnostic/Utility System is a series of programs used to test the computer system. The CE invokes the applicable DUS diagnostic during the fault isolation process. The DUS is a COLDLOAD Tape. The following diagnostic programs are installed on DUS:

- o Sleuth Simulator Program (SLEUTHSM IN AID)
- o IOMAP (IOMAP)
- o DMA Exerciser (DMAEXR)
- o ADCC Diagnostic (ADCCDIAG)
- o General I/O Channel Diagnostic (GICDIAG)
- o Series 30 and 33 Memory Diagnostic (MEMDIAG)
- o Series 39/40/42 and 44/48 Pronto Memory Diagnostic (PRMDIAG)
- o Series 42XP/52/58 Memory Diagnostic (MDIAG58)
- o Series 30 and 33 HP 7902A/9895A Flexible Disc Diagnostic (D7902)
- o HP 7970E/7971 Magnetic Tape Diagnostic (D7970S13, D7970S45, D7970S68)
- o HP 13037X Disc Controller Diagnostic (D13037)
- o CS80 Device Diagnostic (CS80DIAG)
- o HP 7906/20/25 Disc Verifier (VERIFIER)
- o ATP (ATPDIAG)
- o SADUTIL (SADUTIL)

## Creating Diagnostic/Utility System Media

To create the DUS media, setup a file equation for media to be used:

```
:FILE MTAPE;DEV=TAPE;DEN=1600(FOR 7976)
:FILE FLOPPY;DEV=FLOP(for 7902/9895)
:FILE CTAP;DEV=CTAPE(for ICT-CS80 option)
:RUN COPYDUS.HP32231.SUPPORT
```

When media is mounted, ready and online, respond to I/O request.

## Loading the Diagnostic/Utility System (DUS)

To execute the Diagnostic/Utility System, perform the following procedure:

- a. Perform an MPE shutdown to properly log off all current sessions.
- b. Ensure that the REMOTE key is in the down position.
- c. Insert a Diagnostic/Utility System (DUS) diskette into the Flexible Disc Unit (FDU) or mount a DUS tape on the Magnetic Tape Unit (MTU).
- d. Set the system front panel COLD LOAD thumbwheel switches to the CHAN ADDR and DEVICE ADDR of the FDU or MTU.
- e. On the system front panel, press COLDLOAD (Series 33), or press LOAD (Series 30, 39/40/42/42XP/52, 44/48/58), or type LOAD.
- f. The welcome message and prompt displayed are:

```
Diagnostic/Utility System (revision XX.XX)
Enter your program name (Type HELP for program information)
:
```

## Sleuth Simulator Program

To execute the Sleuth Simulator program, perform the following procedure:

- a. Install a Diagnostic/Utility System diskette or tape.
- b. COLDLOAD the DUS programs.
- c. When the DUS displays its title message and prompt, enter: AID.
- d. AID will respond with a prompt character (>) and line number: >10
- e. Enter LOAD SLEUTHSM. The Sleuth Simulator is now loaded and you may enter program statements or use available commands.

### ENTERING A SLEUTH PROGRAM

Programs are entered at the first available AID line number after the simulator program. The simulator becomes part of the user program entered.

### DELETING A SLEUTH PROGRAM

To erase the lines of code generated by entries, the delete command must be used as it erases only specified lines:

```
D(elete) 5000/5100
```

To erase both the Sleuth Simulator and user programs, enter the EP command.



## SleuthSM Commands and Statements

The following is a list of SleuthSM Commands and Statements:

Mnemonic	Name	Function
ASSIGN	Assign D Buffer	Stores data into a buffer
BUMP	Bump Pass Counter	Increments the Reserved Variable PASSCOUNT and prints passcount on console
CHB	Change Buffer	Changes contents of specified buffer
DB	Define Buffer	Declares a buffer with a two alpha-character name
DEV	Device	Defines the characteristics of a particular device
ES	Enable Status	Enables automatic checking of device status
ESTA	Expected Status	Changes expected status of next statement that uses status checking
FOR	For-Step-Until	Provides a means of repeating a group of instructions
GET	Get	Reads channel number, error count, or unit number from the console
GOTO	Go To	Allows program to branch unconditionally to another statement
IF	If-Then Control	Allows executing program to evaluate special operator "exp" and transfer control to specified statement
IFN	If-Not-Then	Same as IF THEN except that "exp" is tested to be false
INPUT	Input Data	Receives input from console and assigns it to a variable
LET	Assignment	Allows assignment to a variable, data buffer, or string buffer the value of any variable, numeric, expression, or string
MC	Master Clear	Clears the specified unit by issuing a device clear
NEXT	End of For-Next Loop	Specifies end of a For-Next set of statements
PAUSE	Non-Error Pause	Creates an unconditional pause in the execution of the AID user program
PE	Pause on Error	Notifies user that an error has occurred and stops program execution

## Diagnostics

<b>Mnemonic</b>	<b>Name</b>	<b>Function</b>
PRINT	Print to Console Without Pause	Enables data, print spacing, or strings to be output to list device
PROC	Proceed	Enables or disables proceed mode
RAND	Randomize	Generates a positive random number and places it in the designated variable
RDB	Randomize Data Buffer	Defines randomized data buffers
SCB	Simulated Compare Buffer	Compares word by word each element of two buffers
SOUT	Switch Output	Outputs error messages to line printer or system console
SST	Suppress Status	Disables status checking for all succeeding statements
STAT	Status Dump	Obtains status from channel or device and prints out on system console
TIMEOUT	Channel Program Timeout Flag	Sets software timer for channel program (set to -1 to disable)

Refer to Tables 5-1 and 5-2 for CS80 Commands and Simulated SleuthSM Commands.

Table 5-1. CS80 Commands

Command	Description
BURST	Set Burst
CANCEL	Cancel
DESCRIBE	Describe
DEV	Device
FMT	Format
LENGTH	Set Length
LOCRD	Locate and Read
LOCRFS	Locate and Read Full Sector
LOCVER	Locate and Verify
LOCVERI	Locate and Verify Immediate
LOCWR	Locate and Write
LOOPBACK	HP-IB Loopback
MASKSTAT	Set Status Mask
MC	Master Clear
NOP	No Op
PCHECK	HP-IB Parity Check
RDI	Read Data Immediate
RELDEN	Release Denied
RELEASE	Release
RETADMOD	Set Return Addressing Mode
RFSI	Read Full Sector Immediate
RPS	Set Rotational Position Sensing
RS	Random Seek

Table 5-1. CS80 Commands (Con't.)

Command	Description
SBLKDISP	Set Block Displacement
SETADDR	Set Address
SETOPTS	Set Options
SETREL	Set Release
SETRETIM	Set Retry Time
SPAREBLK	Spare Block
STATUS	Request Status
UNIT	Set Unit
VOLUME	Set Volume
WDI	Write Data Immediate
WFM	Write File Mark

## DISC I/O STATEMENTS

Mnemonic	Name	Function
AR	Address Record	Sets logical address specified in cylinder, head and sector parameters into 13037 controller only.
CL	Clear	Clears any clock offset, status, interface busy bit, and waits for new command.
DS	Decremental Seek	Performs an initial seek to a specified location then decrements by one each time the instruction is executed.
Disp	Display	Displays the item specified in the type parameters for the LUN indicated.
FMT	Format	Formats a moving-head disc and verifies each track.
ID	Initialize Data	Performs an initialize operation on all 7906/7920/7925 disc drives, beginning with the designated cylinder, head, and sector until the word count of the buffer is exhausted.
IDI	Initialize Data Immediate	Performs an initialize operation on a moving-head disc. The internal disc address will be used as the starting point of the write.

## DISC I/O STATEMENTS (cont.)

Mnemonic	Name	Function
IS	Incremental Seek	Performs an initial seek to a specified address and increments cylinder address each time instruction is executed.
IT	Incremental Track	Performs an initial seek to a specified address and increments head address each time instruction is executed.
POLL	Poll	Causes the disc controller to resume polling.
RC	Recalibrate	Performs recalibrate operation on moving-head disc.
RD	Read Data	Performs read operation on moving-head disc.
RDA	Request Disc Address	Returns the current disc address stored in the controller.
RDI	Read Data Immediate	Performs a read operation starting from the current disc address.
RFS	Read Full Sector	Causes full sector on moving head disc to be read.
RFSI	Read Full Sector Immediate	Causes full sector on moving head disc to be read, starting with the current disc address.
RQST	Request Status	Causes disc controller to return two status words.
RS	Random Seek	Causes moving-head disc to seek randomly.
RSA	Request Sector	Returns the current logical sector address under heads.
RSYN	Request Syndrome	Obtains seven-word syndrome from disc controller.
RWO	Read With Offset	Performs a read operation but offset word is sent to disc drive before executing.
RWOI	Read With Offset Immediate	Same as RWO except that heads are assumed to be positioned.

## Diagnostics

### DISC I/O STATEMENTS (cont.)

Mnemonic	Name	Function
RWV	Read Without Verify	Performs a normal read but does not verify preceding sector.
RWVI	Read Without Verify Immediate	Same as RWV but starts at current address.
SEEK	Seek	Causes heads to be positioned over specified cylinder.
SFM	Set File Mask	Sets the file mask on the disc controller.
SKRD	Seek Read Data	Performs a seek to specified address and reads that data.
SKWD	Seek Write Data	Performs a seek to specified location, reads the data and writes it into the specified buffer.
VER	Verify	Verifies the data on a number of sectors on a moving head disc.
VERI	Verify Immediate	Verifies the data on a number of sectors on a moving head disc, starting with the internal address.
WD	Write Data	Writes data to specified location.
WDI	Write Data Immediate	Writes data to current address on moving head disc.
WFS	Write Full Sector	Writes data on full sector on moving head disc.
WFSI	Write Full Sector Immediate	Writes data on full sector using current location.

### LINE PRINTER I/O STATEMENTS

RP	Ripple Print	Writes a ripple pattern on logical unit indicated and continues until stopped with CNTL Y or until 32767 lines have been printed.
WD	Write Data	Writes data from specified buffer onto line printer.

## MAGNETIC TAPE I/O STATEMENTS

Mnemonic	Name	Function
BSF	Backspace File	Issues a backspace file to a magnetic tape unit.
BSR	Backspace Record	Causes the magnetic tape unit to backspace one record from the present position.
FSF	Forward Space File	Moves magnetic tape forward to next file.
FSR	Forward Space Record	Moves magnetic tape forward one record.
GAP	Gap	Writes a gap on the specified magnetic tape.
RD	Read Data	Performs a read operation.
REW	Rewind	Issues a rewind command to the specified magnetic tape unit.
REWOFF	Rewind and Reset	Rewinds and resets specified magnetic tape unit.
RRB	Read Record	Reads from last byte in record towards the first.
SELU	Select Unit	Selects the magnetic tape unit specified in the unit parameter.
WD	Write Data	Executes a write operation.
WFM	Write File Mark	Writes a file mark.

Table 5-2. Simulated SleuthSM Commands

SleuthSM Statement	HP AID Statement	HP AID Command
ACB - Access single word element in buf.	LET - Makes an assignment to any element of buffer.	
PUT - Prints a message on the console.	PRINT - Prints a message on the console.	
HALT - Halt computer (Causes a halt #17)	PAUSE - Creates an unconditional pause in the execution of a HP AID program.	
NOPR - No print (Turns off all messages except user Sleuth dialogue).	SUPPRESS - Suppresses all error messages.	SEPR - Suppress error printout -or- SNPR - Suppress non-error print
PR - Print (Causes resumption of all printing).	ENABLE - Enable error reporting.	EEPR - Enable error printout -or- ENPR - Enable non error print-out
ZBUF (buf) - Zero-defined buffer.	DB Buf, length,0	
DELY - Delays the software timer in increments of .1 sec	TIMEOUT - Delays the software timer in increments of 5 secs.	



## IOMAP

To execute IOMAP standard operating mode, perform the following procedure:

- Install a Diagnostic/Utility System diskette or tape.
- COLDLOAD the DUS programs.
- When the DUS displays its title message and prompt, enter: IOMAP.
- IOMAP will respond with:

```
IOMAP  REVISION xx.xx
```

Enter 'GO' to continue

'GO,1' to continue with printer output

'GO 1' for Optional Test Sections

'GO 1,1' to run Optional Sections with printer output

('LC' to list Commands)

>

- Enter 'GO' or 'GO,1' and the IOMAP program will perform an identify to all devices, display the system I/O configuration table, and return control to the DUS.

### IOMAP SYSTEM I/O CONFIGURATION

```
>Control panel switch settings: Channel=7 Device=1
```

```
>System console is device 0 on channel 1
```

```
-----
Channel 1  ID=!1          Async. Data Comm. Channel (ADCC)
  Devices 0-3 ID=!4080    Devices on ADCC MAIN      (CODE= 1,2).
  Devices 4-7 ID=!4080    Devices on ADCC EXTEND    (CODE= 1,2).
```

```
-----
Channel 5  ID=!0          General I/O Channel (GIC)
  Device 1 ID=!183        7970E/7971 MAG TAPE
```

```
-----
Channel 6  ID=!0          General I/O Channel (GIC)
  Device 1 ID=!2          7906/7920/7925 Disc Subsystem (CODE= 2).
```

```
-----
Channel 7  ID=!0          General I/O Channel (GIC)
  Device 1 ID=!81         7902 Flexible Disc Unit (Double-sided)
  Device 2 ID=!2002       2631 Serial Printer
```

```
-----
Explanation of '(CODE= )'
```

1 implies: NO LOOPBACK Capability.

2 implies: NO SELFTEST Capability.

```
-----
End of pass 1
```

## Diagnostics

### OPTIONAL OPERATING MODE

Three additional test sections are available in the optional mode.

Test Section 2 - Identify

Test Section 3 - selftest

Test Section 4 - HP-IB Loopback

To execute any of these test sections:

- a. Enter: TEST SECTION <NO.>
- b. The following is displayed:  
TEST SECTION <NO.> --- <NAME>
- c. Enter legal channel and device numbers to execute test.
- d. Enter -2 to exit test section.

**SUPPORTED DEVICES.** IOMAP currently recognizes the following devices, but not all may be supported by the current system. For the latest information, check the HP device default list during the startup procedure (for MPE V or greater).

<u>ID CODE</u>	<u>HP DEVICE</u>
!0001	7910 Fixed Disc
!0002	13037 Disc Controller for 7906/7920/7925 Disc Drives
!000F	Advanced Terminal Processor (ATP)
!0080	Flexible Disc Unit (Single Sided)
!0081	7902 Flexible Disc Unit (Double Sided)
!0082	12745 HP-IB Adapter for 13037 Disc Controller
!0100	31207 Writable Control Store
!0101	2893 Card Reader
!0102	9875 Cartridge Tape Controller
!0174	7974 Mag Tape Unit
!0176	7976 Mag Tape Unit
!0178	7478 Mag Tape Unit
!0183	7970E Mag Tape Controller
!0204	7911 Disc Drive
!0205	7911 Disc with Cartridge Tape
!0208	7912 Disc Drive
!0209	7914 Disc with Cartridge Tape
!020A	7914 Disc Drive
!0210	7931 Disc Drive
!0212	7933/7935 Disc Drive
!0214	7937 Disc Drive
!0215	7936 Disc Drive

!022A	7957 Disc Drive
!022B	7958 Disc Drive
!0240	Cartridge Tape Drive
!0260	9144 Cartridge Tape Drive
!0270	35401A Multicartridge Tape Drive
!2000	9871 Character Printer
!2101	2563A Line Printer
!2101	2565A Line Printer
!2101	2566A Line Printer
!2001	2608A Dot Matrix Printer
!2101	2608S Dot Matrix Printer
!2002	2631A Serial Printer
!2004	268X Page Printer
!2005	9872 Plotter
!2006	7245 Plotter/Printer
!2009	2631B Serial Printer
!200A	2611/2613/2617/2619A Line Printer
!2080	Integrated Display System (IDS)
!2101	2608S/2563A/2564B/2567B Line Printers
!4000	31281 SDLC-EIA Interface
!4001	BYSINC Interface
!4002	30020A Intelligent Network Processor (INP)
!4003	30020B Intelligent Network Processor (INP)
!4080	ADCC
!6000	31262 GIC as device
!8000	31321 Processor Maintenance Panel
!A000	9847 Digitizer

## DMA Exerciser Diagnostic (DMAEXR9)

DMAEXR9 is a go/no go test of the computer hardware. Like DMAEXR, DMAEXR9 is an AID diagnostic tool that runs under the control of the DUS offline operating system. DMAEXR9 supports concurrent operation of up to three Controller - Device GIC pairs (six GICs) and up to two busy GICs.

If there are more than two busy GICs on Series 30/33/39/4X/5X systems, the diagnostic will hang. In general, you should have a minimum of one GIC pair and two busy GICs.

All GICs configured in DMAEXR9 perform DMA into and out of the bank under test. This is different from DMAEXR, in which the Busy GIC operates out of bank 0. Because of this, DMAEXR9 can detect Series 39/4X/5X memory boards that have bad Data Valid (DAV) circuitry.

Enter CTRL-Y at any time to abort the diagnostic.

To execute the DMA Exerciser Diagnostic, do this:

1. Back up the system.
2. Perform an MPE SHUTDOWN.
3. Cold load the Diagnostic/Utility System (DUS).
4. When the DUS program displays a title message and prompt (:), enter

## Diagnostics

### DMAEXR9

5. The following message is displayed:

Enhanced DMA Exerciser Program, DMAEXR-9, version XX.XX

6. Enter GO to continue.

7. The program displays the message:

DEVICE NUMBERS USED FOR ANY GIC MUST NOT CORRESPOND  
TO DEVICES ACTUALLY ATTACHED TO THAT GIC.

The device numbers you enter must be unique. They must not match those of any devices currently on the system. The IMB number (always 0) and channel number MUST exist in the system, but the device number specified for the device GIC MUST NOT exist on that channel. Usable numbers for the Series 3X/4X/5X are:

IMB - 0

Channel - 1-15

Device - 0-7

8. Enter responses to these prompts:

Number of CONTROLLER - DEVICE GIC pairs available (1-3)?

Enter first CONTROLLER GIC's IMB, channel, device numbers:

Enter first DEVICE GIC's IMB, channel, device numbers:

Enter second CONTROLLER GIC's IMB, channel, device numbers:

Enter second DEVICE GIC's IMB, channel, device numbers:

Enter third CONTROLLER GIC's IMB, channel device numbers:

Enter third DEVICE GIC's IMB, channel, device numbers:

Number of BUSY GIC's available (0-3)?

Enter first BUSY GIC's IMB, channel, device numbers:

Enter second BUSY GIC's IMB, channel, device numbers:

Enter third BUSY GIC's IMB, channel, device numbers:

The DUS cold-load device will not work on the device GIC and it should not be placed on the busy GIC. Place the cold-load device on the controller GIC, but at a different device number from that of the controller - device GIC pair being tested.

9. You can tie the two HP-IB ports together at the junction panel with an HP-IB cable. This is useful for testing an HP-IB cable as part of the system. Follow the directions for CHANNEL CONFIGURATION in the example below:

1. Connect GIC 0/15 to GIC 0/14 by HP-IB.
2. Connect GIC 0/13 to GIC 0/12 by HP-IB.
3. Connect GIC 0/11 to GIC 0/10 by HP-IB.  
Note that each connected CONTROLLER GIC-DEVICE GIC pair can have no more than ONE ACTUAL HP-IB DEVICE attached to their HP-IB.
4. Set the 'SYS CTRL' switch to the OUT position on GIC 0/14, 0/12, 0/10.

These steps logically tie together the channels of the controller - device pairs being tested. . You can also tie the ports at the lower board edge, where an INP would attach, with an HP-IB ribbon cable. You can attach or disconnect HP-IB cables of either type with the power on.

Remove all devices attached to the controller or device GICs, except the cold load device. Remove all HP-IB cable hoods at the edge of the board. This allows the busy GIC to operate at the highest speed. Pull out the system controller switch (SYS CNTL) to enable the GIC to behave as a device GIC. The switch is behind the HP-IB cable hood. With this switch pulled out, the device GIC is no longer the system controller on the bus. You cannot have more than one system controller on the bus.

10. Enter the appropriate responses to the prompts for MEMORY CONFIGURATION:

Enter the number of MEGABYTES of memory to test:  
or 0 (zero) for partial megabyte question.  
Note that 1 bank = 128K bytes, 8 banks = 1 Megabyte.  
Enter the number of BANKS of memory to test:

You must specify either the number of megabytes or the number of banks to test. For systems with an integer multiple of one-megabyte memory, the memory size can be entered as 1, 2, 3, or 4 for one-megabyte, two-megabyte, three-megabyte, or four-megabyte configurations.

If the system does not have an integer multiple of one-megabyte memory, you must enter the memory size as the number of banks. For example, 768 kbytes equals six banks and 2.5 megabytes equals 20 banks. You can enter memory size as number of banks for systems with an even number of megabyte memory, e.g. four megabytes equals 32 banks.

**NOTE**

There is a known problem with all DMAEXR version through revision 00.03. One extra bank will be tested by mistake if the value entered is the number of banks. This does not affect the validity of the test.

## Diagnostics

### 11. Enter a value for the TRANSFER COUNT:

620 transfers will allow one pass through 8 megabytes  
Enter the number of TRANSFER to perform,  
or 0 (zero) for continuous looping.

The number of passes that DMAEXR9 makes through memory is determined by the value you enter here and by the amount of memory available. The first two banks of memory are not tested by DMAEXR9 in the same way as the rest of memory, because DUS resides there. If the first two banks are suspect, you may want to swap the address of board 0 and another board. Then re-run the test.

Ten test passes are made for each bank. Eighty passes are made for each megabyte. If you subtract the two banks that are not tested, 620 passes are made for eight megabytes of memory.

## DMA Exerciser Diagnostic (DMAEXR)

To execute the DMA exerciser diagnostic perform the following procedure:

- a. Backup system.
- b. Perform MPE 'SHUTDOWN'
- c. COLDLOAD the Diagnostic/Utility System (DUS).
- d. Once the DUS program has output its title message and prompt (:), enter DMAEXR.
- e. The response should be:  
  
DMAEXR EXERCISER PROGRAM 'DMAEXR', version XX.XX.
- f. A 'CTRL Y' may be entered at any time to abort the diagnostic.
- g. For memory size, enter highest bank number + 00 (800 for 1 Mbyte).
- h. Enter number of transfers. 10 transfers per bank tested (60 for 1 Mbyte).

This program is intended to provide an exhaustive check of the DMA operation. The full check requires three GIC assemblies. A minimum test, however, may use two GICs (Control and Device). Follow the configuration instruction always using valid IMB, Channel, and Device numbers.

## ADCC Diagnostic (ADCCDIAG)

Install test hood, HP 5060-5563, before beginning the diagnostic. To execute the ADCC Diagnostic, perform the following procedure:

- a. Install a Diagnostic/Utility System diskette, cartridge, or tape.
- b. COLDLOAD the DUS programs.
- c. When the DUS displays its title message and prompt, enter: ADCCDIAG.
- d. When the prompt (>) is returned, enter GO and respond to the following:

"Enter channel number of ADCC under test"

"Is the extended ADCC present?(Y/N)"

## GIC Diagnostic (GICDIAG)

To execute the GIC diagnostic, perform the following procedure:

- a. Install a Diagnostic/Utility System diskette, cartridge, or tape.
- b. COLDLOAD the DUS programs.
- c. When DUS displays its title message and prompt, enter: GICDIAG.
- d. When the prompt (>) is returned, enter GO.

## Series 30 and 33 Memory Diagnostic (MEMDIAG)

To execute Series 30 and 33 memory diagnostic, perform the following procedure:

- a. Install a Diagnostic/Utility System diskette, cartridge, or tape.
- b. COLDLOAD the DUS programs.
- c. When the DUS displays its title message and prompt, enter: MEMDIAG.
- d. When the prompt (>) is returned, enter GO.
- e. Observe system memory display configuration for possible errors.

Example of memory configuration map:

---

### Controller 0

```
0   1   2   3   4   5   6   7   128K BYTE MODULE
1111 1111 111 ?111 11.1. 1111 .... ....

      . => absent
      1 => present
      ? => present with detectable multi-bit error(s)
```

type GO to continue (LC to list commands)

---

This example shows a system containing one controller with 128K bytes of memory, of which there is a problem with the 4th and 5th array boards (array 3 and 4).



## Series 39/40/42 and 44/48 Pronto Memory Diagnostic (PRMDIAG)

To execute the Series 39/40/42 and 44/48 Pronto memory diagnostic, perform the following procedure:

- a. Install a DUS flexible disc, cartridge tape, or tape.
- b. Set Control Panel COLDLOAD CHANNEL and DEVICE switches to the channel and device number of the magnetic tape unit.
- c. The Diagnostic Utility System will respond with the following message:

```
Diagnostic/Utility System Revision nn.nn  
Enter Your Program Name (type HELP for program information)  
:
```

- d. Respond to the Diagnostic/Utility System prompt with:

```
PRMDIAG
```

## Series 42XP/52/58 Memory Diagnostic (MDIAG58)

To execute the Series 42XP/52/58 memory diagnostic, perform the following procedure:

- a. Install a DUS flexible disc, cartridge tape, or tape.
- b. Set Control Panel COLD LOAD CHANNEL and DEVICE switches to the channel and device number of the cold load device.
- c. Press Control Panel HALT.
- d. Press Control Panel LOAD (will cause the CPU to switch from the HALT state to the RUN state). DUS will respond with the following message within 50 seconds:

```
Diagnostic/Utility System Revision nn.nn  
Enter Your Program Name (type HELP for program information)  
:
```

- e. Respond to the DUS prompt with MDIAG58.

Follow all responses to the diagnostic or DUS prompts by pressing **RETURN**.

## HP 7902A/9895A Flexible Disc Diagnostic (D7902)

To execute the HP 7902A/9895A flexible disc diagnostic, perform the following procedure:

- a. Install a Diagnostic/Utility System diskette or tape.
- b. COLDLOAD the DUS programs.
- c. When the DUS displays its title message and prompt, enter: D7902.
- d. After the prompt (>) is returned, enter GO. Answer the following:

What is the IMB?

What is the CHANNEL ADDRESS of the controlling GIC (1-15)?

What is the DEVICE ADDRESS OF THE FDU or TAPE (0-7)?

## HP 7970E/7971 Magnetic Tape Diagnostic (D7970S13, D7970S45, D7970S68)

To execute magnetic tape diagnostics, perform the following procedure:

- a. Install a Diagnostic/Utility System diskette or tape.
- b. COLDLOAD the DUS programs.
- c. When the DUS returns its prompt, enter D7970S13, D7970S45, or D7970S68.
- d. When the prompt (>) is returned, enter GO. Answer the following instruction messages:

ENTER CHANNEL NUMBER TO WHICH THE 7970 CONTROLLER IS CONNECTED  
(1-15)  
?

ENTER DEVICE NUMBER ASSIGNED TO CONTROLLER BY HP-IB (0-7)  
?

PUT MAGNETIC TAPE WITH WRITE RING ONTO UNITS UNDER TEST AND PUSH  
ON-LINE AND SELECTED UNIT #'S! ENTER GO TO CONTINUE  
?

Enter "GO" to continue

ENTER THE NUMBER OF REQUIRED PASSES (-1 = INDEFINITELY)

UNIT 0 WILL BE TESTED. IF OK TYPE 0, ELSE 1?

- e. Enter GO to execute diagnostic, AB (abort) to exit from diagnostic execution.

## HP 13037X Disc Controller Diagnostic (D13037)

To execute disc controller diagnostic, perform the following procedure:

### STANDARD OPERATING MODE

- a. Install a Diagnostic/Utility System diskette or tape.
- b. COLDLOAD the DUS programs.
- c. When the DUS displays its title message and prompt, enter: D13037.
- d. Install a scratch cartridge/pack in all units to be tested. If scratch cartridges and packs are not available, save contents to another media and then later restore from this media.
- e. To continue execution, enter GO. Respond to message:  
  
Enter Channel number to which the 13037 controller is connected (1-15)  
  
Enter Device number assigned to the controller by the HP-IB (0-7)
- f. When diagnostic identifies test configuration, respond to the next request message:  
  
Enter the number of required passes (-1 = indefinitely)

### OPTIONAL OPERATING MODE

The optional operating mode allows selection of particular test sections for execution, and permits suppression or enabling of error and non-error printout and pauses.

## CS80 DEVICE DIAGNOSTICS

### CS80EXER Offline Diagnostic

CS80EXER is an offline Diagnostic/Utility System (DUS) diagnostic. It replaces CS80DIAG and is fully backward compatible, providing support for all CS80 devices. CS80EXER uses a format similar to CS80UTIL. CS80EXER is distributed with DUS revision 3.02 or later.

To execute CS80EXER, do this:

- 1) Perform an MPE SHUTDOWN.
- 2) Cold load the Diagnostic/Utility System (DUS).
- 3) When the DUS program displays the title message and prompt (:), enter CS80EXER

## Diagnostics

### 4) The response is:

```
CS80EXER X.XX.XX (C) Hewlett-Packard Co., 1986

Please wait: loading message file ...

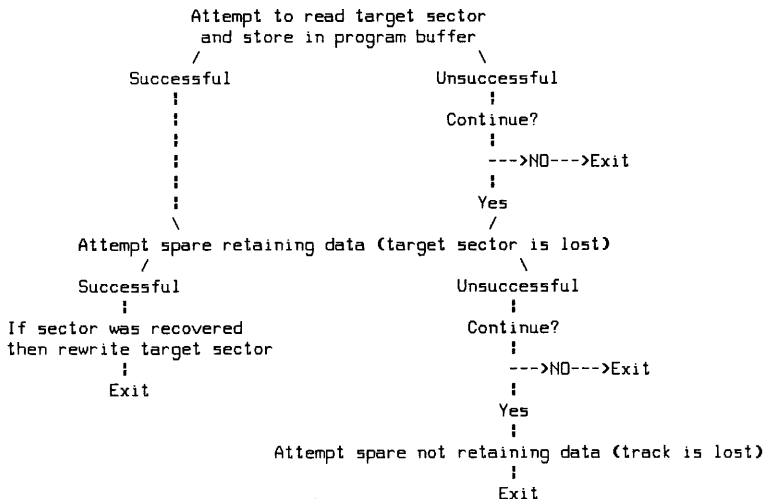
CS80 Device Configuration

Logical Device? (Enter User Selected "LDEV" Number)
DRT?
List logical devices (Y/N)[N]?

CS80EXER>
```

After the desired devices are configured, the program prompts you for user input with a CS80EXER> prompt. For a list of available commands, enter HELP at the CS80EXER> prompt.

The CS80EXER SPARE command executes this algorithm:



<b>NOTE</b>
-------------

The user must ensure that data affected by sparing is properly taken care of.

## CS80UTIL Online Diagnostic

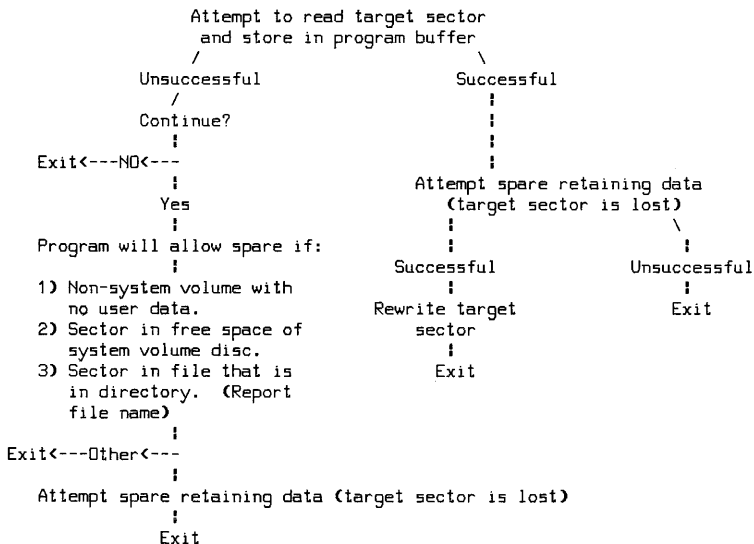
CS80UTIL normally resides in the CS80 group of the TELESUP account. CS80UTIL uses a message file called CS80MSG. CS80UTIL looks for CS80MSG in the user logon group. It then looks for CS80.TELESUP and HP32340.TELESUP. CS80UTIL will not run if the version of the message file is different from the program, or if it does not find a message file.

To execute CS80UTIL, enter the following system commands:

```
:HELLO FIELD.TELESUP,CS80
:RUN CS80UTIL
(Program header will be displayed)
CS80UTIL>
```

For a list of available commands, enter HELP at the CS80UTIL> prompt.

The CS80UTIL SPARE command executes this algorithm:



<b>NOTE</b>
-------------

The user must ensure that files affected by sparing are properly taken care of.

## Diagnostics

### **CS80Diag**

To execute CS80 device diagnostics, perform the following procedure:

- a. Perform an MPE 'SHUTDOWN'.
- b. COLDLOAD the Diagnostic/Utility System.
- c. Once the DUS program has output its title message and prompt (:), enter "CS80DIAG".
- d. The response should be:

```
Program Loaded!!  
nnnn>
```

The CS80DIAG is now loaded and may be run with the "RUN" command.

**HP 7906/7920/7925 Disc Verifier (VERIFIER)**

To execute disc verifier diagnostics, perform the following procedure:

- a. Install a Diagnostic/Utility System diskette or tape.
- b. COLDDLOAD the DUS programs.
- c. When the DUS displays its title message and prompt, enter: VERIFIER.
- d. Answer the following requests:

79XX Disc Verifier Revision xx.xx

Place Scratch Pack/Cartridge in Units to be Tested

Enter Channel Number (GIC channel number of 13037 controller)  
 Enter Device Number (Disc Unit Device # of 13037)  
 Enter Unit Number (Number of Unit to be tested)  
 Enter Error Count (# of errors to display before program ends)

- e. Respond to the following requests:

Unit Select Switch Test? (0=N, 1=Y)

Enter Unit # to be Tested

Format Pack? (0=N, 1=Y)

Verify Pack? (0=N, 1=Y)

Verify Long Pass? (0=N, 1=Y)

Enter the number of passes desired.

- f. The following messages are displayed as each section is executed:

Begin Format (If formatting was requested)  
 End Format

Begin Verify (If verifying was requested)  
 Verify Pass #X (short or long pass)  
 End Verify

Begin Main  
 End Head Test  
 End Track Switch Test  
 End W/R Test

## ATP (ATPDIAG)

<b>NOTE</b>
-------------

Tests can be run individually or as a group. It is recommended that they be run as a group.

To execute ATP, perform the following procedure:

1. Load Diagnostic/Utility System (DUS) or Diskette.
2. Bring up the Diagnostic/Utility System (DUS).  
Enter Program Name is displayed.
3. Respond ATPDIAG to initiate the Diagnostic. The ATP Diagnostic Program displays its title message and prompts for the Channel #. Then it prompts for the IMB # of the SIB. Respond with RETURN or 0.
4. Four types of message are output by the diagnostic: prompt, help, information and error messages.
5. Before the diagnostics are started you can specify whether the diagnostics should stop after the first error or whether they should continue to test as much of the system as possible.
6. The following is a sample dialog:

```
Advanced Terminal Processor Offline Diagnostic V-00.20
```

```
Enter Exit in response to any question to terminate the program.
```

```
Enter IMB number to which the SIB is connected (0-2) - 0
Enter the channel number of the SIB under test: 1
Print failure messages? NO
Print success messages? NO
Output results to line printer? YES
Stop on errors? NO
Loop count-(zero for continuous looping): 1
Enter SIB tests to be run:
>ALL
Enter AIB tests to be run:
>ALL
Enter ports to be tested, separated by commas:
>A0, 1, 2, 3.....11)
```



**NOTE**

Port 0 can not be tested since it is connected to the console.

**NOTE**

It is recommended that you respond with a NO to questions concerning errors and messages, since the results will be summarized at the end of the diagnostic testing.

7. Refer to ATP Diagnostic Manual (P/N 30144-90003) for more detailed information.

**SADUTIL (SADUTIL)**

SADUTIL is a stand-alone utility program used to perform disk operations. Refer MPE System Utilities Manual P/N 30000-90044. SADUTIL performs the following functions:

- o When used with RECOVER2 utility, MPE files are recovered that have become logically inaccessible because of a catastrophic condition (invalid system file directory, or bad code-load information).
- o Requires no special MPE capability.

Refer to Section IV for a description of the SADUTIL commands.

## ONLINE DIAGNOSTICS

The following is a description of online diagnostic tests.

### HP 2563A/2565A/2566A/2608A/S Line Printer

Restore file PD466A to the HP32340 group of the SUPPORT account. Enter the following system commands:

```
:HELLO FIELD.SUPPORT,HP32340  
:RUN PD466A
```

The program will request user inputs for test configuration. Enter the appropriate values for each request:

Enter Model No.

Enter Number of Characters to be used (64/96/128).

For HP 2563A/2608S printers only: printer connected via multi-point terminal system (i.e., Remote) Y/N?

Enter Logical Dev. No.

Select Section Flags.

For looping and Status checks, use SLEUTHSM in offline Diagnostic/Utility System (DUS).

<b>NOTE</b>
-------------

Until the online verifier program is updated to include the HP 2565/66A as a valid device option, respond to all model number inquiries with "2563". This will satisfy program requirements for the presence of a valid device without affecting test execution or validity.

## HP 2680A/2688A Page Printer Verifier

To execute the page printer verifier, perform the following procedure:

1. Verify proper online operation.
2. Enter the following system commands:  
:HELLO FIELD.SUPPORT,HP32340  
:RUN PD467A
3. Perform procedures requested by the verifier.

<b>NOTE</b>
-------------

Use the printer selftest function (on top panel keyboard) to run the complete set of printer diagnostics.

4. To run printer selftest, enter the following commands from the printer keyboard:
  - a. Press HALT.
  - b. Enter 1 ENT.
  - c. Press RUN.

## ATPDSM

To execute the ATPDSM, perform the following procedure:

1. ATPDSM Options
  - a. Run diagnostics.
  - b. Abort job(s).
  - c. Abort I/O.
  - d. Reset one or more ports and associated tables.
  - e. Display tables.
  - f. Dump one or more ports and associated tables.
  - g. Obtain a list of broken ports.
2. Once you have created an MPE session, invoke ATPDSM by the following:

```
RUN ATPDSM.PUB.SYS <cr>
```

Use of ATPDSM requires (OP) capability. ATPDSM will output the following message after it has verified (OP) capability:

```
TERMINAL DIAGNOSTIC--VERSION V.UU.FF  
Type HELP for aid
```

<b>NOTE</b>
-------------

ATPDSM will be called "TERMDSM" and will run both on ATP and ADCC ports for MPE V/E only.

## HP 7974A/78A Magnetic Tape Diagnostic

To execute the magnetic tape diagnostics, perform the following procedure:

```
:HELLO FIELD.SUPPORT,HP32340 RETURN :RUN PD471A RETURN
```

The HP 7974A Tape Diagnostic has no interactive test sections, but the user can select the following test parameters:

- o Enter sections separated by commas
- o Enter steps separated by commas
- o Enter loop count
- o Enter error parameters: error only, error pause, error count
- o Enter logical device number of tape unit under test

If all default parameters have been selected, the diagnostic will respond with a header and welcome message, and if no errors are generated, will output the following message:

```
Section 3 - Identify (5sec)
End Section 3, ID code of $174 was returned
```

```
Section 4 - Loopback (2min)
End Section 4
```

```
Section 5 - Power-on Selftest (30secs)
End Section 5
```

HP 7974A Magnetic Tape Diagnostic Normal Termination

## HP 7976A Magnetic Tape Diagnostic Loader

The HP 7976A Diagnostic Loader may be run in either Auto or Manual mode. To execute the diagnostic loader, perform the following procedure:

```
:HELLO FIELD.SUPPORT,HP32340
:RUN PD470A
or
:RUN PD470A,MANUAL
```

If the Loader is run in Auto mode, minimal user interaction is necessary. In Manual mode the Loader prompts the user for the desired operation:

Routine (RTssrree), Selftest, Loopback, Auto, Exit?

Where:

- ss is the section designator in OCTAL
- rr is the routine designator in OCTAL
- ee is the routine extension field in OCTAL

## MISCELLANEOUS DIAGNOSTIC PROGRAMS

The following programs are for the Series 30,33,39/40/42/42XP/52 and 44/48/58.

### NOON

NOON is a note file in MPE that describes changes associated with a particular MIT release. To execute NOON, perform the following procedures:

```
HELLO FIELD.SUPPORT,HP32231 (FOR SERIES 3X AND 4X)
or
HELLO FIELD.SUPPORT,HP32340 (FOR ONLINE DIAGNOSTICS)

:EDITOR
```

Text in the NOON file.

The following is an example of the Series 33 note file:

Release issue of HP 32231A Series 33 diagnostics and utilities.  
\*\* First Series 33 MIT \*\*

Cartridge tapes associated with HP 32231A:

Maintenance Interface and COLDLLOAD Selftest	30070-10401
Maintenance Display Software	30070-10402
Remote Maintenance/Console Facility	30070-10403

Flexible disc associated with HP 32231A:

Diagnostic/Utility System	30070-13401
---------------------------	-------------

\*\*\* Maintenance Interface and COLDLLOAD Selftest Cartridge\*\*\*  
\*\* 30070-10401 Rev 1909 \*\*

Maintenance Interface Diagnostic	Version 0.00
COLDLOAD Selftest	Version 0.05**

TO GENERATE AN MI DIAGNOSTIC AND CLST TAPE ON THE RIGHT CARTRIDGE TAPE, RUN FCOPY.PUB.SYS AND ENTER THE FOLLOWING COMMANDS:

```
>FROM=MIDHEAD;TO=%CTUR
>FROM=MIDLbins;TO=%CTUR;SKIPEOF=,2
>FROM=CLSTHEAD;TO=%CTUR;SKIPEOF=,3
>FROM=CASET4;TO=%CTUR;SKIPEOF=,4
>EXIT
```

\*\*\* Maintenance Display Software Cartridge Tape \*\*\*  
\*\* 30070-10402 Rev 1910 \*\*

Maintenance Display Software                   Version 0.01 \*\*  
TO GENERATE A MAINTENANCE DISPLAY TAPE ON THE RIGHT CARTRIDGE  
TAPE, RUN FCOPY.PUB.SYS AND ENTER THE FOLLOWING COMMANDS:  
>FROM=MPHEAD;TO=%CTUR  
>FROM=MPLINKBS;TO=%CTUR;SKIPEOF=,2  
>EXIT

\*\*\*Remote Maintenance/Console Facility Cartridge Tape \*\*\*  
\*\* 30070-10403 Rev 1835 \*\*

Remote Maintenance/Console Facility           Version 0.00  
TO GENERATE A REMOTE TAPE ON THE RIGHT CARTRIDGE TAPE,  
RUN FCOPY.PUB.SYS AND ENTER THE FOLLOWING COMMANDS:  
>FROM=REMHEAD;TO=%CTUR  
>FROM=REMLINKB;TO=%CTUR;SKIPEOF=,2  
>EXIT

\*\*\*Diagnostic/Utility System Flexible Disc \*\*\*  
\*\* 30070-13401 Rev 1911 \*\*

## Contributed SleuthSM Programs

The following programs can be used as an aid in troubleshooting.

### FLPYCOPY

This program performs a disc-to-disc copy with verify between the 7902 and 79XX.

```

5002 PRINT "THIS PROGRAM IS CONFIGURED FOR: 79XX IN CHAN 6 AS ";
5005 PRINT"DEV 1,UNIT 0",33,"7902 DISC IN CHAN 7 AS DEV 1,UNIT 0
5007 PRINT 0,"DO YOU WISH TO CHANGE THIS CONFIGURATION (TYPE Y/N)
5008 INPUT W
5010 IF W="Y" THEN 5015
5012 LET E:=7,F:=1,I:=1,A:=B:=G:=J:=0,H:=6
5013 IF W="N" THEN 5025
5014 GOTO 5007
5015 PRINT 0,"ENTER CHAN, DEV AND UNIT# OF 7902 FLOPPY DISC
      (i.e., 7,3,0)"
5017 INPUT E,F,G
5019 PRINT 0,"ENTER CHAN, DEV, AND UNIT# OF 79XX DISC (i.e., 6,5)
5021 INPUT H,I,F
5025 DEV 0,E,F,10,G
5027 DEV 1,H,I,10,J
5030 DB AA,7680,-1
5040 DB BB,7680,0
5055 PRINT "INSTALL MASTER DISKETTE INTO THE 7902 AND TYPE GO."
5060 RQST 0 .CLEAR FLOPPY 1ST STATUS
5065 GOSUB 5240 .GET MAX # OF CYL
5070 FOR C:=0 UNTIL K
5080 SEEK 0,C,0,0 .FLOPPY DISC
5090 RDI 0,AA(0)
5100 SEEK 1,C,0,0 .79XX DISC
5110 WDI 1,AA(0),2 .CYL MODE
5160 NEXT 5070
5162 PRINT 0,"VERIFYING MASTER COPY WRITTEN ON 79XX DISC.",0
5165 GOSUB 5310
5170 PRINT "INSTALL NEW DISKETTE & TYPE GO."
5175 RQST 0 .CLEAR FLOPPY 1ST STATUS
5190 FOR D:=0 UNTIL K
5200 SEEK 1,D .79XX DISC
5210 RDI 1,AA(0),2 .CYL MODE
5220 SEEK 0,D .FLOPPY DISC
5230 WDI 0,AA(0)
5280 NEXT 5190
5282 GOSUB 5296 .VERIFY DATA
5285 PRINT 0,"DO YOU WISH TO MAKE ANOTHER COPY? (TYPE Y/N)."
5287 INPUT F
5288 IF F="N" THEN 5291
5289 IF F="Y" THEN 5170
5290 GOTO 5285
5291 END
5296 PRINT 0,"BEGIN VERIFICATION"
5310 FOR E:=0 UNTIL K

```



```
5320 RD 0,AA(0),0,E
5330 RD 1,BB(0),2,E
5340 SCB 0,AA(0),BB(0),5
5390 NEXT 5310
5400 PRINT 0,"END VERIFICATION",0
5410 RETURN
5415 .THIS SECTION FINDS THE # OF CYL USED ON THE DISKETTE
5420 DB &CC,6,"DIREC"
5430 FILENAME &CC(0)
5440 READFILE AA(0),640
5450 IF AA(A)=-1 THEN 5540
5460 LET C:=A+8,D:=A+10,F:=A+4,I:=A+5
5470 LET B:=AA(F) AND !7FF
5480 LET J:=AA(I) AND !F000
5490 IFN J:=1000 THEN 5510
5500 LET D:=D-1
5510 LET E:=AA(C),G:=AA(D),H:=E+G
5520 LET A:=A+11
5530 GOTO 5450
5540 LET K:=H/7680+1,K:=K+B
5550 RETURN
```

## SERIES 42XP/52/58 MEMORY ADD-ON

Figure 3-16 shows the location of the memory controller address switch for the Series 42XP/52/58.

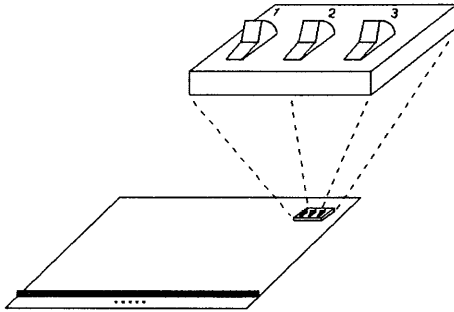


Figure 3-16. Series 42XP/52/58 Memory Controller Address Switch

### Series 42XP Memory Add-On

The Series 42XP can have a maximum memory configuration of six Mbytes. Up to four memory PCAs can be installed. The allowable memory PCAs are the 1-Mbyte Memory PCA (P/N 30161-60001) and the 2-Mbyte Memory PCA (P/N 30173-60001). Examples of Series 42XP memory configurations are shown in Table 3-30 through Table 3-32. All of the allowable memory configurations are shown in Table 3-33.

Table 3-30. Series 42XP with 5 MB of Memory (one 2 MB PCA).

