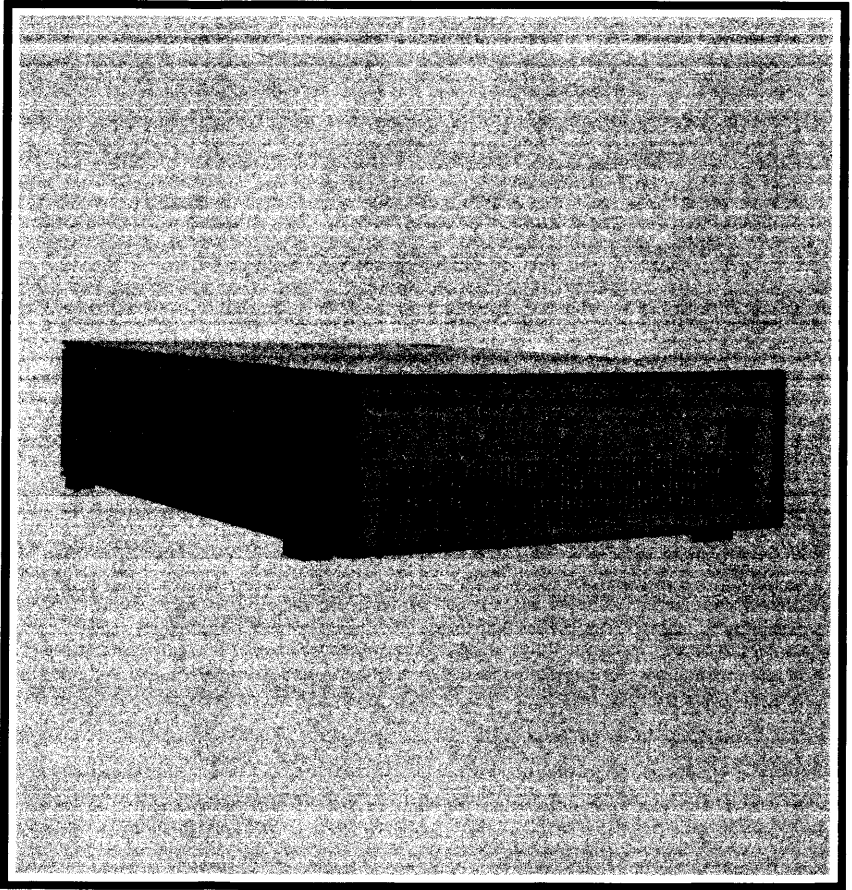


97060 CE Handbook



97060 CE Handbook

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Printing History

The manual printing date and part number indicate its current edition. The printing date will change when a new edition is printed. Minor changes may be made at reprint without changing the printing date. The manual part number will change when extensive changes are made.

Manual updates may be issued between editions to correct errors or document product changes. To ensure that you receive these updates or new editions, you should subscribe to the appropriate product support service. See your HP sales representative for details.

January 1984...First Edition

Chapter 1

97060A Product Information

Features

- LSI/VLSI bipolar and MOS technology
- Eight planes of 1024 X 1024 pixels
- 33 Hz or 60 Hz display mode refresh rate
- 256 colors displayed out of 16.7 million available
- 110V or 220V
- Extensive self-test capability

Functional Specifications

Resolution:	1024 x 768 @ 33 Hz interlaced 736 x 552 @ 60 Hz non-interlaced Other options are soft programmable, such as 640 x 480, 30 Hz, RS-170
Horizontal Scan Rate:	28.3 kHz at 33 Hz vertical 35.4 kHz at 60 Hz vertical
Host Interface:	Compatible with HP 27112A General Purpose I/O (GPIO) Interface Card with Option 001 interface cable
Tablet Interface:	Compatible with HP 9111A Data Tablet
Reset:	Power up causes full self test Host reset causes full self test

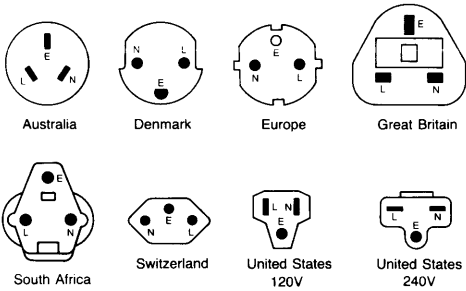
Electrical Characteristics

Rated Line Voltage:	Low Range:	90 to 132 Vac
	High Range:	180 to 264 Vac
Frequency Range:	47 to 66 Hz	
Power Dissipated:	<100W; 85W typical	
Supply Ratings:	+5V @ 20A	
	-5V @ 12A	
Fuse:	4A Low Voltage Range, fast blow	
	2A High Voltage Range, fast blow	
Video:	RS-343 compatible; 1V p-p with sync on Green; 0.7V video, 0.3V sync within 5%	

Configuration

- Interfaces with HP 9000 Series 500 computer via HP 27112A GPIO interface card.
- Interfaces with HP 13279B Color Monitor or any other RS-343-compatible 19-inch color monitor which can support the 97060A horizontal scan rate.
- Has built-in HP-IB interface which can communicate with the HP 9111A Graphics Tablet.

Power Cords



Country	Part Number	Opt.	Voltage
Australia	8120-1369	901	250V, 6A
Denmark	8120-2956	912	250V, 6A
Europe	8120-1689	902	250V, 6A
Great Britain	8120-1351	900	250V, 6A
South Africa	8120-4211	917	250V, 10A
Switzerland	8120-2104	906	250V, 6A
United States	8120-1378	903	120V, 10A
United States	8120-0698	904	240V, 10A

Power cords supplied by HP have polarities matched to the power-input socket on the computer.