Card Cage Slot Number	Memory PCA Size	Address Switch Setting
1	2 MB	0
2	1 MB	2
3	1 MB	3
4	1 MB	4

## Diagnostics

### SERVO EXERCISER (7902/9895)

```
5000 DEV 0,<CHAN NO.>, <DEV NO.>, 99, 0,<IMB NO.>
5010 FOR A:=0 TO 3
5020 SEEK 0,0,0,0
5030 SEEK 0,76,0,0
5040 NEXT 5010
5050 SEEK 0,0,0,0
5060 FOR A:=0 TO 76
5070 IS 0
5080 DS 0
5090 NEXT 5060
5100 SEEK 0,44,0,0
5110 SEEK 0,0,0,0
5120 FOR A:=0 TO 14
5130 RS 0
5140 NEXT 5120
5150 SEEK 0,0,0,0
5160 RUN
```

<b>NOTE</b>
-------------

If using a single-sided flexible disc, you must change line 5109 of the Sleuth Simulator to:

```
5109 IF U-!80 THEN 5130 .7902?
```

!80= ID code for the single-sided flexible disc

!81= ID code for the double-sided flexible disc

### FMTVER06 (7906)

```
5000 DEV 0,<CHAN NO.>, <DEV NO.>,100,0,<IMB NO.>
5010 FMT 0
5020 SFM 0,7
5025 PRINT "BEGIN VERIFY"
5030 FOR I:=0 UNTIL 410
5040 SEEK 0,1,0,0
5050 VER 0,144,1,0,0
5060 NEXT 5030
```

**SERVO TEST (7906)**

```
5000 DEV 0,<CHAN NO>,<DEV NO>,100,0,<IMB NO>
5010 DB AA,128,0
5020 DB BB,6144,0
5025 PRINT "RANDOM SEEKS 300 TIMES"
5030 FOR I=1 UNTIL 300
5040 RS 0
5050 NEXT 5030
5055 PRINT "IS-DS SEEKS-500 TIMES"
5060 FOR I=1 UNTIL 500
5070 IS 0
5080 DS 0
5090 NEXT 5060
5095 PRINT "RANDOM SEEK-READS, 79 TIMES"
5100 LET D:=387
5110 RAND I
5120 LET A:=I MOD 10
5130 LET B:=D+A
5140 SKRD 0,AA(0),7,B,0,A
5150 LET D:=D-5
5160 IF D > 10 THEN 5110
5165 PRINT "SEEK 0 TO 410 TO 0,500 TIMES"
5170 FOR I=UNTIL 500
5180 SEEK 0
5190 SEEK 0,410,0,0
5200 NEXT 5170
5205 PRINT "RANDOM CYLINDER READS, 18 TIMES"
5210 LET D:=0
5220 RAND I
5230 LET A:=I MOD 50
5240 LET B:=D+A
5250 SKRD 0,AA(0),7,B,0,0
5260 LET D:=D+20
5270 IF D < 360 THEN 5220
5275 PRINT "INCREMENT CYLINDER READS, 2 THROUGH 400"
5280 LET D:=2
5290 SKRD 0,AA(0),7,D,0,24
5300 LET D:=D+D
5310 IF D < 400 THEN 5290
```

## Diagnostics

### RANDOM READ/WRITE (7906)

```
5000 DEV 0,<CHAN NO.>,<DEV NO.>,10,0,<IMB NO.>
5010 DB AA,2000,0
5020 ASSIGN AA(0),( 666 ),%155555,%133333,%066666
5030 DB BB,2000,0
5040 RAND D
5050 LET A:=D MOD 813
5060 LET B:=D MOD 2
5070 LET C:=D MOD 47
5080 SKWR 0,AA(0),7,A,B,C
5090 RS 0
5100 SKRD 0,BB(0),7,A,B,C
5110 GOTO 5040
```

### FLAG DEFECTIVE TRACKS (7906, 7920)

```
5000 DEV 0,<CHAN NO.>,<DEV NO.>,10,0,<IMB NO.>
5010 DB AA, 6144,0
5020 RC 0
5030 PRINT "CYLINDER # TO BE FLAGGED DEFECTIVE?"
5040 INPUT A
5050 PRINT "HEAD #?"
5060 INPUT B
5070 SEEK 0,A,B,0
5080 IDI 0,AA(0),3,D
5090 PRINT "CONTINUE? (YES/NO)"
5100 INPUT &BB
5110 IF &BB= "YES" THEN 5020
```

### FORMAT AND VERIFY (7920)

```
5000 DEV 0,6,1,100,0,<IMB NO.>
5010 DB AA,6144,0
5020 RC 0
5030 FOR A:= 0 TO 822
5040 FOR B:= 0 TO 4
5050 SEEK 0,A,B,0
5060 IDI 0,AA(0),3,N
5070 NEXT 5040
5080 NEXT 5030
5090 FOR A:= 0 TO 822
5100 FOR B:= 0 TO 4
5110 SEEK 0,A,B,0
5120 VER 0,48,A,B,0
5130 NEXT 5100
5140 NEXT 5090
```

**RANDOM READ/WRITE (7920)**

```

5000 DEV 0,<CHAN NO>,<DEV NO>,10,0,<IMB NO>
5010 DB AA,2000,0
5020 ASSIGN AA(0),( 666 ),%155555,%133333,%066666
5030 DB BB,2000,0
5040 RAND D
5050 LET A:= D MOD 813
5060 LET B:= D MOD 4
5070 LET C:= D MOD 47
5080 SKWD 0,AA(0),7,A,B,C
5090 RS 0
5100 SKRD 0,BB(0),7,A,B,C
5110 GOTO 5040

```

**FLAG DEFECTIVE TRACKS (7925)**

```

5000 DEV 0,<CHAN NO>,<DEV NO>,10,0,<IMB NO>
5010 DB AA, 8192,0
5020 RC 0
5030 PRINT "CYLINDER # TO BE FLAGGED DEFECTIVE?"
5040 INPUT A
5050 PRINT "HEAD #?"
5060 INPUT B
5070 SEEK 0,A,B,0
5080 IDI 0,AA(0),3,D
5090 PRINT "CONTINUE? (YES/NO)"
5100 INPUT &BB
5110 IF &BB="YES" THEN 5020

```

**FORMAT AND VERIFY (7925)**

```

5000 DEV 0,6,1,100,0,<IMB NO>
5010 DB AA,8192,0
5020 RC 0
5030 FOR A= 0 TO 822
5040 FOR B= 0 TO 8
5050 SEEK 0,A,B,0
5060 IDI 0,AA(0),3,N
5070 IDI 0,AA(0),3,N
5080 NEXT 5040
5090 NEXT 5030
5100 FOR A= 0 TO 822
5110 FOR B= 0 TO 8
5120 SEEK 0,A,B,0
5130 VER 0,64,A,B,0
5140 NEXT 5100
      NEXT 5090

```

## Diagnostics

### RANDOM READ/WRITE (7925)

```
5000 DEV 0,<CHAN NO.>,<DEV NO.>,10,0,<IMB NO.>
5010 DB AA,2000,0
5020 ASSIGN AA(0),( 666 )%155555,%133333,%066666
5030 DB BB,2000,0
5040 RAND D
5050 LET A:= D MOD 813
5060 LET B:= D MOD 8
5070 LET C:= D MOD 63
5080 SKWD 0,AA(0),7,A,B,C
5090 RS 0
5100 SKRD 0,BB(0),7,A,B,C
5110 GOTO 5040
```

### RANDOM WRITE/READ (7906, 7920, 7925)

```
5000 DEV 0,<CHAN NO.>,<DEV NO.>,100,0,<IMB NO.>
5006 GOSUB 888
5010 DB AA, 3072
5011 DB BB, 3072
5020 ASSIGN AA(0),(1024)%155555,%133333,%066666
5025 LET H:= WW(13) MOD 100
5030 LET B:= WW(13)-1-H, F:= WW(14)-1, G:= WW(15)-1
5040 RAND 0
5045 LET A:= D MOD E, B:= D MOD F, C:= D MOD G
5050 SKWD 0, AA(0),7,A,B,C
5060 RS 0
5070 SKRD 0, BB(0),7,A,B,C
5080 CB AA(0), BB(0),3072
5090 IF INDEX=-1 THEN 5040
5100 PRINT "BUFFER COMPARE ERROR -- TEST ABORTED"
```

WW(13) = First disc track

WW(14) = No. of heads

WW(15) = No. of sectors

**SERVO TEST (7906,7920,7925)**

```
5000 DEV 0,<CHAN NO>,<DEV NO>,99,0,<IMB NO>
5010 FOR A:= 0 TO 50
5020 LET B:= 822
5030 RC 0
5040 SEEK 0,B,0,0
5050 NEXT 5010
5060 FOR A:= 0 TO 30
5070 FOR B:= 0 TO 822
5080 LET C:= 823-B
5090 SEEK 0,B,0,0
5100 SEEK 0,C,0,0
5110 NEXT 5070
5120 NEXT 5060
5130 FOR A:= 0 TO 10
5140 RAND C
5150 LET C:= C MOD 821
5160 SEEK 0,C,0,0
5160 RC 0
5170 NEXT 5130
5180
```



## Diagnostics

### MULTIDISC EXERCISER (7906,7920,7925)

```
5000 DEV 0,<CHAN NO.>,<DEV NO.>,100,0,<IMB NO.>
5010 DEV 1,<CHAN NO.>,<DEV NO.>,100,1,<IMB NO.>
5020 DEV 2,<CHAN NO.>,<DEV NO.>,100,2,<IMB NO.>
5030 DEV 3,<CHAN NO.>,<DEV NO.>,100,3,<IMB NO.>
5040 DB AA,128,1
5050 DB BB,128,0
5060 PRINT "ENTER NO. OF DRIVES TO BE TESTED (4 MAX.)?"
5070 INPUT A
5080 FOR B= 0 TO 100
5090 RS 0
5100 WDI 0,AA(0)
5110 RDI 0,BB(0)
5120 SCB 0,AA(0),BB(0),1
5130 IF A<1 THEN 5280
5140 RS 1
5150 WDI 1,AA(0)
5160 RDI 1,BB(0)
5170 SCB 1,AA(0),BB(0),1
5180 IF A<2 THEN 5280
5190 RS 2
5200 WDI 2,AA(0)
5210 RDI 2,BB(0)
5220 SCB 2,AA(0),BB(0),1
5230 IF A<3 THEN 5280
5240 RS 3
5250 WDI 3,AA(0)
5260 RDI 3,BB(0)
5270 SCB 3,AA(0),BB(0),1
5280 BUMP
5290 NEXT 5080
```

### TEST SPARING FUNCTION (7906,7920,7925)

```
5000 DEV 0,<CHAN NO.>,<DEV NO.>,100,0,<IMB NO.>
5010 DB AA,6144,0
5020 FOR A= 0 TO 10
5030 LET A:= 815
5040 SEEK 0,10,0,0
5040 ID 0,AA,3,D,A,0,0
5050 SEEK 0,,A,0,0
5060 ID 0,AA,3,S,10,0,0
5070 SEEK 0,10,0,0
5080 RDI 0,AA(0),7
5090 NEXT 5020
5100
```

**DISC VOLUME AND COLD LOAD PROGRAM REWRITE**

THIS PROGRAM WILL ALLOW ONE TO REWRITE THE DISC VOLUME NAME AND COLD LOAD PROGRAM. \*\*\*CAUTION\*\*\* THIS PROGRAM SHOULD BE USED ONLY AS A LAST RESORT AND YOU MUST KNOW THE CORRECT CONTENTS OF CYLINDER ZERO, AND SECTOR ZERO.

```
5000 DEV 0,<CHAN NO.>,<DEV NO.>,10,0,<IMB NO.>
5010 DB AA,128,0
5020 DB BB,128,0
5030 RC 0
5040 SKRD 0,AA(0),0
5050 FOR A= 0 TO 15
5060 LET BB(A)=AA(A)
5070 PRINT "WORK ";A;" CONTAINS ":AA(A)
5080 PRINT "WISH TO CHANGE (Y/N)?"
5090 INPUT B
5100 IF B="N" THEN 5130
5110 PRINT "ENTER IN OCTAL NEW VALUE?"
5120 INPUT B BB(A)
5130 NEXT 5050
5140 PRINT "OK TO WRITE TO DISC (Y/N)?"
5150 INPUT B
5160 IF B="N" THEN 5250
5170 RC 0
5180 SKWD 0,BB(0),0
5190 SKRD 0,AA(0),0
5200 CB AA(0),BB(0),128
5210 IF INDEX= -1 THEN 5260
5220 PRINT "DISC WRITE OK READ ERROR WISH TP RETRY (Y/N)?"
5230 INPUT B
5240 IF B="Y" THEN 5170
5250 PRINT "REQUEST NOT GRANTED"
5260 PRINT "END OF PROGRAM"
5270 END
```

Diagnostics

**WRITE ENTIRE TAPE WITH "ONES"  
PATTERN (7970E/7971)**

```
5000 DEV 0,<CHAN NO.>,<DEV NO.>,100,0,<IMB NO.>
5010 DB AA,4000,%177777
5020 WD 0,AA(0)
5030 GOTO 5020
```

**WRITE 20 RECORDS, BACKSPACE,  
AND READ (7970E/7971)**

```
5000 DEV 0,<CHAN NO.>,<DEV NO.>,20,0,<IMB NO.>
5010 DB AA,4000,0
5020 DB BB,4000,0
5030 ASSIGN AA(0),(1000),3,5,7,9
5040 FOR A:= 0 TO 19
5050 WD 0,AA(0)
5060 WFM 0
5070 NEXT 5040
5080 REW 0
5090 FOR A:= 0 TO 18
5100 FSF 0
5110 NEXT 5090
5120 RD 0,BB(0)
5130 SCB 0,AA(0),BB(0),3
```

**RIPPLE PRINT (2608,2631)**

```
5000 DEV 0,<CHAN NO.>,<DEV NO.>,100,0,<IMB NO.>
5010 RP 0,132
```

**PRINT 50 LINES OF "H" (2608,2631)**

```
5000 DEV 0,<CHAN NO.>,<DEV NO.>,100,0,<IMB NO.>
5010 DB &AA,132,"H"
5020 FOR A:=1 UNTIL 50
5030 WD 0,&AA(0),1,132
5040 NEXT 5020
```

Table 3-29. Memory Add-On Configurations (Series 44/48)

Memory Array Count		ConnectorLength (Slots)		Total Memory	Card Cage 1									Controller Switch Setting		Card Cage 2						
1Mb	256Kb	Card Cage 1	Card Cage 2		A1	A2	A3	A4	A5	A6	A7	A8	A9	F8	F9	F10	F11	F12	F13	F14	F15	F16
0	4	6 or 9	-	1.0	1/4 0	1/4 1	1/4 2	1/4 3					A	-								
0	6	9	-	1.5	1/4 0	1/4 1	1/4 2	1/4 3	1/4 4	1/4 5			A	-								
0	8	9	-	2.0	1/4 0	1/4 1	1/4 2	1/4 3	1/4 4	1/4 5	1/4 6	1/4 7	A	-								
0	10	9	6 or 9	2.5	1/4 0	1/4 1	1/4 2	1/4 3	1/4 4	1/4 5	1/4 6	1/4 7	A	B							1/4 1	1/4 0
0	12	9	6 or 9	3.0	1/4 0	1/4 1	1/4 2	1/4 3	1/4 4	1/4 5	1/4 6	1/4 7	A	B				1/4 3	1/4 2	1/4 1	1/4 0	1/4 0
0	14	9	9	3.5	1/4 0	1/4 1	1/4 2	1/4 3	1/4 4	1/4 5	1/4 6	1/4 7	A	B		1/4 5	1/4 4	1/4 3	1/4 2	1/4 1	1/4 0	1/4 0
0	16	9	9	4.0	1/4 0	1/4 1	1/4 2	1/4 3	1/4 4	1/4 5	1/4 6	1/4 7	A	B	1/4 7	1/4 6	1/4 5	1/4 4	1/4 3	1/4 2	1/4 1	1/4 0
1	0	6	-	1.0				1 0					A	-								
1	2	6 or 9	-	1.5	1 0	1/4 4	1/4 5						A	-								
1	4	6 or 9	-	2.0	1 0	1/4 4	1/4 5	1/4 6	1/4 7				A	-								
1	6	6 or 9	6 or 9	2.5	1 0	1/4 4	1/4 5	1/4 6	1/4 7				A	B							1/4 1	1/4 0
1	8	6 or 9	6 or 9	3.0	1 0	1/4 4	1/4 5	1/4 6	1/4 7				A	B				1/4 3	1/4 2	1/4 1	1/4 0	1/4 0
1	10	6 or 9	6 or 9	3.5	1 0	1/4 4	1/4 5	1/4 6	1/4 7				A	B		1/4 5	1/4 4	1/4 3	1/4 2	1/4 1	1/4 0	1/4 0
1	12	6 or 9	9	4.0	1 0	1/4 4	1/4 5	1/4 6	1/4 7				A	B	1/4 7	1/4 6	1/4 5	1/4 4	1/4 3	1/4 2	1/4 1	1/4 0
2	0	6 or 9	-	2.0	1 0	1 1							A	-								
2	2	6 or 9	6 or 9	2.5	1 0	1 1							A	B							1/4 1	1/4 0
2	4	6 or 9	6 or 9	3.0	1 0	1 1							A	B				1/4 3	1/4 2	1/4 1	1/4 0	1/4 0
2	6	6 or 9	9	3.5	1 0	1 1							A	B		1/4 5	1/4 4	1/4 3	1/4 2	1/4 1	1/4 0	1/4 0
2	8	6 or 9	9	4.0	1 0	1 1							A	B	1/4 7	1/4 6	1/4 5	1/4 4	1/4 3	1/4 2	1/4 1	1/4 0
3	0	6 or 9	-	3.0	1 0	1 1	1 2						M	-								
3	2	6 or 9	6 or 9	3.5	1 0	1 1							A	B					1/4 5	1/4 4	1/4 3	1/4 2
3	4	6 or 9	6 or 9	4.0	1 0	1 1							A	B			1/4 7	1/4 6	1/4 5	1/4 4	1/4 3	1/4 2
4	0	6 or 9	-	4.0	1 0	1 1	1 2	1 3					M	-								

A = responds to addresses in first 2 MBs

B = responds to addresses in second 2 MBs

M = responds to all addresses in 0-4 MB range

# ADJUSTMENTS

SECTION

VI

Adjustment procedures for the 30,33, 39/40/42/42XP/52, and 44/48/58 are presented in the following section.

<b>MAIN POWER SUPPLY ADJUSTMENTS</b> . . . . .	6-2
Series 30 and 39/40/42/42XP/52 Main Power Supply Adjustments . . . . .	6-2
Series 33 and 44/48/58 Main Power Supply Adjustments . . . . .	6-4
<b>MEMORY POWER SUPPLY ADJUSTMENTS</b> . . . . .	6-5
Series 30 and 39/40/42/42XP/52 Memory Power Supply Adjustments . . . . .	6-5
Series 33 and 44/48/58 Memory Power Supply Adjustments . . . . .	6-9
<b>BATTERY TEST</b> . . . . .	6-9
Series 30, 33, 39/40/42/42XP/52, and 44/48/58 Battery Test . . . . .	6-9
<b>POWER CONTROL PCA ADJUSTMENTS</b> . . . . .	6-10
Series 30,33 and 39/40/42/42XP/52 Power Control PCA Adjustments . . . . .	6-10
Series 44/48/58 Power Control PCA Adjustments . . . . .	6-10

## MAIN POWER SUPPLY ADJUSTMENTS

The main power supply is a switching regulator power supply and provides three output DC voltages: +5V, +12V and -12V. Perform the following adjustments only after replacing the main power supply.

### Series 30 and 39/40/42/42XP/52 Main Power Supply Adjustments

The main power supply adjustments for a Series 30 and 39/40/42/42XP/52 are accessible by removing the system front panel. To adjust the main power supply, perform the following procedure:

1. Connect a voltmeter to a common test point and +5V test point on the backplane.
2. Adjust the +5V test potentiometer, shown in Figure 6-1, until voltage is within limits specified in Table 6-1.
3. Connect a voltmeter to a common test point and +12V test point on the backplane.
4. Adjust the +12V test potentiometer, shown in Figure 6-1, until voltage is within the limits specified in Table 6-1.
5. Connect a the voltmeter to the -12V test point on the backplane and verify that the voltage is within limits specified in Table 6-1.

#### CAUTION

The +5, +12, -12 CURRENT LIMIT ADJ. are preadjusted at the factory. Do not attempt to make these adjustments, a special test setups are required.

Table 6-1. DC Output Voltages (Series 30,33,39/40/42/42XP/52 and 44/48/58)

Voltage Test Points	Min. Reading (Vdc)	Max. Reading (Vdc)	Ripple Voltage
+5V *	+4.95	+5.05	0.05 V p-p
+12V *	+11.80	+12.20	0.075 V p-p
-12V	-12.20	-11.80	0.075 V p-p
+5M*	+5.0	+5.2	
+12M*	+11.86	+12.34	
-12M	-13.80	-10.20	
BATT.	16.45 (approx.)		
PON	4.99 (approx.)		

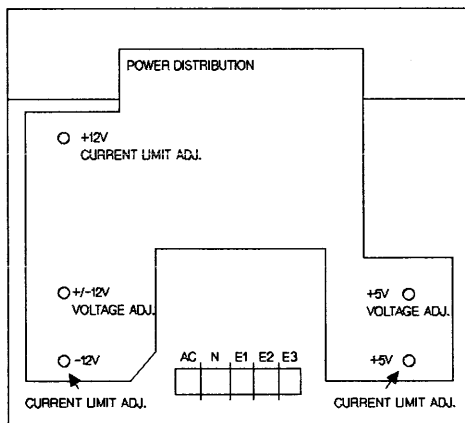


Figure 6-1. Power Supply and Distribution PCA  
(Series 30, 33, 39/40/42/42XP/52 and 44/48/58)

Note: Series 30, +5V adjustment is located on the upper right hand corner of the power supply.

## Series 33 and 44/48/58 Main Power Supply Adjustments

The main power supply adjustments are accessible by opening the system rear panel door, removing four screws from the respective power supply assembly and sliding it out. To adjust the main power supply, perform the following procedure:

1. Connect a voltmeter to a common test point and +5V test point on the power supply front panel, shown in Figure 6-2.
2. Adjust the +5V potentiometer, shown in Figure 6-1, until voltage is within limits specified in Table 6-1.
3. Connect a voltmeter to a common test point and +12V test point on the power supply front panel, shown in Figure 6-2.
4. Adjust the +12V potentiometer, shown in Figure 6-1, until voltage is within limits specified in Table 6-1.
5. Connect the voltmeter to the -12V test point on the power supply front panel, shown in Figure 6-2, and verify that the voltage is within limits specified in Table 6-1.

### CAUTION

The +5, +12, -12 CURRENT LIMIT ADJ. are preadjusted at the factory. Do not attempt to make these adjustments as special test setups are required.

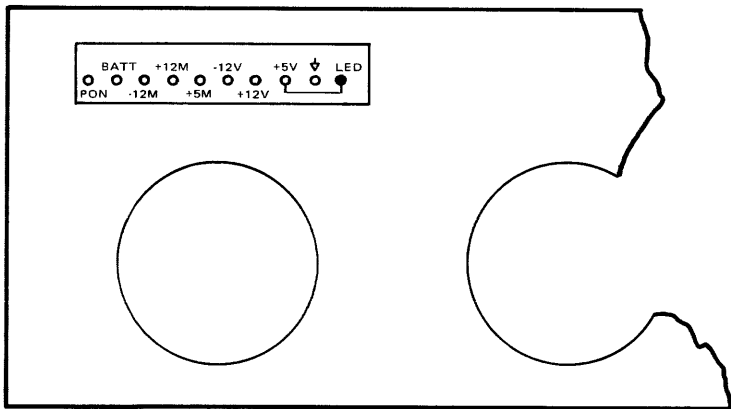


Figure 6-2. Power Supply Front Panel (Series 33 and 44/48/58)



## MEMORY POWER SUPPLY ADJUSTMENTS

There are three memory power supply adjustments; one adjustment is on the memory preregulator PCA, and two are on the memory regulator PCA.

### Series 30,39/40/42/42XP/52 Memory Power Supply Adjustments

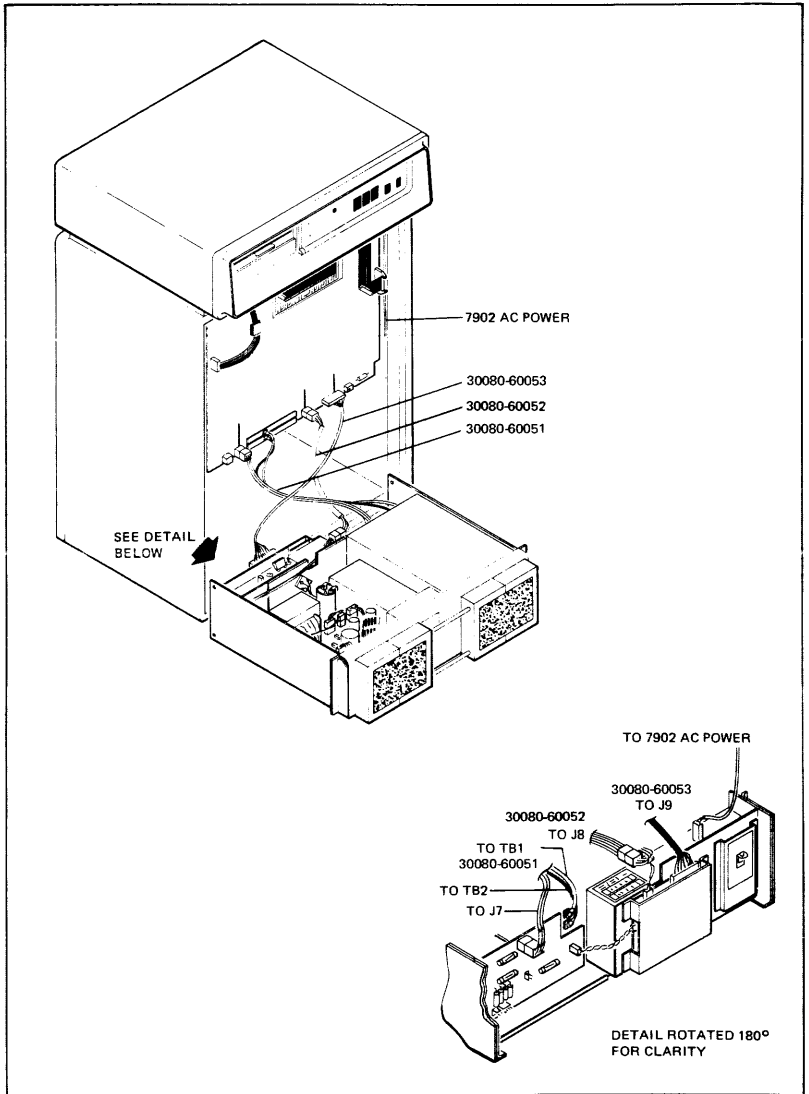
The memory power supply adjustments for Series 30 and 39/40/42/42XP/52 are accessible by removing the system front panel.

#### Preregulator adjustment:

1. Remove the Power Supply Unit (PSU) from the cabinet and connect the power supply extender cables between the PSU and the mainframe, shown in Figures 6-3 and 6-4.
2. Connect a voltmeter between a common terminal test point and BATT TEST point.
3. Adjust the VOUT potentiometer R10, shown in Figure 6-5, until the battery level is approximately +16.45 volts at 25 degrees C.

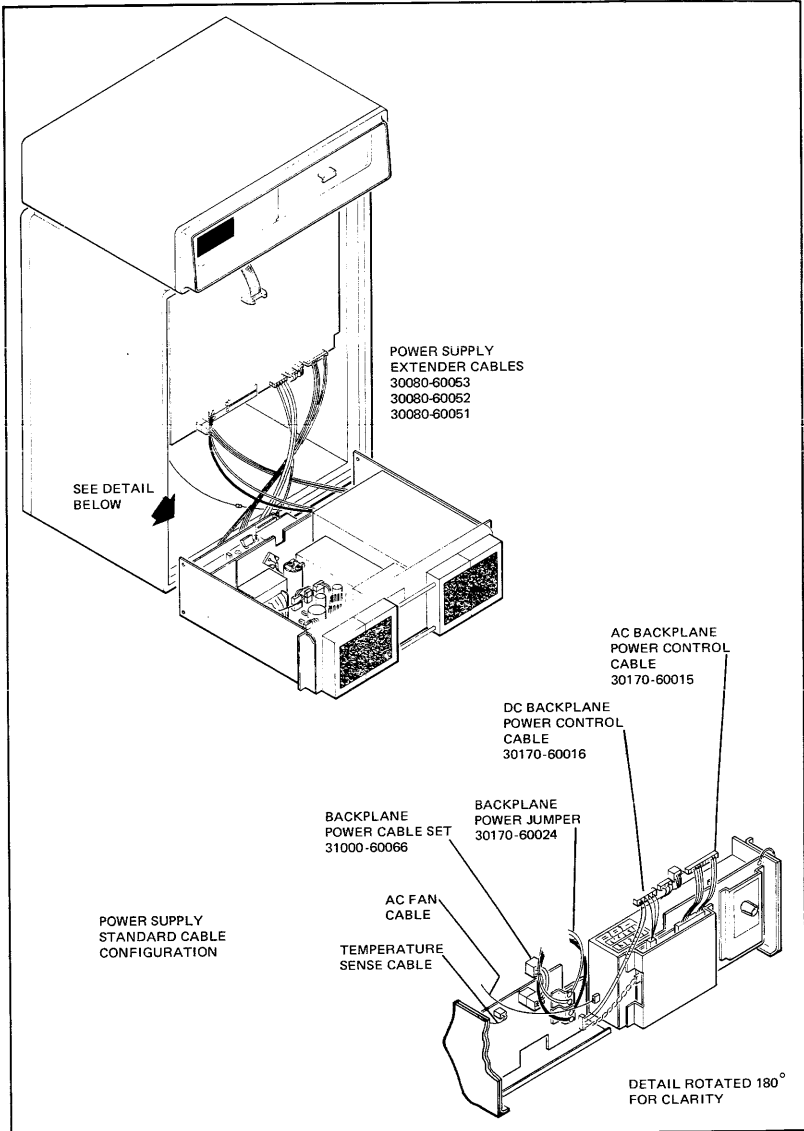
#### Regulator adjustment:

1. Using the same common terminal, position the positive test lead to the +5M test point on backplane.
2. Adjust the +5M potentiometer R27, shown in Figure 6-6, until voltage is within limits specified in Table 6-1.
3. Connect a voltmeter to the +12M test point on backplane.
4. Adjust the +12M potentiometer R17, shown in Figure 6-6, until voltage is within limits specified in Table 6-1.
5. Connect a voltmeter to the -12M TEST point on the backplane and verify that voltage is within limits specified in Table 6-1.



147014-18

Figure 6-3. Power Supply Extension Cable Connections (Series 30)



147018-102

Figure 6-4. Power Supply Extension Cable Connections (Series 39/40/42/42XP/52)

# Adjustments

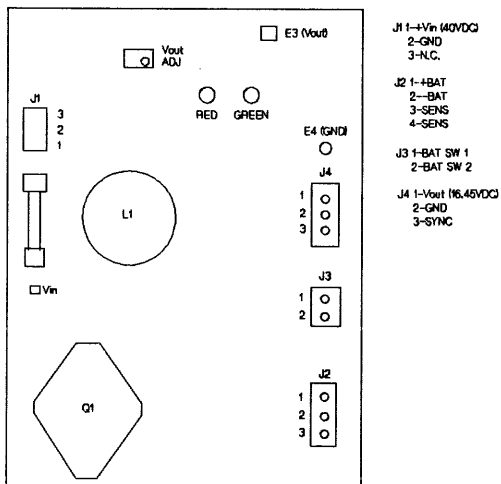


Figure 6-5. Memory Preregulator PCA (Series 30,33,39/40/42/42XP/52 and 44/48/58)

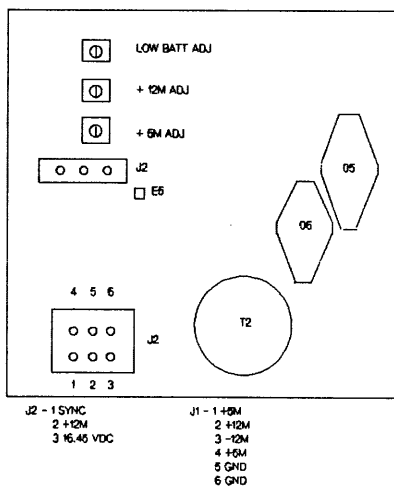


Figure 6-6. Memory Regulator PCA (Series 30,33,39/40/42/42XP/52 and 44/48/58)

## Series 33 and 44/48/58 Memory Power Supply Adjustments

The memory power supply adjustments for Series 33 and 44/48/58 are accessible by opening the system rear panel, removing four screws from the respective power supply assembly and sliding it out.

Preregulator adjustment:

1. Connect a voltmeter between common terminal test point and BATT TEST point located on the power supply front panel, shown in Figure 6-2.
2. Adjust the VOUT potentiometer R10, shown in Figure 6-5, until the battery level is approximately +16.45 volts.

Regulator adjustment:

1. Using the same common terminal, connect the positive test lead to the +5M test point, shown in Figure 6-2.
2. Adjust the +5M potentiometer R27, shown in Figure 6-6, until voltage is within limits specified in Table 6-1.
3. Connect a voltmeter between a common terminal and +12M test point, shown in Figure 6-2.
4. Adjust the +12M potentiometer R17, shown in Figure 6-6, until voltage is within limits specified in Table 6-1.
5. Connect a voltmeter to the -12M test point, shown in Figure 6-2, and verify that voltage is within limits specified in Table 6-1.

## BATTERY TEST

The battery test certifies that the backup capability of the memory power supply is functioning normally. The system should be halted before performing this test. To certify that the battery is functioning, perform the following procedure:

### Series 30,33, 39/40/42/42XP/52 and 44/48/58 Battery Test

Series 30 and 39/40/42/42XP/52 - remove the system front panel to observe the charge and discharge LEDs on the memory preregulator PCA. Series 33 and 44/48/58 - open the system rear panel, remove four screws on the respective power supply assembly and slide it out to observe the charge and discharge LEDs on the memory preregulator PCA.

1. On the power control module, set the main circuit breaker to OFF.
2. Observe that the discharge indicator (red LED) on the memory preregulator PCA lights, shown in Figure 6-5, and that the +12M LED on the card cage backplane remains lit.
3. Allow approximately four minutes of discharge time.
4. Set the main circuit breaker to ON.
5. The charge indicator (green LED) on the memory preregulator PCA should light.

## POWER CONTROL PCA ADJUSTMENTS

The Power Control PCA contains the low line detector adjustment.

### Series 30,33, and 39/40/42/42XP/52 Power Control PCA Adjustments

Series 30 and 39/40/42/42XP/52 - remove the system front panel to gain access to the Power Control PCA. Series 33 - remove the system control panel to gain access to the Power Control PCA. To adjust the Power Control PCA, perform the following procedure:

1. Rotate low AC potentiometer fully counterclockwise, shown in Figure 6-7.
2. Jumper test point E1, shown in Figure 6-7, to ground.
3. Rotate potentiometer R1 clockwise until a system power fail occurs.  
Series 30 - the top LED (+12V) on the backplane will go out to show this.  
Series 33 - the +5V LED, on the power supply front panel, will go out to show this.  
Series 39/40/42/42XP/52 - the system power LED on the front panel will go out and the battery LED will light to show this.
4. Remove the jumper from test point E1. The LED's will turn off and the power fail setting will be approximately 10 percent below the AC line voltage.

### Series 44/48/58 Power Control PCA Adjustments

The Power Control PCA is accessible by removing the system control panel. To adjust the Power Control PCA, perform the following procedure:

1. Rotate potentiometer R65 fully clockwise, shown in Figure 6-8.
2. Jumper test point E2 to E1 (ground), shown in Figure 6-8.
3. Rotate potentiometer R65 counterclockwise until a system power fail occurs. The PFW LED will light to show this.
4. Remove the jumper. The power fail setting will cause a power fail to occur at an input voltage of approximately 180 volts RMS.
5. Check and, if necessary, adjust the extender Power Control PCA.

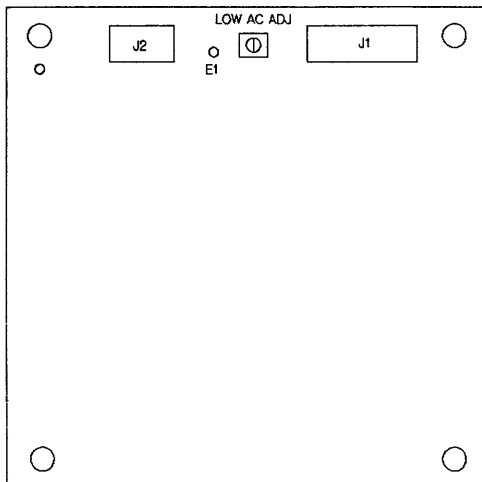


Figure 6-7. Power Control PCA (Series 30,33 and 39/40/42/42XP/52)

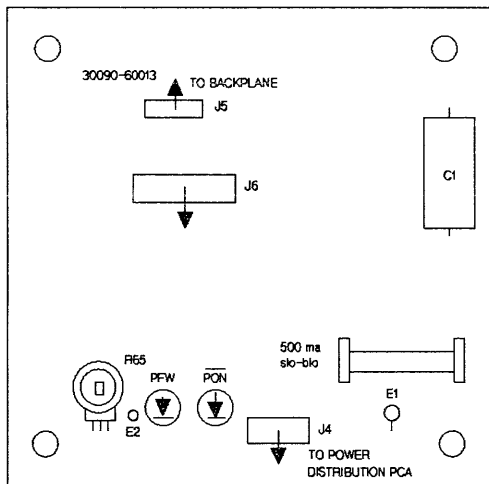


Figure 6-8. Power Control PCA (Series 44/48/58)

The diagrams contained in this section have been prepared from factory drawings to assist the CE in troubleshooting the system.

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**HP 2649E SYSTEM CONSOLE (Series 30 and 33 only)**

Information for the HP 2649E is contained in Figures 7-1 through 7-4.

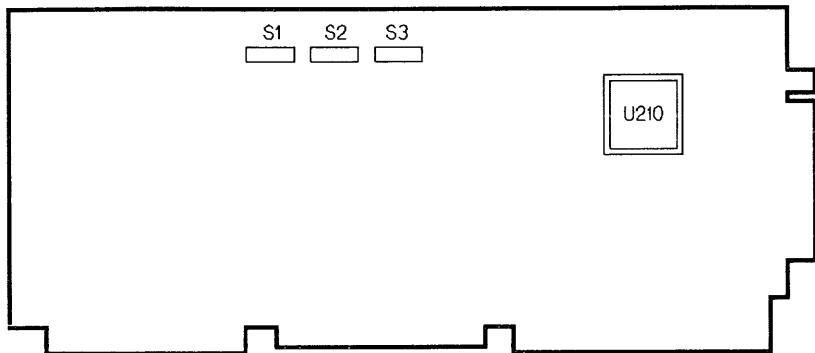
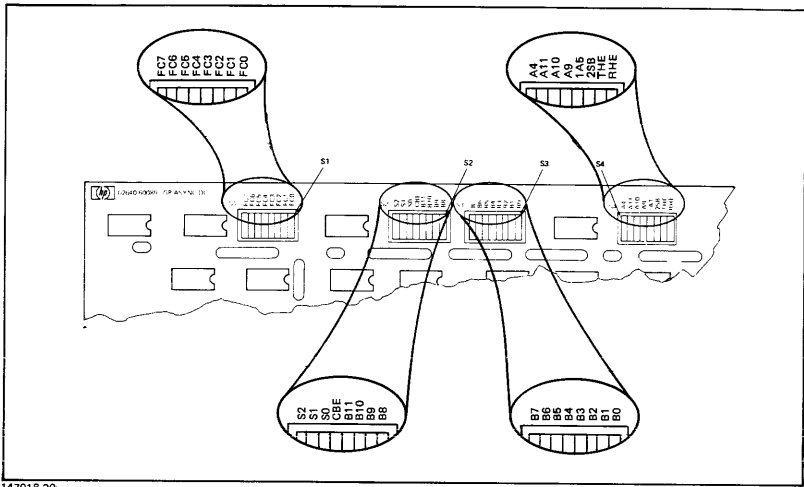


Figure 7-1. HP-IB Interface PCA (02640-60128)

**HP-IB Interface Switch Positioning**

<b>Switch</b>	<b>Position</b>	<b>Function</b>
A 4, A11	Open	Module address selection
A 9, A10	Closed	Module address selection
ATN	Open	Interrupt on ATN line
ATN2	Open	Interrupt on ATN2 line
PL0 - PL6	Open	Respond to polling by pulling BUSn low, corresponding to closed PLn. (One exclusive PL closed switch position per module.)
FC	Open	Firmware control word.
TA	Closed	Talk always
LA	Closed	Listen always
B0 - B4	Closed	Device address selection
SC	Open	System controller



147018-20

Figure 7-2. General Purpose Data Communication Card

### Switch Positioning

FC7-FC0: Not used. Normally left open.

CBE: Closed. The custom baud rate switches are used; the remote console software does not specify a baud rate.

S0-S2: All closed or all open.

B0-B11: As required for baud rate. For 300 baud (standard), set B0-B8 closed and B9-B11 open.

BAUD RATE	B11	B10	B9	B8	B7	B6	B5	B4	B3	B2	B1	B0
110	0	C	0	C	0	C	C	C	0	0	C	C
150	0	0	C	C	C	C	C	C	C	C	C	C
300	0	0	0	C	C	C	C	C	C	C	C	C
1200	0	0	0	0	0	C	C	C	C	C	C	C
2400	0	0	0	0	0	0	C	C	C	C	C	C
4800	0	0	0	0	0	0	0	C	C	C	C	C

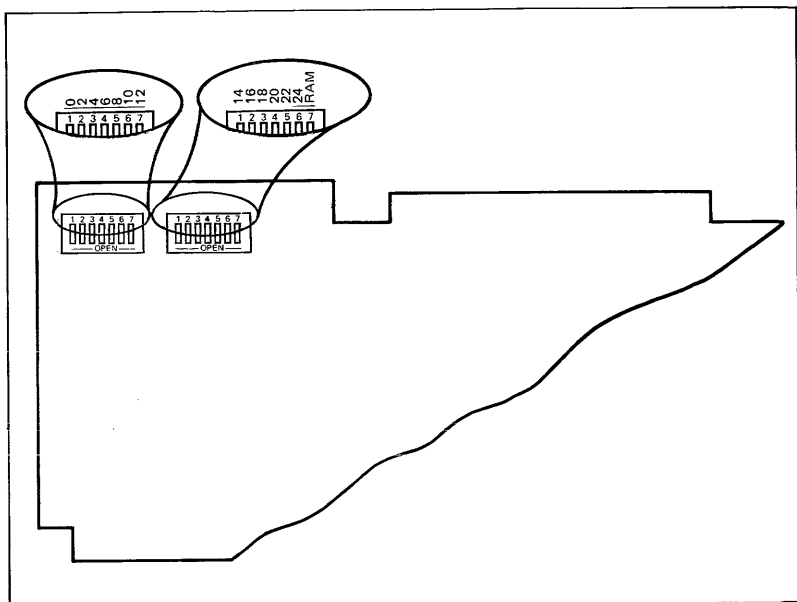
C=Closed, 0=Open

A4, A9-All: All open. The remote console software will announce the card to be missing if these are not correctly set.

## Peripherals

### HP 2649E System Console Self Test Error Messages

<b>ERROR #</b>	<b>MEANING</b>
1.	The PHI Chip on the Interface cannot be initialized.
2.	The console wrote patterns to the registers on the PHI Chip, then read them back. The data read back did not match the data written.
3.	Same as error 2.
4.	Same as 2, but additionally, the PHI registers may not be addressable. (Example: A read from Register 6 may get the value written into Register 5.)
5.	PHI will not become the system controller offline.
6.	PHI will not become controller in charge offline.
10.	PHI does not accept data bytes.
11.	The byte written did not appear in the Inbound FIFO.
12.	The byte received does not match the byte written.
20.	PHI does not accept a data byte.
21.	PHI accepts more than 16 bytes, thus a byte must have been lost.
30.	Less than 16 bytes were received.
31.	The bytes read did not match the bytes written.
32.	More than 15 data bytes without EOI were found.
33.	The 16th byte was not an EOI.
34.	Data was found after the last (EOI) byte.
35.	The INFIFO does not empty as expected.



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Figure 7-3. HP 2649E Memory Control PCA

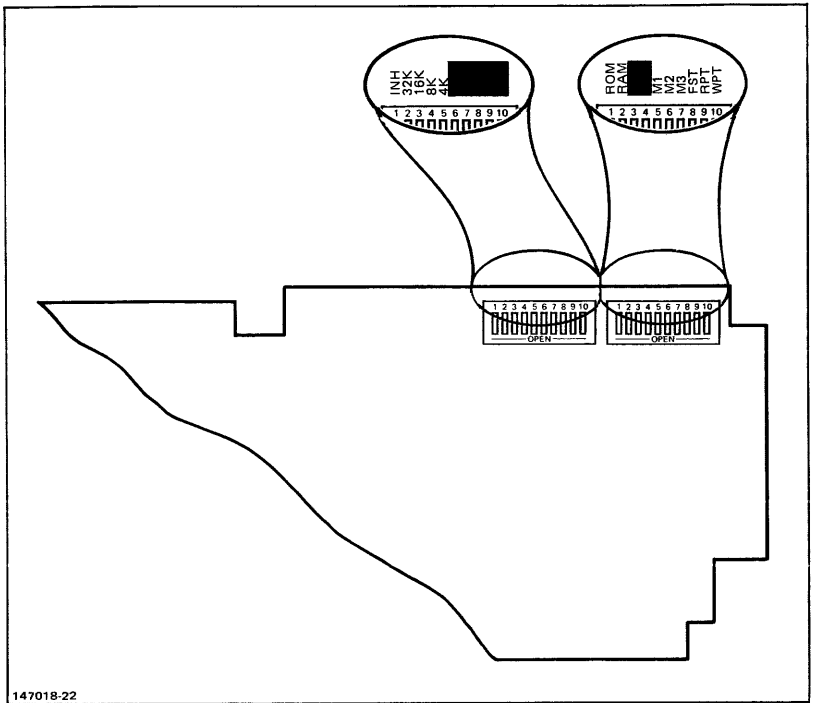
## Switch Positions

## Memory Control #1

0-20	: Closed
22	: Open
24 and RAM	: Closed

## Memory Control #2

0-2	: Closed
4-24	: Open
RAM	: Closed



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Figure 7-4. HP 2649E Universal Memory PCA

Switch Positions

INH	: Open
32K and 16K	: Closed
8K and 4K	: Open
--Gold Block Labels--	
INH	: Closed
32k, 16K, 8K and 4K	: Open
ROM and RAM	: Open, Normal & Gold Blocks
M1	: Closed
M2 and M3	: Open
FST	: Closed
RPT and WPT	: Open

## HP 7902A/9895A FLEXIBLE DISC UNIT

Information for the HP 7902A/9895A Flexible Disc Unit is contained in Figures 7-5 through 7-8 and Table 7-1.

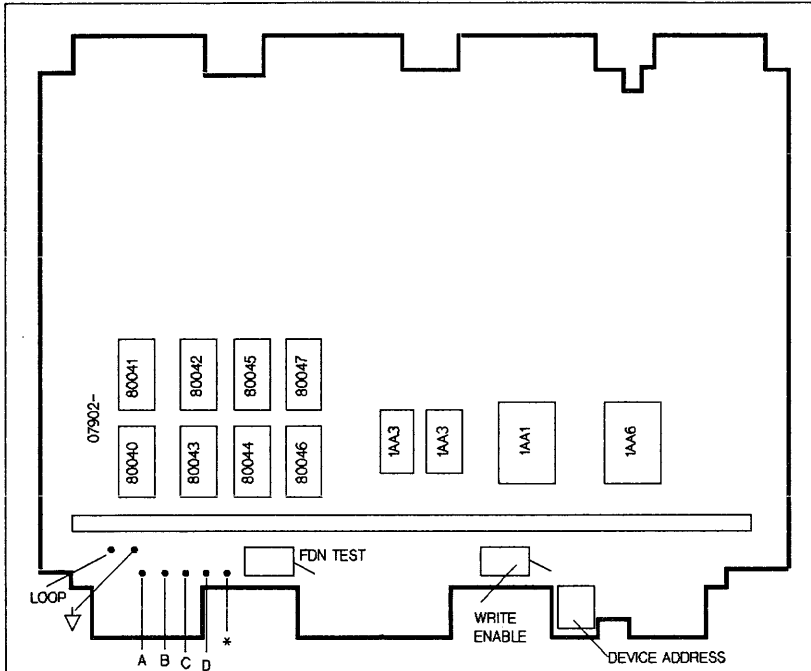


Figure 7-5. HP 7902A/9895A FDU Controller

Table 7-1. HP 7902A/9895A Controller Selftests

LED Pattern					Controller Status
A	B	C	D	*	
-	-	-	-	-	
0	0	0	1	0	Polling drive
0	0	1	0	0	Transfer byte(s) to HP-IB
0	0	1	1	0	Receive byte(s) from HP-IB
0	1	0	0	0	Status operation
0	1	0	1	0	Head load
0	1	1	0	0	Release drive
0	1	1	1	0	Formatting
1	0	0	0	0	Main loop, DSJ=0 (no error)
1	0	0	1	0	Main loop, DSJ=1 (error)
1	0	1	0	0	Main loop, DSJ=2 (power on)
1	0	1	1	0	Main loop, DSJ=3 (HP-IB parity error)
1	1	0	0	0	Verify operation
1	1	0	1	0	Seeking
1	1	1	0	0	Write to disc
1	1	1	1	0	Read from disc
0	0	0	0	1	No errors
0	0	0	1	1	Left byte (most significant) of ROM checksum of locations F800-FFFF
0	0	1	0	1	Right byte of ROM checksum of locations F800-FFF
0	0	1	1	1	Left byte (most significant) of locations F000-F7FF
0	1	0	0	1	Right byte of ROM checksum of locations F000-F7FF
0	1	0	1	1	Left byte RAM pattern failure
0	1	1	0	1	Right byte RAM pattern failure
0	1	1	1	1	PHI offline test error
1	0	0	0	1	Controller timeout or overrun failure
1	0	0	1	1	Controller data loop test failure
1	0	1	0	1	CRC chip test failure
1	0	1	1	1	Drive select/seek test failure
1	1	0	0	1	Rotational timing test failure
1	1	0	1	1	Write test failure, cannot write
1	1	1	0	1	Write/read test failure, unsuccessful read
1	1	1	1	1	MCC system failure

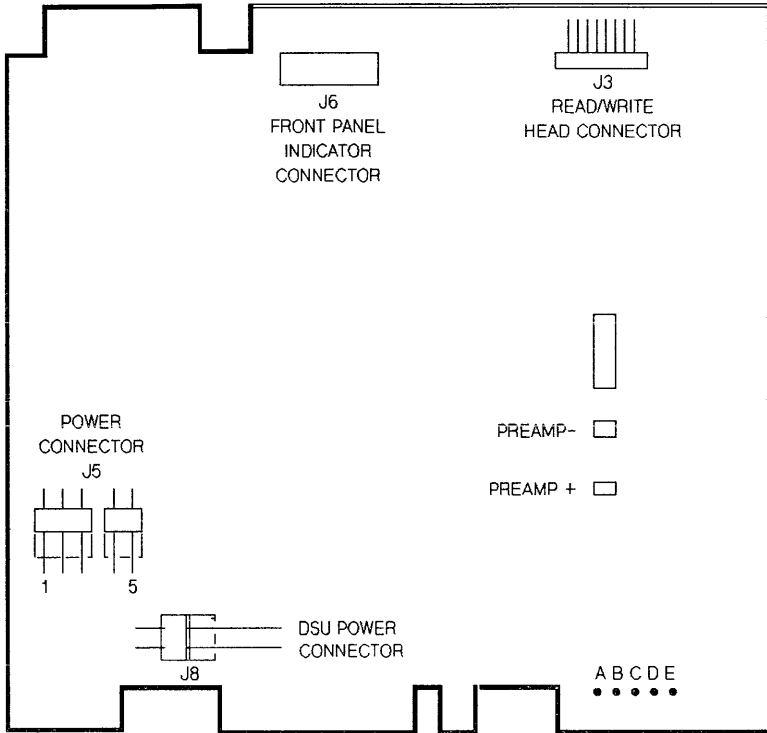


Figure 7-6. HP 7902A/9895A Drive Electronics PCA (Old Version)

Meanings of status LEDs:

- A - Drive Select
- B - Disc Ready
- C - Read LED
- D - Door Lock
- E - Write LED



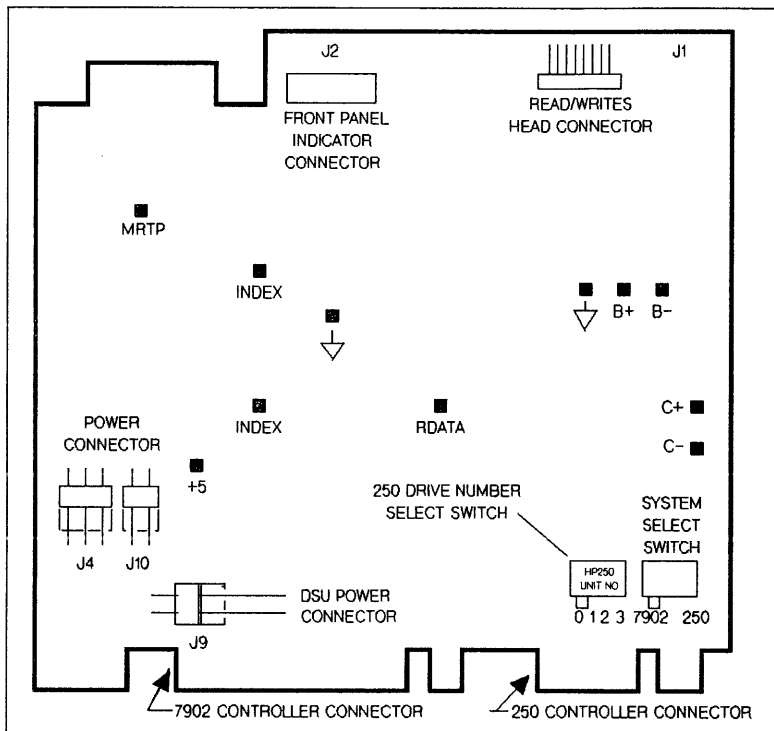
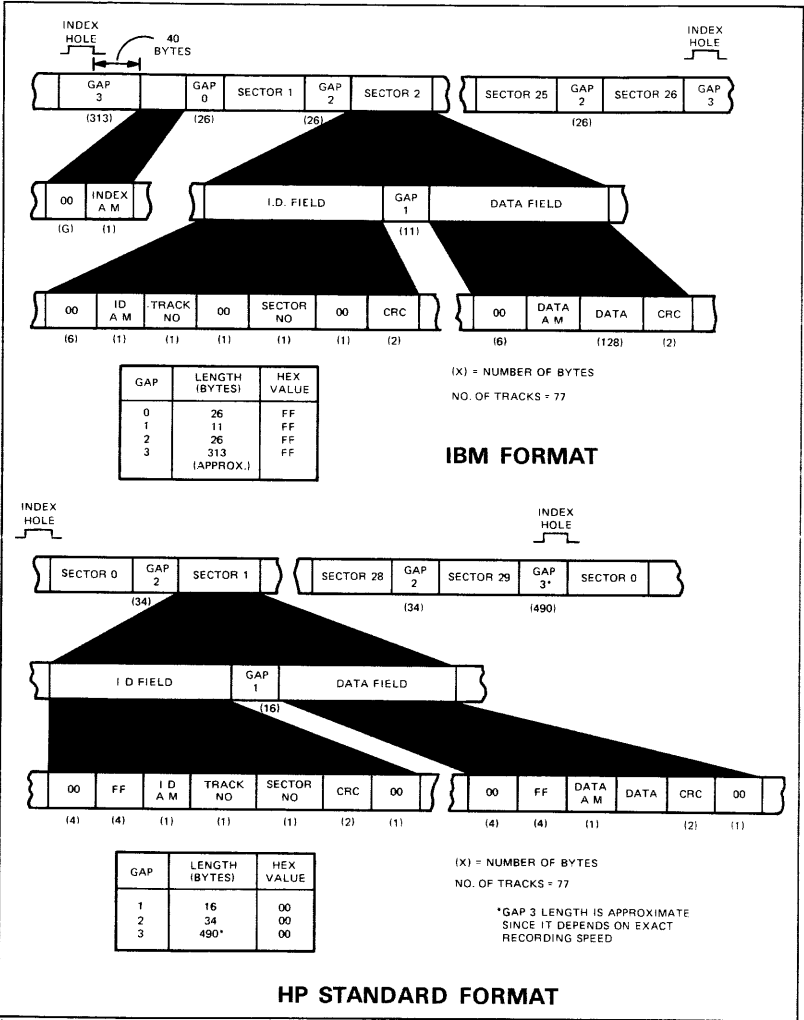


Figure 7-7. HP 7902A/9895A Drive Electronics PCA (New Version)





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Figure 7-8. Sector Recording Formats (HP 7902/9895A)



\*Table 7-4. Encoded Termination Status Definitions

STATUS WORD ONE (hex)	TSTAT (binary) Status Word 1 Bits 3-7	DEFINITION (controller internal name)
0000	00000	No errors. (NORMAL COMPLETE)
0100	00001	Illegal opcode. (ILLEGAL OPCODE)
0200	00010	Unit available. (UNIT AVAILABLE)
0700	00111	Cylinder compare error. (CYL CMP ERR)
0800	01000	Uncorrectable data error. (UNCOR DATA ERR)
0900	01001	Head-sector compare error. (HD/SEC CMP ERR)
0A00	01010	I/O program error. (RECEIVED ILLEGAL HP-IB SECONDARY COMMAND)
0C00	01100	End of cylinder. (END OF CYLINDER)
0E00	01110	Data overrun. (OVERRUN)
0F00	01111	Possibly correctable data error.
1000	10000	Illegal access to spare track. (SPR TRK ACCESS)
1100	10001	Defective track. (DEFECTIVE TRK)
1200	10010	Access not ready during data operation. (ACCS NR DATOP)
1300	10011	Status word two error. (SEE STATUS BIT 2 FOR DETAILS)
1600	10110	Attempt to write on protected or defective track. (WRT PROTEC TRK)
1700	10111	Unit unavailable. (UNIT UNAVAIL)
1F00	11111	Drive attention. (DRIVE ATTENTION)

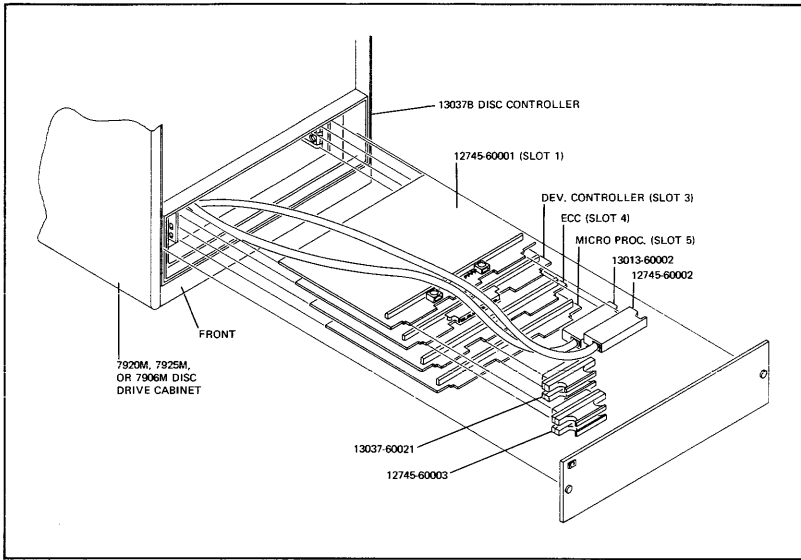
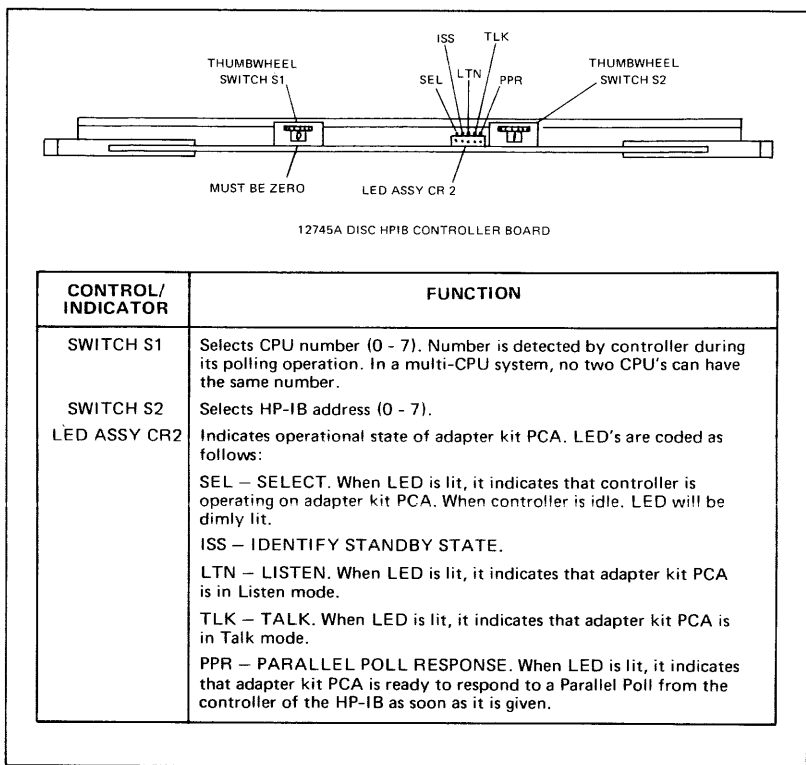
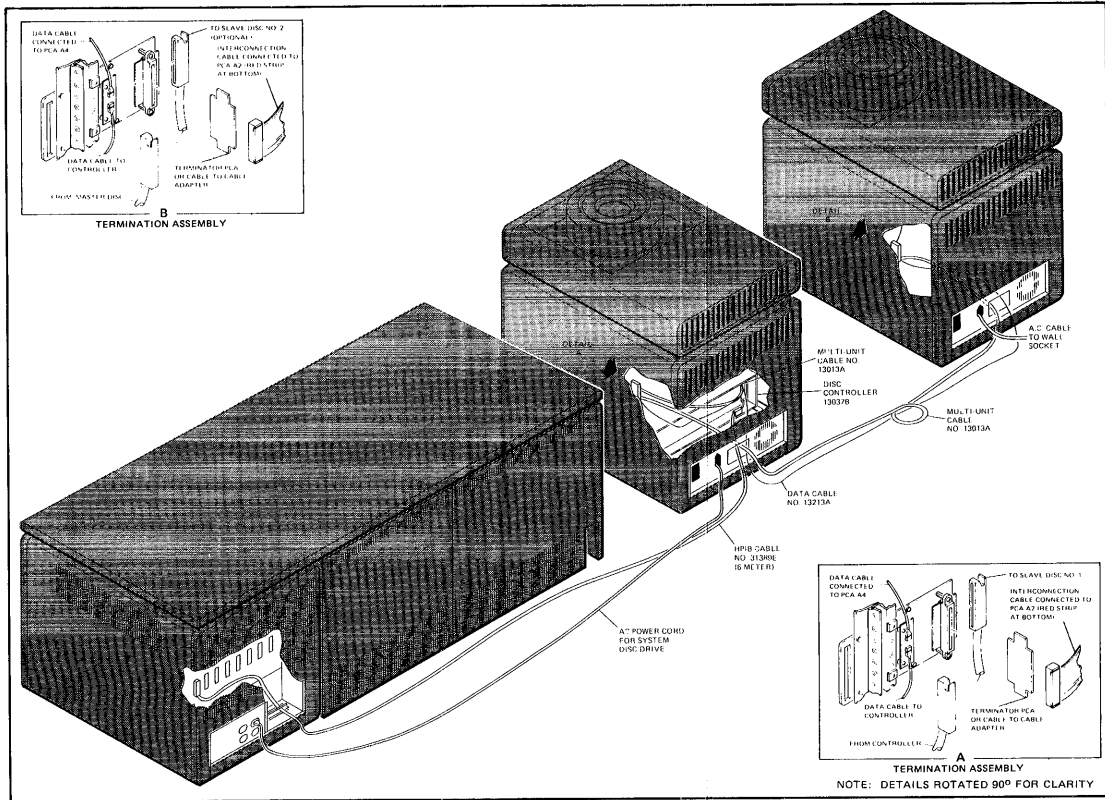


Figure 7-9. HP 13037B Disc Controller



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Figure 7-10. System Disc HP-IB Device Select Switch



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Figure 7-11. Series 33 Master/Slave Disc Cabling



**HP 7911/7912/7914/7933/7935 and LINUS STATUS FORMAT**

Refer to Table 7-5 for a description of the bit definitions for status words 1-4. For further detail on Error Reporting Fields refer to CS80 Instruction Set Programming Manual P/N 5955-3442.

Table 7-5. HP 7911/12/14/33/35 and Linus Status Bit Definitions

Status Word No. 1

Word Bit No.	Error Reporting Field	Description
0	0	Not Used.
1	1	Not Used.
2	2	<b>Channel Parity Error</b> - A channel command was received without odd parity.
3	3	Not Used.
4	4	Not Used.
5	5	<b>Illegal Opcode</b> - An unrecognizable opcode was received.
6	6	<b>Module Addressing</b> - An illegal volume or unit number was specified for this device.
7	7	<b>Address Bounds</b> - The target address has exceeded the bounds for this device.
8	8	<b>Parameter Bounds</b> - A parameter (other than unit, volume, or target address) is not allowed for this device.
9	9	<b>Illegal Parameter</b> - A parameter field was the wrong length for the opcode preceding it.
10	10	<b>Message Sequence</b> - The message sequence has been violated. (Error suppressed if any reject or fault errors have occurred prior to sequence error.)
11	11	Not Used.
12	12	<b>Message Length</b> - The total length of the execution message differs from the current default value.
13	13	Not Used.
14	14	Not Used.
15	15	Not Used.

## Status Word No. 2

Word Bit No.	Error Reporting Field	Description
0	16	<b>Not Used.</b>
1	17	<b>Cross-Unit</b> - An error had occurred during a Copy Data operation.
2	18	<b>Not Used.</b>
3	19	<b>Controller Fault</b> - A hardware fault occurred in the controller.
4	20	<b>Not Used.</b>
5	21	<b>Not Used.</b>
6	22	<b>Unit Fault</b> - A hardware fault has occurred in the unit addressed.
7	23	<b>Not Used.</b>
8	24	<b>Diagnostic Result</b> - The hardware failed the diagnostic indicated in the parameter field.
9	25	<b>Not Used.</b>
10	26*	<b>Operator Request</b> - Release required for operator request (e.g., load/unload, restore).
11	27*	<b>Diagnostic Request</b> - Release required for diagnostics initiated from control panel (e.g., HIO, self test).
12	28*	<b>Internal Maintenance</b> - Release required for internal maintenance (e.g., head alignment, error log).
13	29	<b>Not Used.</b>
14	30	<b>Power Fail</b> - The power to the unit failed, a diagnostic destroyed configuration, or a pack was loaded. Device should be reconfigured.
15	31	<b>Retransmit</b> - The preceding transaction should be retried.

\* Release required - This command can not be executed until after release is granted to the device.

Word Bit No.	Error Reporting Fields	Description
0	32	<b>Illegal Parallel Operation</b> - The requested operation can't be executed in parallel with some other operation(s) currently in progress.
1	33	<b>Uninitialized Media</b> - The host attempted to access unformatted media, or unusable media has been loaded.
2	34	<b>No Spares Available</b> - Spare Block can't be executed due to lack of spare media.
3	35	<b>Not Ready</b> - The selected unit is not ready for access at this time (e.g., heads or media not yet fully loaded).
4	36	<b>Write Protect</b> - The selected volume is write protected.
5	37	<b>No Data Found</b> - A block accessed during a read has not been written.
6	38	<b>Not Used.</b>
7	39	<b>Not Used.</b>
8	40	<b>Unrecoverable Data Overflow</b> - The previous transaction generated more than one unrecoverable data error. The entire transfer should be considered in error.
9	41	<b>Unrecoverable Data</b> - Unrecoverable data at indicated block(s).
10	42	<b>Not Used.</b>
11	43	<b>End of File</b> - End of file encountered on file structured device.
12	44	<b>End of Volume</b> - The host attempted to access across a volume boundary.
13	45	<b>Not Used.</b>
14	46	<b>Not Used.</b>
15	47	<b>Not Used.</b>

## Status Word No. 4

Word Bit No.	Error Reporting Fields	Description
0	48	<b>Operator Request</b> - Release requested for operator request (e.g., load/unload, restore).
1	49	<b>Diagnostic Request</b> - Release request initiated from diagnostic control panel (e.g., HIO, self test).
2	50	<b>Internal Maintenance</b> - Release requested for internal maintenance (e.g., head alignment, error log).
3	51	<b>Media Wear</b> - Only one spare track (disc) or one spare block (tape) remaining.
4	52	<b>Latency Induced</b> - A latency was induced during the transfer due to slow transfer rate or seek retry.
5	53	Not Used.
6	54	Not Used.
7	55	<b>Auto Sparing Invoked</b> - A defective block has been automatically spared by the device.
8	56	Not Used.
9	57	<b>Recoverable Data Overflow</b> - The previous transaction generated more than one recoverable data error.
10	58	<b>Marginal Data</b> - Data was recovered, but with difficulty.
11	59	<b>Recoverable Data</b> - A latency was introduced in order to correct a data error.
12	60	Not Used.
13	61	<b>Maintenance Track Overflow</b> - Error and fault log area is full.
14	62	Not Used.
15	63	Not Used.

**HP 7970 MAGNETIC TAPE UNIT**

Refer to Table 7-6 for a description of the bit definitions for status bytes 1-3.

Table 7-6. HP 7970 Status Bit Definitions

## Status Byte No. 1

Byte Bit No.	HP-IB Data Line No.	Description
0	8	EOF - End of File or File Mark (FM).
1	7	BOT - Beginning of Tape or Load Point.
2	6	EOT - End of Tape.
3	5	STE - Single Track Error.
4	4	Command Rejected.
5	3	File Protected (no write ring).
6	2	MTE - Multiple Track Error.
7	1	Online.

## Status Byte No. 2

Byte Bit No.	HP-IB Data Line No.	Description
0	8	Reserved.
1	7	Selected Tape Unit MSB (in channel program).
2	6	Selected Tape Unit LSB (in channel program).
3	5	Data Error (Timing).
4	4	Tape Runaway.
5	3	Rewinding.
6	2	Tape Unit Busy.
7	1	Interface Busy.

## Status Byte No. 3

Byte Bit No.	HP-IB Data Line No.	Description
0	8	Reserved.
1	7	Reserved.
2	6	Power has been restored.
3	5	Reserved.
4	4	Tape Unit 3 has been placed ONLINE.
5	3	Tape Unit 2 has been placed ONLINE.
6	2	Tape Unit 1 has been placed ONLINE.
7	1	Tape Unit 0 has been placed ONLINE.

# HP 7974/78 MAGNETIC TAPE DRIVE

Refer to Table 7-7 for a description of the bit definitions for status bytes 1-3. Status byte 4 contains two fields; the retry count for the last read or write operation (bits 3-7) and the error detail of a command reject error (bits 0-2). The three bits of command reject detail are decoded as follows:

000 = no further detail  
 001 = no further detail  
 010 = device reject; see byte 5  
 011 = protocol reject; see byte 5  
 100 = no further detail  
 101 = prior error reject; see byte 5  
 110 = no further detail  
 111 = selftest failure

Table 7-7. HP 7974/78 Status Bit Definitions

## Status Byte No. 1

Byte Bit No.	HP-IB Data Line No.	Description
0	8	EOF - End of File detected.
1	7	BOT/LP - Beginning of Tape/Load Point.
2	6	EOT - End of Tape.
3	5	STE - Single Track Error (recovered error).
4	4	Command reject (see byte 4 for details).
5	3	File Project (not write enabled; no write ring).
6	2	Unrecovered error.
7	1	Unit Online.

## Status Byte No. 2

Byte Bit No.	HP-IB Data Line No.	Description
0	8	In GCR (6250 CPI Density) mode.
1	7	Unknown density on tape.
2	6	Data Parity Error.
3	5	Data Error (Timing).
4	4	Tape Runaway.
5	3	Door Open.
6	2	Not Used.
7	1	Immediate report enable.

## Status Byte No. 3

Byte Bit No.	HP-IB Data Line No.	Description
0	8	In PE (1600 CPI Density) mode.
1	7	In NRZI (800 CPI Density) mode.
2	6	Power Restored.
3	5	HP-IB Command Parity Error.
4	4	Tape position is unknown (unrecovered).
5	3	Tape drive formatter error.
6	2	Tape drive servo error.
7	1	Tape drive controller error.

The fifth status byte contains binary coded information regarding the specific error encountered. The sixth status byte is used only for reporting the transparent status of hard and soft errors while in immediate report mode. This byte indicates which command had the error. It contains the number of commands sent and reported since the command in question was issued.

**HP 7976A MAGNETIC TAPE UNIT**

Refer to Table 7-8 for a description of the bit definitions for status words 1-3.

Table 7-8. HP 7976A Status Bit Definitions

Status Word No. 1

Bit 0:	End of file
Bit 1:	Beginning of Tape/Load Point
Bit 2:	End of Tape
Bit 3:	Single track error (not logged for reads)
Bit 4:	Command rejected
Bit 5:	File protect (not write enabled, no write ring)
Bit 6:	Multiple track error
Bit 7:	Unit ONLINE
Bit 8:	GCR (6250 BPI-DENSITY) 1=6250 BPI Mode 0=1600 BPI Mode
Bit 9:	Unit Number (MSB)
Bit 10:	Unit Number (LSB)
Bit 11:	Timing Error
Bit 12:	Tape runaway
Bit 13:	Rewinding
Bit 14:	Reserved
Bit 15:	Interface busy



## Status Word No. 2 (add to DIT of 7976A in Tables Manual)

```

+-----+
|Bit 0:  MTU/FCU Reset
|Bit 1:  Protocol Error
|Bit 2:  Power Restored
|Bit 3:  Parity Error
|Bit 4:  Magnetic Tape Unit Error
|Bit 5:  Formatter/Controller unit error
|Bit 6:  Interface Controller Error (IFC) (FCU S.SM)
|Bit 7:  Interface Controller Error (IFC) incl. PHI S.M
|Bit 8 to 10:  Error Details (binary):
|
|          000 = Null Code
|          001 = Data Parity Error
|
|          010 = FCU/MTU Reject
|          011 = Protocol Reject
|          100 = Timeout Reject
|          101 = Prior Error Reject
|          110 = ROM Parity Error
|          111 = SelfTest Failure Error
+-----+

```

## Status Word No. 3

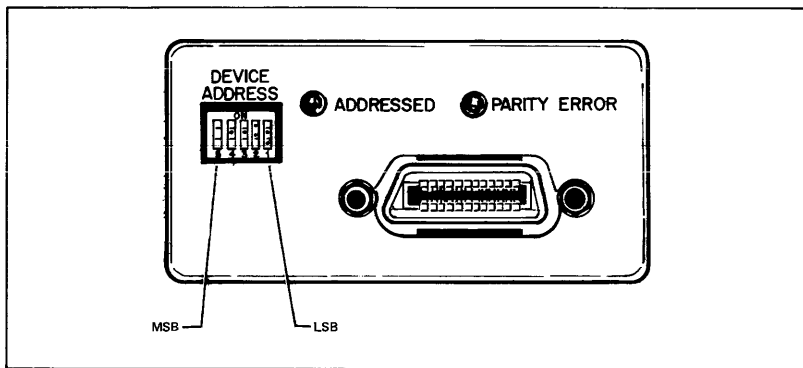
```

+-----+
|The content of the third status word depends on the bits from
|the first status word.
|
|- If Format Failure is asserted, the register will be encoded
|with the return code from the FCU.
|
|- If MTE is asserted the register will be encoded with the error
|mux. lines.
|
|- If internal failure is asserted, this register will be encoded
|with the actual error condition flagged.
|
|- If selftest failure is asserted, this register will be encoded
|with the type of selftest failure condition.
+-----+

```

# HP 2608A/2563A/2565A/2566A LINE PRINTER

See Figure 7-12 for a layout of the HP-IB interface connector and refer to Table 7-9 for a description of the status bit definitions for status word 1.



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Figure 7-12. HP-IB Interface Connector and Device Address Switches

DEVICE ADDRESS Switches*	5	4	3	2	1
Binary representation	16	8	4	2	1
Example device address (7)	0	0	1	1	1

1 = on  
0 = off

\*Note: On the 256XA printers, this is done via the keypad.

Table 7-9. HP 2608A/2563A/2565A/2566A Status Bit Definitions

## Status Word No. 1

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
															Not Used
															Platen/ribbon
															6/8 Lines per
															Inch
															SelfTest Mode
															Paper Error
															SelfTest Failure
															Print Mechanism Failure
															OnLine
															Power Restored
															Not Used
															6/8 Lines per Inch
															VFC Initialized
															VFC Channel 12 (top of form)
															VFC Channel 9 (bottom of form)
															Not Ready
															OnLine

**HP 2608A/2608S COMPATIBILITY**

These are the major differences between the HP 2608A and the HP 2608S line printers.

**ISSUE: :DOWNLOAD**

**HP 2608A:** Recognizes :DOWNLOAD; cannot have environment files.

The ability to specify the VFC as an environment means there is no need for an operator to use the DOWNLOAD command. CIPER does not have exactly the same operator dialogue for downloading to a "hot" device. If :DOWNLOAD is done with active spoolfile and the HP 2608S offline, the HP 2608S is hung until warmstart.

**ISSUE: :Running "HOT" (unspooled)**

**HP 2608A:** Supported

**HP 2608S (Both modes):** Can not run truly "HOT" since lines are buffered in the CIPER data segment. A successful return from ATTACHIO does not mean that your line has been printed successfully.

**ISSUE: Double and Triple Spacing**

**HP 2608A:** Same as other HP-IB printers.

**HP 2608S (Transparent Mode):** Same as HP 2608A.

**HP 2608S (Feature Access):** Same as Series III printers.

**ISSUE: Shift In, Shift Out, Backspace**

**HP 2608A:** Supported

**HP 2608S (Transparent Mode):** Not supported - This implies no alternate character sets. Combined with the previous issue this means that we have no mode where the HP 2608S can emulate the 2608A.

**HP 2608S (Feature Access):** Supported.

Peripherals

ISSUE: Powerfail Recovery (while spooled, no recovery if "HOT")

HP 2608A: Not Automatic; recovery starts at beginning of spoolfile.

HP 2608S (Both Modes): Automatic recovery starts with page where the powerfail occurred. Possible problem if customer does not want automatic restart, e.g., duplicate checks (workaround is to run "HOT").

ISSUE: FORMS alignment

HP 2608A: When forms have been specified in the printer file equation the operating system prints a line so that the operator can see if the forms are aligned correctly.

HP 2608S (Both Modes): The operator should push a button at the printer which causes a reference line to be printed.

ISSUE: Embedded Escape Sequences and Control Codes.

HP 2608A: Prints a symbol representing code, but does not execute it.

HP 2608S (Transparent Model): Same as HP 2608A.

HP 2608S (Feature Access): Executes the command.

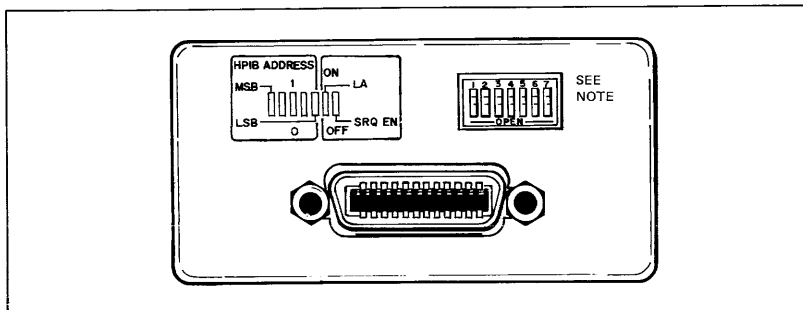


## Peripherals

- b. Perform the following ONLINE tests to eliminate the driver and hardware as a probable cause of the problem:
  1. If a line printer I/O problem is suspected, use the MPE command 'STOPSPoolFILE 6'. This will allow files to by-pass the SPOOLER and be sent directly to the line printer. If this causes the problem to disappear, the problem is probably in the SPOOLER or user file.
  2. Run PD466A to perform the more standard tests such as Ripple Print. PD466A is an ONLINE supported utility.
- c. Perform the following OFF-LINE tests:
  1. Run IOMAP to determine if the device controller can identify the line printer when it does not appear to respond.
  2. Write and run a short SLEUTHSM program that will attempt a line printer access under programmatic control, but not under MPE control.

# HP 2631B LINE PRINTER

See Figure 7-13 for the HP 2631B interface connector and refer to Table 7-11 for a description of the bit definitions for status word 1.



147018-31

Figure 7-13. HP 2631B Interface Connector and Device Address Switches

### NOTE

Switch representations placarded on connector panel for clarity.

HP-IB ADDRESS Switches (1-5)	1	2	3	4	5
Binary representation	16	8	4	2	1
Example device address (7)	0	0	1	1	1

1 = closed

0 = open

Switches 6 (LA - Listen Always) and 7 (SRQ EN - Serial poll enable) are always set to OFF.





## HP 2680A/2688A PAGE PRINTER

### I/O Status

The HP 2680A status reports contains 16 data words to indicate the condition of the HP 2680A system. The status report is used to diagnose HP 2680A system faults. The following is an example of an I/O display in response to the OCTAL command.

<b>NOTE</b>
-------------

Words 2 through 15 and bits 1,2,3 and 4 of word 1 are cleared whenever the I/O status block is returned to the host system.

WORD	I/O STATUS	ENV STATUS
0	%004004	%000020
1	%000000	%027511
2	%000000	%000057
3	%000000	%010100
4	%001000	%070101
5	%000000	%000654
6	%000000	%000000
7	%000000	%000102
8	%000000	%021156
9	%000000	%000000
10	%000000	%000675
11	%000000	%004102
12	%000000	%000000
13	%000001	%000000
14	%000000	%000000
15	%000000	%000000



## I/O Status Word 4

BIT	DESCRIPTION
0	No memory available for attempted character set load.
1	No memory available for attempted form load.
2	No memory available for attempted VFC load.
3	An attempt was made to print data without a selected character set.
4	An attempt was made to select an undefined form.
5	An attempt was made to print data without a selected Vertical Form Control (VFC).
6	An attempt was made to print data without a selected Logical Page Table (LPT).
7	An attempt was made to move pen off the logical page.
8	The printer could not process all data before transfer was made to the drum/paper. Data will be lost.
9	Data block contains format error. Invalid function code or record/block size error.
10	Missing multi-copy forms table. An attempt was made to use a multicopy forms table that was not loaded for this job.

## I/O Status Word 4 (con't.)

BIT	DESCRIPTION
11	Maximum number of copies per physical page has been exceeded.
12	A command or function code was received without a job in process.
13	No user memory available. User memory is loaded with character sets, VFC's, forms and data. The current data transmitted cannot be processed and will be lost.
14	A VFC is selected by a logical page table entry which has word ten (line spacing on page) less than or equal to zero.
15	A skip was made to a non-existent VFC.

## I/O Status Word 5

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
BIT	DESCRIPTION														
0	Logical page was truncated to fit on the physical page.														
1	Page size requested by programmer does not match page length set by operator. The operator-set page length will be used.														
2	No character set selected when print record was processed. Record was skipped.														
3-15	Unused.														

**I/O Status Word 6**

BIT	DESCRIPTION
0	Not enough memory for picture download.
1	Attempt to print more than 64 pictures on a physical page.
2	Attempt to print a picture which is not present.
3-15	Unused.

**I/O Status Words 7-11** - Reserved for future use.

<b>NOTE</b>
-------------

I/O Status Words 12,13,14, and 15 are double word integers.

**I/O Status Word 12**

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
---	---	---	---	---	---	---	---	---	---	----	----	----	----	----	----

Contains error record number defined by word 4. Information is reported during a JOB function.

**I/O Status Word 13**

0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
---	---	---	---	---	---	---	---	---	---	----	----	----	----	----	----

Contains error record number defined by word 4. Information is reported during a JOB function.

## Peripherals

### I/O Status Word 14

-----  
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Contains sheet number where error occurred as defined by word 4. Information is reported during a job function.

### I/O Status Word 15

-----  
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Contains sheet number where error occurred as defined by word 4. Information is reported during a job function.

## Environmental Status

The environmental status report contains 16 data words indicating current configuration, print job, and printer mode of the HP 2680A page printer. Data is supplied to assist in the interpretation of diagnostic data. The following is a description of the bit definitions for status words 0 through 15.

### Environmental Status Word 0

-----  
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

| | | | | | | | | | | | | | | |

|  
|  
Number of data blocks  
in the incoming data  
buffer.

|  
|  
Size of incoming data buffer  
in 512 word blocks.

### Environmental Status Word 1

-----  
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Number of twenty word buckets available.





Peripherals

**Environmental Status Word 5**

```

-----
| 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 |
-----

```

Number of character set dot/bit image (words+3)/4 plus the number of proportional spacing (words used plus 3)/4.

**Environmental Status Word 6**

```

-----
| 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 |
-----

```

Number of form dots per bit (words + 3)/4 plus the number of form triplet (words plus 3)/4.

**Environmental Status Word 7**

```

-----
| 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 |
-----

```

Number of VFC words loaded.

**Environmental Status Word 8**

```

-----
| 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 |
-----
| | | | | | | | | | | | | | | |
-----

```

|  
 Page length in the  
 direction of paper  
 motion, in 0.25"  
 increments.

|  
 Page width in direction of laser  
 scan, in 0.1 inch increments.



Peripherals

**Environmental Status Word 12**

-----  
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Number of non blank characters clipped (not printed) on this job.

**Environmental Status Word 13**

-----  
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Reserved.

**Environmental Status Word 14 and 15**

-----  
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

Number of physical pages printed since last job open (signed double integer). Indicates total number of physical pages printed for this job since the environmental status block read function.

# INTELLIGENT NETWORK PROCESSOR

See Figures 7-14 and 7-15 for illustrations of the INP component locations and INP cabling. Refer to Tables 7-12 through 7-14 for a description of INPA rocker switch positions, INPA and INPB selftest LED patterns and defective RAM chip identification chart.

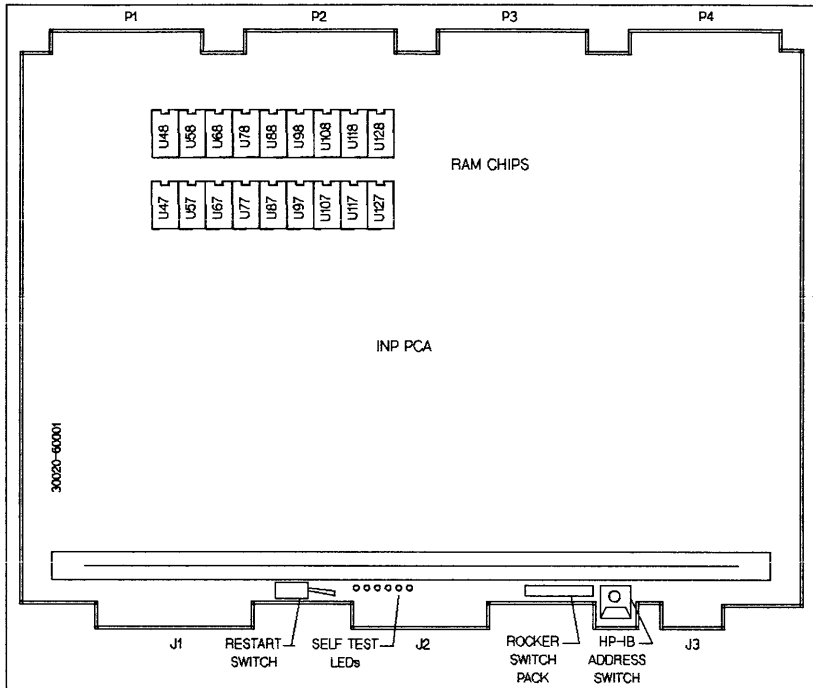


Figure 7-14. INPA Component Locations

Table 7-12. INPA Rocker Switch Positions

Switch No.	Function	Enable Position	Required Position For System Use
	Allow refresh	Open	Open
2	Allow processor execution	Open	Open
3	Access ET PROM (note 1)	Closed	Open
4	Access INP ROM (note 1)	Closed	Closed
5	Allow remote restart	Open	Open
6	HP-IB shield (ground) - J3	Closed	Open
7	HP-IB controller-in-charge	Open=controller	Closed
8	Execute from ET PROM instead of selftest after reset of INP	Closed	Open
9	System interface indicator	Open	Open
10	Loop selftest (note 2)	Closed = Loop	Open

**NOTE**

1. Simultaneous closure of switches 3 and 4 defaults to ET PROM.
2. With HP-supplied SOS ROMs, the selftest program will loop when switch is closed.

Table 7-13. INPA and INPB Selftest LED Patterns

LED Pattern								Test Failure
7	6	5	4	3	2	1	0	
*							*	None (Normal Operation)
*					*	*		Basic Instruction Set
	*				*	*		ROM Test
		*			*	*		SDLC Test
*	*				*	*		SDLC Test with DMA
			*		*	*		BISYNC Test
*		*			*	*		BISYNC Test with DMA
0	0	0	0	*	*	*		RAM Test
*	*				*	*		RAM Test Parity Error
	*	*			*	*		Timer Interrupt Test
*	*	*			*	*		BISYNC and SDLC Tests with DMA

Legend:  
\* = LED lit

0 = When lit, coded pattern signifies which chip (bit) has failed

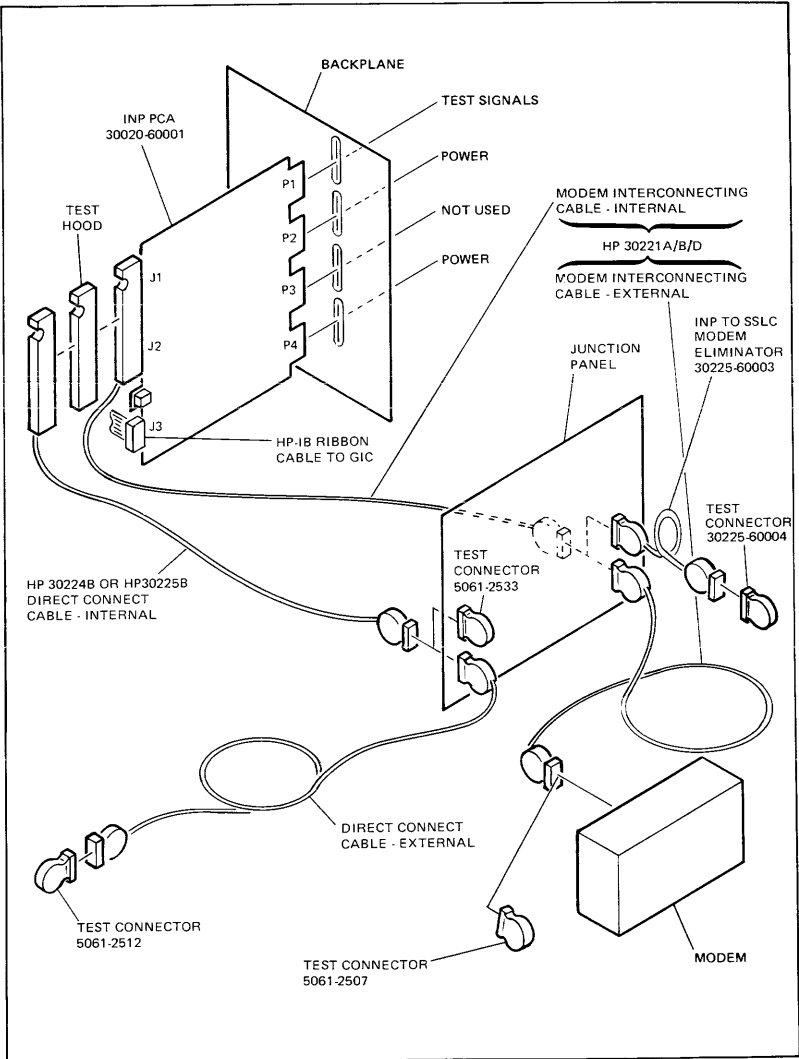
Table 7-14. INPA and INPB Defective RAM Chip Identification Chart

LED Display	Bit No.	Defective INPA RAM Chip	Defective INPB RAM Chip
7 6 5 4			
0 0 0 0	0	U47	U87
0 0 0 1	1	U57	U77
0 0 1 0	2	U67	U67
0 0 1 1	3	U77	U57
0 1 0 0	4	U87	U47
0 1 0 1	5	U97	U37
0 1 1 0	6	U107	U27
0 1 1 1	7	U117	U17
1 0 0 0	8	U48	U18
1 0 0 1	9	U58	U28
1 0 1 0	10	U68	U38
1 0 1 1	11	U78	U48
1 1 0 0	12	U88	U58
1 1 0 1	13	U98	U68
1 1 1 0	14	U108	U78
1 1 1 1	15	U118	U88
Parity			U97&U98

## Legend:

1 = LED lit

0 = LED off



147018-95

Figure 7-15. INP Cabling



## HP 26075A MULTIPLE SYSTEM ACCESS SELECTOR

The HP 26075A is an HP-IB switchbox designed to switch an HP 2680A or HP 7976A between HP 3000 CPUs (up to three).

### 1. Maximum Configuration

There are four standard HP-IB connections in total, with a maximum of three CPUs to one peripheral.

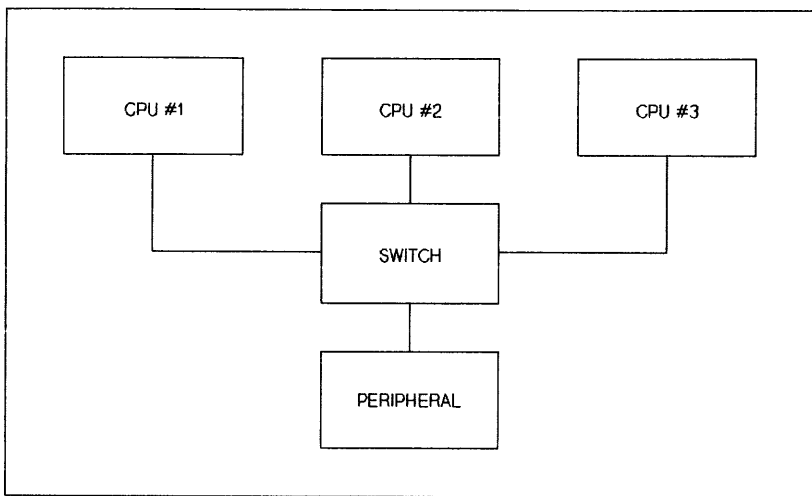


Figure 7-16. HP 26075A Maximum Configuration

## 2. Cable Loading

In this example there are two cable lengths possible, depending on the system selected by the HP 26075A, they are based on internal cable lengths and peripheral device loads.

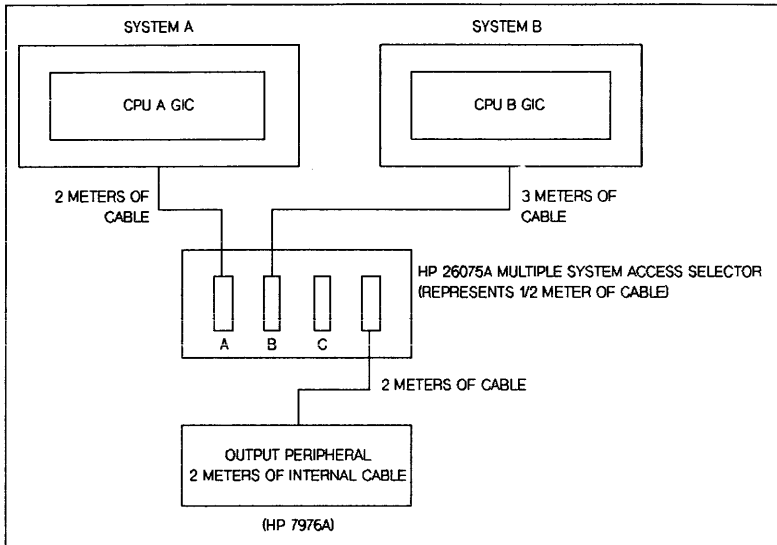


Figure 7-17. HP 26075A Cable Loading

Note that the CPU "A GIC" will be attached to 6 1/2 meters of cable if "A" is selected, and CPU "B GIC" will be attached to 7 1/2 meters of cable when "B" is selected.

## Peripherals

The HP 7976A is a high-speed device consisting of two electrical device loads. To calculate the amount of external cable that is allowed perform the following:

- o Seven meters plus one meter per electrical device load rule:

```
7 Meters
+2 Meters (7976A is configured with two electrical device loads)
-----
9 Meters (Max. length allowed with electrical device load
          configuration as shipped from the factory)
```

- o Take the nine meters (calculated above) and subtract the internal cabling lengths for that particular peripheral and CPU for a total of available external cable length connection.

```
9.0 Meters (max. length allowed)
-1.5 Meters (from GIC to junction panel; Series 30 and 39/40/42
            is 1.0 meter and Series 33 and 44/48 is 1.5 meters.)
- .5 Meters (26075A internal cable length)
-2.0 Meters (7976A internal cable length)
-----
5.0 Meters (Cable length remaining for external connections)
```

### NOTES

- o When switching the HP 26075A access selector, make certain there is no activity (data transfer processes) on the bus; otherwise data loss may result.
- o The HP 26075A access selector is not supported on any bus configuration to which a disc drive is connected.
- o The devices on the bus being switched from and to must be properly halted before switching the peripheral to another system.

### NOTE

The maximum length of an HP-IB cable connecting a peripheral device to a GIC is seven meters plus one meter per device load to a maximum of 15 meters per GIC. High-speed peripherals can be attached to no more than two GICs on each Intermodule Bus (IMB).

## HP 37203A HP-IB EXTENDERS

The HP 37203A HP-IB Extender allows HP 3000 systems to be connected to remote or distributed printing stations. With Option 010 (Coaxial Cable), printers can be placed up to 250 meters from the HP 3000. With Options 010 and 001 (Fiber Optic Cable), printers can be placed up to 1000 meters away. See Figure 7-18 for the maximum supported configuration.

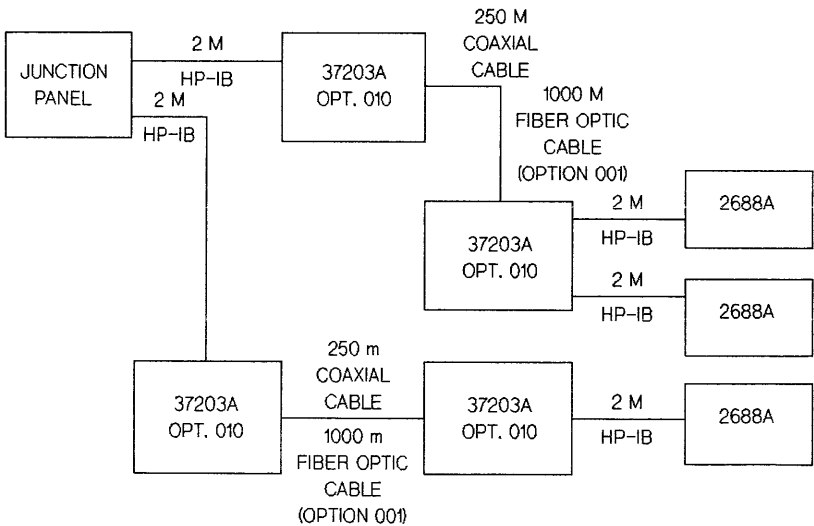


Figure 7-18. HP 37203A Maximum Supported Configuration

## Option 010 (Coaxial Cable)

The HP-IB Extender Option 010 increases the number of 2688A page printers supported on the HP 3000 Series 39/40/42/42XP/52 and 44/48/58. It also increases the distance that the 2688A can be from the processor. With the HP-IB Extender, the HP 2688A can be placed up to 250 meters from the HP 3000.

A dedicated GIC is required for the HP-IB Extender and this GIC is considered to be a low-speed GIC. (Note that when configured directly via HP-IB, the HP 2688A is on a high-speed GIC.)

The HP 2688A will be supported using HP-IB Extenders on the HP 3000 Series 39/40/42/42XP/52 and 44/48/58 configured with at least 1/2 Mb of memory. Extenders are not supported on Series 30 and 33. The number of HP 2688's supported on systems is as follows:

WITHOUT HP-IB EXTENDER	WITH AT LEAST 1 HP-IB EXTENDER
2	3

Up to two HP-IB Extender pairs can be connected to a system, and each pair requires a dedicated GIC. No more than two HP 2688s can be connected to extender pairs and there can be no more than two HP 2688s connected to the extender pairs attached to the system (see Figure 7-18).

Option 010 provides powerfail recovery and is **required** for HP 3000 support. The HP 2688A is the only device supported on the HP-IB extenders and may be used with the HP 2688A only on systems running Q-Delta-2 or any subsequent release of MPE.

## Option 010 and 001 (Fiber Optic Cable)

The HP 37203A HP-IB Extender with Options 001 and 010 uses the same packaging and electronics as the HP 37203A with Option 010, but provides connections with fiber optic cable rather than coaxial cable. This provides greater protection against electrical disturbance, allowing a greater cabling distance (up to 1000 meters) between the extender pairs.

The following printers can be combined on a single extender chain:

HP 2563A/B	300 lpm dot matrix impact
HP 2564A/B	600 lpm dot matrix impact
HP 2565A	600 lpm dot matrix impact
HP 2566A/B	900 lpm dot matrix impact
HP 2567B	1200 lpm dot matrix impact
HP 2680A	45 ppm non-impact
HP 2688A	12 ppm non-impact

A maximum of four printers are supported on each extender chain. Two of these can be non-impact printers (HP 2680A and HP 2688A). For combinations of HP 256X printers, there can be two sets of extenders per GIC.

The number of printers supported per system is the same with or without extenders.

As with Option 010 (Coaxial Cable), there is a maximum of two GICs per system. The extenders must be on a dedicated low-speed GIC.

## HP 26069A HP-IB-to-DIFFERENTIAL TRANSLATOR

The HP 26069A HP-IB-to-Differential Translator Kit makes possible, the connection of an HP 2619A, HP 2617A, HP 2613A, or HP 2611A with a differential interface, to an HP 3000 Series 3X (except Series 37), 4X and 5X system with HP-IB interface protocol. See Figures 7-19 and 7-20 for cable configurations and Figure 7-21 for a layout of the Translator PCA.

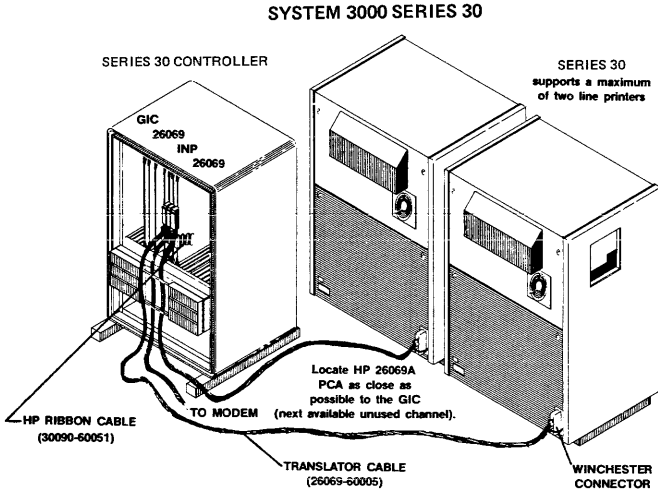


Figure 7-19. HP 26069A Cable Configuration (Series 30)

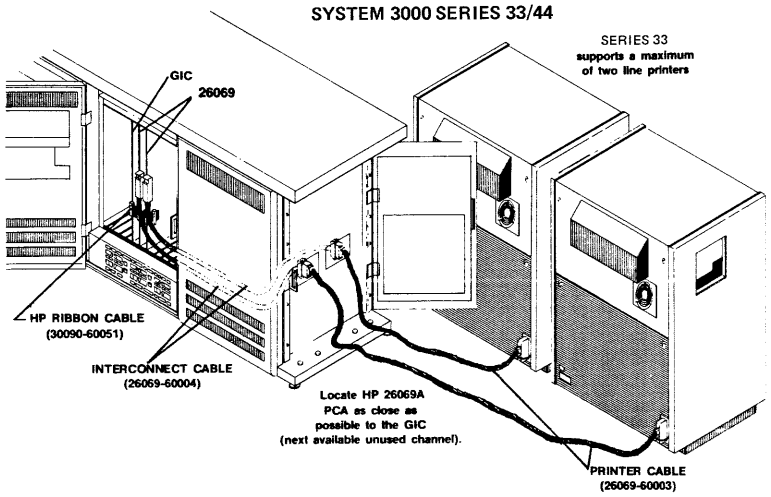


Figure 7-20. HP 26069A Cable Configuration (Series 33/44/48/58)

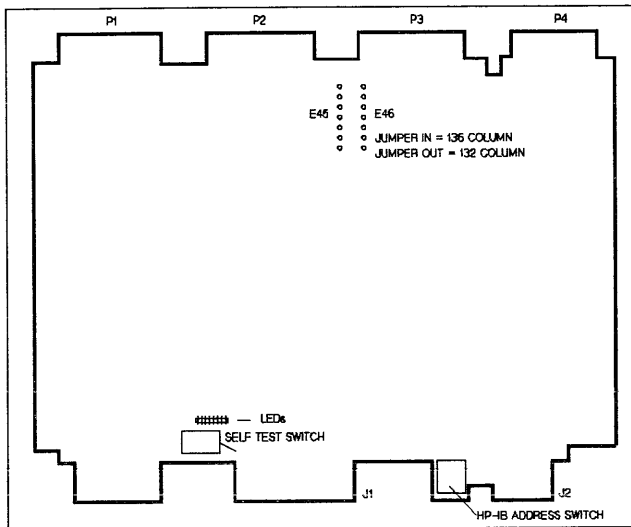


Figure 7-21. HP 26069A Translator PCA

### Test LED Functions

If the system controller to which an HP 26069A Translator is connected is inoperative, it is possible to run the HP 26069A Selftest using the Selftest toggle switch. Test result information is displayed on six (of eight) LEDs (A - E and \*). The two other LEDs, ADDR and PARITY are not used for Selftest information but furnish operating information.

When Selftest is initiated (pressing Selftest switch), LED A will begin flashing indicating that Selftest is running; LED \* also comes on at the same time, indicating that LEDs C, D, and E represent, in binary, the number of the subtest currently being run. When testing stops, because testing has completed or an error has occurred, LED A will go out and LED \* will remain lit indicating that LEDs C, D, and E are displaying the test results. If no errors occurred during testing, LEDs C, D, and E will be extinguished; these results will be displayed for five seconds (i.e., LED \* will remain lit for approximately five seconds). If an error occurs in any subtest, testing will stop at that point, LED A will stop flashing, and LED \* will remain lit (for approximately 25 seconds) indicating that LEDs C, D, and E represent the number of the subtest in which the error was detected. If an error in the Selftest feature prevents Selftest from being run, LED B will light, along with LED \*, indicating this condition.

If Selftest has stopped testing because a subtest error was detected, re-initializing Selftest will enable it from the beginning again.

### Jumper

The 132/136 column strap (E45-E46) configures the HP 26069A for operation with either 132 column printers or 136 column printers.



# REPLACEABLE PARTS

SECTION

VIII

This Replaceable Parts Catalog provides illustrations and parts lists to assist the user in locating replaceable assemblies of the HP 3000 Series 30, 33, 39/40/42/42XP/52 and 44/48/58 computer system. The primary purpose of the catalog is to provide part number data for the Customer Engineer when parts replacement is required.

HOW TO USE THE PARTS CATALOG .....	8-2
SERIES 30 PARTS CATALOG .....	8-3
SERIES 33 PARTS CATALOG .....	8-15
SERIES 39/40/42/42XP/52 PARTS CATALOG .....	8-32
SERIES 44/48/58 PARTS CATALOG .....	8-38

## HOW TO USE THE PARTS CATALOG

The Illustrated Parts Catalog is supplied for HP 3000 Computer Systems only as a means of obtaining order information for replaceable parts. Unless otherwise specified, listed parts are field replaceable (refer to symbol definitions).

The parts catalog is organized in the order of significant major assemblies, followed by subassemblies and associated parts. When the part number is unknown, use the illustrations to locate the major assembly or subassembly. Then refer to the associated parts list for the indexed part number corresponding to the index number on the illustration. The parts list contains the description, part number, and quantity per unit.

### DEFINITION OF SYMBOLS

**E (Exchange)** - Indicates that the part/assembly is on the exchange parts program. These parts are ordered from the organization that provides your support materials.

**C (Consumable)** - Indicates that the part/assembly is considered consumable and that the broken or damaged part is discarded after replacement. These parts are ordered from Corporate Parts Center (CPC) or Parts Center Europe (PCE).

**F (Fabricated)** - Indicates that the item is considered a low failure rate item and as such, is built and supplied upon demand. These parts are ordered from CPC or PCE.

**NR (Not Recommended for Replacement)** - Order next higher assembly.

**REF** - Indicates for reference only.

**SERIES 30 PARTS CATALOG**

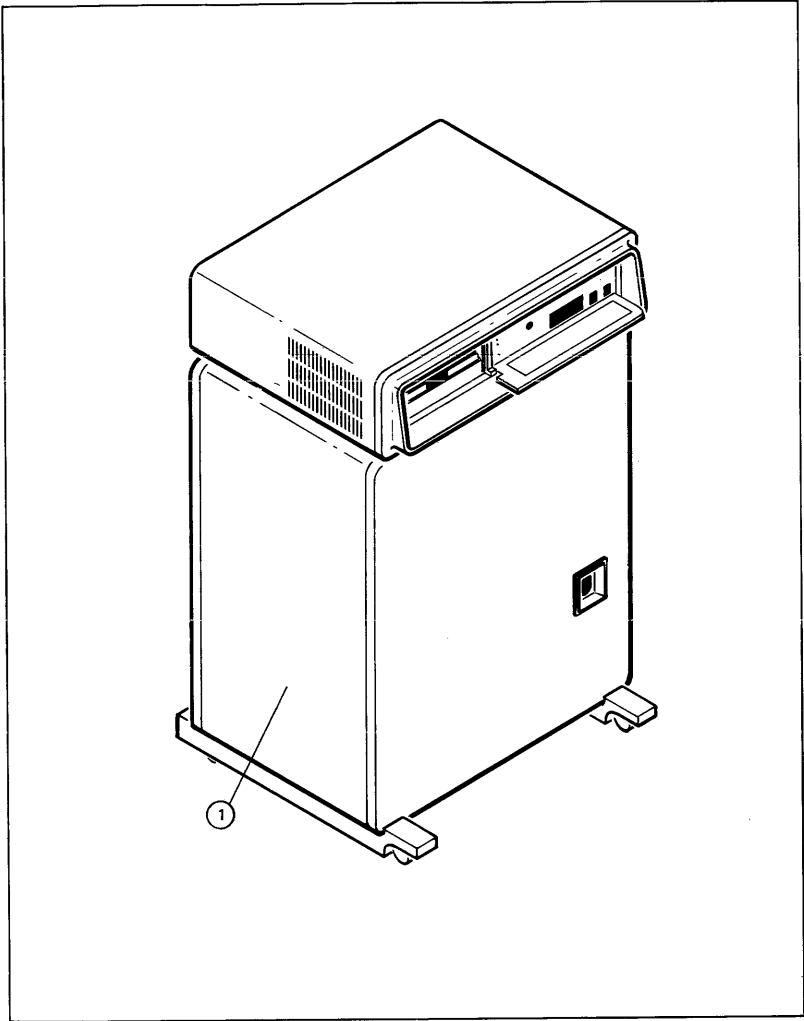
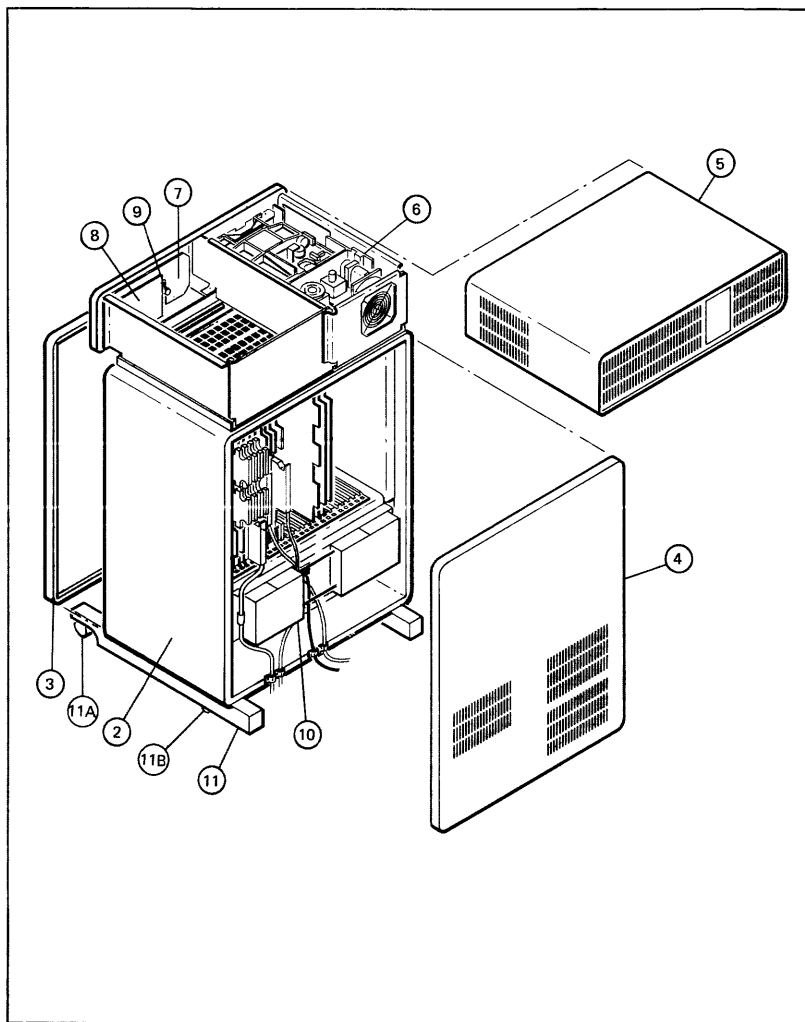
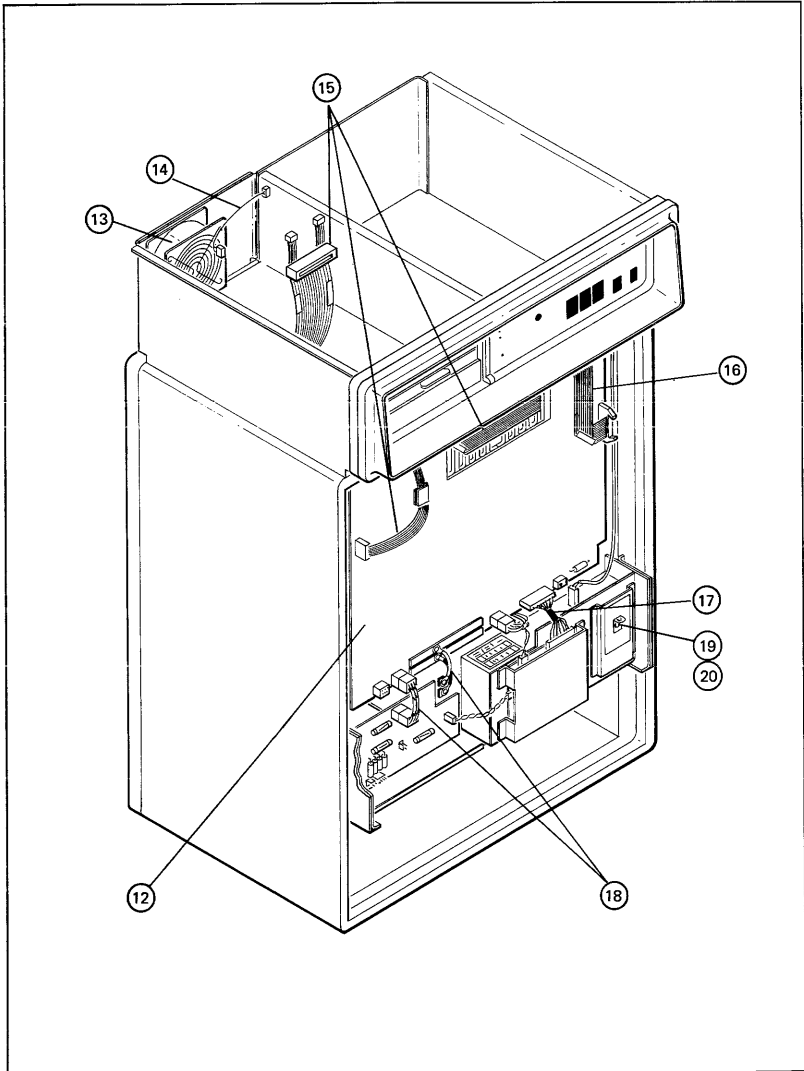


Figure 8-1. HP 3000 Series 30 Computer (Sheet 1 of 3)



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Figure 8-1. HP 3000 Series 30 Computer (Sheet 2 of 3)



047018-56

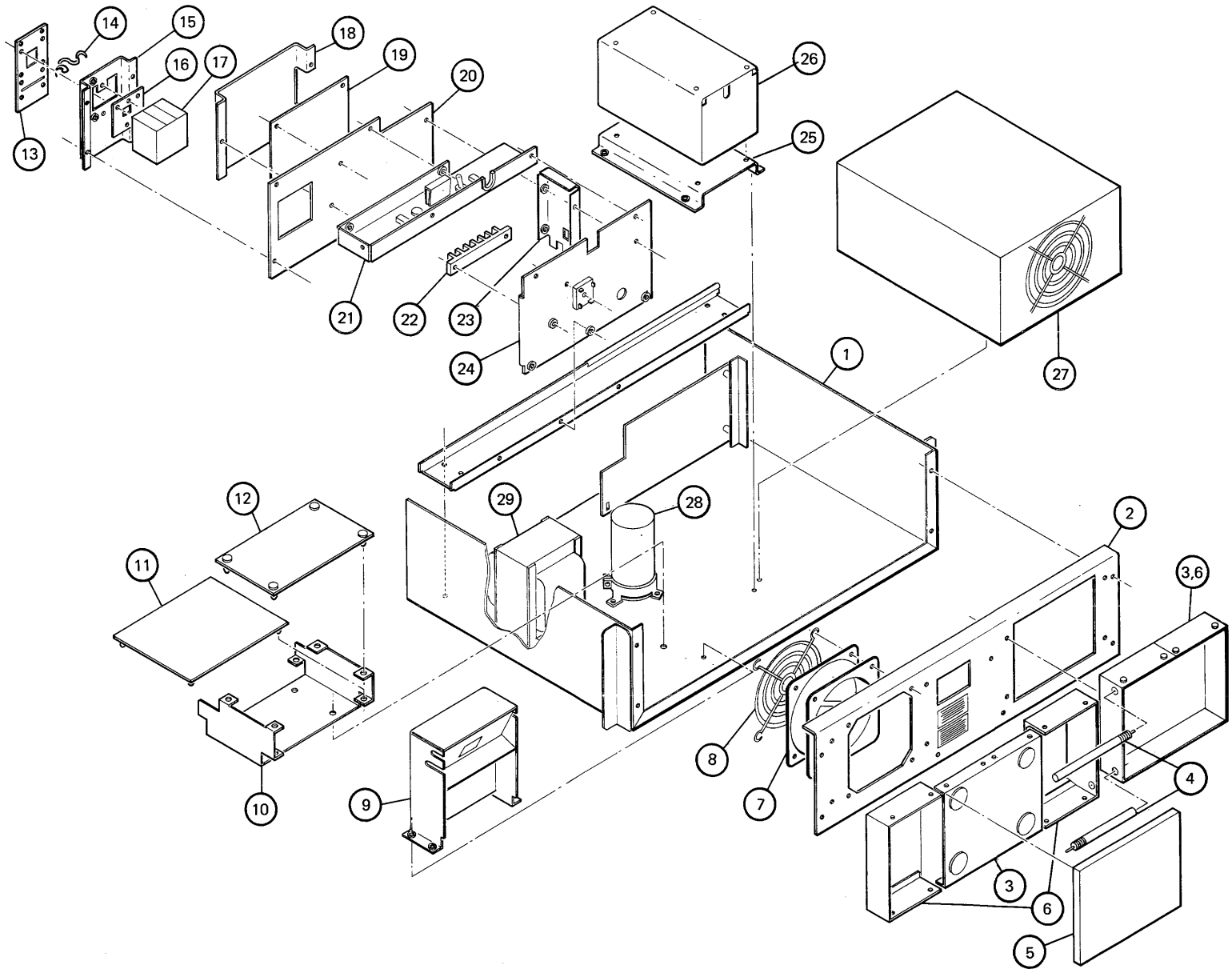
Figure 8-1. HP 3000 Series 30 Computer (Sheet 3 of 3)

## Series 30 Replaceable Parts

Figure and Index #	Description	H.P. Part Number	Def of Sym	Qty
8-1-1	HP 3000/30 Mainframe	30080B		REF
-2	* Cabinet Assembly	30080-60002		1
-3	* Front Door Assy	30080-00007		1
-4	* Rear Door Assy	31000-60081		1
-5	* Shroud	30080-60012		1
-6	* Flexible Disc Drive	7902A		1
	* * Drive Electronic Assy	07902-69023	E	1
	* * Controller PCA	07902-69024	E	1
	* * GIC Flat Cable	30070-60037	F	1
	* * Drive Assy	07902-69038	E	1
	* * Controller Cable	30070-60036	F	1
	* * Status Light Cable	30070-60035	F	1
	* * 50 Hz Belt	1535-3649	C	1
	* * 50 Hz Pulley	1535-3650	C	1
	* * 60 Hz Belt	1535-3651	C	1
	* * 60 Hz Pulley	1500-0499	C	1
	* System Control Panel	30080-60005		1
-7	* * Switch Board PCA	30080-60010		1
-8	* * Logic PCA	30080-60011		1
-9	* * Keyswitch	30080-60014		1
	Switch	30080-60014		1
-10	* Power Supply Unit (See figure 8-2)	31000-60002		1
-11	* Left/ Right Pedestal	30080-20005		2
-11A	* * Frontwheel Caster	1492-0037		2
-11B	* * Rearwheel Caster	30080-20003		2
-12	* Card Cage Assembly	30080-60003		1
	* * CPU Processor PCA	30070-69012	E	1
	* * Bus Intfc Cntrlr PCA	31000-69053	E	1
	* * Extended Firmware PCA	30070-69090	E	1
	* * Maint. Intfce PCA	30070-69013	E	1
	* * General I/O Channel PCA	31262-69001	E	1 to 4
	* * ADCC - Main	31264-69001	E	1 to 4
	* * ADCC - Extender	31265-69001	E	1 to 4
	* * Memory Controller	31202-69001	E	1
	* * Memory Array	31204-69001	E	2 to 8
-13	* Fan Assembly	REF		
	* * Fan	3160-0218	C	1
	* * Fan Grille	3160-0092	C	2
	* * Fan Support	30080-00004	F	1

## Series 30 Replaceable Parts

Figure and Index #	Description	H.P. Part Number	Def of Sym	Qty
8-1-				
-14	* AC Cable Assy, FDU	30080-60016	C	1
-15	* Cable Assy Set, FDU	30080-60021	C	1
-16	* Cable Assy, Front Panel	30080-60006	C	1
-17	* Power Control Cable Assy	31000-60061	C	1
-18	* DC Cable Assy Set	31000-60061	C	1
	* MI HP-IB Cable Assy	30080-60028	C	var.
	* GIC HP-IB Cable Assy	30080-60026	C	var.
	* ADCC Quad Box and Cable Assy	30080-60027	C	var.
-19	* Power Switch	3100-1654		1
-20	* Power Switch Knob	0370-3102		1



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Figure 8-2. HP 3000 Series 30 Power Supply Unit

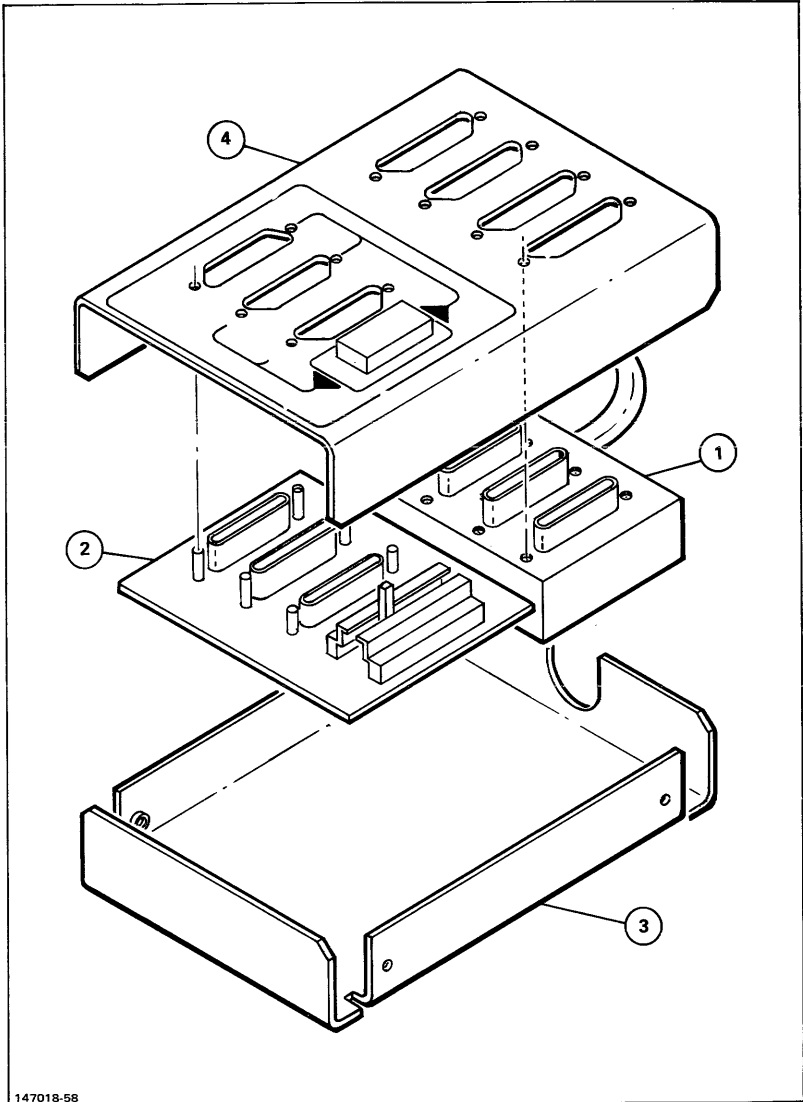


## Series 30 Replaceable Parts

Figure and Index #	Description	H.P. Part Number	Def of Sym	Qty
8-2-	Power Supply Unit	31000-60002	E	1
-1	* Chassis	31000-00017	NR	1
	* Rear Panel Assy	REF	NR	1
-2	* * Rear Panel	31000-00018	NR	1
-3	* * Air Filter Support	31000-00076	NR	2
-4	* * Cable Retainer Rod	31000-20008	NR	2
-5	* * Air Filter	4208-0197	C	2
-6	* * Air Filter Housing	31000-00075	NR	4
-7	* * Fan	3160-0252	C	1
-8	* * Fan Grille	3160-0092	C	1
-9	* Filter Mount Assy	REF		1
	* * AC Socket Mount	31000-00016	C	1
	* * Socket Support	31000-00036	C	1
	* * AC Power Socket	1251-4470	C	1
	* * Line Filter PCA	31000-60068	C	1
-10	* Memory P.S. Support	31000-00031	C	1
-11	* Memory Regulator PCA	31000-60028	E	1
-12	* Memory Preregulator PCA	31000-60067	E	1
	* Switch Assy	REF		1
-13	* * Switch Cover	31000-00020	C	1
-14	* * Switch Guard	1460-1667	C	1
-15	* * Switch Mount	31000-00021	C	1
-16	* * Ground Plate	31000-00086	C	1
-17	* * Circuit Breaker	3105-0087	C	1
-18	* Cover, Power Control PCA	31000-00031	C	1
-19	* Power Control PCA	31000-60056	C	1
-20	* Front Cover	31000-00019	C	1
-21	* Upper Channel Assy	REF		1
	* * Label, AC Line Voltage	7120-6678	C	1
	* * Fuse Holder	2110-0566	C	1
	* * Fuse 3A SB	2110-0381	C	1
	* * Fuse Holder Cap 3AG	2110-0565	C	1
	* * Switch, DPDT	3101-0056	C	1

## Series 30 Replaceable Parts

Figure and Index #	Description	H.P. Part Number	Def of Sym	Qty
-----				
8-2-				
-22	* Terminal Block	0360-1870	C	1
-23	* End Cover	31000-00085	C	1
-24	* Back Cover	31000-00028	C	1
-25	* Battery Support	31000-00027	C	1
-26	* Battery Pack Assy	31000-60001	C	1
-27	* Power Supply DC	63312-69001	E	1
-28	* Capacitor 6900UF 75V AL	0180-2757	C	1
-29	* Transformer Assy	31000-60026	C	1



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Figure 8-3. HP 3000 Series 30 Switch Box Assembly

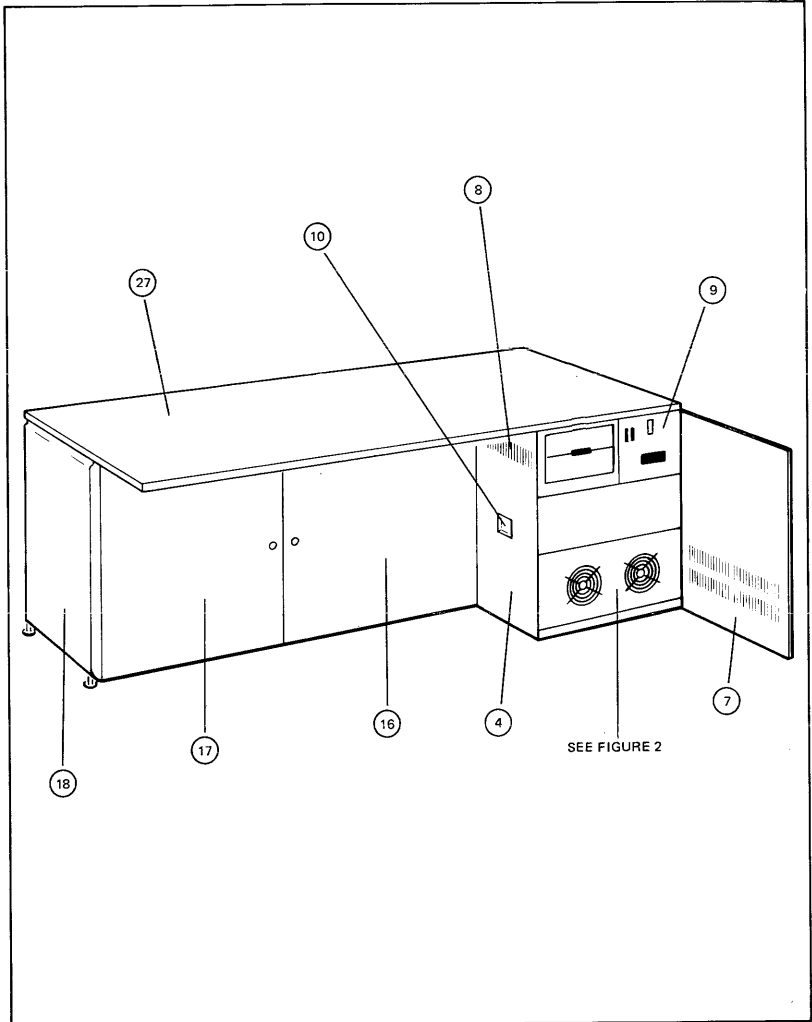
Series 30 Replaceable Parts

Figure and Index #	Description	H. P. Part Number	Def of Sym	Qty
8-3-	Switch Box Assembly	30080-60024	C	1
-1	Quad Box	30080-60027	C	1
-2	SCF PCA	30070-60066	C	1
-3	Bottom Panel	30080-00018	C	1
-4	Top Panel	30080-00017	C	1

Miscellaneous part numbers not referenced by figure and index numbers.

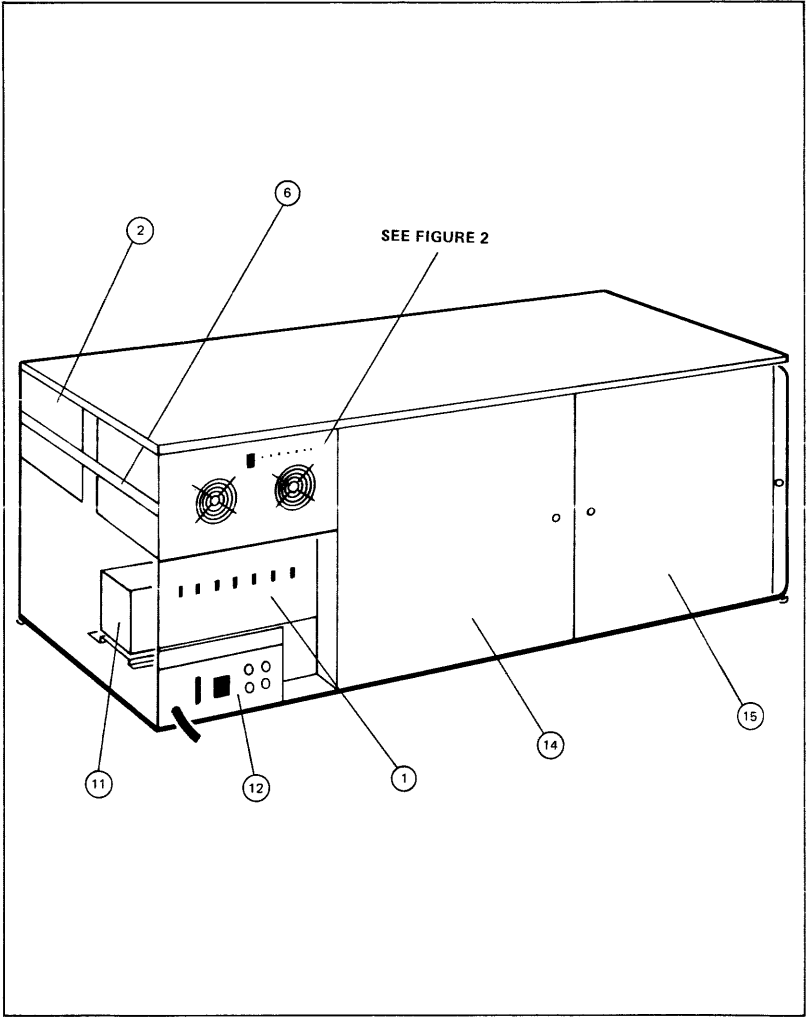
Description	HP Part Number
Power Cord	8120-2371
Keyswitch	3101-2477
Switch	3101-2477
Back Door Key	1390-0345
Control Mode Switch Key	1535-4228
Touch-up Paint, Pearl Gray, Spray Can	6010-0695
Touch-up Paint, Pearl Gray, 5 Gallons	6010-0790

# SERIES 33 PARTS CATALOG



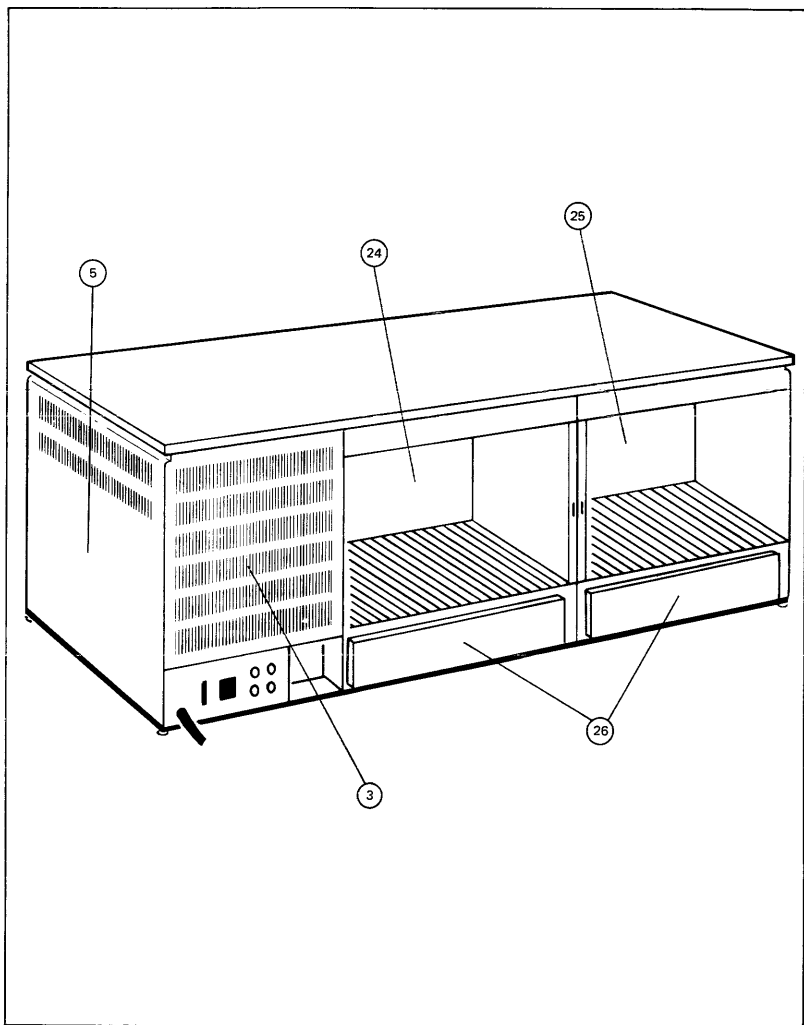
147018-48

Figure 8-4. HP 3000 Series 33 Front View (Sheet 1 of 3)



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Figure 8-4. HP 3000 Series 33 Rear View (Sheet 2 of 3)



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Figure 8-4. HP 3000 Series 33 Rear View (Sheet 3 of 3)

## Series 33 Replaceable Parts

Figure and Index #	Description	H. P. Part Number	Def of Sym	Qty
-----				
8-4-				
-1	HP-IB JUNCTION PANEL ID Chart I/O Panel	30070-60014 7120-7497	F C	1 1
	---*---			
-2	7902 and SYSTEM CONTROL PANEL ENCLOSURE	30070-60028	F	1
	---*---			
-3	REAR DOOR Lock Assy Key only	30070-00084 1390-0467 1390-0468	F C C	1 1 1
	---*---			
-4	SHORT SIDE PANEL	30070-00054	F	1
	---*---			
-5	FULL SIDE PANEL	30070-00055	F	1
	---*---			
-6	P/S SLIDING RAILS	1494-0038	C	1
	---*---			
-7	FRONT DOOR Filter Filter Bezel 7902 Disc Bezel Lock Assy Key only Hinge on frame Pawl for Lock Assy Door Hinge Pins	30070-00083 4208-0218 5040-9803 5040-9802 1390-0344 1390-0345 1600-0541 1600-0543 30070-20013	F C F F C C C C C	1 1 1 1 1 1 1 1 2
	---*---			
-8	FAN Fan Grille Fan Bracket Filter	3160-0294 3160-0092 30070-00019 4208-0217	C C F C	1 1 1 1



Figure and Index #	Description	H.P. Part Number	Def of Sym	Qty
-----*-----				
8-4-				
-9	SYSTEM CONTROL PANEL	30070-69008	E	1
	Logic PCA		NR	1
	Switch PCA		NR	1
	LED (red)	1990-0529	C	2
	LED (yellow)	1990-0524	C	1
	Push Button Switch S-PL	5060-9436	C	6
	Keycap (small)	5041-0309	C	1
	Keycap (large)	5041-0311	C	3
	Keycap (RUN)	5041-1607	C	1
	Keycap (HALT)	5041-1608	C	1
	Front Panel Cover	30070-00024	F	1
	Chassis	30070-00053	F	1
	Interconn Flat Cable	30070-60029	F	1
	Temperature Sense Cable	30070-60031	F	1
	SCP-BP Interface Cable	30070-60030	F	1
-----*-----				
-10	SYSTEM ON/OFF SWITCH			
	Circuit Breaker 20A 250VAC	3105-0103	C	1
	AC Power Cable	30070-60019	F	1
	Mounting Bracket	30070-00021	F	1
	Cover	30070-00022	F	1
-----*-----				
-11	ISOLATION TRANSFORMER	9100-4062	C	1
	Primary Power Cable	30070-60021	F	1
	Secondary Power Cable	30070-60022	F	1
	Ground Strap	30070-60062	F	1

## Series 33 Replaceable Parts

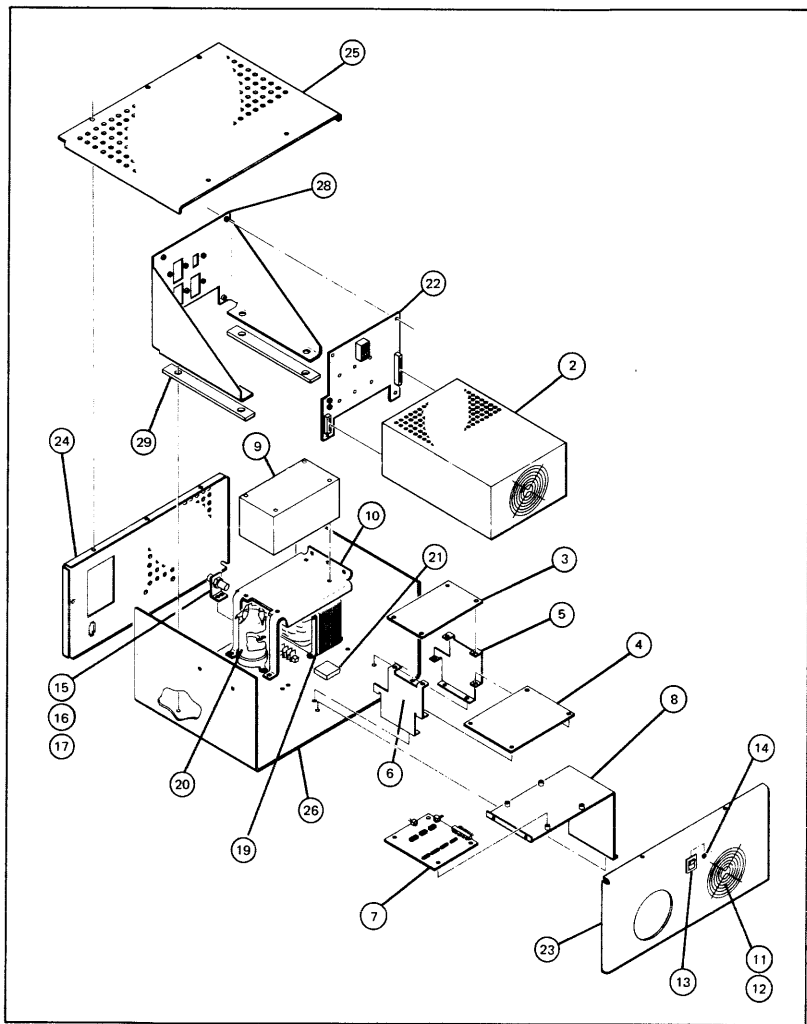
Figure and Index #	Description	H.P. Part Number	Def of Sym	Qty
-----*-----				
8-4-				
-12	POWER DISTRIB. UNIT 60HZ	30016-60001	F	1
	POWER DISTRIB. UNIT 50HZ	30017-60001	F	1
	Breaker (25 amp)	3105-0100	C	1
	Breaker (15 amp) 60HZ	3105-0101	C	1
	Breaker (10 amp) 50HZ	3105-0092	C	1
	AC Sockets 60HZ	1251-5235	C	1
	AC Sockets 50HZ	1251-5236	C	1
	Front Cover	30016-00013	F	1
	Bottom Cover	30016-00015	F	1
	Chassis	30016-00011	F	1
	Partition Panel	30016-00014	F	1
	AC Out Bracket	30016-00012	F	1
	AC In Bracket	30016-00005	F	1
	Mounting Bracket	30016-00009	F	1
	Cable Clamp	30070-00070	F	1
	Cable Clamp Bracket	30070-00069	F	1
	Dressing Bracket	30016-00007	F	1
	Connector (3 pin)	1251-5106	C	2
	Connector (4 pin)	1251-5228	C	3
	Connector (4 pin BLK)	1251-5070	C	3
	Label "warning"	7120-7038	C	1
	Label "warning"	7120-7039	C	2
-----*-----				
-13	7902 FLEXIBLE DISC			
	Drive Electronic Assy	07902-69001	E	1
	Controller Assy	07902-69002	E	1
	GIC flat cable	30070-60037	F	1
	Drive Assy	07902-69003	E	1
	Controller Cable	30070-60036	F	1
	Status Light Cable	30070-60035	F	1
	LED Bracket	30070-00051	F	1
	Disc Front Panel Guard	30070-00049	F	1
	DC Power Cable	30070-60034	F	1
	AC Power Cable	30070-60028	F	1
	50 Hz Belt	1535-3649	C	1
	50 Hz Pulley	1535-3650	C	1
	60 Hz Belt	1535-3651	C	1
	60 Hz Pulley	1500-0499	C	1
	Slide chassis	1494-0037	F	1

Figure and Index #	Description	H.P. Part Number	Def of Sym	Qty
-----*-----				
8-4-				
-14	REAR DOOR RIGHT	30070-00078	F	1
	Hinge	30070-20008	F	1
	Lock plate	30070-00063	F	1
	Lock Assy	1390-0467	C	1
-----*-----				
-15	REAR DOOR LEFT	30070-00079	F	1
	Hinges	30070-20008	F	1
	Lock Plate	30070-00063	F	1
	Lock Assy	1390-0467	C	1
-----*-----				
-16	FRONT DOOR RIGHT	30070-00074	F	1
	Hinges	30070-20007	F	1
	Lock Plate	30070-00061	F	1
	Lock Assy	1390-0467	C	1
-----*-----				
-17	FRONT DOOR LEFT	30070-00077	F	1
	Hinges	30070-20007	F	1
	Lock Plate	30070-00061	F	1
	Lock Assy	1390-0467	C	1
-----*-----				
-18	TERMINAL JUNCTION PANEL DR	30070-00080	F	1
	Hinges	30070-20008	F	1
	Lock Plate	30070-00064	F	1
	Lock Assy	1390-0440	C	1
	ID Chart Terminal Data Comm	7120-7432	C	1
-----*-----				
-19	CPU PROCESSOR PCA	30070-69012	E	1
	PCU (chip)	1AB2-6003	C	1
	RASS (chip)	1AB3-6003	C	1
	RALU (chip)	1AB4-6003	C	1
	CPU Bus Interface PCA	31000-69053	E	1
	J1 Interconnect Cable	30000-93054	F	1
	J2 Interconnect Cable	30000-93054	F	1
	Extended Firmware PCA	30070-69001	E	1

## Series 33 Replaceable Parts

Figure and Index #	Description	H.P. Part Number	Def of Sym	Qty
-----*-----				
8-4-				
-20	GENERAL I/O CHANNEL	31262-69001	E	?
	GIC/HP-IB Cable	30140-60107	F	1
	Mounting Plate	30070-00043	F	1
	Label Blank	7120-6600	F	1
	PHI (chip)	1AA6-6004	C	1
-----*-----				
-21	MEMORY CONTROLLER	31202-69001	E	2
	Memory Array	31204-69001	E	?
	16K RAM (chip)	1818-0341	C	88
-----*-----				
-22	MAINTENANCE INTERFACE	30070-69013	E	1
	MI/HP-IB Cable	5061-2504	F	1
	HP-IB Test Cable	8120-2237	F	1
	PHI (chip)	1AA6-6004	C	1
-----*-----				
-23	ADCC - MAIN	31264-69001	E	?
	ADCC - Extended	31265-69001	E	1
	Interconnect Cable	31265-60002	F	1
	Terminal Junction Panel	30070-60006	F	1
	cover plates	30070-00016	F	1
	ADCC/J.P. Cable	5061-2502	F	1
-----*-----				
-24	CARD CAGE #1	30070-60003	F	1
	Temperature Sense Switch	3103-0064	C	3
	Temperature Sense Cable	30070-60018	F	1
	SN74S15N IC	1820-0687	C	1
	SN745241N IC	1820-1624	C	2
	LED (red)	1990-0486	C	1
	LED (yellow)	1990-0487	C	1
	DC Power Cable (orange)	30070-60026	F	1
	DC Power Cable (brown)	30070-60025	F	1
	DC Power Cable (blue)	30070-60027	F	1
	Ground Strap	30070-60060	F	1
	Label Card Cage 1	7120-7175	C	1

Figure and Index #	Description	H.P. Part Number	Def of Sym	Qty
-----*-----				
8-4-				
-25	CARD CAGE #2	30070-60057	F	1
	Blank plate	30070-00008	F	1
	Temperature Sense Switch	3103-0064	C	3
	Temperature Sense Cable	30070-60018	F	1
	CC1 to CC2 Temp. Sense Cable	30070-60032	F	1
	Card Cage Interconn Cable	30070-60015	F	1
	LED (red)	1990-0486	C	1
	LED (yellow)	1990-0487	C	1
	SN74S241N IC	1820-1624	C	1
	DC Power Cable (orange)	30070-60026	F	1
	DC Power Cable (brown)	30070-60025	F	1
	DC Power Cable (blue)	30070-60027	F	1
	Ground Strap	30070-80023	F	1
	Label Card Cage 2	7120-7176	F	1
-----*-----				
-26	AIR PLENUM	30070-60005	F	1
	Fan	3160-0294	C	3
	Filter	4208-0216	C	1
	Plenum AC Cable	30070-60050	F	1
	PCM to Plenum AC Cable	30070-60051	F	1
-----*-----				
-27	TABLE TOP	30070-60058	F	1
-----*-----				
-28	REMOTE MAINTENANCE SW.	30070-60067	C	1
	Jumper SCF Cable	30070-60070	C	1
	SCF Switch board	30070-60066	C	1



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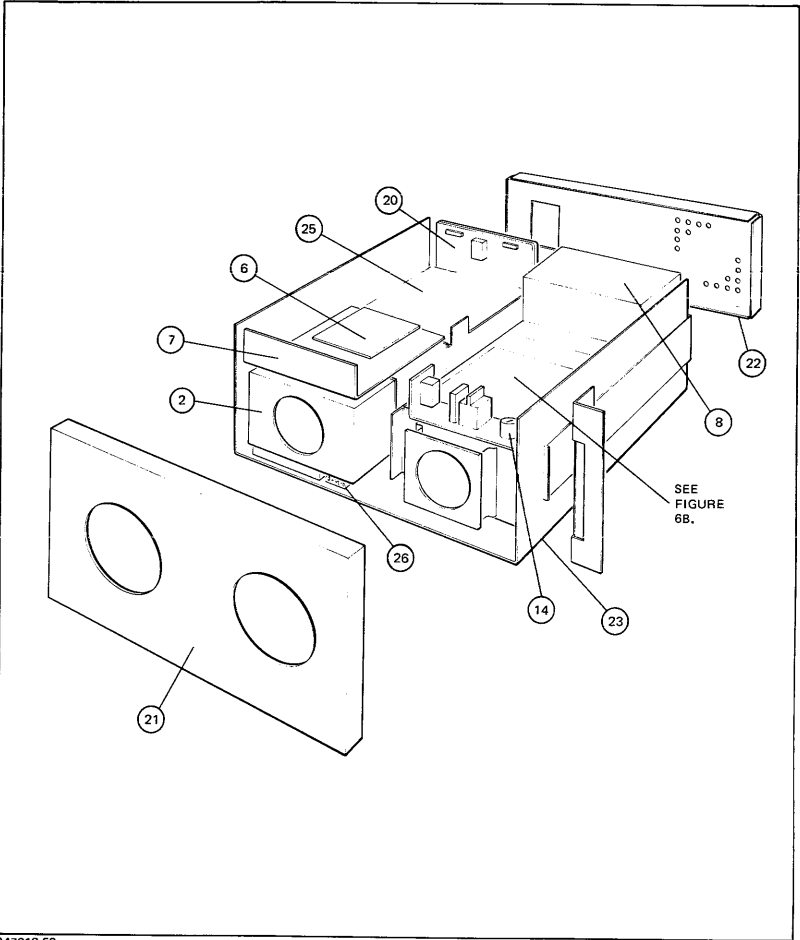
Figure 8-5. HP 3000 Series 33 Power Supply (Old Version)

Figure and Index #	Description	H. P. Part Number	Def of Sym	Qty
8-5-1	POWER SUPPLY (Old Version)	30070-60007	C	2
-2	NJD Power Supply Assembly	63312-69001	E	1
-3	NJD Power Supply Fan Memory Preregulator PCA	3160-0097 31000-69067	E	1
-4	Memory Regulator PCA	31000-69028	E	1
-5	support right	30070-00029	F	1
-6	support left	30070-00030	F	1
-7	Power Control PCA	31000-69056	E	1
-8	support	30070-00033	F	1
-9	Battery Pack	31000-60001	C	1
-10	support	30070-00034	F	1
-11	Fan	3160-0294	C	1
-12	fan grille	3160-0092	C	1
-13	On/Off Switch	3101-2281	C	1
-14	LED (red)	1990-0325	C	1
-15	Fuse (5 amp)	2110-0010	C	1
-16	Fuse Holder fuse holder body fuse holder cap 3AG fuse holder nut	2110-0564 2110-0565 2110-0569	C C C	1 1 1
-17	Fuse Bracket	30070-00135	F	1
-18	Fuse (8 amp)	2110-0342	C	1
-19	Power Transformer	9100-4066	C	1
-20	Capacitor 6900 uf 75V AL capacitor clamp	0180-2757 0180-1969	C C	1 1

## Series 33 Replaceable Parts

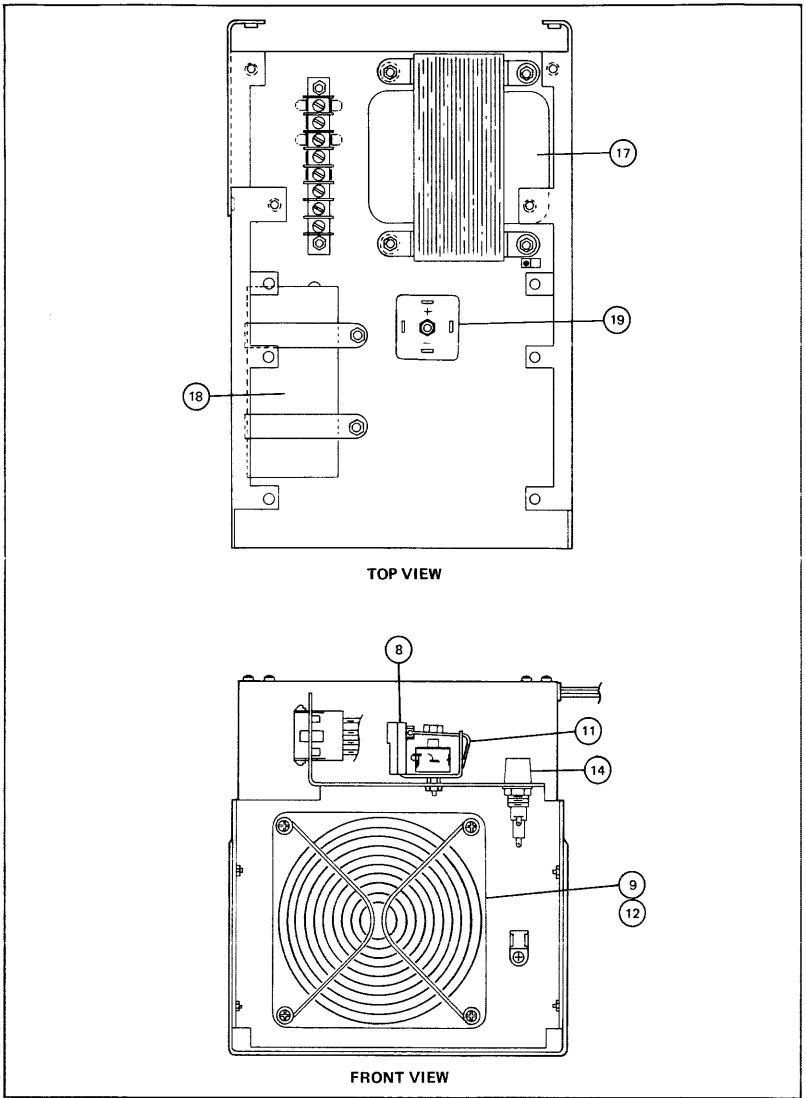
Figure and Index #	Description	H.P. Part Number	Def of Sym	Qty
-----				
8-5-				
-21	Diode Rectifier	1906-0093	C	1
-22	Power Distribution PCA	30070-60016	F	1
-23	Front panel	30070-00026	F	1
	Bracket right	30070-00036	F	1
	Bracket left	30070-00037	F	1
-24	Rear Panel	30070-00027	F	1
-25	Top Cover	30070-00028	F	1
-26	Deck (bottom)	30070-00025	F	1
-27	AC Power Cable	30070-60024	F	1
-28	NJD P/S Support	30070-00031	F	1
-29	NJD P/S Spacer	30070-00032	F	1
-30	Relay	0490-1188	C	1





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Figure 8-6A. HP 3000 Series 33 Power Supply (New Version)



047018-53

Figure 8-6B. HP 3000 Series 33 Power Supply (Memory Module)

Figure and Index #	Description	H.P. Part Number	Def of Sym	Qty
8-6-				
-1	POWER SUPPLY UNIT (New Version)	30070-60078	C	2
-2	NJD Power Supply Assembly	30070-60079	E	1
-3	Memory Preregular PCA	31000-69067	E	1
-4	Memory Regular PCA	31000-69028	E	1
-5	support	30070-00136	F	1
-6	Power Control PCA	31000-60056	F	1
-7	support	30070-00134	F	1
-8	Battery Pack	31000-60001	C	1
-9	Fan	3160-0294	C	1
-12	Fan Grille	3160-0092	C	1
-11	RELAY IC 12 VDC	0490-1188	C	1
-12	LED (red)	1990-0325	C	1
-13	Fuse (5 amp)	2110-0010	C	1
-14	Fuse			
	Fuse holder body	2110-0564	C	1
	Fuse holder cap 3AG	2110-0565	C	1
	Fuse holder nut	2110-0569	C	1
-15	Fuse Bracket	30070-00035	F	1
-16	Fuse (8 amp)	2110-0342	C	1
-17	Power Transformer	9100-4066	C	1

## Series 33 Replaceable Parts

Figure and Index #	Description	H.P. Part Number	Def of Sym	Qty
-----				
8-6-				
-18	Capacitor 6900 UF 75V AL	0180-2757	C	1
	Capacitor clamp	0180-1969	C	1
-19	Diode Rectifier	1906-0093	C	1
-20	Power Distribution PCA	30070-60016	F	1
-21	Front Panel	30070-00127	F	1
	Right Rail Mtg	30070-00130	F	1
	Left Rail Mtg	30070-00131	F	1
-22	Rear Panel	30070-00128	F	1
-23	Deck (bottom)	30070-00025	F	1
-24	AC Power Cable	30070-60024	F	1
-25	NJD P/S Support	30070-00031	F	1
-26	NJD P/S Spacer	30070-00032	F	2

Description	H.P. Part Number	Def of Sym	Qty
-------------	------------------------	------------------	-----

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## SYSTEM CONSOLE SPECIAL PARTS

(Parts are not illustrated in this manual)

ROM 1	1818-0501	C	1
ROM 2	1818-0502	C	1
ROM 3	1818-0503	C	1
KEYCAP "START"	0371-1063	C	1
KEYCAP "LOAD"	0371-1061	C	1
KEYCAP "DUMP"	0371-1062	C	1
KEYCAP "RUN"	0371-1065	C	1
KEYCAP "HALT"	0371-1064	C	1
KEYCAP "STATUS"	0371-1066	C	1

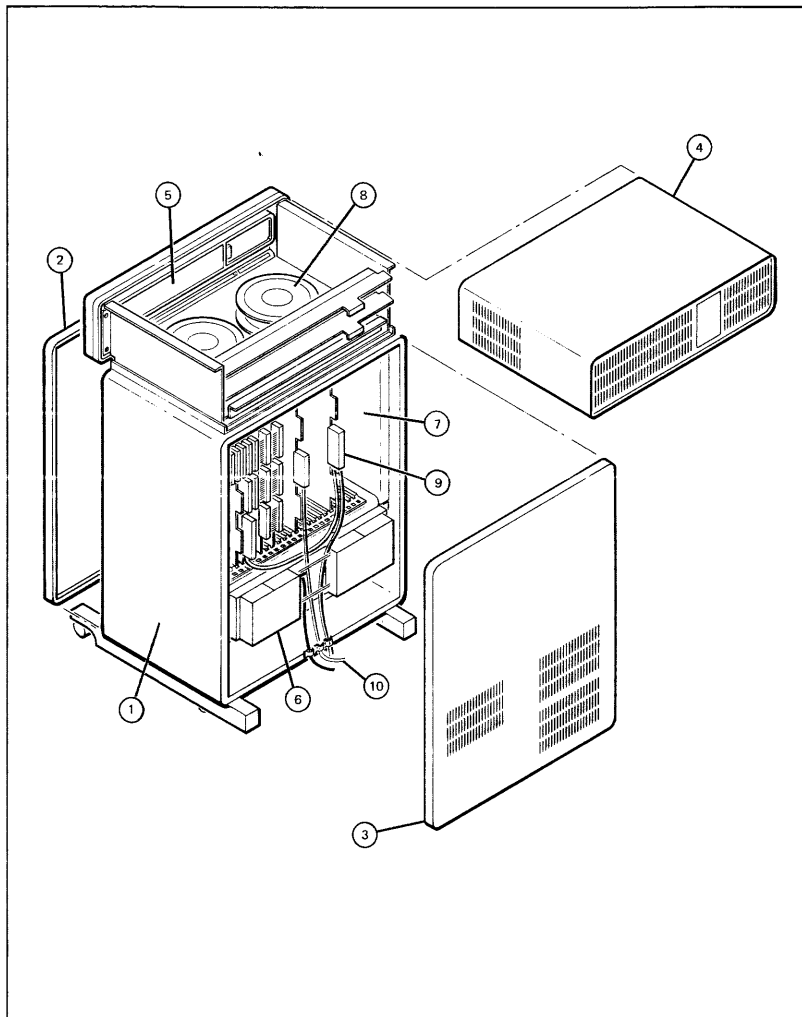
Miscellaneous part numbers not referenced by figure and index numbers.

Description	HP Part Number
-------------	----------------------

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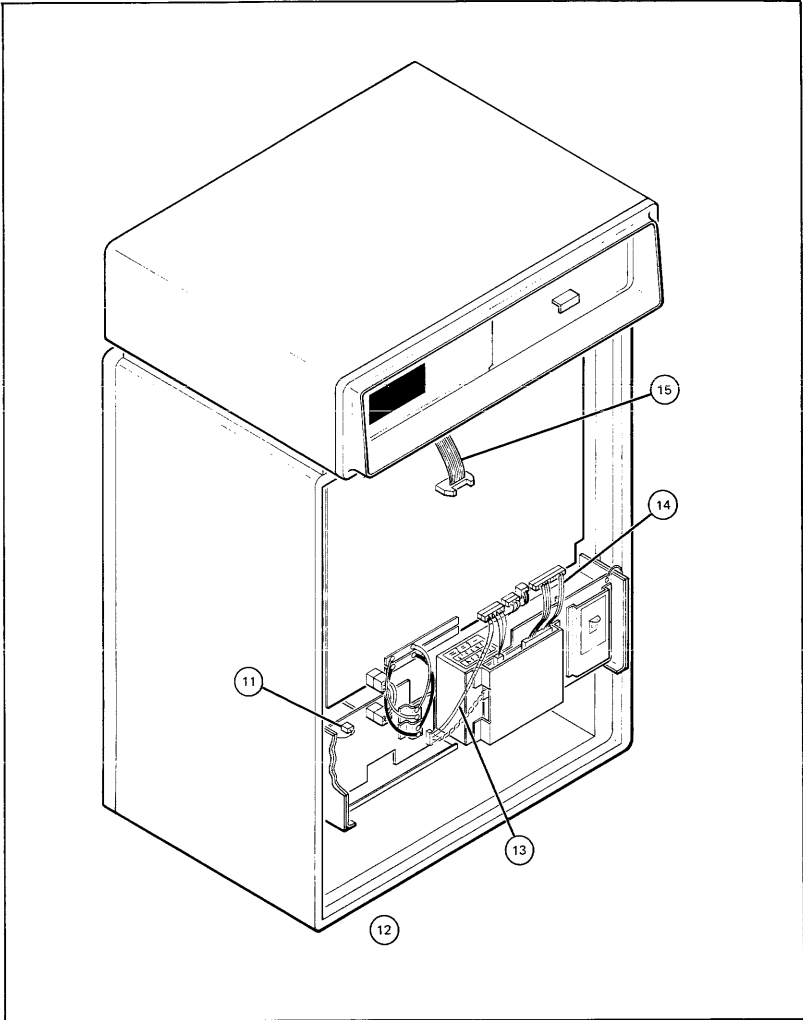
Operator's Key	1390-0345
Electronics Bay Key	1390-0468
Touch-up Paint, Pearl Gray, Spray Can	6010-0695
Touch-up Paint, Pearl Gray, 5 Gallons	6010-0790

## SERIES 39/40/42/42XP/52 PARTS CATALOG



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Figure 8-7. HP 3000 Series 39/40/42/42XP/52 Computer (Sheet 1 of 2)



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Figure 8-7. HP 3000 Series 39/40/42/42XP/52 Computer (Sheet 2 of 2)

## Series 39/40/42/42XP/52 Replaceable Parts

Figure and Index #	Description	H.P. Part Number	Def of Sym	Qty
8-7-1	HP 3000/40 Mainframe	30170-60001	F	REF
-2	* Front Door Assy	30080-60007	F	1
-3	* Rear door	31000-60081	F	1
-4	* Shroud	30080-60012	F	1
-5	* System Ctrl Pnl Assy	30170-60002	F	1
	* System Ctrl Pnl Bezel	30170-40001	F	1
	* System Ctrl Pnl Door	30170-40002	F	1
-6	* Power Supply Unit (See figure 8-8)	30170-60009	F	1
-7	* Card Cage Assembly	30170-60007	F	1
	* PCA - Memory(256Kb)	30092-69001	E	Var
	* PCA - Memory Cntrlr	30094-69001	E	1
	* PCA - CMP	30090-69019	E	1
	* PCA - CMP2	30090-69087	E	1
	* PCA - PCS	30090-69024	E	1
	* PCA - ALU	30090-69021	E	1
	* PCA - CTL	30090-69022	E	1
	* PCA - GIC	31262-69001	E	Var
	* PCA - ADCC Main	31264-69001	E	Var
	* PCA - ADCC Extender	31265-69001	E	Var
	* PCA - CPS	30090-69076	E	1
	* PCA - CPS-E	30090-69082	E	1
	* PCA - INPB	30020-69009	E	1
	* PCA - INPA	30020-69002	E	1
(42XP/52 only)				
	PCA - CPS-F	30476-69014	E	1
	PCA - ALU-F	30476-69003	E	1
	PCA - CMP-2	30090-69087	E	1
	PCA - Memory Cntrlr	30172-69001	E	1
	PCA - Memory (1 MB)	30161-69001	E	1
	PCA - Memory (2 MB)	30173-60001	E	1
	PCA - Memory (2 MB)	30478-60001	E	1
	PCA - Memory (4 MB)	30479-60001	E	1
-8	* Fan	3160-0373	C	1
-9	* CMP/ADCC Cable Assy	30170-60030	C	1
-10	* GIC HP-IB Cable Assy	30170-60026	C	Var
-11	* Temperature Sense Cable	30170-60019	C	1
-12	* Backplane Pwr Cable Set	31000-60066	C	1
-13	* Backplane DC Power Control Cable	30170-60016	C	1
-14	* Backplane Power Control Cable	30170-60015	C	1
-15	* System Control Panel to Backplane Flat Cable	30170-60023	C	1
-16	* Backplane Pwr Cable	30170-60024	C	1



## Series 39/40/42/42XP/52 Replaceable Parts

Figure and Index #	Description	H.P. Part Number	Def of Sym	Qty
-----				
(Series 52 only)				
	Front Door Assy (w/ captive screws, no lock, not backward compatible)	30179-60004	F	1
	RFI Strip Finger	8160-0598	C	1
	Rear Door Assy (w/ captive screws, no lock, not backward compatible)	30179-60005	F	1
	RFI Strip Finger	8160-0598	C	1

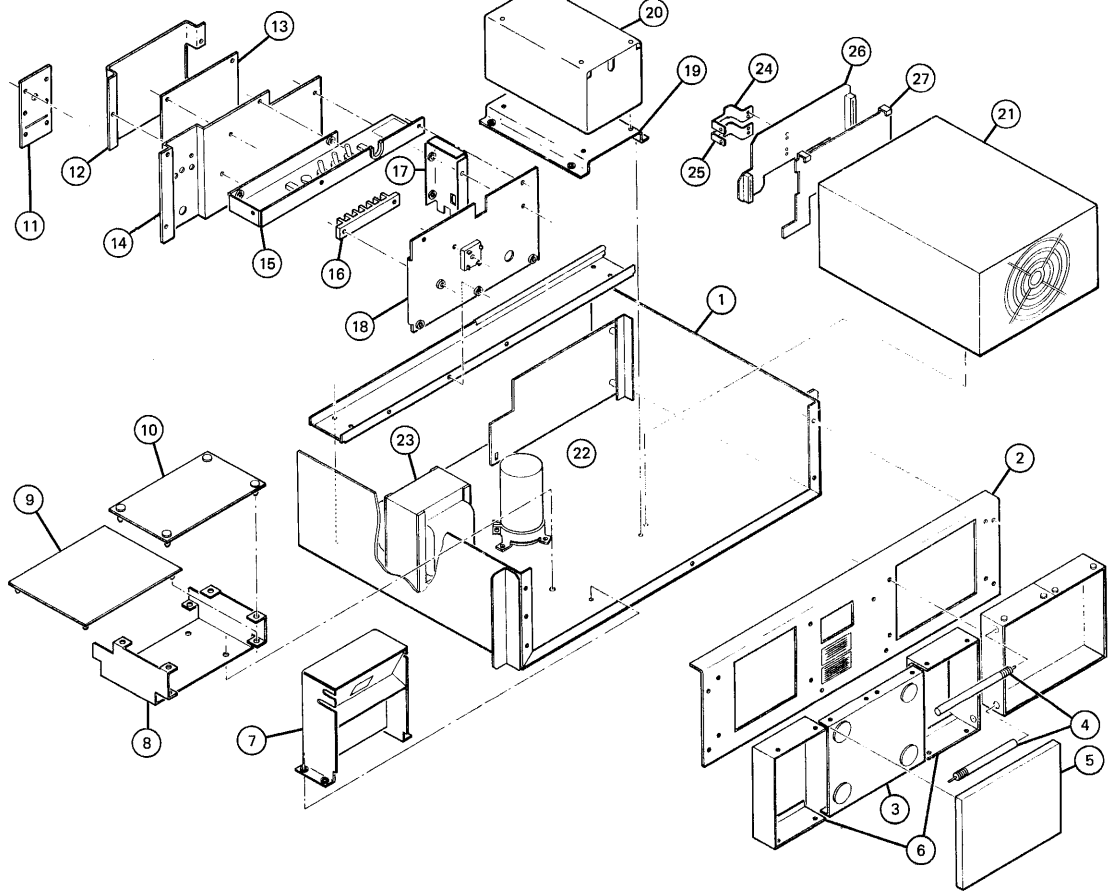


Figure 8-8. Series 39/40/42/42XP/52 Power Supply Unit

Figure and Index #	Description	H.P. Part Number	Def of Sym	Qty
8-8-	Power Supply Unit	30170-60009	E	1
-1	* Chassis	31000-00017	NR	1
	* Rear Panel Assy	REF	NR	1
-2	** Rear Panel	30170-00010	NR	1
-3	** Air Filter Support	31000-00076	NR	2
-4	** Cable Retainer Rod	31000-20008	NR	2
-5	** Air Filter	4208-0197	C	2
-6	** Air Filter Housing	31000-00075	NR	4
-7	* Filter Mount Assy	REF		1
	** AC Socket Mount	31000-00016	C	1
	** Socket Support	31000-00036	C	1
	** AC Power Socket	1251-4470	C	1
	** Line Filter PCA	31000-60068	C	1
-8	* Memory P.S. Support	31000-00031	C	1
-9	* Memory Regulator PCA	31000-69094	E	1
-10	* Memory Preregulator PCA	31000-69095	E	1
-11	** Switch Cover	31000-00111	C	1
-12	* Cover, Power Control PCA	31000-00032	C	1
-13	* Power Control PCA	31000-60056	C	1
-14	* Front Cover	31000-00113	C	1
-15	* Upper Channel Assy	REF		1
-16	* Terminal Block	0360-1870	C	1
-17	* End Cover	31000-00085	C	1
-18	* Back Cover	31000-00028	C	1
-19	* Battery Support	31000-00027	C	1
-20	* Battery Pack	31000-60001	C	1
-21	* Power Supply	63909-69001	E	1
	* Power Supply Fan	3160-0097		
-22	* Capacitor 6900UF 75V AL	0180-2757	C	1
-23	* Transformer Assy	31000-60026	C	1
-24	* +5 Volt Bus	30170-00011	C	1
-25	* +5 Volt Return Bus	30170-00012	C	1
-26	* Power Distribution Board	30170-60004	C	1
-27	* PCB Mounting Board	30135-00012	C	1

Miscellaneous part numbers not referenced by figure and index numbers.

Description	H.P. Part Number	Def of Sym	Qty
Power Cord	8120-2371		
Keyswitch	3101-2477		
Back Door Lock	1390-0344		
Back Door Key	1390-0345		
Control Mode Switch Key	1535-4228		
Touch-up Paint, Pearl Gray, Spray Can	6010-0695		
Touch-up Paint, Pearl Gray, 5 Gallons	6010-0790		

# SERIES 44/48/58 PARTS CATALOG

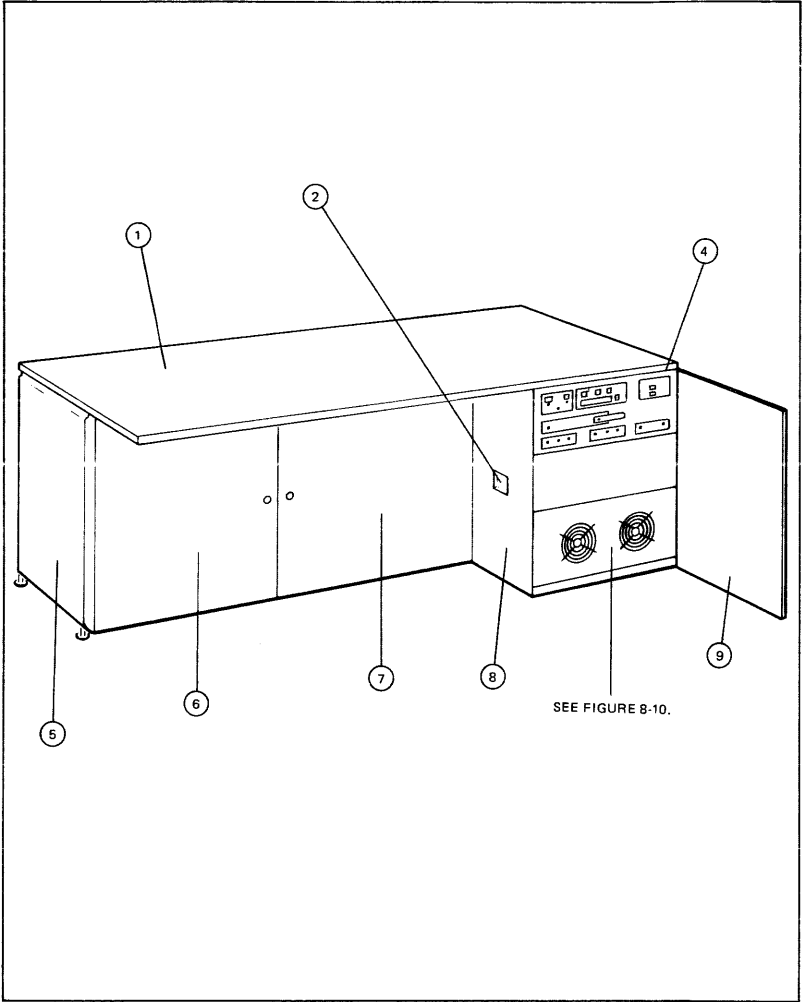
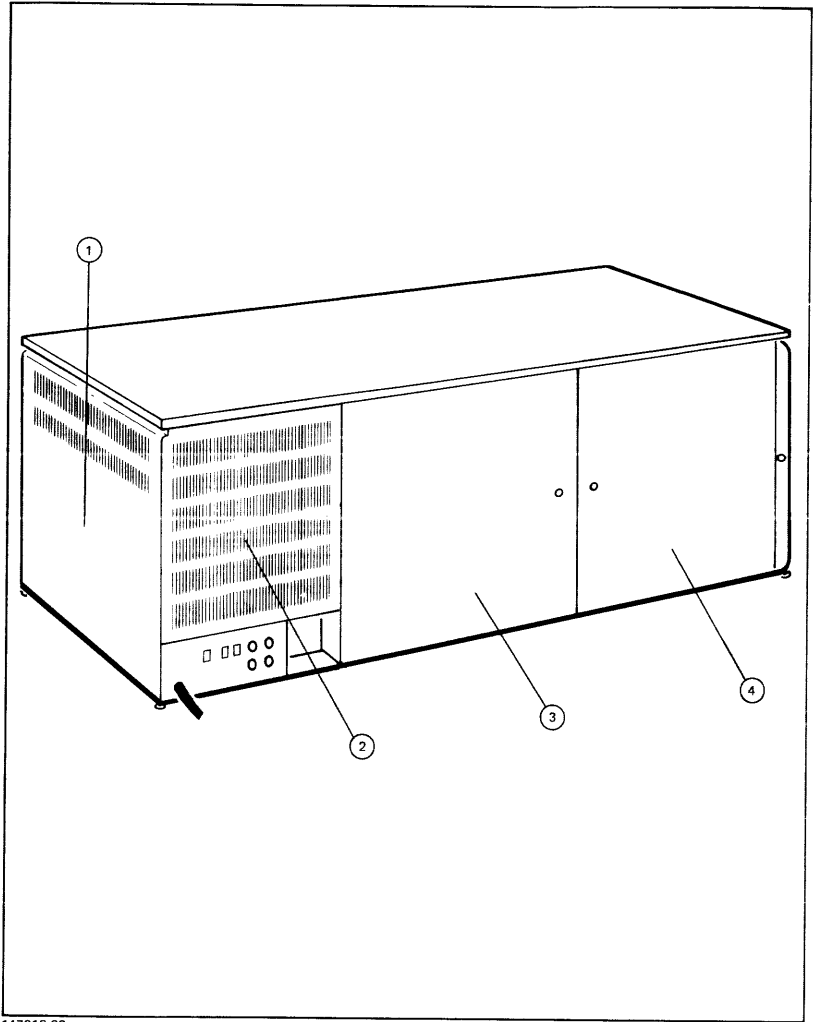


Figure 8-9. HP 3000 Series 44/48/58 Front View

Figure and Index #	Description	H.P. Part Number	Def of Sym	Qty
-----*-----				
8-9-				
-1	TABLE TOP	30070-60058	F	1
	----*----			
-2	SYSTEM ON/OFF SWITCH			
	Circuit Breaker 20A 250VAC	3105-0103	C	1
	Cable	30070-60019	F	1
	Mounting Bracket	30070-00021	F	1
	Cover	30070-00022	F	1
	----*----			
-4	SYSTEM CONTROL PANEL	30090-60007	E	1
	Logic PCA	30090-60008		1
	Switch PCA	30090-60009		1
	Control Panel PCA	30090-60021		1
	Interconnect Cable	31265-60002	F	1
	----*----			
-5	SIDE JUNCTION PANEL DOOR	30070-00080	F	1
	Hinges	30070-20008	F	2
	Lock Plate	30070-00064	F	1
	Lock Assy	1390-0440	C	1
	ID Chart		C	1
	----*----			
-6	FRONT DOOR LEFT	30070-00077	F	1
	Hinges	30070-20007	F	2
	Lock Plate	30070-00061	F	1
	Lock Assy	1390-0467	C	1
	----*----			
-7	FRONT DOOR RIGHT	30070-00074	F	1
	Hinges	30070-20007	F	2
	Lock Plate	30070-00061	F	1
	Lock Assy	1390-0467	C	1
	----*----			
-8	SHORT SIDE PANEL	30070-00054	F	1
	----*----			
-9	FRONT DOOR	30090-00002	F	1
	Filter	4208-0358	C	1
	Filter Bezel	30090-40001	F	1
	Lock Assy	1390-0344	C	1
	Name Plate System 44	7121-1166		1
	Name Plate System 48	30090-80201		1
	Name Plate System 58	32558-80201		1
	Hinge Pin	03070-20013		2
	Leveler Feet	29421-20013		4



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Figure 8-10. HP 3000 Series 44/48/58 Rear View

Figure and Index #	Description	HP Part Number	Def of Sym	Qty
-----				
8-10-				
-1	FULL SIDE PANEL	30070-00055	F	1
	---*---			
-2	REAR DOOR	30070-00084	F	1
	Lock Assy	1390-0467	C	1
	---*---			
-3	REAR DOOR LEFT	30070-00079	F	1
	Hinges	30070-20008	F	2
	Lock Plate	30070-00063	F	1
	Lock Assy	1390-0467	C	1
	---*---			
-4	REAR DOOR RIGHT	30070-00078	F	1
	Hinges	30070-20008	F	2
	Lock Plate	30070-00063	F	1
	Lock Assy	1390-0467	C	1

## Series 44/48/58 Replaceable Parts

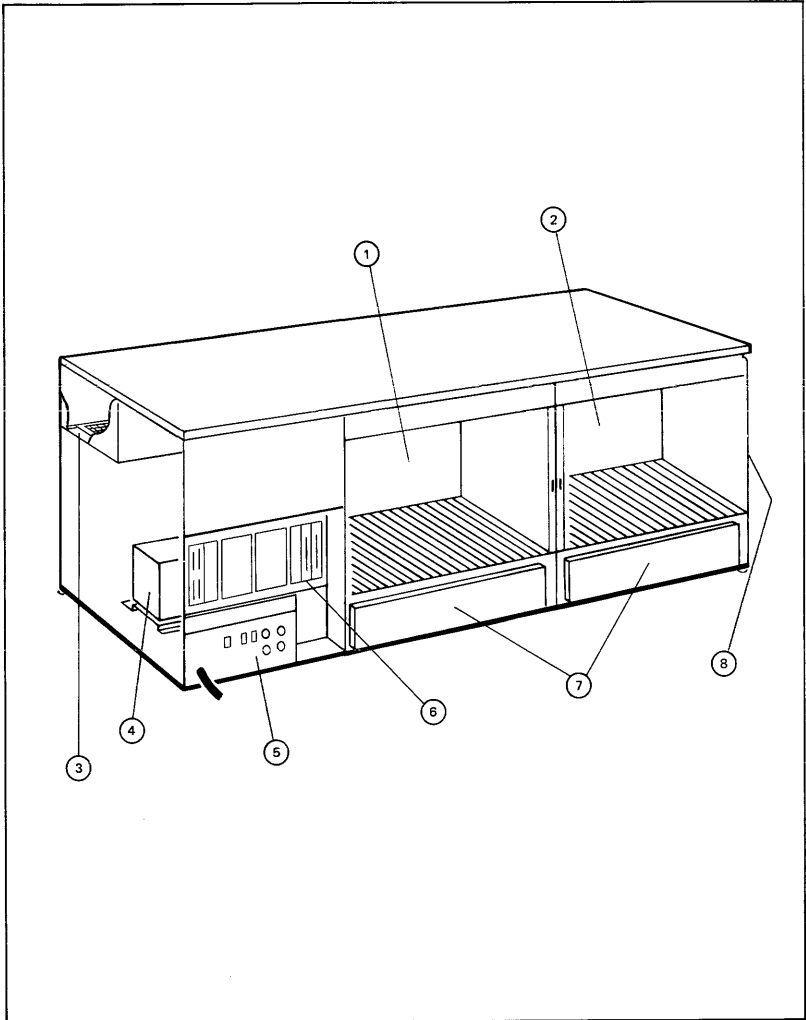
Figure and Index #	Description	HP Part Number	Def of Sym	Qty
--------------------------	-------------	----------------------	------------------	-----

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(Series 58 only)

	Front Door Assy (w/ captive screws, no lock, not backward compatible)	30477-00007	F	1
	RFI Strip Finger	8160-0598	C	1
	Rear Door Assy (w/ captive screws, no lock, not backward compatible)	30477-00008	F	1
	RFI Strip Finger	8160-0598	C	1





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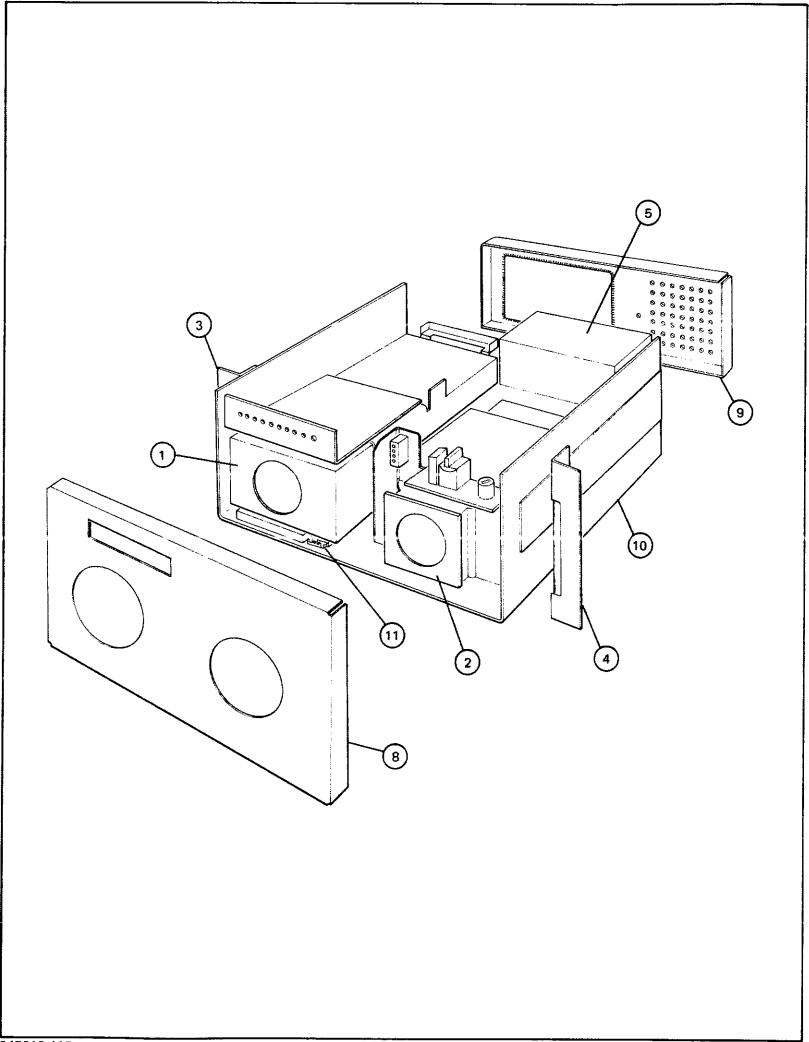
Figure 8-11. Series 44/48/58 Rear View (doors and side panel removed)

## Series 44/48/58 Replaceable Parts

Figure and Index #	Description	HP Part Number	Def of Sym	Qty
-----				
8-11-				
-1	CARD CAGE 1 (MAIN) w/ backplane	30070-60003	F	1
	Temperature Sense Switch	3103-0064	C	3
	Temperature Sense Cable	30070-60018	F	1
	SN74S15N IC	1820-0687	C	1
	SN74S24IN IC	1820-1624	C	2
	LED (red)	1990-0486	C	1
	LED (yellow)	1990-0487	C	1
	DC Power Cable (brown)	30090-60023	F	1
	DC Power Cable (orange)	30090-60024	F	1
	DC Power Cable (blue)	30090-60025	F	1
	Ground Strap	30070-60060	F	1
	Label	7121-0851	C	1
---*---				
-2	CARD CAGE 2 (EXTEND) w/backplane	30070-60057	F	1
	Blank Panel	30070-00008	F	1
	Temperature Sense Switch	3103-0064	F	1
	Temperature Sense Cable	30070-60018	C	1
	Card Cage 1 to Card Cage 2			
	Temperature Sense Cable	30070-60032	F	1
	Card Cage Interconnect Cable	30070-60015	F	1
	LED (red)	1990-0486	C	1
	LED (yellow)	1990-0487	C	1
	SN74S24IN IC	1820-1624	C	1
	DC Power Cable (brown)	30090-60026	F	1
	DC Power Cable (orange)	30090-60027	F	1
	DC Power Cable (blue)	30090-60028	F	1
	Ground Strap	30070-60060	F	1
	Label		C	1
---*---				
-3	DC POWER DISTRIBUTION ASSY	30090-60020	F	1
	Power Distribution Shelf	30090-00003	F	1
	DC Power Distribution PCA	30090-60012	F	1
	DC Power Control PCA	30090-60013	E	1
	Distribution Assy/Back Plane			
	Flat Cable	30090-60022	F	1
	Power Control PCA Flat Cable	30090-60043	F	1
	+5V Bus	30090-00032		
	+5V Return Bus	30090-00033		
---*---				
-4	ISOLATION TRANSFORMER	9100-4062	C	1
	Primary Power Cable	30070-60021	F	1
	Secondary Power Cable	30070-60022	F	1
	Ground Strap	30070-60062	F	1

Figure and Index #	Description	H.P. Part Number	Def of Sym	Qty
8-11-5	AC POWER DISTRIB. UNIT (60Hz)	30016-60001	F	1
	*AC POWER DISTRIB. UNIT (50Hz)	30017-60001	F	1
	Breaker (25 Amp) 240VAC	3105-0100	C	1
	*Breaker (15 Amp) 240VAC	3105-0101	C	1
	*Breaker (10 Amp) 240VAC	3105-0092	C	1
	*AC Sockets 60Hz	1251-5235	C	1
	*AC 50Hz	1251-5236	C	1
	Front Cover	30016-00013	F	1
	Bottom Cover	30016-00015	F	1
	Chassis	30016-00011	F	1
	Partition Panel	30016-00014	F	1
	AC Out Bracket	30016-00012	F	1
	AC In Bracket	30016-00005	F	1
	Mounting Bracket	30016-00009	F	1
	Cable Clamp	30070-00070	F	1
	Cable Clamp Bracket	30070-00069	F	1
	Dress Bracket	30016-00007	F	1
	Connector (3 pin)	1251-5106	C	2
	Connector (4 pin)	1251-5228	C	1
	Connector (4 pin BLK)	1251-5070	C	2
	Label "warning"	7120-7038	C	1
	Label "warning"	7120-7039	C	2
	---*---			
-6	REAR JUNCTION PANEL (HP-IB)	30090-00015	F	1
	Plate - 1/3 Blank	30090-00016	F	1
	Plate - 1/2 Blank	30090-00020	F	1
	Plate - Full Blank	30090-00022	F	2
	---*---			
-7	AIR PLENUM	30090-60037	F	1
	Fan	3160-0289	C	1
	Fan Screws	0624-0217	F	4
	Filter	4208-0216	C	1
	Fan Cable	30090-60045	F	1
	Plenum Power Cable	30090-60038	F	1
	---*---			
-8	SIDE JUNCTION PANEL	30090-00019	F	1
	Plate - Full Blank	30090-00022	F	1
	Plate - GIC	30090-00017	F	1
	Plate - LPI	26069-00008	F	1
	Plate - INP	30221-00001	F	1
	Plate - ATP	30147-00002	F	1
	Clamp Bracket	30090-00034	F	1
	Cable Clamp	30090-00035	F	5

\* These are NOT part of the Series 58 system.



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Figure 8-12. HP 3000 Series 44/48/58 Power Supply Unit

Figure and Index #	Description	HP Part Number	Def of Sym	Qty
-----				
8-12-				
-1	5V, 12V Power	30090-60036	E	1
-2	Memory Power	30090-60014	E	1
-3	Mating Rail-L.H.	30070-00131	C	1
-4	Mating Rail-R.H.	30070-00130	C	1
-5	Battery Pack	31000-60001	E	1
-8	Front Panel	30090-00037	C	1
-9	Rear Panel	30090-00006	C	1
-10	Power Supply Deck	30070-00126	C	1
-11	Guide	30135-40001	C	1

Miscellaneous part numbers not referenced by figure and index numbers.

Description	Part Number
-----	
Operator's Key	1390-0345
Electronics Bay Key	1390-0468
Touch-up Paint, Pearl Gray, Spray Can	6010-0695
Touch-up Paint, Pearl Gray, 5 Gallons	6010-0790

# DIAGRAMS

SECTION

IX

The diagrams contained in this section have been prepared from factory drawings to assist the CE in troubleshooting the system.

SERIES 30 and 33 DIAGRAMS . . . . .	9-2
SERIES 39/40/42/42XP/52 and 44/48/58 DIAGRAMS . . . . .	9-8
SERIES 33,44,48,58 CARD CAGE DIAGRAMS . . . . .	9-20
SERIES 30, 33, 39/40/42/42XP/52 and 44/48/58 DIAGRAMS . . . . .	9-22
SERIES 30 POWER DISTRIBUTION . . . . .	9-31
SERIES 33 POWER DISTRIBUTION . . . . .	9-37
SERIES 39/40/42/42XP/52 POWER DISTRIBUTION . . . . .	9-49/9/50
SERIES 44/48 POWER DISTRIBUTION . . . . .	9-56
SERIES 58 POWER DISTRIBUTION . . . . .	9-69/9-70

## SERIES 30 and 33 DIAGRAMS

Figures 9-1 through 9-5 illustrate printed circuit boards for Series 30 and 33.

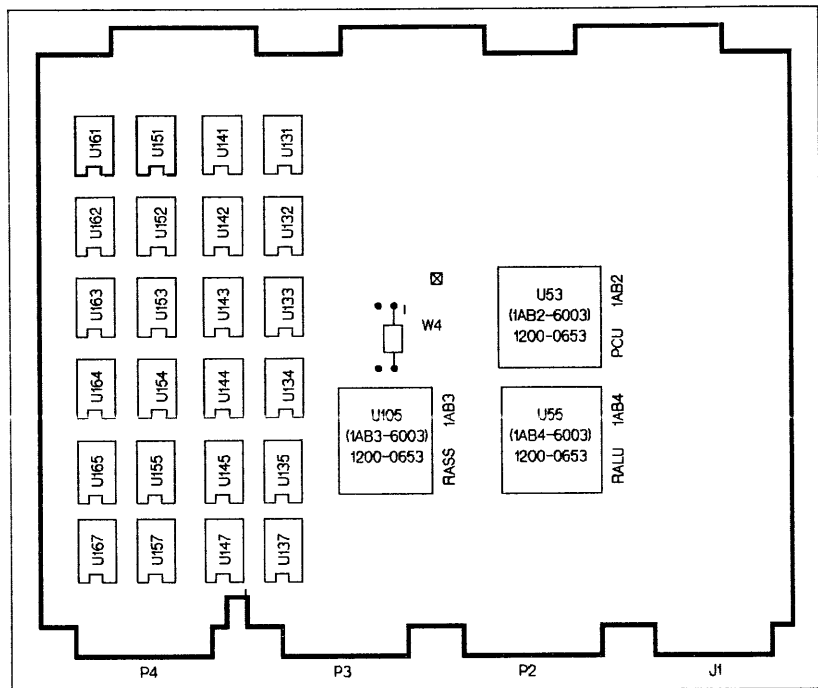


Figure 9-1. CPU Part Locations

Jumper W4 must be installed in right-hand holes for Series 30 and 33. Left-hand holes must be open.

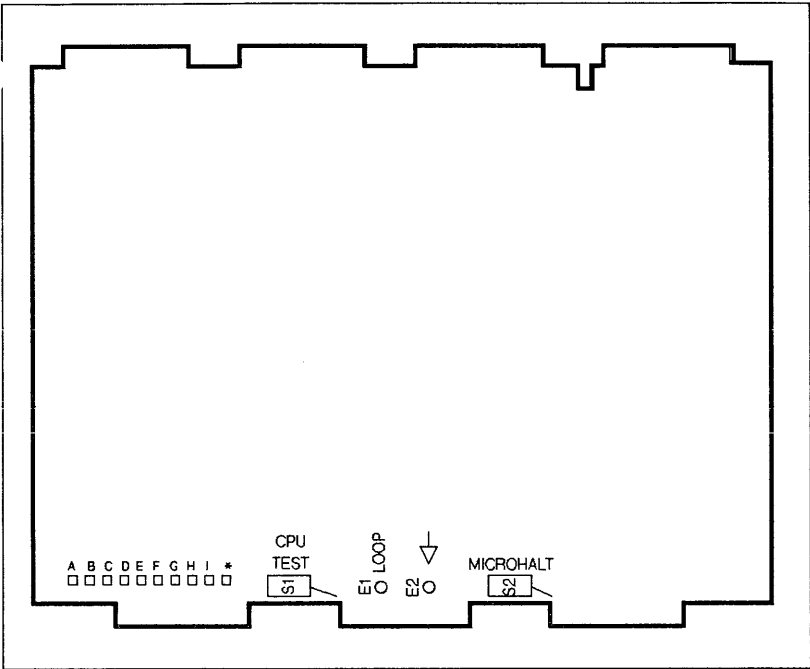


Figure 9-2. Bus Interface Controller Test LEDs and Switches

See description of LEDs and switches on following page.



## Description of LEDs and Switches

LEDs A through I, and (\*) display results of selftest during selftest mode, and provide single indications during run mode. Refer to Section V, Diagnostics for selftest results and ROM error codes. The following shows conditions for LEDs during run mode:

LED	Test	Run	Meaning During Normal Operation
A	OFF	X	NIR bit 10 or error code
B	OFF	X	NIR bit 11 or error code
C	OFF	X	NIR bit 12 or error code
D	OFF	X	NIR bit 13 or error code
E	ON	X	NIR bit 14 or error code
F	OFF	X	NIR bit 15 or error code
G	OFF	ON	Instruction Fetch
H	OFF	ON	IMB Request
I	OFF	X	Channel Program Microcode
*	OFF	OFF	SelfTest Mode

## Notes:

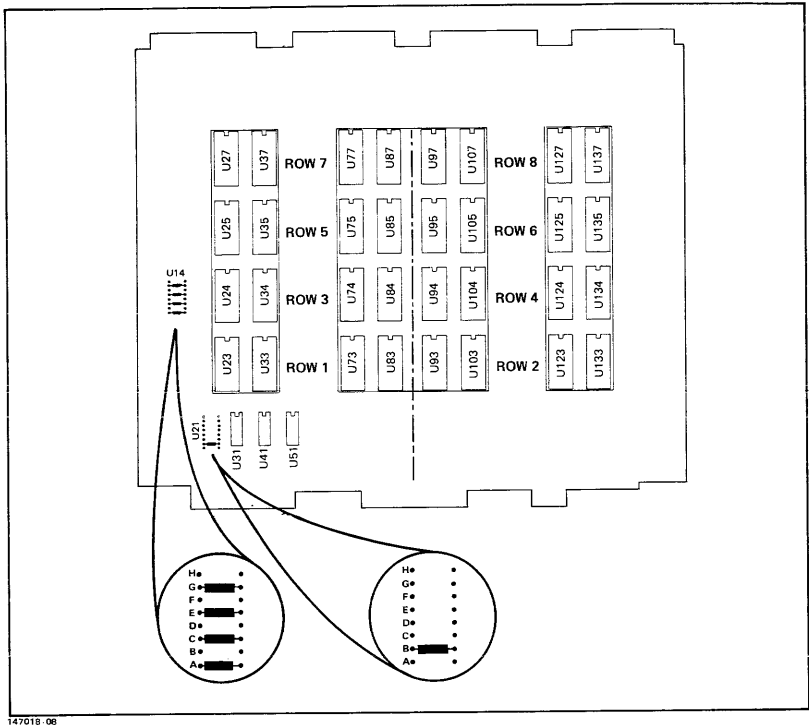
Test = CHAN=N, FDU empty, power on, wait until stable

Run = System up and transferring data

X = Don't care

NIR (Next Instruction Register) bits define system halts.

Jumper from E1 to E2 causes continuous looping of Selftest until first error.



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Figure 9-3. Firmware PCA Parts and Jumper Locations

U14: Jumpers installed for use with 8K PROMs, if 16K PROMs (standard) are to be used, move jumpers to B, D, F, H.

U21: Bank address jumper. Must be connected as shown.

**NOTE**

Alpha identification is shown for reference only, not placarded on PCA.

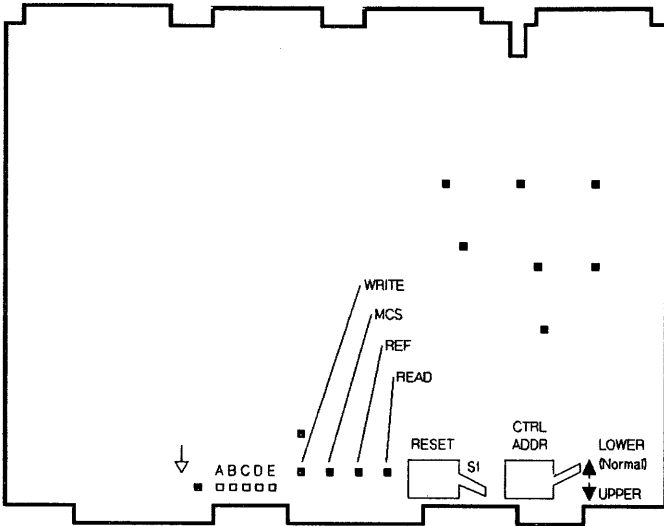


Figure 9-4. Memory Controller Test LEDs and Switches (Series 30 and 33)

CTRL ADDR Switch

Lower - Less than one Mbyte

Upper - More than one Mbyte (Series 33 with two card cages only)

Test LED Functions A - Refresh/IMB Activity

Very dim = memory performing refresh

On = Controller communicating over IMB

OFF = No +5V system power from main supply

B and C - Not used

D - Corrected Error

On = At least one single-bit error has occurred and has been corrected. System proceeds normally. Light remains on until reset occurs. Or MPE software clears (MEMLOGP).

Off = No single-bit errors since last reset.

E - Parity Error

ON = Non-correctable error has occurred. Controller asserts backplane signal Parity Error (PER) and interrupts the operating system. Normally this causes a system failure. Light remains on until reset occurs.

Off = No multi-bit parity errors since last reset.

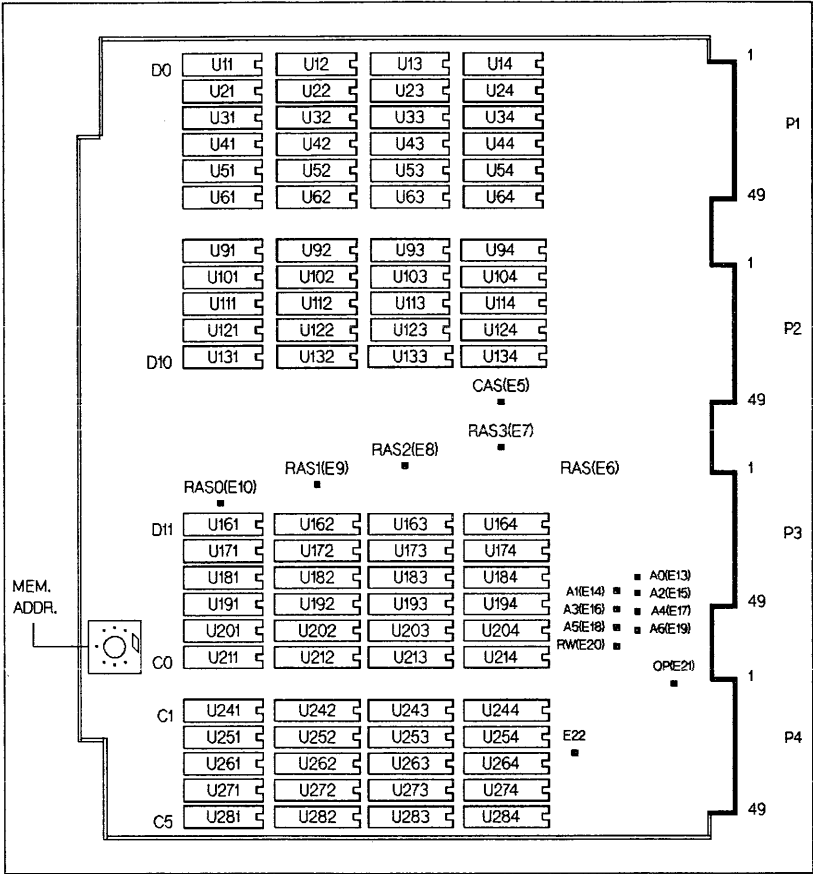


Figure 9-5. Memory Array Parts and Test Point Locations (Series 30 and 33)

## SERIES 39/40/42/42XP/52 and 44/48/58 DIAGRAMS

Figures 9-6 through 9-9, 9-11, 9-12, 9-14, and 9-15 illustrate printed circuit boards for Series 39/40/42 and 44/48. Figures 9-7, 9-10, 9-13, and 9-15 illustrate printed circuit boards for Series 42XP/52/58.

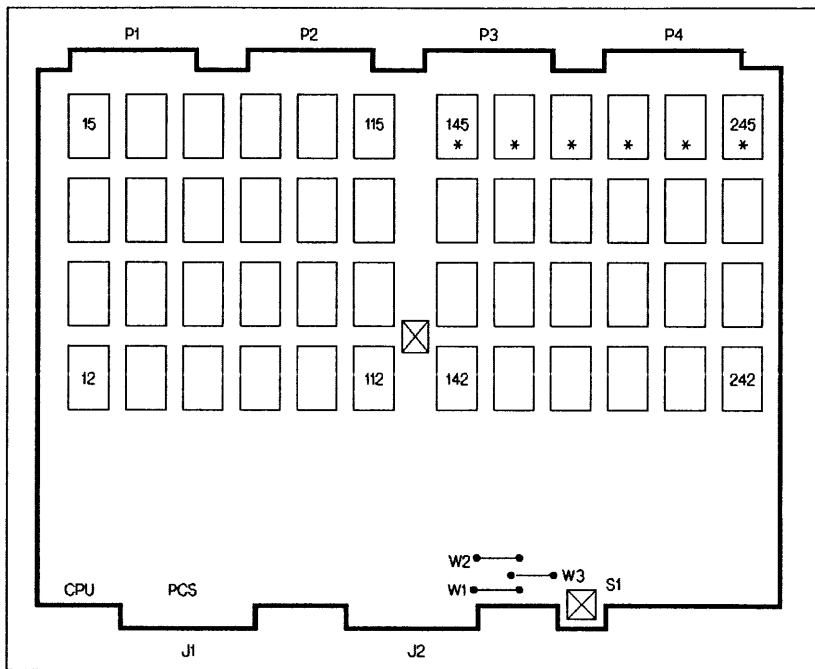


Figure 9-6. PCS Part Locations

Switch S1 - Thumbwheel - selects ROM starting address (standard setting is zero).

\* - indicates ROM's not installed

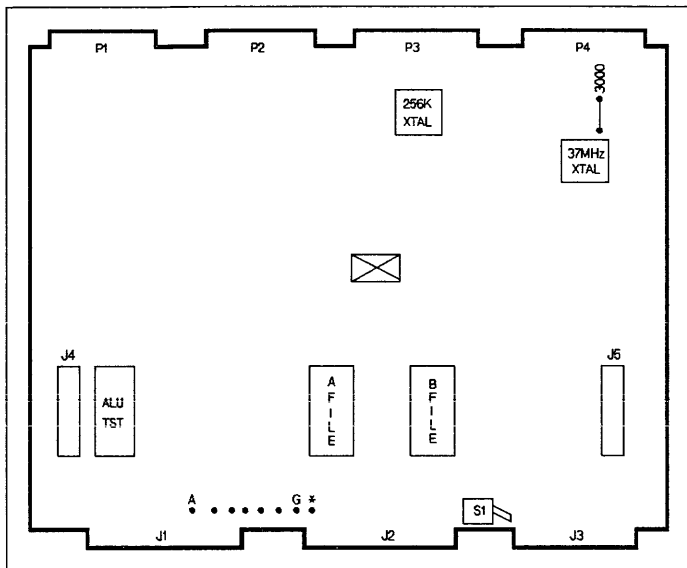


Figure 9-7. ALU Part Locations

Note: ALU-F (Series 42XP/52/58) part locations are different. The LED test functions are the same, with additional tests at the end of the list.

Switch S1 - initiates CPU micro diagnostic selftest - if CPU is in halt state.

#### Test LED Functions

The LED failure indications are formatted such that the upper three LEDs hold one hex digit (A-C), the hex next four LEDs hold the second hex digit (D-G), and the bottom LED (\*) provides parity over all eight LEDs. Normal state is indicated by parity LED (\*) ON and all other LEDs OFF. Hex failure parameters (decimal codes are reported on the terminal) are:

- I20 (32) Unconditional branches (ALU, CPL)
- I21 (33) Conditional branches
- I22 (34) Set R14Z to zero test
- I23 (35) F-bus and zero testing
- I24 (36) Branch sequencing
- I25 (37) NXOR, UBUS testing
- I26 (38) IOR
- I27 (39) SPO
- I28 (40) Preliminary register test: R6 or R13 failed, but not both
- I29 (41) Preliminary register test: R6 or R13 failed

- !2A (42) IOR LSL
- !2B (43) ZL,ZR
- !2C (44) SR Controls and tests
- !2D (45) CTR register and specials
- !2E (46) POS, NEG, BIT8
- !2F (47) Flags-control and tests
- !30 (48) ALU tests
- !31 (49) Carry
- !32 (50) Link
- !33 (51) Exhaustive tests of the 6 fundamental ALU operations
- !34 (52) Remaining shift-less ALU operations
- !35 (53) Preliminary 16 bit shifts
- !36 (54) Preliminary 32 bit shifts
- !37 (55) Remaining 16 bit shifts
- !38 (56) Remaining 32 bit shifts
- !39 (57) Register direct accessing
- !3A (58) Register indirect accessing
- !3B (59) Register bit testing
- !3C (60) Jmp user mode
- !3D (61) Repeat
- !3E (62) XEQ
- !3F (63) Decrement SR
- !40 (64) Overflow
- !41 (65) NBCC
- !42 (66) CCB
- !43 (67) MPY
- !44 (68) DIV
- !45 (69) DNEG
- !46 (70) NDEC
- !48 (72) CCA
- !49 (73) CCOC, CLO, COCL
- !4A (74) PSHA, POPA
- !4B (75) Namer
- !50 (80) SIR--reset SIR, SIR(6), SIR(10)
- !51 (81) SIR timer--The timer is tested for 20% tolerance
- !52 (82) SIR(12:14)--includes ICS, SS, DISP

Note: Additional error codes for the Series 42XP/52/58 are on the next page.

- !70 (112) Force IMB timeout and test
- !71 (113) Initialize MCL (MCL, ALU ,CTL)  
R10(7)=1 if parity error  
R10(8)=1 if IMB timeout
- !72 (114) Initialize first 256Kb to zero  
R10(7)=1 if parity error  
R10(8)=1 if timeout
- !73 (115) Read back first 256Kb, check for zero  
Failing address in BBNK, R4 OPND has failing data  
R10(7)= 1 if parity error  
R10(8)= 1 if timeout
- !74 (116) Write address in first 128Kb, not(address)in second 128Kb.(MCL, SMA)  
Failing address in DBNK, R4  
OPND should=R4 if DBNK=0, OPND should=not (R4) if DBNK=1

- R10(7)=1 if parity error  
 R10(8)=1 if timeout
- !75 (117) Write not(address)in first 128Kb, address in second 128Kb.(SMA, MCL)  
 Failing address in SBNK, R 4  
 OPND should=not (R4) if SBN=0, OPND should=R 4 if SBNK=1  
 R10(7)=1 if parity error  
 R10(8)=1 if timeout
- !76 (118) Read, Write 1's memory operation (RWA).(MCL)
- !77 (119) IMB commands RONG, DPOP, (CTL)
- !7A (122) Next sequencing (CTL, ALU)
- !7B (123) The test attempted to return to the main microcode after completion or when an error was detected, but the attempt (CSAR) failed. The previous error code, if any, is lost. (CTL, ALU)
- !7F (127) Communication problem (front panel connector, CTL, ALU).

Note: If everything is working properly, the Selftest will stop or fail at predetermined steps depending on how much the system has been built up. The following describes three stages of card cage build-up and what failures to expect:

-CPU (ALU, CTL, PCS or ALU and CPS plus ribbon cable frontplanes (3) ) will fail Selftest at step !71.

-CPU plus MCL will fail Selftest at step !73.

-CPU plus MCL plus Memory array zero will complete Selftest ( all lights out except \* LED)

Additional Series 42XP/52/58 Test LED Functions

!53	(83)	EXF (Barrel Shifter)
!54	(84)	Bounds Checker
!64	(100)	Cache hit test and address compare
!65	(101)	Cache miss test and address compare
!66	(102)	Cache lookaside miss
!67	(103)	Cache lookaside hit
!68	(104)	Cache data rams
!69	(105)	A-bus bypass register
!6E	(110)	CIR mask
!6F	(111)	BCC



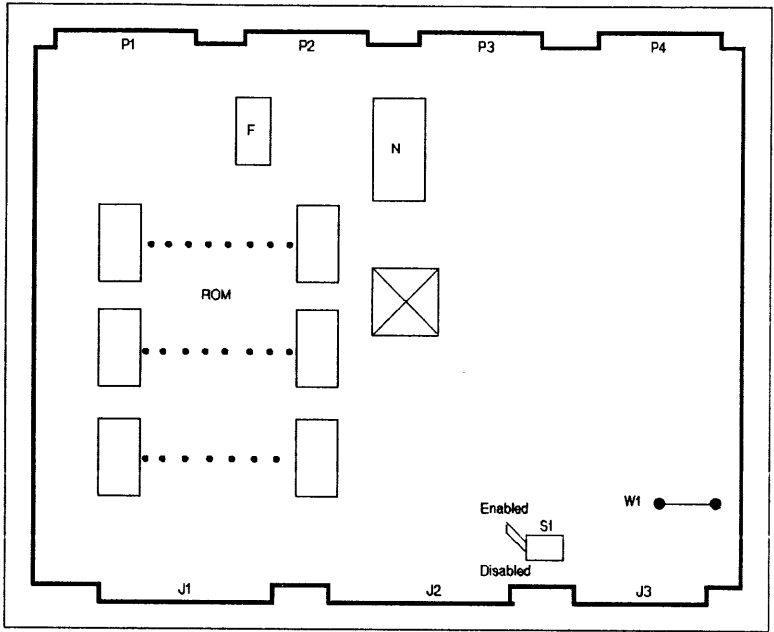


Figure 9-8. CTL Part Locations

Switch S1 - enables or disables the control PROM  
Normal state = enabled (inward toward stiffener)

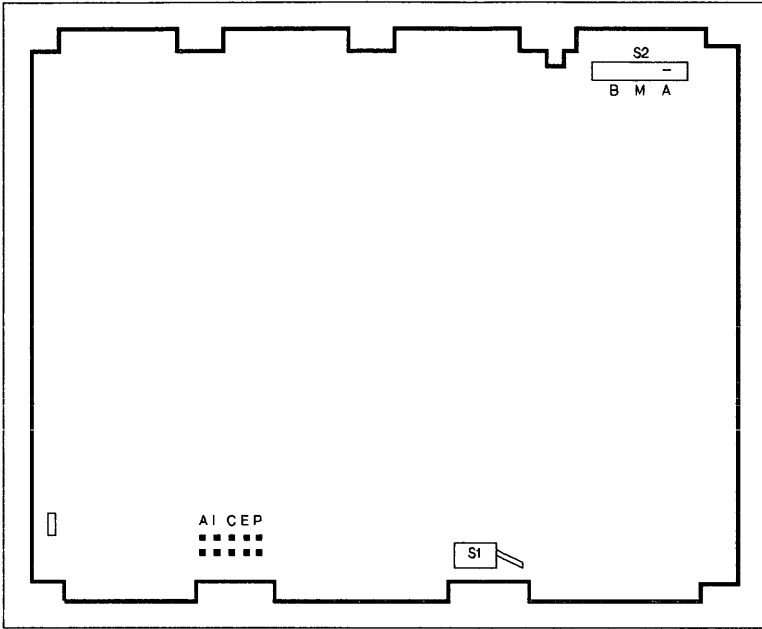


Figure 9-9. Memory Controller Part Locations (Series 39/40/42 and 44/48)

Switch S1 - Reset - A momentary switch that forces all control logic and the E and P status bits to the reset state. Note that this switch has been removed on printed circuit assemblies of Revision E and later.

Switch 2 - Three position slide switch

- A = responds to addresses in first 2 Megabytes
- B = responds to addresses in second 2 Megabytes
- M = responds to addresses in 0-4 Megabyte range

Test LED Functions

- A - Memory controller activity
- I - Initialize write
- C - MCL set to B position 2-4 megs (second controller)
- E - Single bit parity error detected
- P - Multi-bit parity error detected

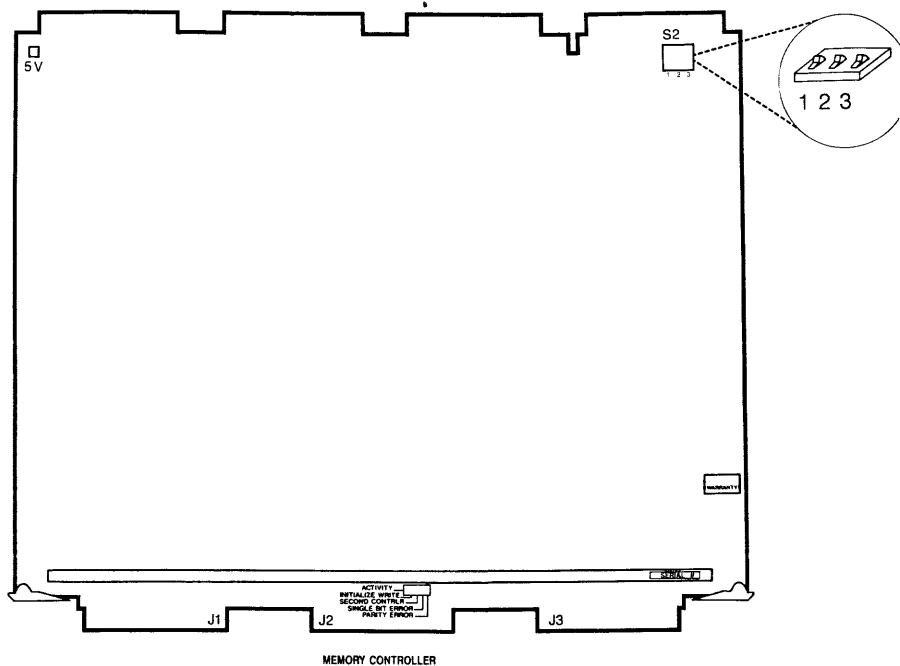
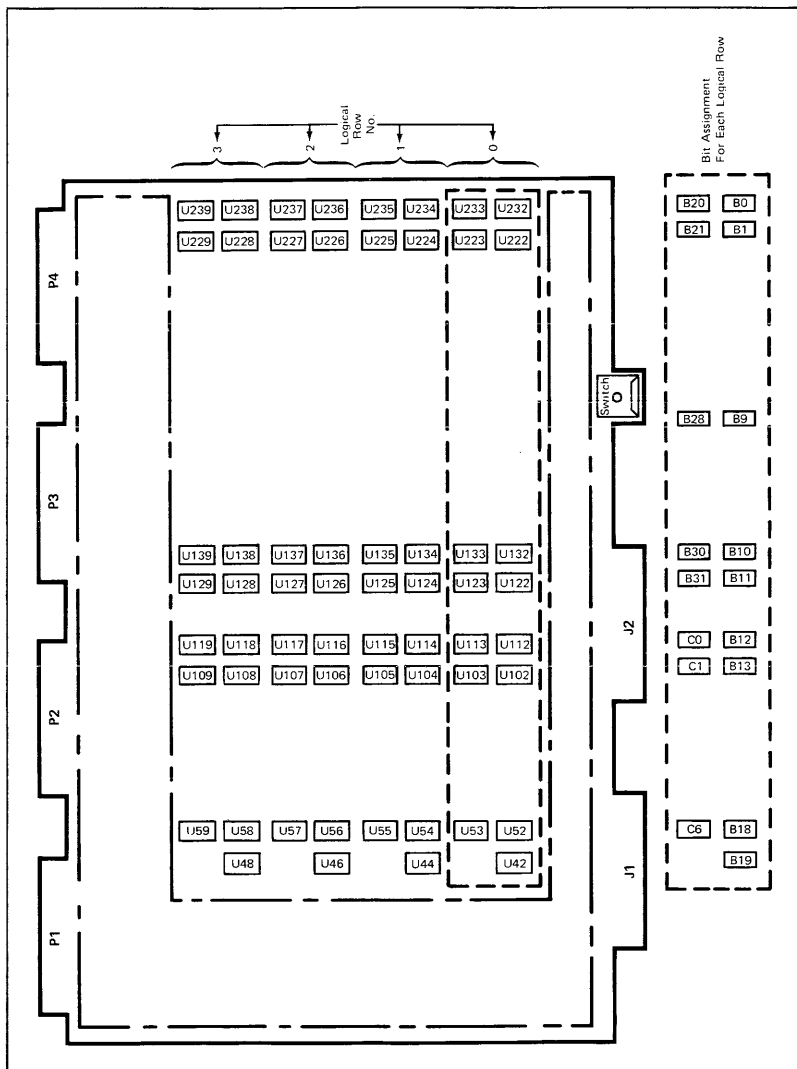


Figure 9-10. Memory Controller Part Locations (Series 42XP/52/58).



147018-82

Figure 9-11. Memory Array Part Locations (Series 39/40/42 and 44/48)

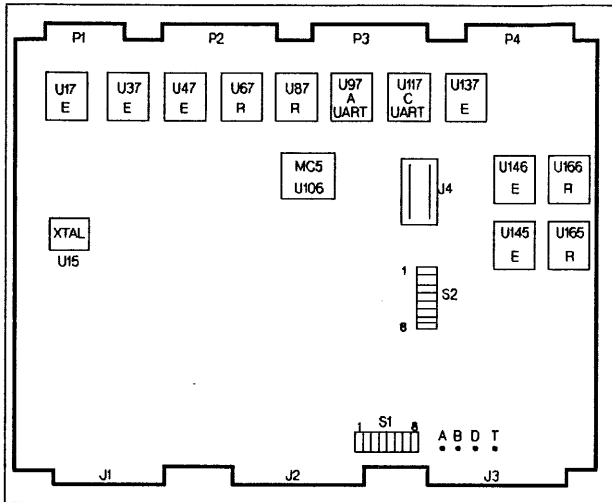


Figure 9-12. CMP Part Locations  
(Series 39/40/42 only)

E - EPROM (32Kb; 12K words Total)

R - RAM (8Kb; 2K words Total)

Switch S1 - Unused switches should be in the closed position. The remaining switches have been assigned the following functions:

- 1 - Automatic Warm Start. When the switch is in the up (open) position, the CMP will cause an automatic warm start whenever the system is powered on.
- 3 - CMP Disabled. When the switch is in the up (open) position, the CMP will be disabled. It will not enable any of its interface circuitry. Two of the LEDs on the edge of the CMP will blink while the switch is up. The console to ADCC path will still be operable.
- 8 - Loop Selftest. Setting this switch to up (open) will cause SELFTEST and DCTEST commands to cause the test to loop regardless of errors. In the down (closed) position the DCTEST will not loop and the SELFTEST will halt on first failure.

Switch S2 - Switch positions 1-8 should normally be in the closed position. They are for factory use only.

Test LED Functions

A - Reg 3 bit 11 - selftest (normally on)

B - Reg 3 bit 12 - selftest (normally on)

D - DTR (console connected and on) On if console cable has DTR wire

T - CMP active (normally on)

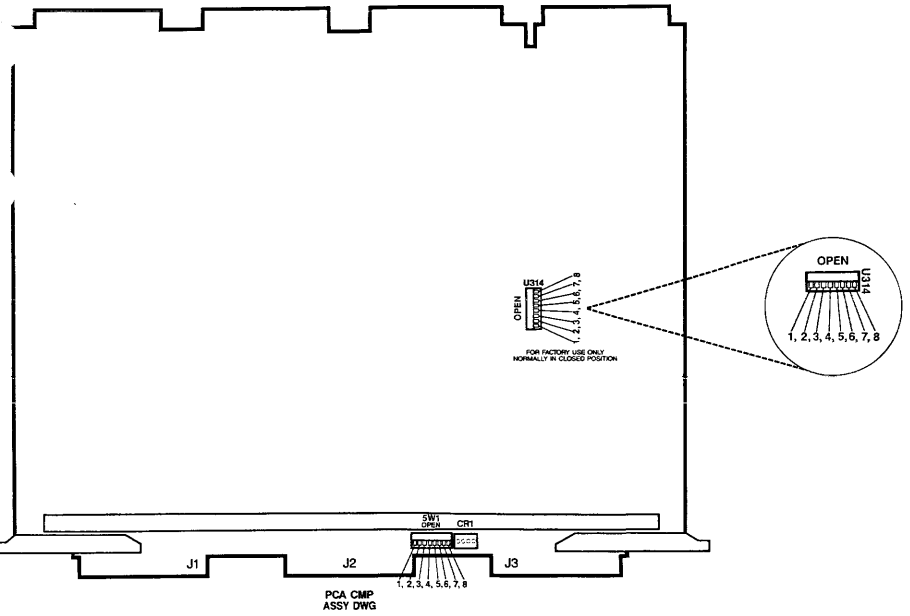


Figure 9-13. CMP-2 Part Locations (Series 42XP/52/58)

Switch S1

Same as CMP board

Switch S2

Same as CMP board

Test LED Functions

Same as CMP board

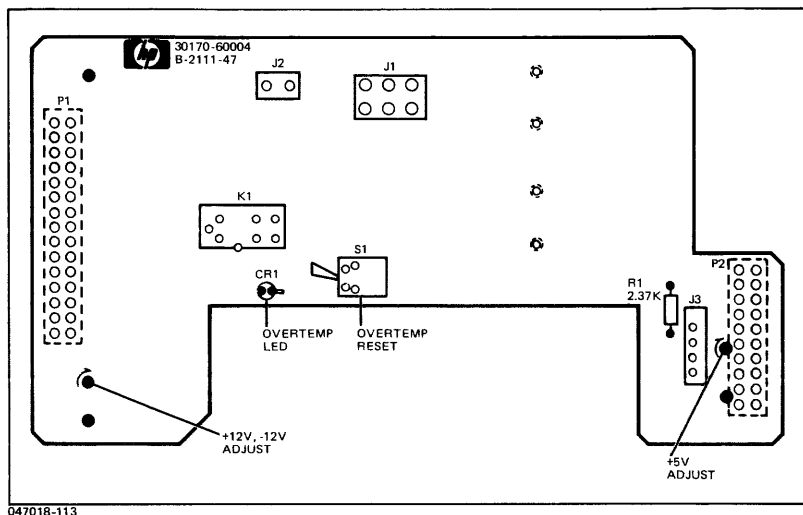


Figure 9-14. Power Distribution PCA  
(Series 40 only)

The +12V, -12V and +5V adjustments are located in the same position on the Power Distribution PCA for Series 39/40/42 and 44/48.

**NOTE**

Do **NOT** adjust the current limit adjustment potentiometer in the field. Because of special tool requirements the current limit adjustments are set at the factory.

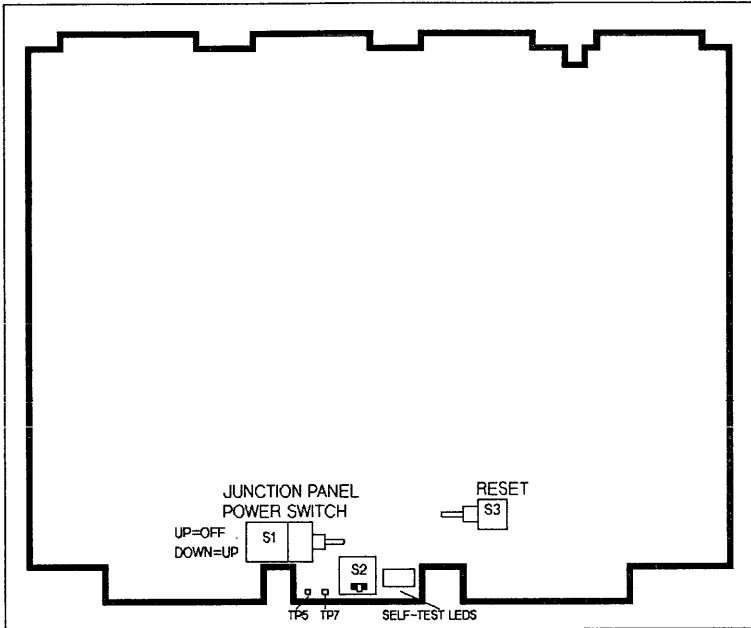


Figure 9-15. AIB Part Locations

Switch S1 - Junction panel power switch

Switch S2 - 8 position thumbwheel number switch

Reset Switch (S3) Selftest

Press Reset Switch - The PCC and then the MCC selftest is initiated. If a modem motherboard is installed the MSC selftest is also run. All selftest LEDs should be off, if any remain on the corresponding PCC or MCC chip, or the AIB board is malfunctioning.

Short TP5 and TP7 and press reset switch - The manufacturing diagnostic is initiated, the MCC tests communication with the PCCs. All LEDs should be off if any remain on the AIB board is malfunctioning.

**NOTE**

Do not press the junction panel power switch while MPE is running, or a failure will occur.



## SERIES 33,44,48,58 CARD CAGE DIAGRAMS

Figures 9-16 and 9-17 illustrate the layout of card cages 1 and 2.

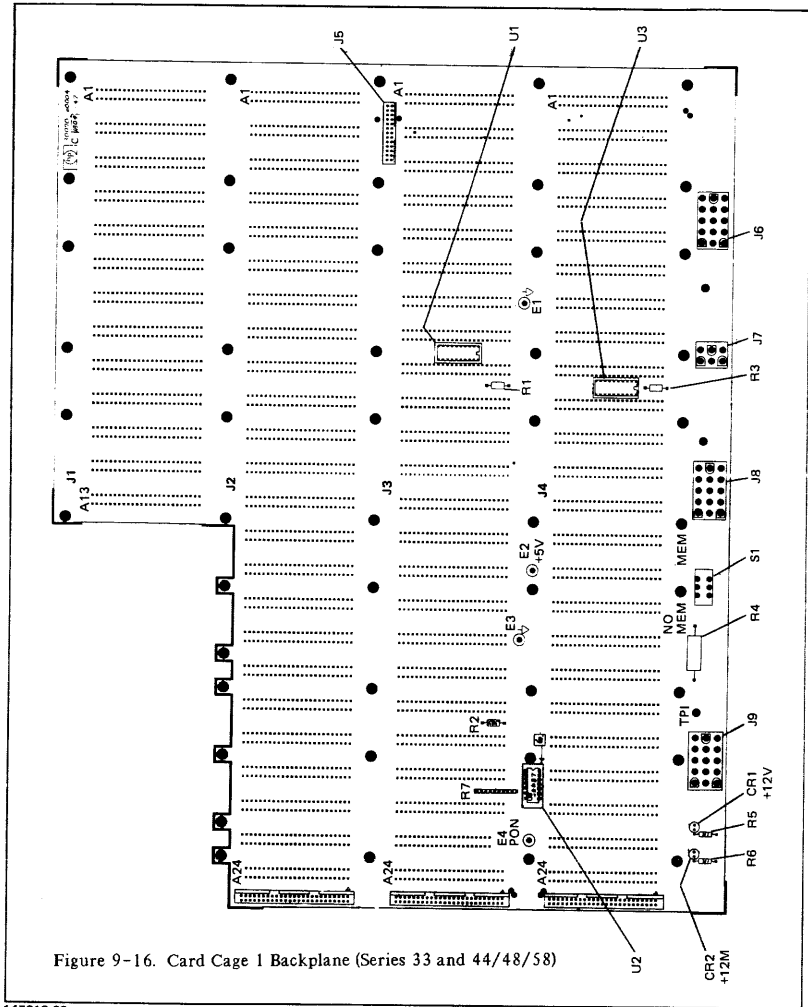


Figure 9-16. Card Cage 1 Backplane (Series 33 and 44/48/58)

147018-09

Chip

U1  
U2  
U3

MAY 87  
9-20

Description

Extended Memory Address (E1-E5, A0 and A1)  
Priority Carry Regeneration  
AD0/DD0

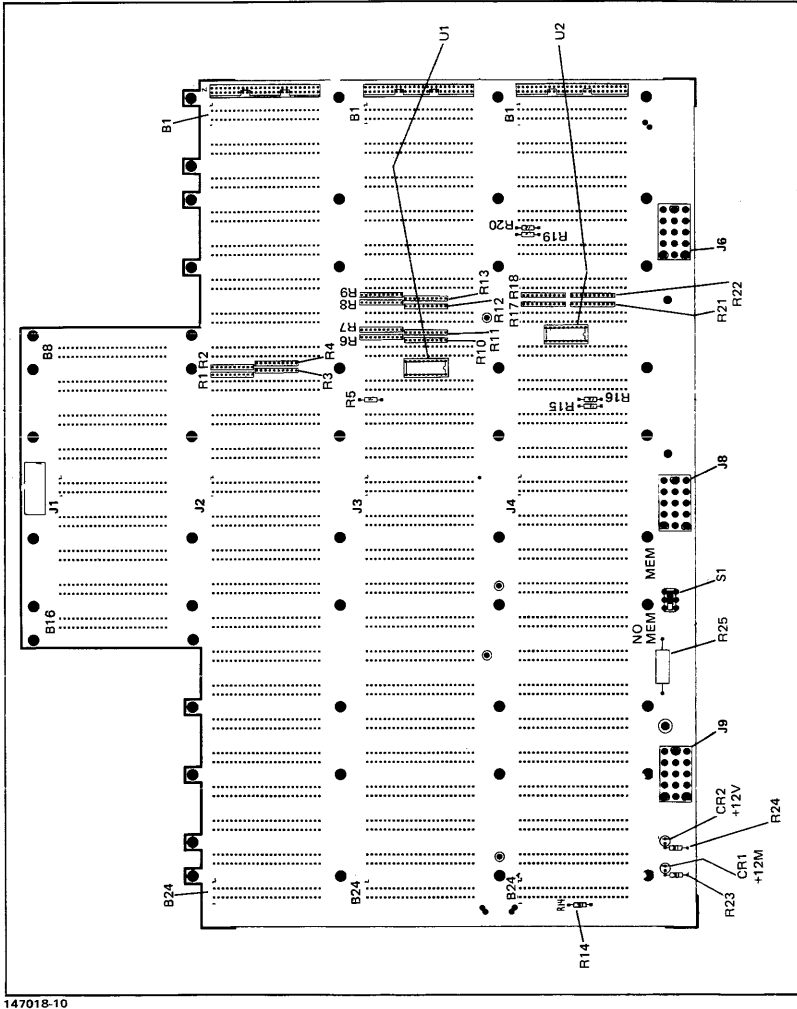


Figure 9-17. Card Cage 2 Backplane (Series 33 and 44/48/58)

Chip

U1  
U2

Description

E1-E5 and A0-A1  
AD0/DD0

## SERIES 30, 33, 39/40/42/42XP/52 AND 44/48/58 DIAGRAMS

Figures 9-18 through 9-20 and Tables 9-1 through 9-4 are illustrations and pin assignments common to all Series 3X, 4X, and 5X systems.

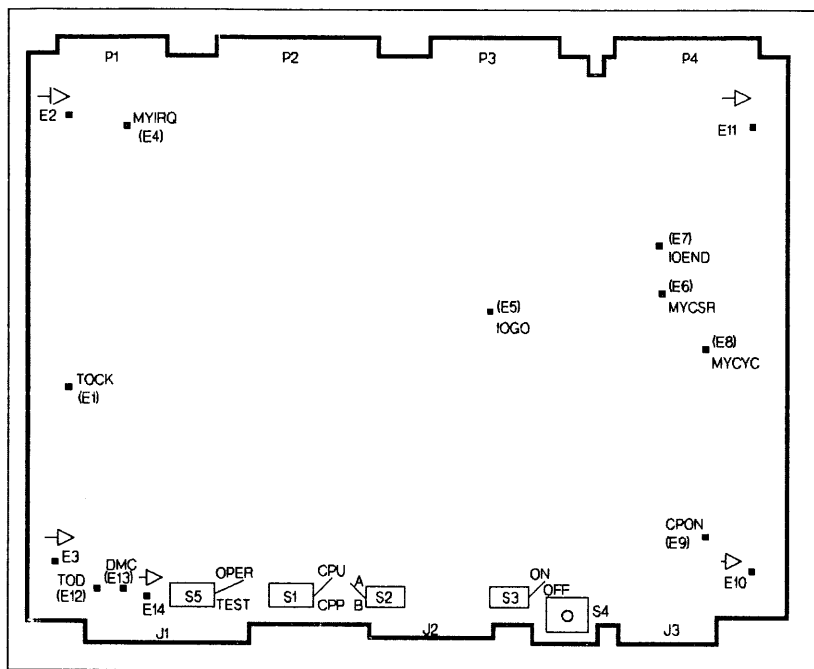


Figure 9-18. General I/O Channel Switches and Test Point Locations

Standard Switch Positions:

- o OPER
- o CPU
- o A
- o ON

Table 9-1. Standard Switch Positions

SWITCH	FUNCTION
PROCESSOR Switch S1	A two-position toggle switch that allows the GIC to generate channel switch requests (CSRQ) when set to the CPU position. The CPP position is not used.
DEVICE TYPE Switch S2	A two-position (A and B) toggle switch. In normal (A) position, the system performs unit identification during power up (PON). Position B is not used.
SYS CTRL Switch S3	A two-position toggle switch (ON and OFF). When set to ON, the GIC is designated as system controller, and the GIC is controller in charge of the HP-IB.  When the switch is set to OFF, the GIC operates as an HP-IB device. In this mode the GIC controls only peripheral devices, and then only upon command from another GIC that is controller in charge.
CHAN ADDR Switch S4	A thumbwheel switch that configures the GIC on an identifying channel number. This channel number establishes IMB priority and the GIC responds accordingly when addressed.
MODE Switch S5	A two-position toggle switch that places the GIC in the operate mode (OPER) or test mode (TEST). When set to TEST, the GIC diagnostic can be run. Also, this mode allows the DMA state machine to be single-stepped by clocking the slave flip-flop, prevents a CSRQ command from being issued, and disables the one-second timeout.

Table 9-2. GIC Connector Pin Assignments

Conn. Pin No.	P2 IMB 50	P3 IMB 50	P4 IMB 50	J3 HP-IB 26	J2 HP-IB 30	J1 TEST 59
1	+5v	ADR-7	+5v		DIO1	COM
2	+5v	ADR-6	+5v		DIO2	PLY4
3	+5v	ADR-5	+5v	COM	DIO3	COM
4	+5v	COM	+5v	COM	DIO4	PLY3
5	DATA-15	ADR-4		COM	EOI	COM
6	DATA-14			ATN	DAV	PLY2
7		DNV		COM	NRFD	COM
8		DATA-7		SRQ	NDAC	PLY1
9	DATA-13	DATA-6	CSRQ1	COM	IFC	COM
10	DATA-12	COM	CSRQ2	JFC	SRQ	PLY0
11		DATA-5		COM	ATN	COM
12		DATA-4		NDAC	COM	PLAEN
13		DATA-3	+12v	COM		COM
14		DATA-2	+12v	NRFD	COM	DIAGCK
15	DATA-11	DATA-1	BRQ	COM	COM	COM
16	DATA-10	COM	COM	DAV	DIO5	XDMCKAF
17	DATA-9	DATA-0	BACK	REN	DIO6	COM
18	COM		COM	EOI	DIC7	TOCLK
19	DATA-8	ADR-3	WAIT	DIO8	DIO8	COM
20	ADR-15	ADR-2	COM	DIO4	REN	DIAG
21		ADR-1	ADN	DIO7	COM	COM
22		COM	COM	DIO3	COM	
23	ADR-14	ADR-0	ADO	DIO6	COM	COM
24	ADR-13	ADR-E1	COM	DIO2	COM	MEREN
25		ADR-E2	DDO	DIO5	COM	COM
26		ADR-E3	COM	DIO1	COM	DMCNTEN
27	ADR-12	ADR-E4	DDN		COM	COM
28	COM	COM	COM			TODIS
29	ADR-11	ADR-E5	IRQ		COM	COM
30	ADR-10	ADR-E6	PER		COM	MYCHANB

Table 9-2. GIC Connector Pin Assignments (Con't.)

Conn. Pin No.	P2 IMB 50	P3 IMB 50	P4 IMB 50	J3 HP-IE 26	J2 HP-IB 30	J1 TEST 50
31		ADR-E7				COM
32		ADR-E8				MYCHANA
33	ADR-9	OP-2	SRST			COM
34	ADR-8	COM	PFW			XSLAVEF
35	COM	OP-1	COM			COM
36		OP-0	PON			MYCHAND
37		COM				COM
38		PRI				MYCHANC
39		PRI				COM
40		PRI				
41		PRI				COM
42		PRI				
43		PRI				COM
44		PRI				HYBRID
45	COM	PRI	COM			COM
46	COM	PRI	COM			CSRQ2
47		PRI				COM
48		PRO				SYSCON
49		COM				COM
50		PCRY				

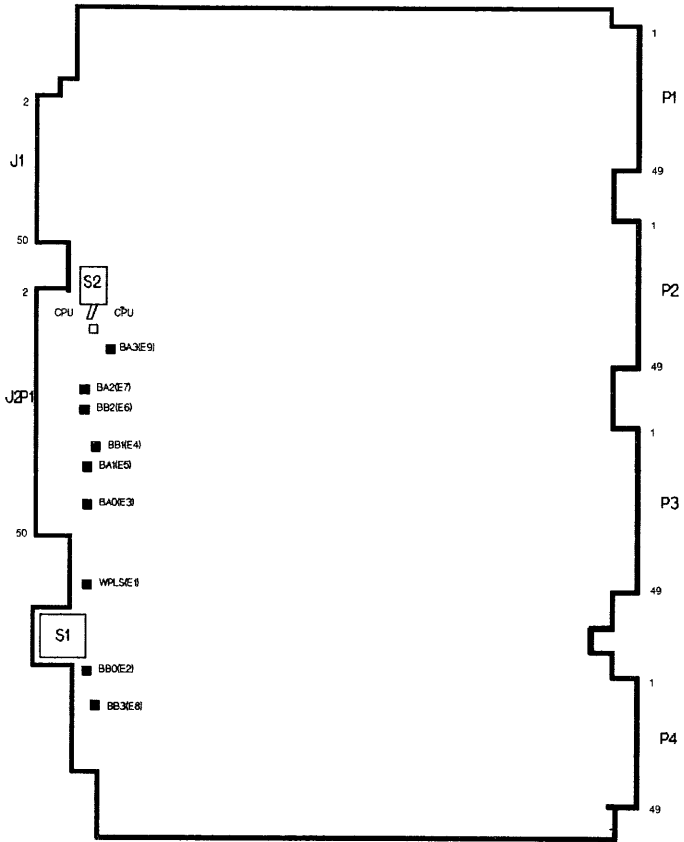
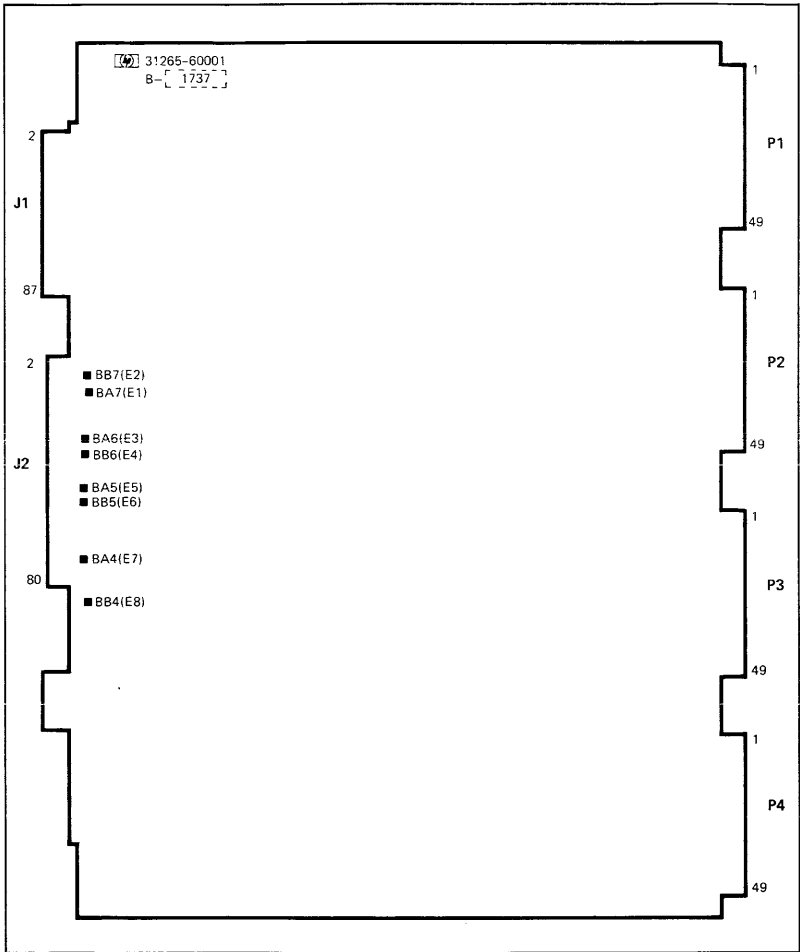


Figure 9-19. ADCC Main Switch and Test Point Locations

- Switch S1 - 16 position rotary switch that selects IMB channel address of the ADCC. (position zero is not used)
- Switch S2 - CPU position selects the channel programs for the ADCC to be executed by the CPU. CPP position not used.

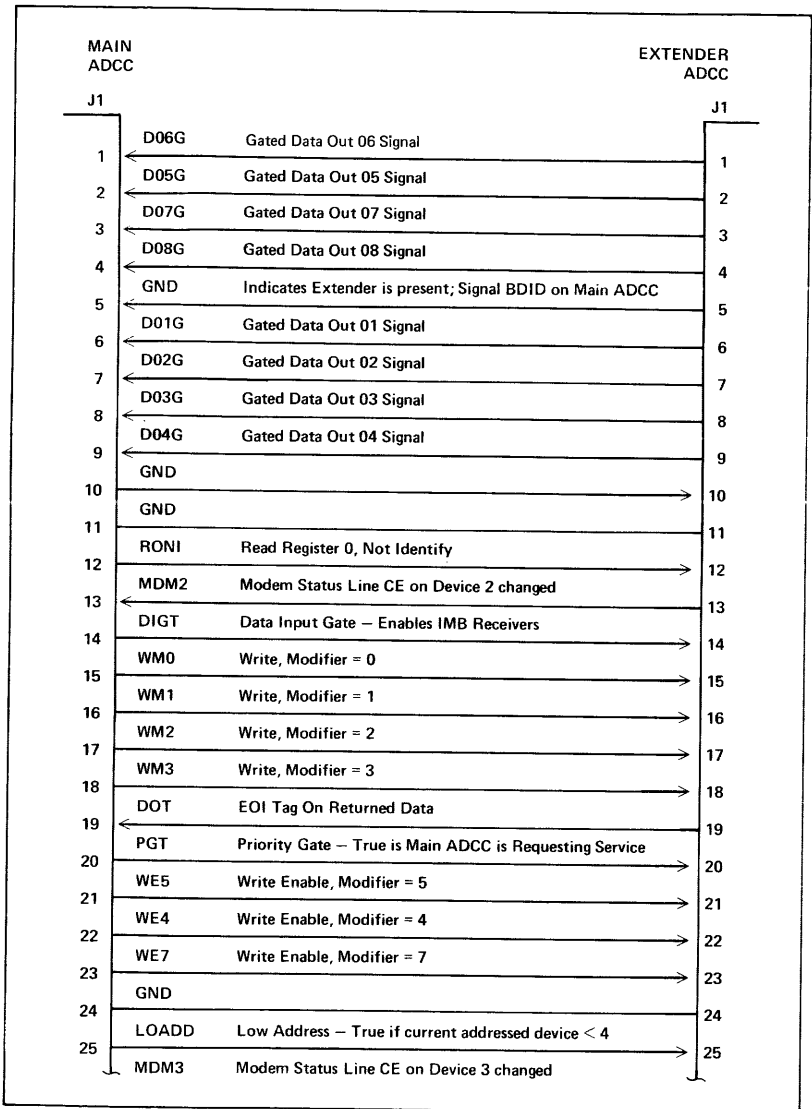


147018-16

Figure 9-20. ADCC Extender Test Point Locations



Table 9-3. ADCC Main To Extender Connections



147018.17

Table 9-3. ADCC Main To Extender Connections (Con't.)

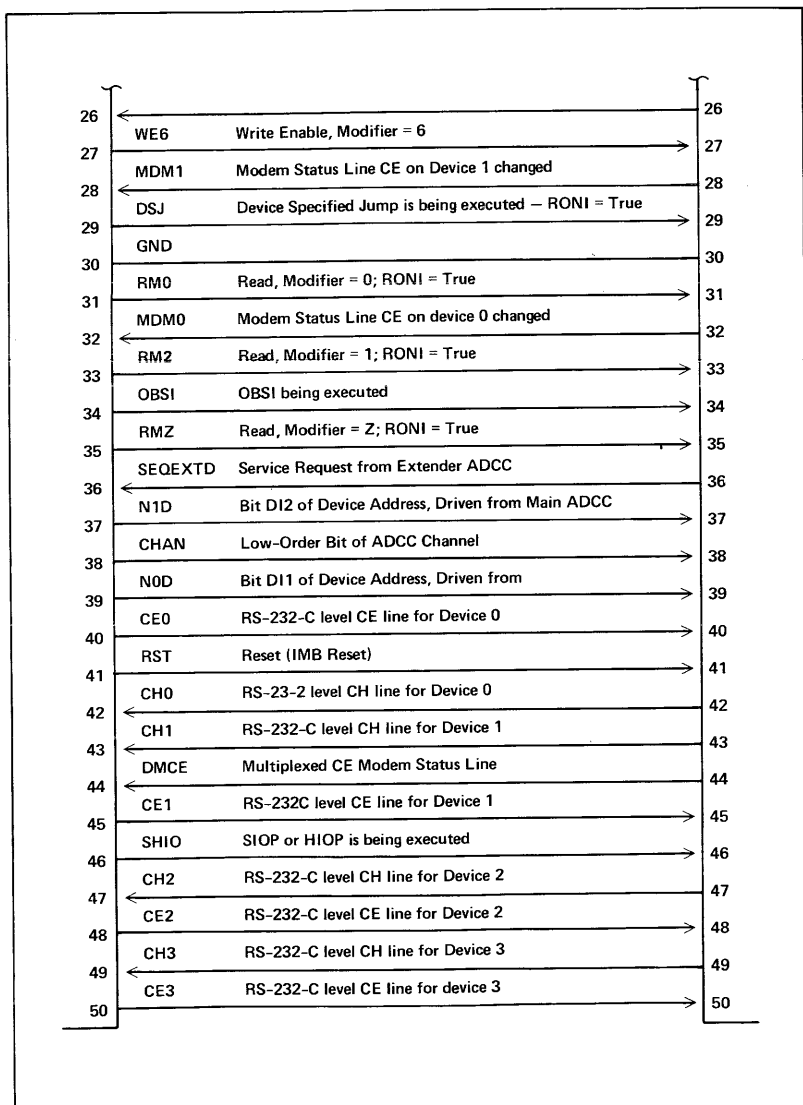


Table 9-4. Connector J2 Pin Assignments

Pin	Signal	Dev/Pin	(J2) Pin	Signal	Dev/Pin
1	CE3(7)	3-32	26	SCF0(4)	0-12
2	CC3(7)	3-6	27	CA0(4)	0-4
3	BB3(7)	3-3	28	CD0(4)	0-20
4	SCF3(7)	3-12	A	CH3(7)	3-23
5	CA3(7)	3-4	B	CB3(7)	3-5
6	SCA3(7)	3-11,19	C	CF3(7)	3-8
7	AB3(7)	3-7	D	BA3(7)	3-2
8	CH2(6)	2-23	E	CB3(7)	3-20
9	CB2(6)	2-5	J	CE2(6)	2-22
10	CC2(6)	2-6	K	AB2(6)	2-7
11	BA2(6)	2-2	L	CF2(6)	2-8
12	CA2(6)	2-4	M	SCF2(6)	2-12
13	SCA2(6)	2-11,19	N	BE2(6)	2-3
14	CB1(5)	1-5	P	CD2(6)	2-20
15	CC1(5)	1-6	R	CE1(5)	1-22
16	CF1(5)	1-8	S	CH1(5)	1-23
17	BA1(5)	1-2	T	AB1(5)	1-7
18	CD1(5)	1-20	U	BB1(5)	1-3
19	SCF1(5)	1-12	V	CA1(5)	1-4
20	CH0(4)	0-23	W	SCA1(5)	1-11,19
21	AB0(4)	0-7	X	CE0(4)	0-22
23	CB0(4)	0-5	DD	BA0(4)	0-2
24	CC0(4)	0-6	EE	SCA0	0-11,19
25	CF0(4)	0-8	FF	BB0(4)	0-3

NOTE: Numbers in parentheses indicate device numbers and signals connected to the Extender ADCC. For example, Pin 1 of J2 is connected to CE3 on Main ADCC and to CE7 on Extender ADCC. This signal connects Main ADCC to device 3, and to device 7 from Extender ADCC.



Table 9-5. AC Input Power (Series 30)

Voltage	Tolerance	Voltage Limits (RMS)	
		Lower	Upper
100	-10% +4%	90	108
120	-10% +4%	108	126
220	-10% +4%	198	231
240	-10% +4%	216	250

Voltage (VAC)	Current (RMS) (Amperes)	Volt-Amperes (VA)	Power (Watts)
100	9.65	965	810
120	8.15	980	810
220	4.45	978	775
240	4.10	983	775

At turn-on, the maximum peak inrush current is 100 amperes, decaying exponentially to 20 amperes peak with a time constant of less than 50 ms when measured at an input line voltage of 120 VAC.

Refer to Adjustment Section for DC Output Voltage specifications.

Table 9-6. Replaceable PSU Fuses (Series 30)

Fuse	Location	Rating
F1	Adjacent to three toggle switches on top-front of PSU	3A slo-blow for 100/120 VAC; 1.5A slo-blow for 220/240 VAC.
F1	Power Distribution PCA	5A normal-blow
F2	Power Distribution PCA	5A normal-blow
F3	Power Distribution PCA	3/4A normal-blow
F1	Memory Preregulator PCA	8A normal-blow
F1	Inside battery pack	20A normal-blow

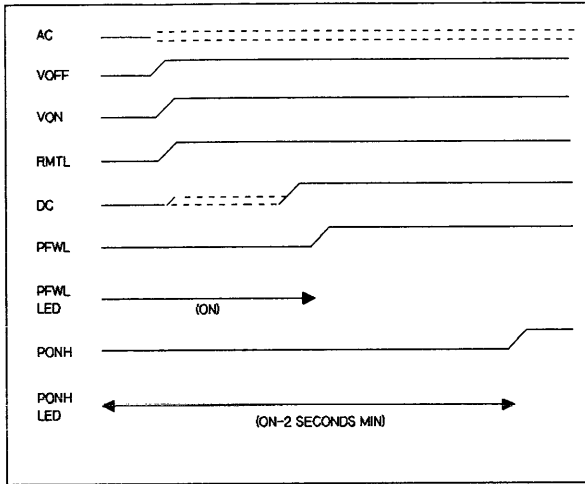


Figure 9-22. Power and System Turn-On Sequence (Series 30)

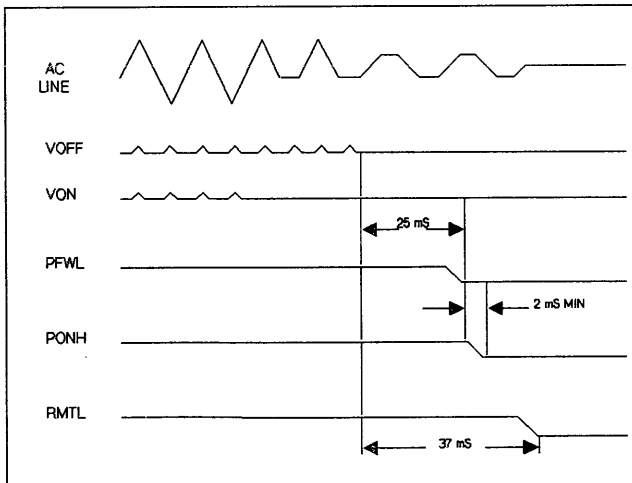


Figure 9-23. AC Power Failure Sequence (Series 30)

Table 9-7. Protection Circuitry Summary (Series 30)

Supply Measured	Device Protected	Type of Protection (location)	Protection Circuitry	Type of Reset Required
AC Input Current	System Main-frame	Main Ckt Bkr (frnt pnl of mainframe)	Trips at $I > 12A$ for 100/120 or $I > 6A$ for 220/240	Turn Ckt Bkr on.
AC Input Current	Xfmr T1	Fuse F1 (Beside S1, S2, S3)	3A slo-blow for 100/120; 1.5A slo-blow for 220/240. Blows before Ckt Bkr trips.	Replace Fuse
AC Input Under-voltage	Main Power Supply (P02)	Low Voltage Detectors (Power Cntrl PCA)	Shuts off P02 when AC input is less than required minimum	None. When AC input $>$ low limit, system turns on
+5 +12 -12 -40 Current	P02	Internal fuses (Inside P02)	Shuts off P02	Replace P02
+5 +12 -12 Current	P02	Current Overload in system (inside P02)	P02 is shut off if excessive current load on +5, +12, or -12	Turn off Ckt Bkr; no wait required turn on Ckt Bkr
+5 +12 -12 Over-voltage	P02	Crowbar-overvoltage (inside P02)	Output voltages clamped to zero if any exceeds high limit.	Turn off Ckt Bkr; wait 15 seconds; turn on Ckt Bkr.
P02 Over-Temp	P02	Temperature thermostat (inside P02)	Turns off all outputs from P02 if there is heat overload.	Self-restoring if heat overload corrected

Table 9-7. Protection Circuitry Summary (Con't.)

Supply Measured	Device Protected	Type of Protection (location)	Protection Circuitry	Type of Reset Required
+12 Current	P02	Fuse F1 (Power Dist. PCA)	5A normal-blow protects +12 on backplane	Replace fuse.
12 current	P02	Fuse F2 (Power Dist. PCA)	5A normal-blow protects -12 on backplane.	Replace fuse
-40 Current	P02	Fuse F3 (Power Dist. PCA)	3/4A normal-blow protects -40	Replace fuse
Memory Prereg. output voltage	Memory Prereg. PCA	Fuse F1 (Memory Prereg PCA)	8A normal-blow Memory Prereg output voltage >19 volts causes fuse to blow.	Replace fuse
+5M +12M Over-voltage	Memory Power Supply	Crowbar-overvoltage (Memory Regulator PCA) Note: -12M is NOT sensed.	All Memory output voltages clamped to zero if output voltage exceeds high limit.	Turn off Ckt Bkr; wait 15 seconds; turn on Ckt Bkr
+5M +12M -12M Current	Memory Power Supply	Crowbar-current overload (Memory Regulator PCA)	All Memory output voltages clamped to zero if output current exceeds high limit.	Turn off Ckt Bkr; wait 15 seconds; turn on Ckt Bkr.
Battery Voltage Dis-charge	Battery Pack	Cutoff circuitry (Memory Regulator PCA)	All Memory output voltages reduced to zero if battery pack voltage drops below +12.5 volts.	Recharge battery
Battery Voltage No-voltage	Battery Pack	Fuse F1 (inside battery Pack)	20A normal-blow protects battery for shorts or overload.	Replace fuse



Table 9-8. Backplane LEDs (Series 30)

Name	Startup	Operation	Shutdown
+12	1	1	X
PFWH	*	0	*
PONL	*	0	*
not used	0	0	0
+12M	1	1	X

1 = on  
 0 = off  
 \* = Momentarily on then turns off  
 X = On then off

## **SERIES 33 POWER DISTRIBUTION**

Series 30 AC and DC power information is provided in Figures 9-24 through 9-30.

### **USE OF OUTLETS ON POWER CONTROL MODULES**

Maximum peripherals connected to PCM:

- a. System Console
- b. Two Disc Drives
- c. Magnetic Tape

<b>NOTE</b>
-------------

If the magnetic tape is absent, **DO NOT** connect a third disc drive or a line printer to the vacant receptacle.

Refer to Adjustment Section for DC Output Voltage specifications.

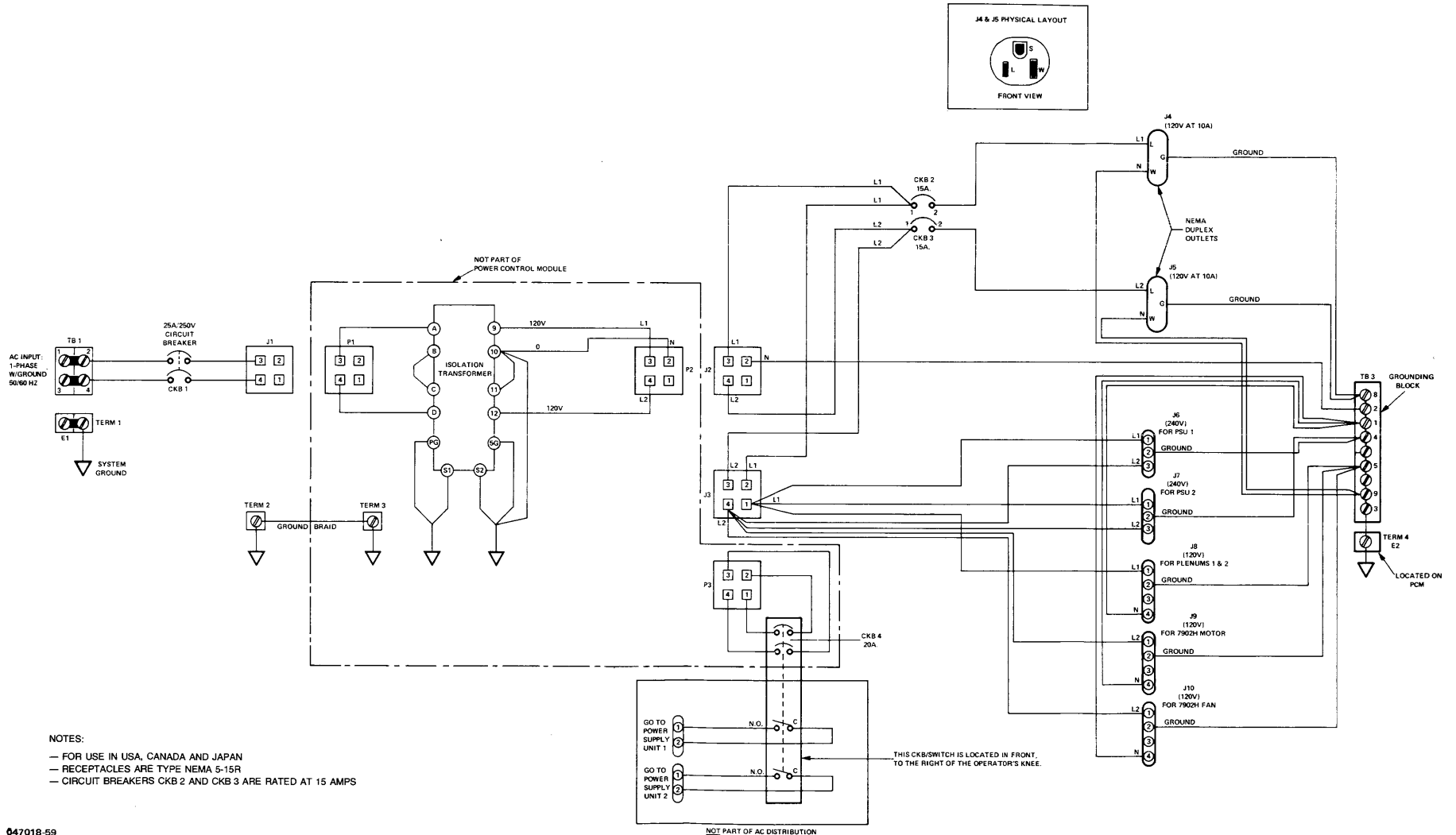
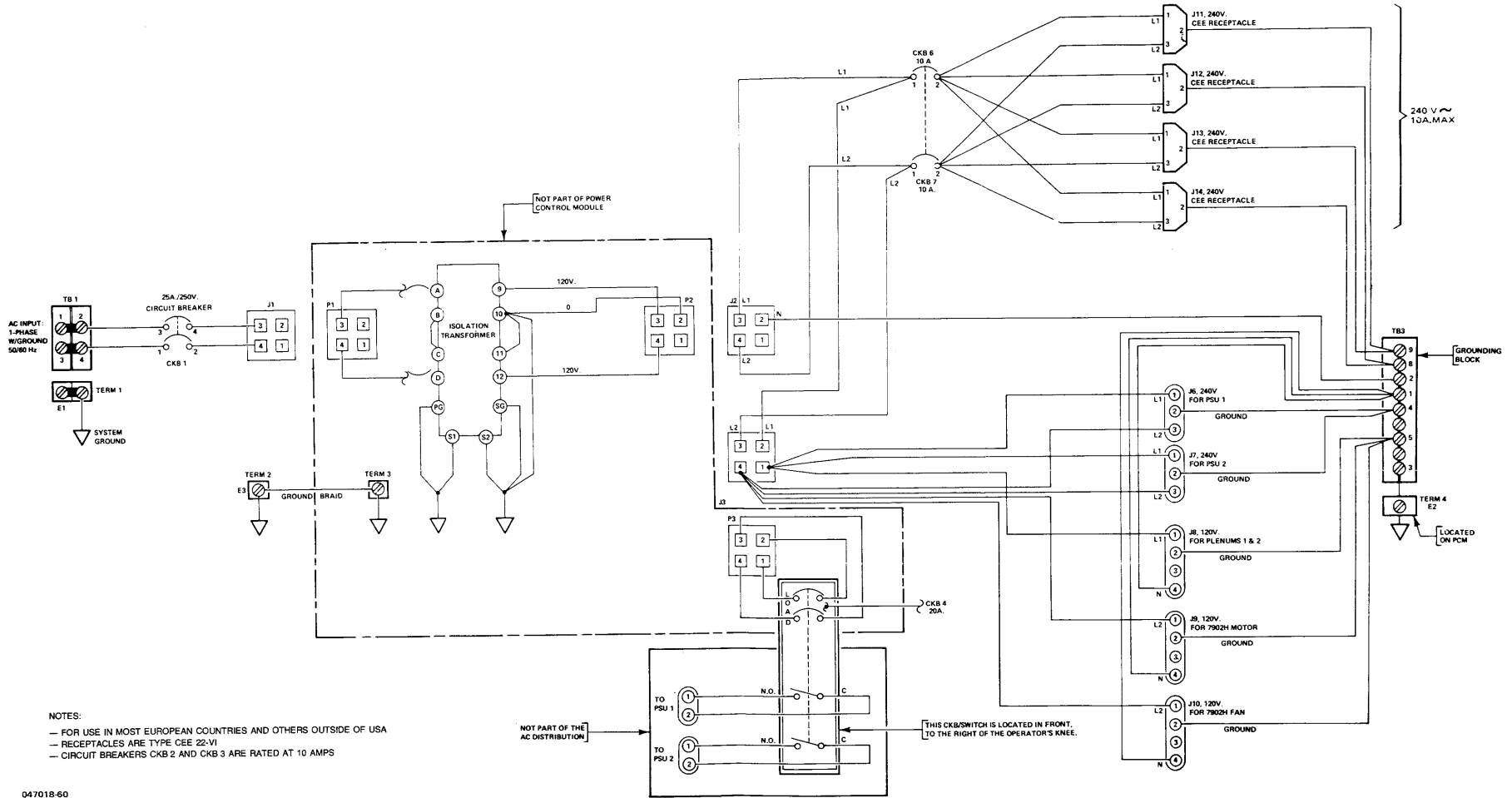


Figure 9-24. Type 1 Power Control Module (PCM) (Series 33)

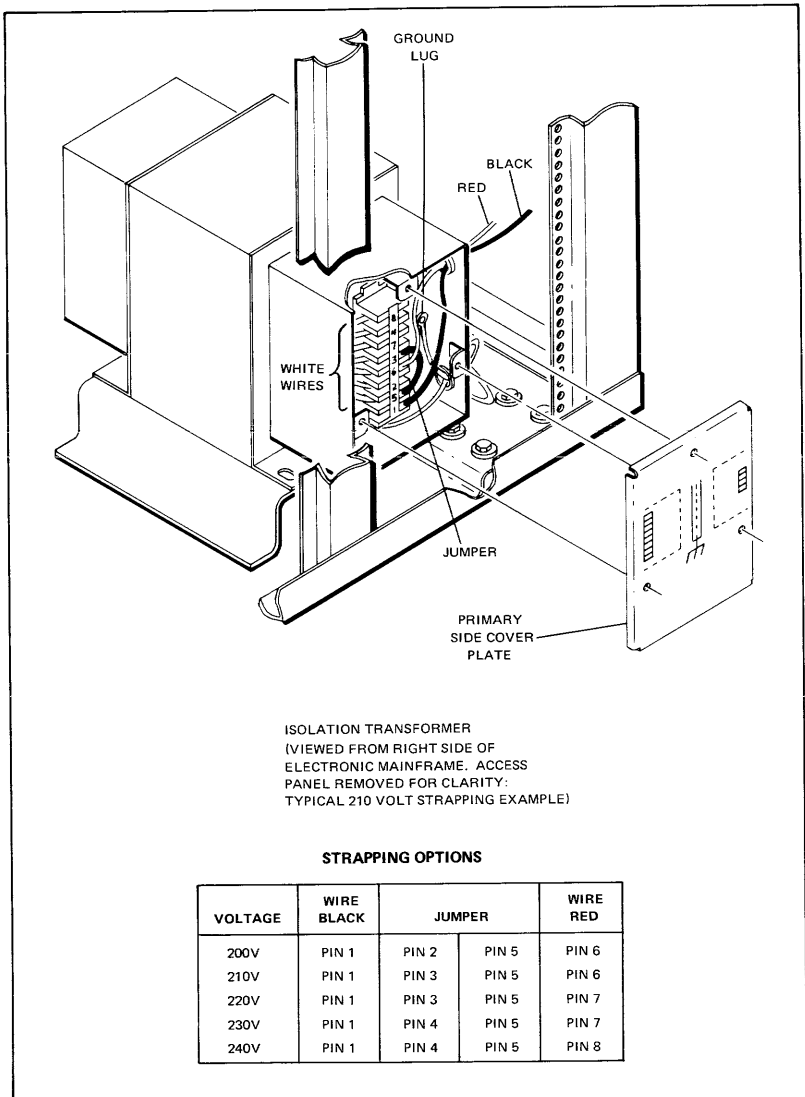


- NOTES:
- FOR USE IN MOST EUROPEAN COUNTRIES AND OTHERS OUTSIDE OF USA
  - RECEPTACLES ARE TYPE CEE 22-VI
  - CIRCUIT BREAKERS CKB 2 AND CKB 3 ARE RATED AT 10 AMPS

NOT PART OF THE AC DISTRIBUTION

THIS CKB/SWITCH IS LOCATED IN FRONT, TO THE RIGHT OF THE OPERATOR'S KNEE.

Figure 9-25. Type 2 Power Control Module (PCM) (Series 33)



147017-19

Figure 9-26. Isolation Transformer Strapping Options (Series 33)

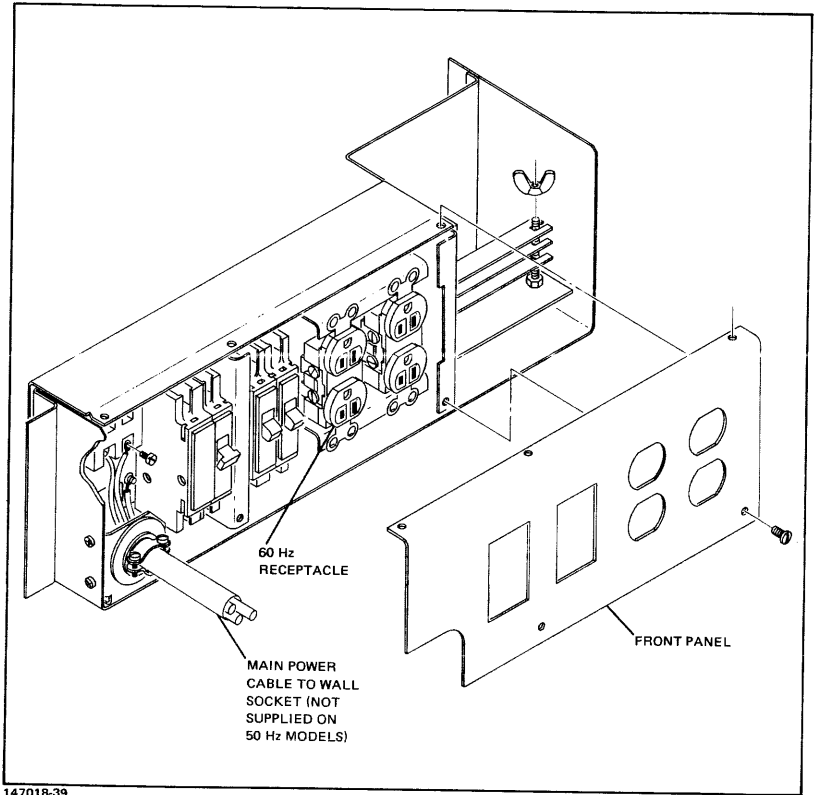
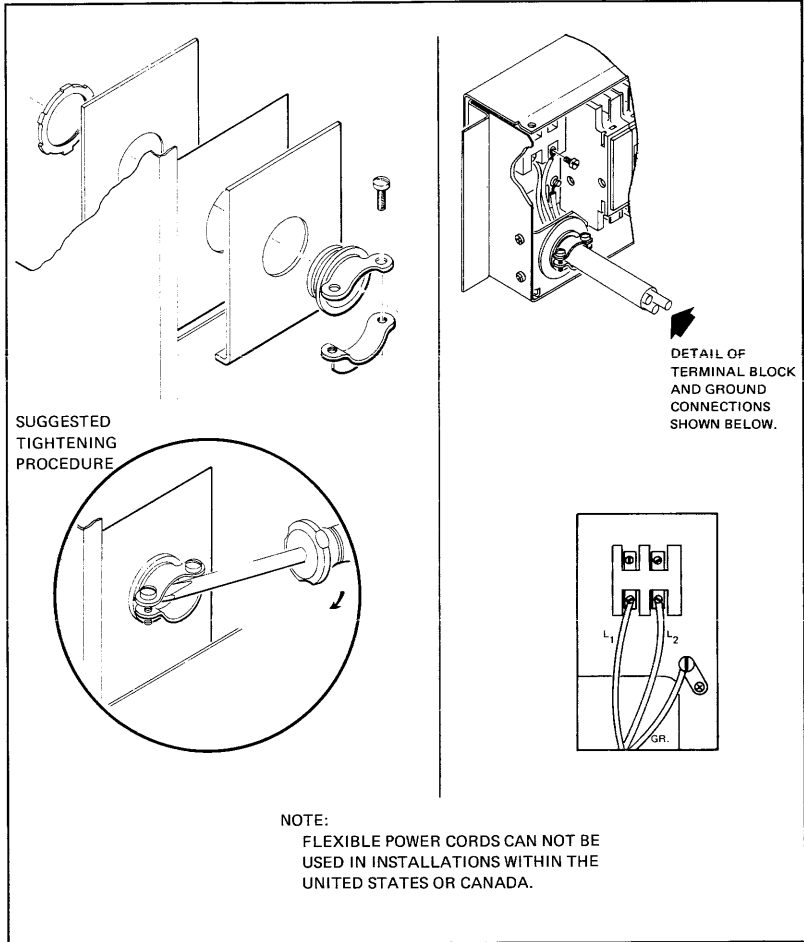
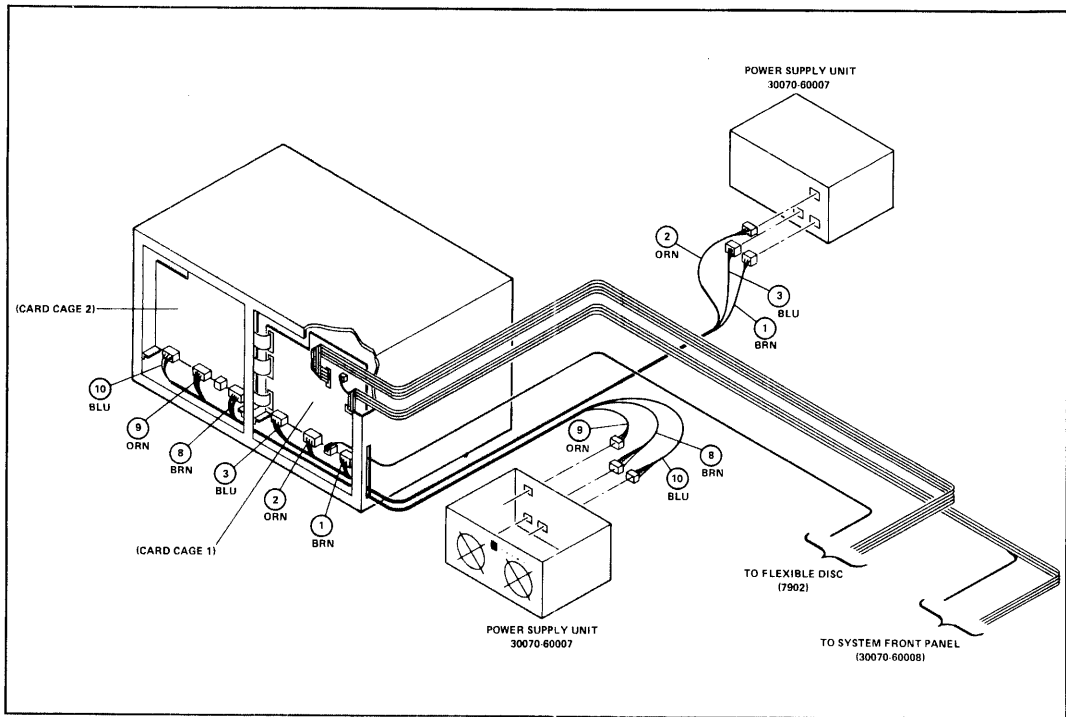


Figure 9-27. 60 Hz Power Line Connection (Series 33)



147018-40

Figure 9-28. PCM Strain Relief Hardware (Series 33)



147018-41

Figure 9-29. DC Power Distribution (Series 33)







Table 9-9. Input AC Power (Series 39/40/42/42XP/52)

Voltage	Tolerance	Voltage Limits (RMS)	
		Lower	Upper
100	-10% +8%	90	108
120	-10% +5%	108	126
220	-10% +5%	198	231
240	-10% +4%	216	250

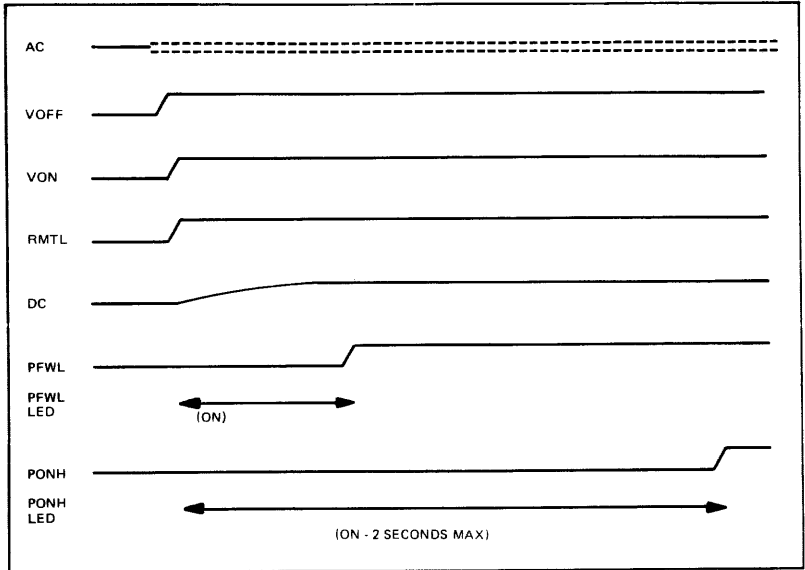
Voltage (VAC)	Current (RMS) (Amperes)	Volt-Amperes (VA)	Power (Watts)
100	10.3	1030	870
120	8.8	1056	870
220	4.7	1034	840
240	4.4	1056	840

At turn-on, the maximum peak inrush current is 100 amperes, decaying exponentially to 20 amperes peak with a time constant of less than 50 ms when measured at an input line voltage of 120 VAC.

Refer to Adjustment Section for DC Output Voltage specifications.

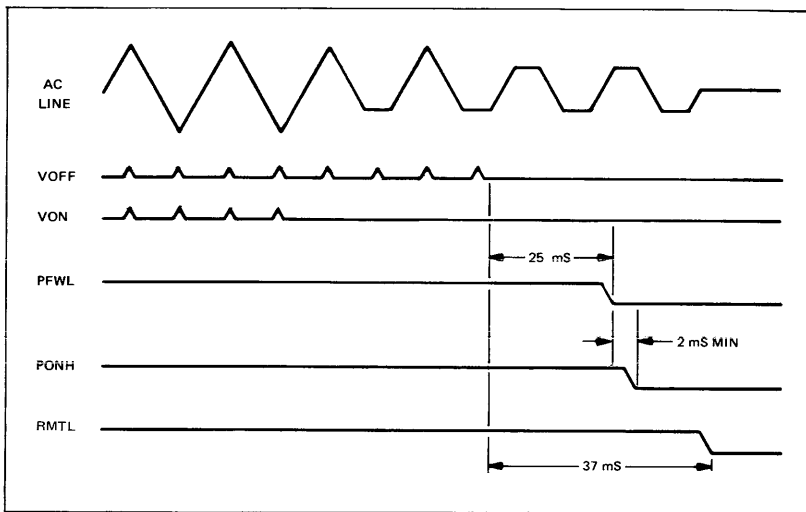
Table 9-10. Replaceable PSU Fuses (Series 39/40/42/42XP/52)

Fuse	Location	Rating
F1	Adjacent to three toggle switches on top-front of PSU	3A slo-blow for 100/120 VAC; 1.5A slo-blow for 220/240 VAC.
F2	Line fuse (below rotary power Switch)	15A normal-blow for 100/120 Vac; 8A normal-blow for 220/240 Vac
F1	Memory Preregulator PCA	8A normal-blow
F1	Inside battery pack	20A normal-blow



147018-106

Figure 9-32. Power and System Turn-On Sequence (Series 39/40/42/42XP/52)



147014-17

Figure 9-33. AC Power Failure Sequence (Series 39/40/42/42XP/52)

Table 9-11. Backplane LEDs (Series 39/40/42/42XP/52)

Name	Startup	Operation	Shutdown
+12	1	1	X
PONH	*	0	*
PFWL	*	0	*
not used	0	0	0
+12M	1	1	X

1 = on  
0 = off  
\* = Momentarily on then turns off  
X = On then off

Table 9-12. Protection Circuitry Summary (Series 39/40/42/42XP/52)

Supply Measured	Device Protected	Type of Protection (location)	Protection Circuitry	Type of Reset Required
AC Input Current	System Main-frame	Fuse 2		Replace Fuse
AC Input Current	Xfmr T1	Fuse F1 (Beside S1, S2, S3)	3A slo-blow for 100/120; 1.5A slo-blow for 220/240. Blows before Ckt Bkr trips.	Replace Fuse
AC Input Under-voltage	Main Power Supply 63909F	Low Voltage Detectors (Power Cntrl PCA)	Shuts off Power Supply when AC input is less than required minimum	None. When AC input > low limit, system turns on.
+5 +12 -12	63909F	Internal fuses (Inside)	Shuts off 63909F	Replace 63909F
+5 +12 -12 Current	63909F	Current Overload in system (63909F)	63909F is shut off if excessive current load on +5, +12, or -12	Turn off Pwr switch no wait required; turn on Pwr switch
+5 +12 -12 Over-voltage	63909F	Crowbar-overvoltage (63909F)	Output voltages clamped to zero if any exceeds high limit.	Turn off Pwr switch wait 15 seconds; turn on Pwr switch
63909F Over-Temp	63909F	Temperature thermostat (63909F)	Turns off all outputs from pwr if there is heat overload.	Cycle AC input pwr or use the reset sw in 63909F

Table 9-12. Protection Circuitry Summary (Series 39/40/42/42XP/52) (Cont.)

Supply Measured	Device Protected	Type of Protection (location)	Protection Circuitry	Type of Reset Required
Memory Prereg. output voltage	Memory Prereg. PCA	Fuse F1 (Memory Prereg PCA)	8A normal-blow Memory Prereg output voltage >19 volts causes fuse to blow.	Replace fuse
+5M +12M Over-voltage	Memory Power Supply	Crowbar-overvoltage (Memory Regulator PCA) Note: -12M is NOT sensed.	All Memory output voltages clamped to zero if output voltage exceeds high limit.	Turn off Ckt Bkr; wait 15 seconds; turn on Ckt Bkr
+5M +12M -12M Current	Memory Power Supply	Crowbar-current overload (Memory Regulator PCA)	All Memory output voltages clamped to zero if output current exceeds high limit.	Turn off Ckt Bkr; wait 15 seconds; turn on Ckt Bkr.
Battery Voltage Dis-charge	Battery Pack	Cutoff circuitry (Memory Regulator PCA)	All Memory output voltages reduced to zero if battery pack voltage drops below +12.5 volts.	Recharge battery
Battery Voltage No-voltage	Battery Pack	Fuse F1 (inside battery Pack)	20A normal-blow protects battery for shorts or overload.	Replace fuse

## **SERIES 44/48 POWER DISTRIBUTION**

AC and DC information for Series 44/48 is provided in Figures 9-34 through 9-41.

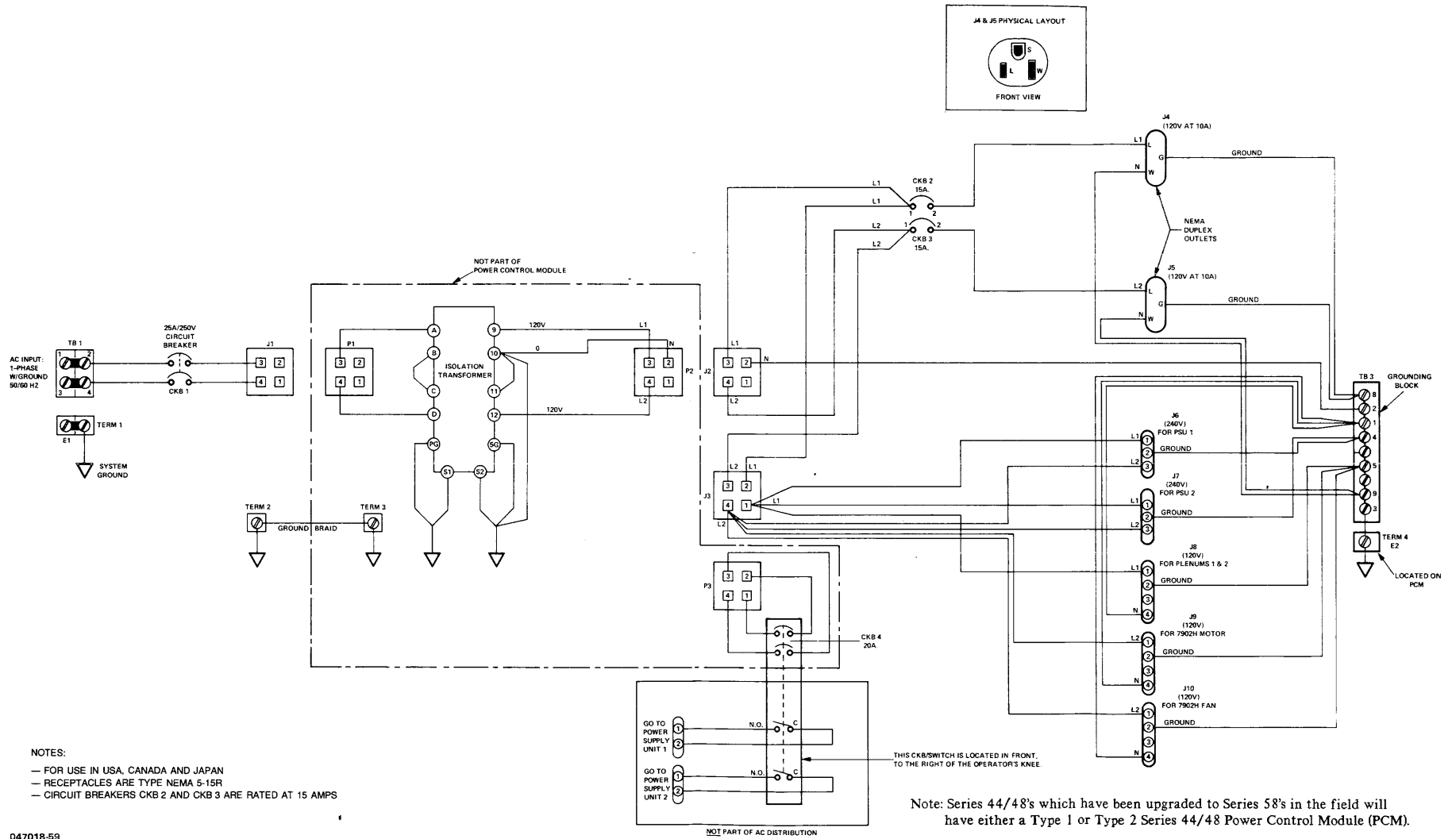
### Use of Outlets on Power Control Modules

Maximum peripherals connected to PCM:

- a. System Console
- b. Master Disc Drive

**Refer to Adjustment Section for DC Output Voltage specifications.**





047018-59

Figure 9-34. Type 1 Power Control Module (PCM) (Series 44/48)

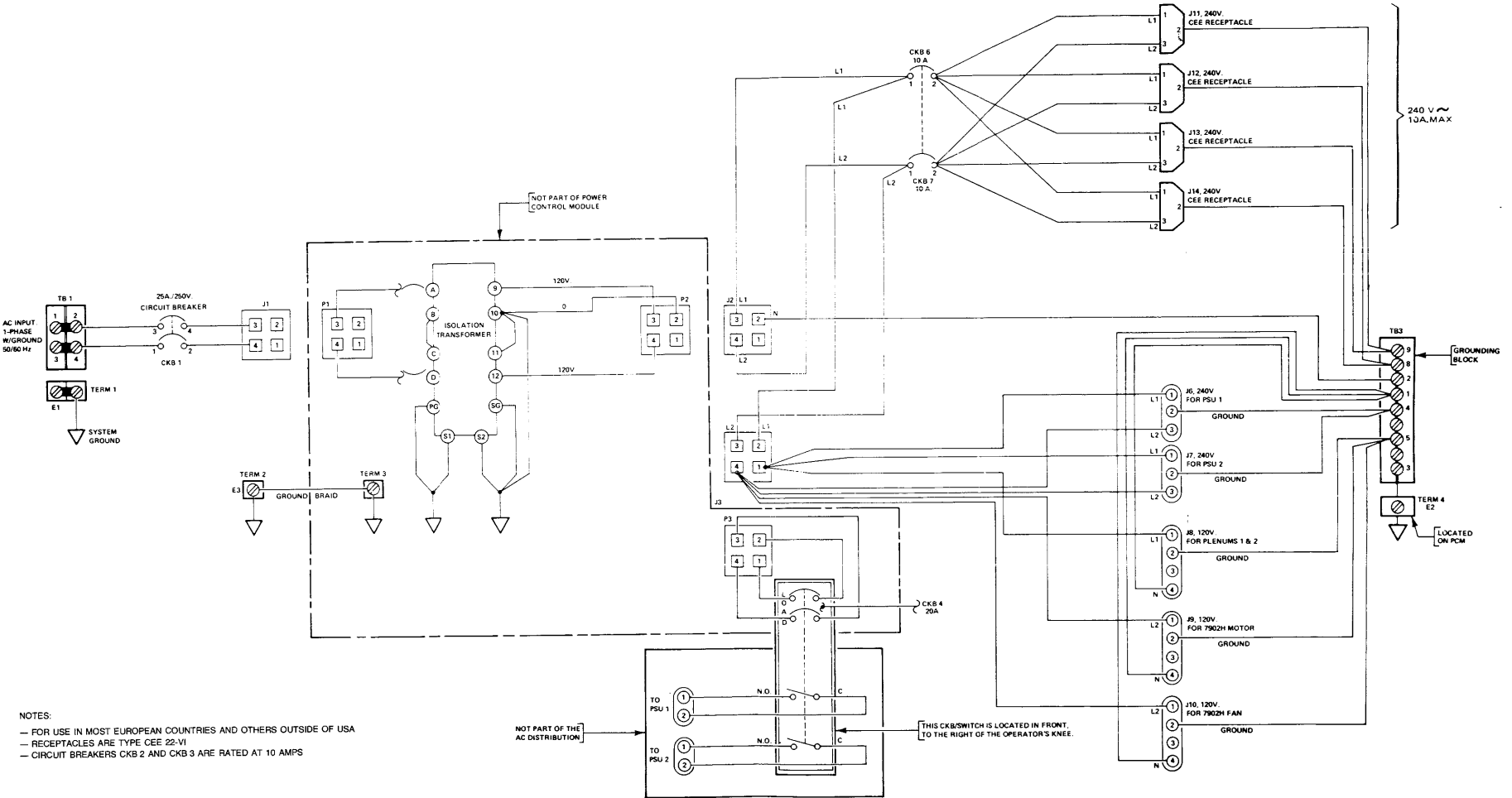
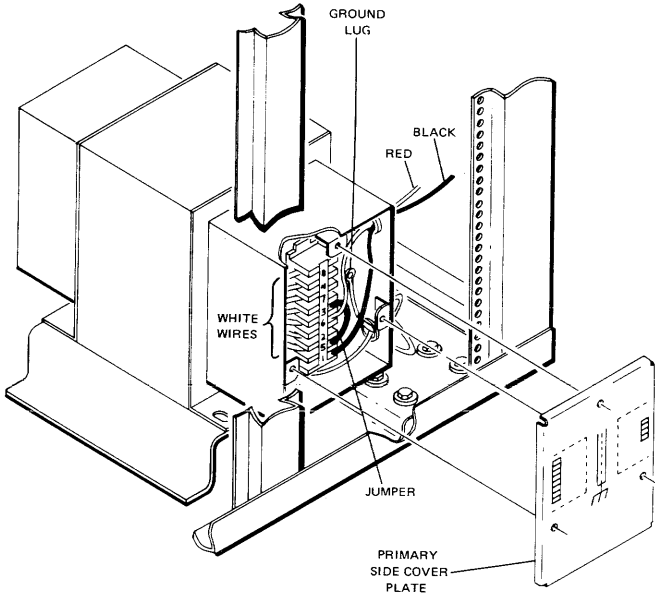


Figure 9-35. Type 2 Power Control Module (PCM) (Series 44/48)



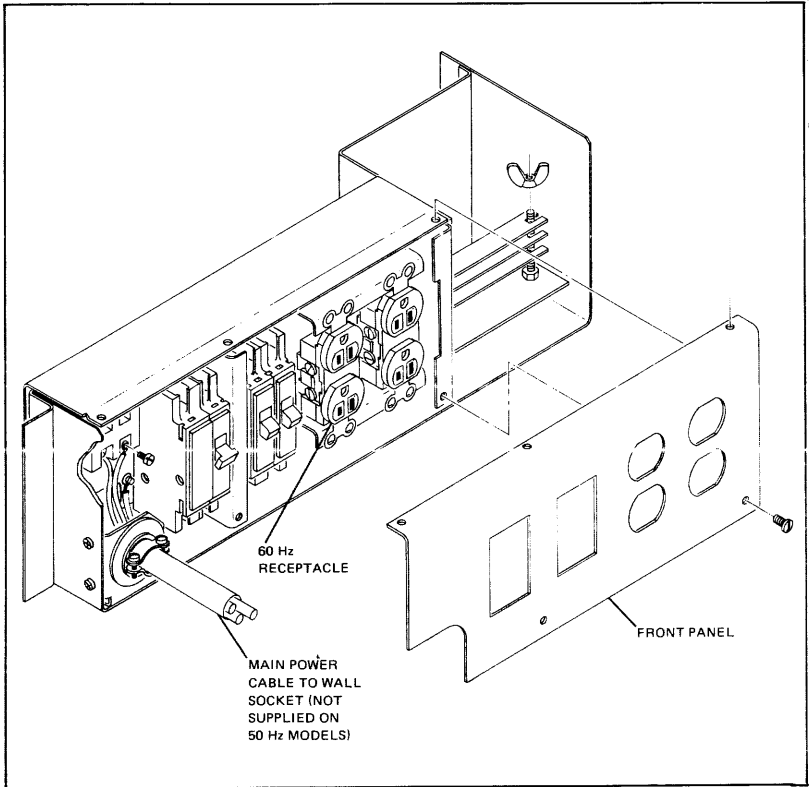
ISOLATION TRANSFORMER  
 (VIEWED FROM RIGHT SIDE OF  
 ELECTRONIC MAINFRAME. ACCESS  
 PANEL REMOVED FOR CLARITY;  
 TYPICAL 210 VOLT STRAPPING EXAMPLE)

**STRAPPING OPTIONS**

VOLTAGE	WIRE BLACK	JUMPER		WIRE RED
200V	PIN 1	PIN 2	PIN 5	PIN 6
210V	PIN 1	PIN 3	PIN 5	PIN 6
220V	PIN 1	PIN 3	PIN 5	PIN 7
230V	PIN 1	PIN 4	PIN 5	PIN 7
240V	PIN 1	PIN 4	PIN 5	PIN 8

147017-19

Figure 9-36. Isolation Transformer Strapping Options (Series 44/48)



147018-39

Figure 9-37. 60 Hz Power Line Connection (Series 44/48)

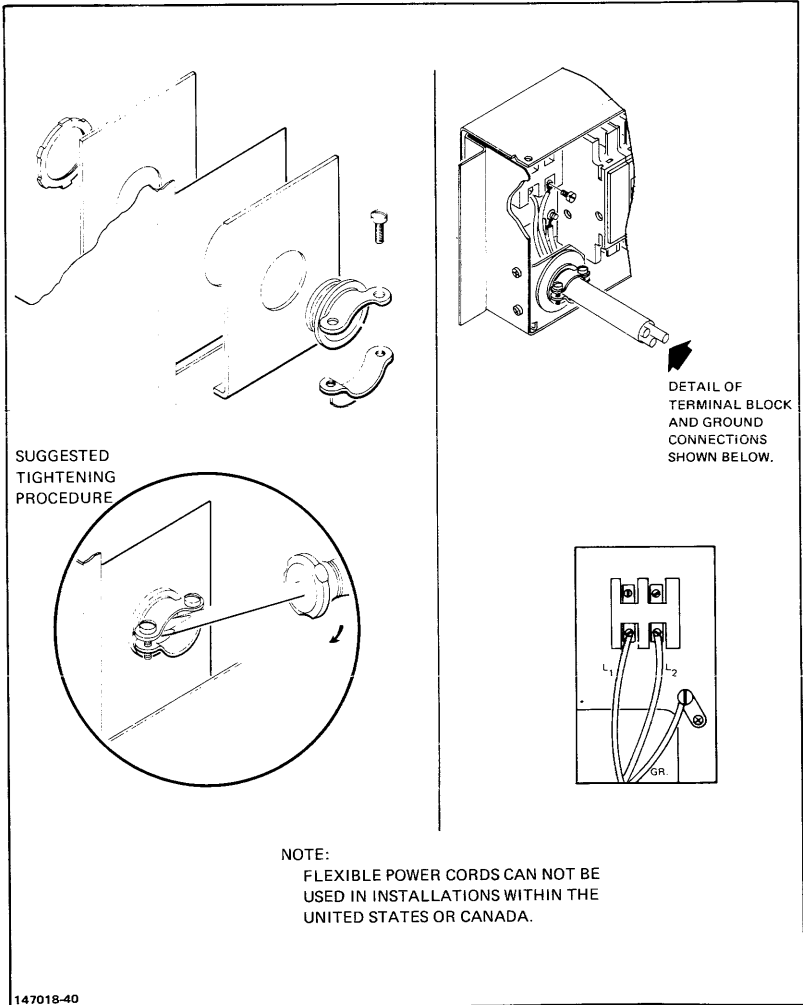


Figure 9-38. PCM Strain Relief Hardware (Series 44/48)

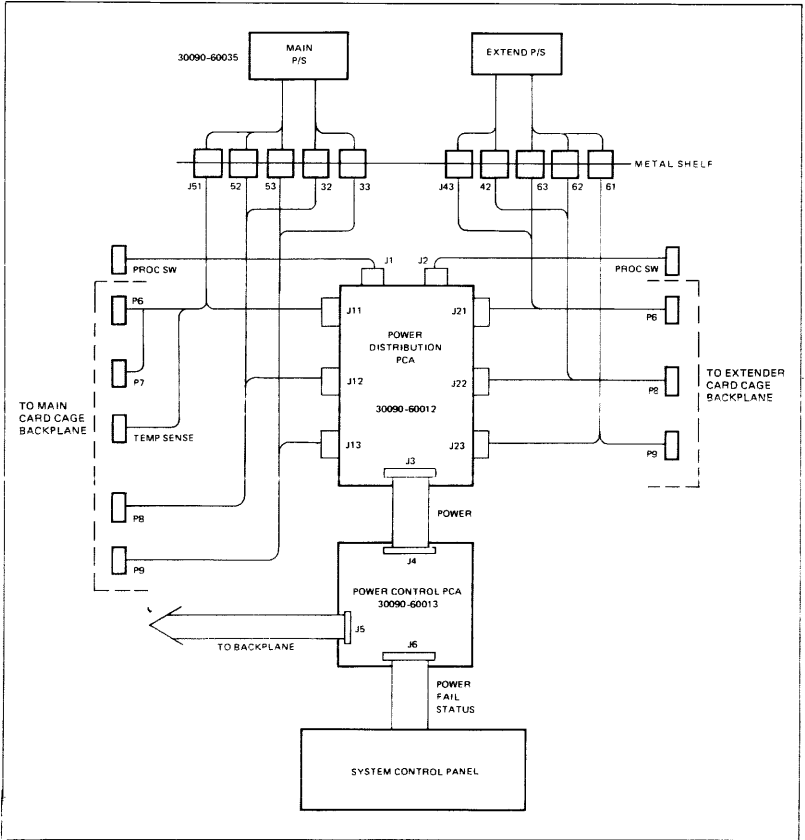


Figure 9-39. DC Power Distribution (Series 44/48)

Table 9-13. DC Power Distribution Pin-to-Pin Connection (Series 44/48)

Voltage	Conn	Pin(s)	Conn	Pin(s)	Conn	Pin(s)	Conn	Pin(s)	Conn	Pin(s)	
+5V	J53	1,2,3,4	J9	1,2,3,5							
BIAS	J53	5	J13	12	J3	1,2					
RMTL	J53	6	J13	3	J3	6					
+12V	J53	7,10	J13	7,10	J12	1	J11	1	J6	10	
-12V	J53	8,11	J13	8,10	J12	2	J11	2	J6	4	
+12SR	J53	9	J13	9	J11	6	J51	8	J6(+5SR)		
+5R	J53	12,13, 14,15	J9	7,13, 15							
+5V	J52	1,2,3	J8	1,2,3							
+/-12R	J52	4,5	J12	6,12	J11	3	J6	7	J8	7	
+12S	J52	6	J12	4,7	J8	12					
+5R	J52	7,8,9	J8	13,14,15							
+5V	J5	1,2,3,4	J6	1,2,3	J7	5					
+5S	J5	5	J11	7	J6	5	J3	5			
-12S	J51	6	J11	5,11	J6	11					
PON	J51	7	J11	13,14	J6	9	J3	3			
+5SR	J51	8	J11	6	J6	8					
+5R	J51	9,10,11, 12	J6	13,14, 15	J7	2					
+12M	J33	1,7	J9	12	J13	1	J1 relay	J2 relay			
Relay	J33	3	J13	2	J1 relay(+12M)	J13	1	J33	1,7	J9	12
ACV1	J33	3	J13	4	J3	14					
ACCT	J33	4	J13	5	J3	18					
ACV2	J33	5	J13	6	J3	22					
MEMR	J33	6,9	J9	8,9	J9	11					
-12M	J33	8	J9	11							
+5M	J32	1,2	J8	5,6(+5MS)	J32	4	J12	10	J3	9	
MEMR	J32	3	J8	9 (MEMR)	J32	6					
PFW	J11	15	J3	4	J6	6					
+12PC	J11	4	J3	7	J6	12					
-12PC	J12	5	J3	8	J8	11					
OTS	J11	9	J3	16	Thermal switch						
OTR	J11	12	J3	20	Thermal switch						
PCR	J12	3	J3	25,26	J8	8					

PHYSICAL LAYOUT  
OF  
POWER DISTRIBUTION AREA IN SERIES 44/48 TOP VIEW

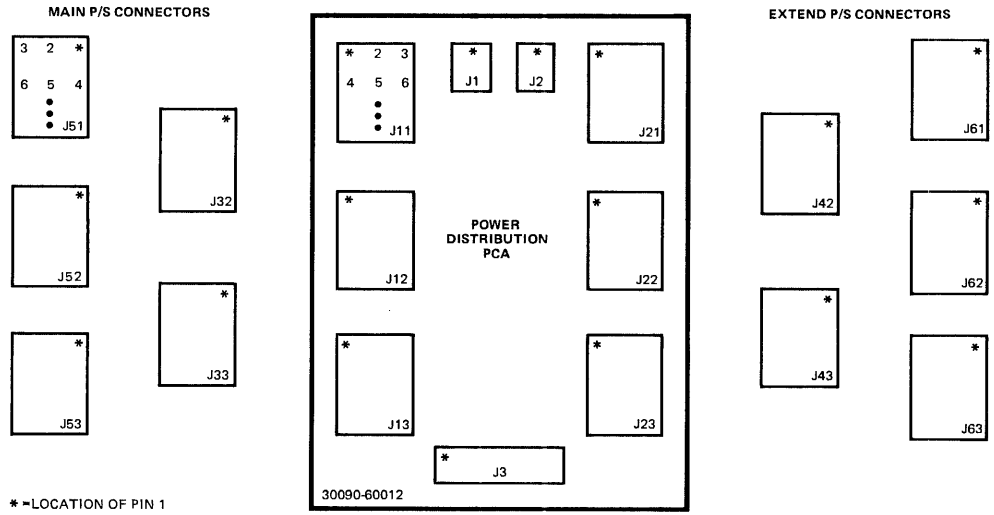
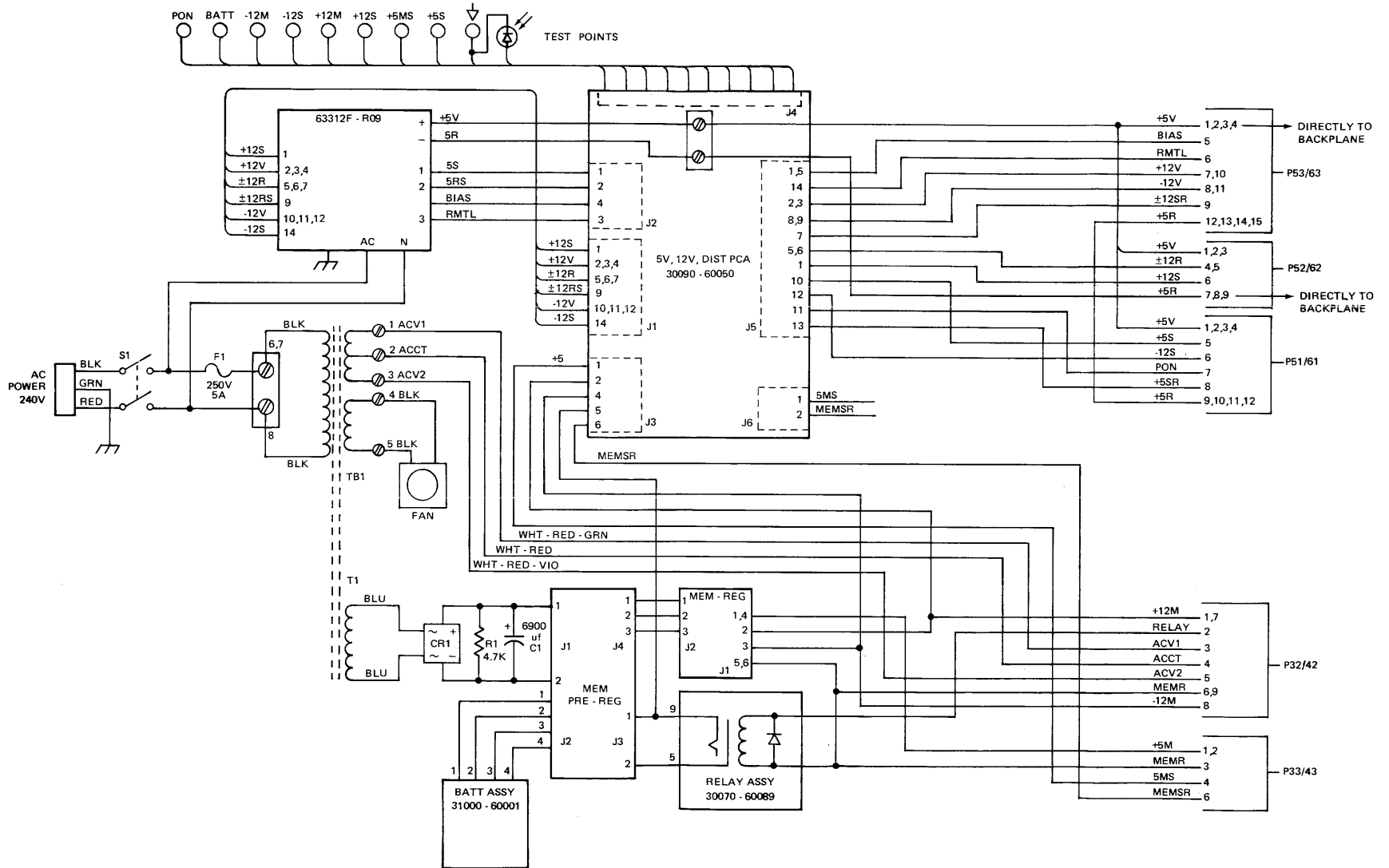


Figure 9-40. Physical Layout of DC Power Distribution PCA (Series 44/48)





147018-107

Figure 9-41. Power Supply Block Diagram (Series 44/48)

# SERIES 58 POWER DISTRIBUTION

Series 58 Power Distribution

The Power Control Module for the Series 58 is illustrated in Figure 9-42.

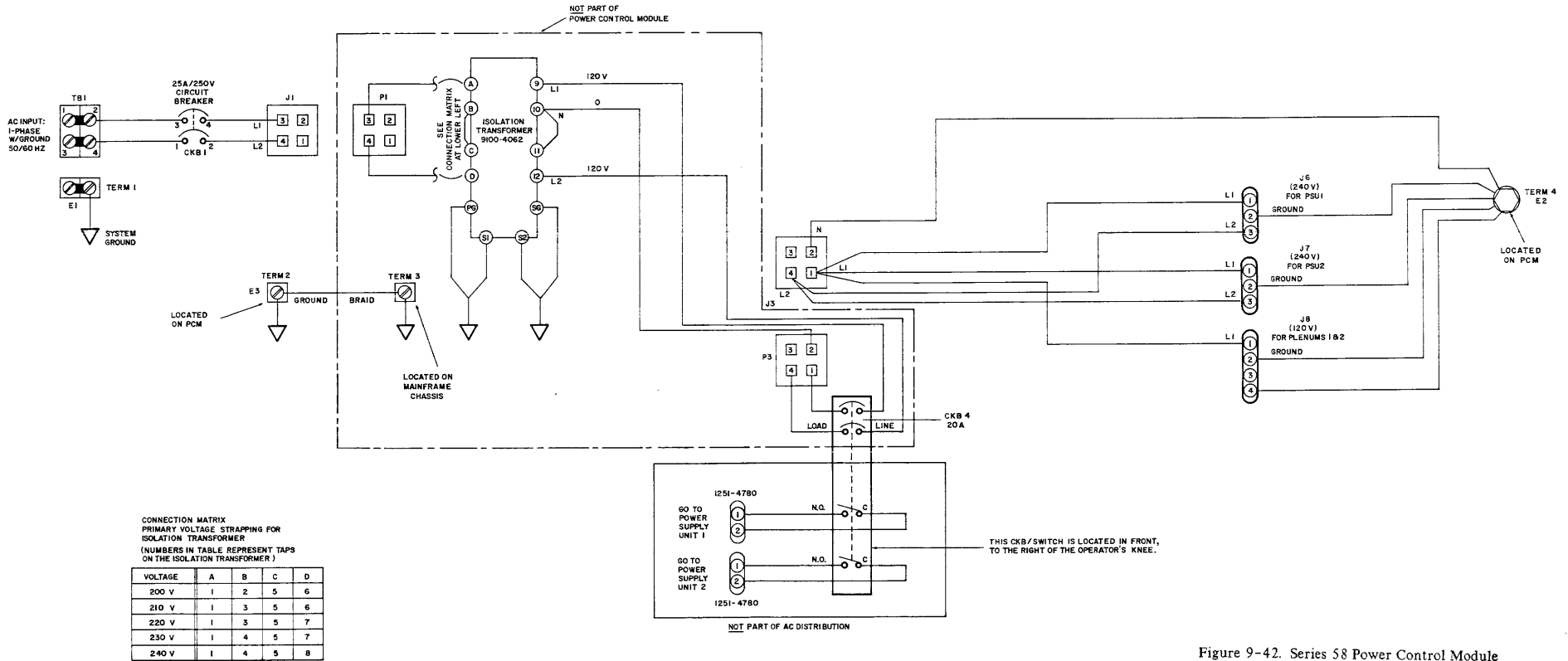


Figure 9-42. Series 58 Power Control Module

MAY 87  
9-69/9-70

# REFERENCE

SECTION

X

This section contains reference Tables 10-1 through 10-4 to aid in troubleshooting Series 30, 33, 39/40/42/42XP/52 and 44/48/58.

ASCII CODE TABLE .....	10-2
RS-232-C SIGNAL DESCRIPTIONS .....	10-4
ASYNCHRONOUS TERMINAL CONTROLLER MODEM CABLE PIN CONNECTIONS .....	10-5
ASYNCHRONOUS TERMINAL CONTROLLER HARDWIRED/EXTENSION CABLE PIN CONNECTIONS .....	10-6

Table 10-1. ASCII Code Table

HOW TO USE THIS TABLE

- The table is sorted by character code, each code being represented by its decimal, octal, and hexadecimal equivalent.
- Each row of the table gives the ASCII and EBCDIC meaning of the character code, the ASCII ↔ EBCDIC conversion code, and the Hollerith representation (punched card code) for the ASCII character.

The following examples describe several ways of using the table:

Example 1: Suppose you want to determine the ASCII code for the S character. Scan down the ASCII graphic column until you locate S, then look left on that row to find the character code - 36 (dec), 044 (oct), and 24 (hex). This is the code used by an ASCII device (terminal, printer, computer, etc.) to represent the S character. Its Hollerith punched card code is 11-3-8.

Example 2: The character code 5B (hex) is the EBCDIC code for what character? Also, when 5B is converted to ASCII (for example, by FCOPY with the EBCDICIN option), what is the octal character code? First, locate 5B in the hex character code column and move right on that row to the EBCDIC graphic which is S. The next column to the right gives the conversion to ASCII, 044. As a check, find 044 (oct) in the character code column, look right to the ASCII graphic column and note that S converted to EBCDIC is 133 (oct) which equals 5B (hex).

CHAR CODE			ASCII			EBCDIC		
Dec	Oct	Hex	Ctrl/ Gph	to EBCDIC (Oct)	Hollerith	Ctrl/ Gph	to ASCII (Oct)	
0	000	00	NUL	000	12-0-18-9	NUL	000	
1	001	01	SOH	001	12-1-9	SOH	001	
2	002	02	STX	002	12-2-9	STX	002	
3	003	03	ETX	003	12-3-9	ETX	003	
4	004	04	EOT	067	7-9	FF	234	
5	005	05	ENQ	026	0-8-9	HT	53	
6	006	06	ACK	056	0-6-8-9	LC	206	
7	007	07	BEL	057	0-7-8-9	DEL	177	
8	010	08	BS	026	11-6-9		227	
9	011	09	HT	005	12-5-9		215	
10	012	0A	LF	045	0-5-9	SMM	216	
11	013	0B	VT	013	12-3-8-9	VT	013	
12	014	0C	FF	014	12-4-8-9	FF	014	
13	015	0D	CR	015	0-2-8-9	CR	015	
14	016	0E	SO	016	12-6-8-9	SO	016	
15	017	0F	SI	017	12-7-8-9	SI	017	
16	020	10	DLE	020	12-11-1-8-9	DL	020	
17	021	11	DC1	021	11-1-9	DC1	021	
18	022	12	DC2	022	11-2-9	DC2	022	
19	023	13	DC3	023	11-3-9	TM	023	
20	024	14	DC4	074	4-8-9	RES	235	
21	025	15	NAK	075	5-8-9	NL	205	
22	026	16	SYN	062	2-9	BS	010	
23	027	17	ETB	046	0-6-9	IL	207	
24	030	18	CAN	030	11-8-9	CAN	030	
25	031	19	EM	031	11-1-8-9	EM	031	
26	032	1A	SUB	077	7-8-9	CC	222	
27	033	1B	ESC	047	3-8-9	CU1	217	
28	034	1C	FS	034	11-4-8-9	IFS	034	
29	035	1D	GS	035	11-5-8-9	IGS	035	
30	036	1E	RS	036	11-6-8-9	IRS	036	
31	037	1F	US	037	11-7-8-9	IUS	037	
32	040	20	SP	100	Blank	DS	200	
33	041	21	"	117	12-7-8	SOS	201	
34	042	22	'	177	7-8	FS	202	
35	043	23	~	173	3-8-9	CU1	217	
36	044	24	\$	133	11-3-8	BYP	204	
37	045	25	%	154	0-4-8	LF	012	
38	046	26	&	120	12	ETB	027	
39	047	27	'	175	5-8	ESC	033	
40	050	28	(	115	12-5-8		210	
41	051	29	)	135	11-5-8		211	
42	052	2A	[	134	11-4-8	SM	212	
43	053	2B	]	116	12-6-8	CU2	213	
44	054	2C	^	153	0-3-8		214	
45	055	2D	_	140	11	ENO	005	
46	056	2E	~	113	12-3-8	ACK	006	
47	057	2F	/	141	0-1	BEL	007	

CHAR CODE			ASCII			EBCDIC		
Dec	Oct	Hex	Ctrl/ Gph	to EBCDIC (Oct)	Hollerith	Ctrl/ Gph	to ASCII (Oct)	
48	060	30	0	360	0			220
49	061	31	1	361	1			221
50	062	32	2	362	2			026
51	063	33	3	363	3			223
52	064	34	4	364	4			224
53	065	35	5	365	5			225
54	066	36	6	366	6			026
55	067	37	7	367	7			227
56	070	38	8	370	8			230
57	071	39	9	371	9			231
58	072	3A		172	2-8			232
59	073	3B		136	11-6-8			CU3
60	074	3C	<	114	12-4-8			DC4
61	075	3D		176	6-8			NAK
62	076	3E	>	156	0-6-8			236
63	077	3F	>	157	0-7-8			SUB
64	100	40	@	174	4-8			SP
65	101	41	A	301	12-1			240
66	102	42	B	302	12-2			241
67	103	43	C	303	12-3			242
68	104	44	D	304	12-4			243
69	105	45	E	305	12-5			244
70	106	46	F	306	12-6			245
71	107	47	G	307	12-7			246
72	110	48	H	310	12-8			247
73	111	49	I	311	12-9			250
74	112	4A	J	321	11-1			133
75	113	4B	K	322	11-2			056
76	114	4C	L	323	11-3			<
77	115	4D	M	324	11-4			050
78	116	4E	N	325	11-5			*
79	117	4F	O	326	11-6			041
80	120	50	P	327	11-7			&
81	121	51	Q	330	11-8			251
82	122	52	R	331	11-9			252
83	123	53	S	342	0-7			253
84	124	54	T	343	0-3			254
85	125	55	U	344	0-4			255
86	126	56	V	345	0-5			256
87	127	57	W	346	0-6			257
88	130	58	X	347	0-7			260
89	131	59	Y	350	0-8			261
90	132	5A	Z	351	0-9			134
91	133	5B	[	112	12-2-8			S
92	134	5C	]	340	0-2-8			*
93	135	5D	^	132	11-2-8			1
94	136	5E	_	137	11-7-8			073
95	137	5F	/	155	0-5-8			136

Table 10-1. ASCII Code Table (Con't.)

CHAR CODE			ASCII			EBCDIC	
Dec	Oct	Hex	Cntrl/ Gph	to EBCDIC (Oct)	Hollerith	Cntrl/ Gph	to ASCII (Oct)
96	140	60	.	171	1-8	-	055
97	141	61	,	207	12-0-1	.	057
98	142	62	a	202	12-0-2	.	262
99	143	63	c	203	12-0-3	.	263
100	144	64	d	204	12-0-4	.	264
101	145	65	e	205	12-0-5	.	265
102	146	66	f	206	12-0-6	.	266
103	147	67	g	207	12-0-7	.	267
104	150	68	h	210	12-0-8	.	270
105	151	69	i	211	12-0-9	.	271
106	152	6A	j	222	12-11-1	.	174
107	153	6B	k	221	12-11-2	.	054
108	154	6C	l	223	12-11-3	.	045
109	155	6D	m	224	12-11-4	.	137
110	156	6E	n	225	12-11-5	.	076
111	157	6F	o	226	12-11-6	.	077
112	160	70	p	227	12-11-7	.	272
113	161	71	q	230	12-11-8	.	273
114	162	72	r	231	12-11-9	.	274
115	163	73	s	242	11-0-2	.	275
116	164	74	t	243	11-0-3	.	276
117	165	75	u	244	11-0-4	.	277
118	166	76	v	245	11-0-5	.	300
119	167	77	w	246	11-0-6	.	301
120	170	78	x	247	11-0-7	.	302
121	171	79	y	250	11-0-8	.	140
122	172	7A	z	251	11-0-9	.	072
123	173	7B	[	300	12-0	.	043
124	174	7C	\	152	12-11	.	@
125	175	7D	]	320	11-0	.	047
126	176	7E	^	241	11-0-1	.	075
127	177	7F	DEL	007	12-7-9	.	042
128	200	80		040	11-0-1-8-9	.	303
129	201	81	A	041	0-1-9	.	141
130	202	82	B	042	0-2-9	.	142
131	203	83	C	043	0-3-9	.	143
132	204	84	D	044	0-4-9	.	144
133	205	85	E	025	11-5-9	.	145
134	206	86	F	006	12-6-9	.	146
135	207	87	G	027	11-7-9	.	147
136	210	88	H	060	0-8-9	.	148
137	211	89	I	051	0-9-9	.	149
138	212	8A	J	052	0-2-8-9	.	304
139	213	8B	K	053	0-3-8-9	.	305
140	214	8C	L	054	0-4-8-9	.	306
141	215	8D	M	011	12-1-8-9	.	307
142	216	8E	N	012	12-2-8-9	.	310
143	217	8F	O	033	11-3-8-9	.	311
144	220	90	P	060	12-11-0-1-8-9	.	312
145	221	91	Q	061	1-9	.	152
146	222	92	R	032	11-2-8-9	.	153
147	223	93	S	063	3-9	.	154
148	224	94	T	064	4-9	.	155
149	225	95	U	065	5-9	.	156
150	226	96	V	066	6-9	.	157
151	227	97	W	010	12-8-9	.	158
152	230	98	X	070	8-9	.	161
153	231	99	Y	071	1-8-9	.	162
154	232	9A	Z	072	2-8-9	.	313
155	233	9B	[	073	3-8-9	.	314
156	234	9C	\	004	12-4-9	.	315
157	235	9D	]	024	11-4-9	.	316
158	236	9E	^	076	6-8-9	.	317
159	237	9F	^	341	11-0-1-9	.	320
160	240	90	a	101	12-0-1-9	.	321
161	241	A1	b	102	12-0-2-9	.	176
162	242	A2	c	103	12-0-3-9	.	163
163	243	A3	d	104	12-0-4-9	.	164
164	244	A4	e	105	12-0-5-9	.	165
165	245	A5	f	106	12-0-6-9	.	166
166	246	A6	g	107	12-0-7-9	.	167
167	247	A7	h	110	12-0-8-9	.	170
168	250	A8	i	111	12-1-8	.	171
169	251	A9	j	121	12-11-1-9	.	172
170	252	AA	k	122	12-11-2-9	.	322
171	253	AB	l	123	12-11-3-9	.	323
172	254	AC	m	124	12-11-4-9	.	324
173	255	AD	n	125	12-11-5-9	.	325
174	256	AE	o	126	12-11-6-9	.	326
175	257	AF	p	127	12-11-7-9	.	327

CHAR CODE			ASCII			EBCDIC	
Dec	Oct	Hex	Cntrl/ Gph	to EBCDIC (Oct)	Hollerith	Cntrl/ Gph	to ASCII (Oct)
176	260	80		130	12-11-8-9	.	330
177	261	81		131	11-8	.	331
178	262	82		142	11-0-2-9	.	332
179	263	83		143	11-0-3-9	.	333
180	264	84		144	11-0-4-9	.	334
181	265	85		145	11-0-5-9	.	335
182	266	86		146	11-0-6-9	.	336
183	267	87		147	11-0-7-9	.	337
184	270	88		150	11-0-8-9	.	340
185	271	89		151	0-1-8	.	341
186	272	8A		160	12-11-0	.	342
187	273	8B		161	12-11-0-1-9	.	343
188	274	8C		162	12-11-0-2-9	.	344
189	275	8D		163	12-11-0-3-9	.	345
190	276	8E		164	12-11-0-4-9	.	346
191	277	8F		165	12-11-0-5-9	.	347
192	300	00		166	12-11-0-6-9	.	173
193	301	01		167	12-11-0-7-9	.	A
194	302	02		170	12-11-0-8-9	.	B
195	303	03		200	12-0-1-8	.	C
196	304	04		212	12-0-2-8	.	D
197	305	05		213	12-0-3-8	.	E
198	306	06		214	12-0-4-8	.	F
199	307	07		215	12-0-5-8	.	G
200	310	08		216	12-0-6-8	.	H
201	311	09		217	12-0-7-8	.	I
202	312	0A		220	12-11-1-8	.	350
203	313	0B		232	12-11-2-8	.	351
204	314	0C		233	12-11-3-8	.	352
205	315	0D		234	12-11-4-8	.	353
206	316	0E		235	12-11-5-8	.	354
207	317	0F		236	12-11-6-8	.	355
208	320	00		237	12-11-7-8	.	J
209	321	01		240	11-0-1-8	.	K
210	322	02		252	11-0-2-8	.	L
211	323	03		253	11-0-3-8	.	L
212	324	04		254	11-0-4-8	.	M
213	325	05		255	11-0-5-8	.	N
214	326	06		256	11-0-6-8	.	O
215	327	07		257	11-0-7-8	.	P
216	330	08		260	12-11-0-1-8	.	Q
217	331	09		251	12-11-0-2-8	.	R
218	332	0A		262	12-11-0-3-8	.	356
219	333	0B		263	12-11-0-4-8	.	357
220	334	0C		264	12-11-0-4-8	.	360
221	335	0D		265	12-11-0-5-8	.	361
222	336	0E		266	12-11-0-6-8	.	362
223	337	0F		267	12-11-0-7-8	.	363
224	340	E0		270	12-11-0-8	.	134
225	341	E1		271	12-11-0-9	.	237
226	342	E2		272	12-11-0-2-8	.	S
227	343	E3		273	12-11-0-3-8	.	T
228	344	E4		274	12-11-0-4-8	.	U
229	345	E5		275	12-11-0-5-8	.	V
230	346	E6		276	12-11-0-6-8	.	W
231	347	E7		277	12-11-0-7-8	.	X
232	360	E8		312	12-0-2-8-9	.	Y
233	361	E9		313	12-0-3-8-9	.	Z
234	362	EA		314	12-0-4-8-9	.	364
235	363	EB		315	12-0-5-8-9	.	365
236	364	EC		316	12-0-6-8-9	.	H
237	365	ED		317	12-0-7-8-9	.	367
238	366	EE		332	12-11-2-8-9	.	370
239	367	EF		333	12-11-3-8-9	.	371
240	360	F0		334	12-11-4-8-9	.	0
241	361	F1		335	12-11-5-8-9	.	1
242	362	F2		336	12-11-6-8-9	.	2
243	363	F3		337	12-11-7-8-9	.	3
244	364	F4		352	11-0-2-8-9	.	4
245	365	F5		353	11-0-3-8-9	.	5
246	366	F6		354	11-0-4-8-9	.	6
247	367	F7		355	11-0-5-8-9	.	7
248	370	F8		356	11-0-6-8-9	.	8
249	371	F9		357	11-0-7-8-9	.	9
250	372	FA		372	12-11-0-2-8-9	.	1
251	373	FB		373	12-11-0-3-8-9	.	373
252	374	FC		374	12-11-0-4-8-9	.	374
253	375	FD		375	12-11-0-5-8-9	.	375
254	376	FE		376	12-11-0-6-8-9	.	376
255	377	FF		377	12-11-0-7-8-9	.	FO

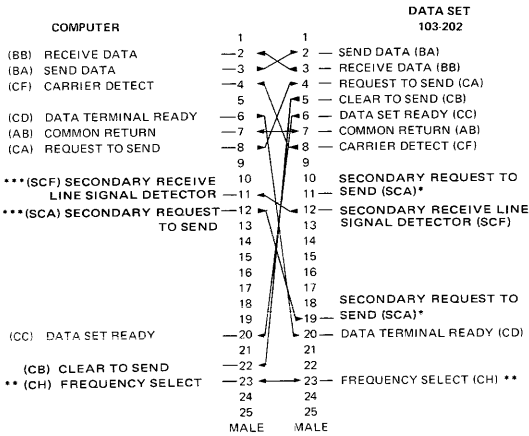
Table 10-2. RS-232-C Signal Descriptions

PIN NO.	CIRCUIT	SIGNAL DESCRIPTION	GND	DATA		CONTROL		TIMING	
				FROM DCE	TO DCE	FROM DCE	TO DCE	FROM DCE	TO DCE
1	AA	Protective Ground	X						
7	AB	Signal Ground/Common Return	X						
2	BA	Transmitted Data			X				
3	BB	Received Data		X					
4	CA	Request to Send					X		
5	CB	Clear to Send				X			
6	CC	Data Set Ready				X			
20	CD	Data Terminal Ready					X		
22	CE	Ring Indicator				X			
8	CF	Carrier Detect				X			
21	CG	Signal Quality Director				X			
23	CH	Data Signal Rate Selector (DTE)					X		
23	CI	Data Signal Rate Selector (DCE)				X			
24	DA	Transmitter Signal Element Timing (DTE)							X
15	DB	Transmitter Signal Element Timing (DCE)						X	
17	DD	Recover Signal Element Timing (DCE)						X	
14	SBA	Secondary Transmitted Data			X				
16	SBB	Secondary Received Data		X					
19	SCA	Secondary Request to Send					X		
13	SCB	Secondary Clear to Send				X			
12	SCF	Secondary Carrier Detect				X			
9	-	(Reserved for Data Set Timing)							
10	-	(Reserved for Data Set Timing)							
11	-	Unassigned							
18	-	Unassigned							
25	-	Unassigned							

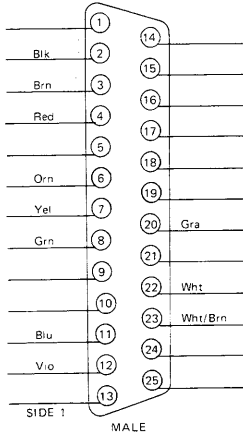
DTE (Data Terminal Equipment)

DCE (Data Communications Equipment)

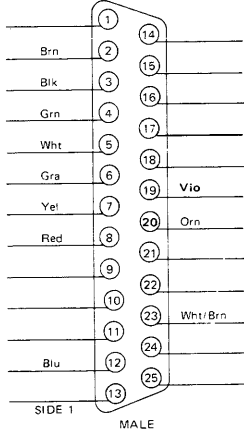
Table 10-3. Asynchronous Terminal Controller Modem Cable Pin Connections



- \* Required for 202S data sets only - physically strapped together in the modem. The DTE can control SCA from either pin 11 or pin 19.
- \*\* European modems only.
- \*\*\* For 202C modems; Pin 11 is Supervisory Transmitted Data (SBA) at the DCE. Pin 12 is Supervisory Receive Data (SBB) at the DCE. Cross connect pins 11-12 and 12-11 for 202C.

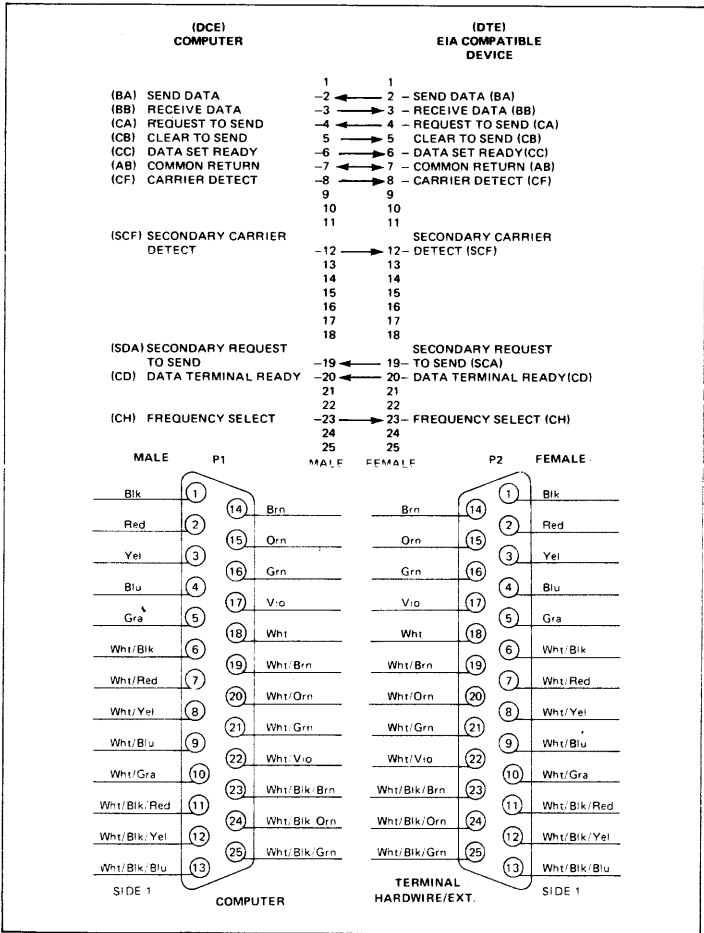


COMPUTER



DATA SET  
103-202

Table 10-4. Asynchronous Terminal Controller Hardwired/Extension Cable Pin Connections





# SERVICE NOTES/IOSM'S

SECTION

XI

## NOTES

## NOTES

**READER COMMENT SHEET**

**HP 3000 HP-IB CE Handbook**

**30070-90010      May 1987**

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