- L = Line or Active Conductor (also called "live" or "hot")
- N = Neutral or Identified Conductor
- E = Earth or Safety Ground

NOTE: Plugs are viewed from connector end. Shape of molded plug may vary within country.

Related Documentation

97060-90001 HP 97060A Graphics Processor Installation Note
 97060-90030 HP 97060A Graphics Processor Service Manual

Product Support Package

The 97060A requires no special tools for service.

Safety

WARNING

LETHAL VOLTAGES ARE PRESENT INSIDE THE 97060A. IF YOU ARE UNFAMILIAR WITH THE 97060A, REFER TO THE WARNINGS IN THE SERVICE MANUAL.

Chapter 2

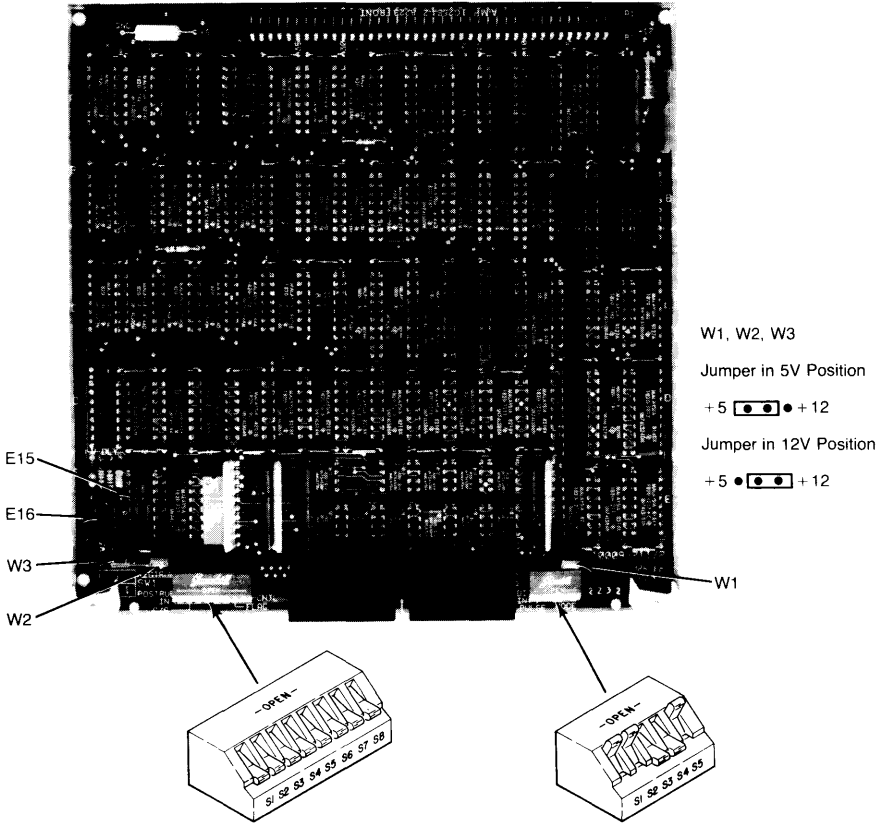
97060A Environmental/Installation/ Preventive Maintenance

Environmental Specifications

Dimensions:	Width: 17 inches Height: 5.25 inches Length: 21 inches
Temperature:	- 40°C to + 75°C non-operating 0°C to + 55°C operating
Humidity:	+ 40°C @ 95% non-condensing operating
Altitude:	50,000 feet, 0-55°C, non-operating 15,000 feet, 0-55°C, operating
EMI:	VDE Class A FCC Class A
Safety:	UL114 (Office Machines) UL478 (EDP) CSA154 (EDP) IEC380 (Office Machines with Amendment 1) IEC435 (EDP 1982)

Installation Procedure

1. Ensure that the HP 27112A GPIO interface card has its switches set as shown:



2. Install the HP 27112A GPIO card in an interface card slot in the computer or HP 97098A I/O Expander, and connect the GPIO interface cable to the card.
3. Connect the other end of the GPIO cable to the 97060A connector labeled "J9/GPIO HOST".
4. Interconnect the 97060A and the monitor with the three 1.8-metre BNC cables, red to red, green to green, and blue to blue.
5. Set the monitor so that the video signal is terminated with 75 ohms.
6. If you are installing the HP 9111A Data Tablet, connect an HP-IB cable from the 9111A to the 97060A input jack labeled "J10/GPIB TABLET". Ensure that the 9111A device address is set to 6 and that no other interface cable is connected to the 9111A.

CAUTION

ENSURE THAT THE 97060A IS CONFIGURED TO MATCH THE INPUT LINE VOLTAGE.

7. Connect power cords to the 97060A, the monitor, and optionally to the 9111A.
8. Turn on power to the computer, 97060A, monitor, and optionally the 9111A.
9. If the computer is a Model 520, load the System Integrity Test and run the 97060 test.
10. If necessary, adjust the monitor's horizontal and/or vertical hold to get a stable picture.

Preventive Maintenance

There are no preventive maintenance procedures. Clean case parts as required according to the following instructions.

CAUTION

CHEMICAL SPRAY-ON CLEANERS USED FOR APPLIANCES AND OTHER HOUSEHOLD APPLICATIONS MAY DAMAGE THE FINISH. THESE OR OTHER CHEMICAL CLEANERS SHOULD NOT BE USED. DO NOT USE DETERGENTS THAT CONTAIN AMMONIA, BENZENES, CHLORIDES, OR ABRASIVES.

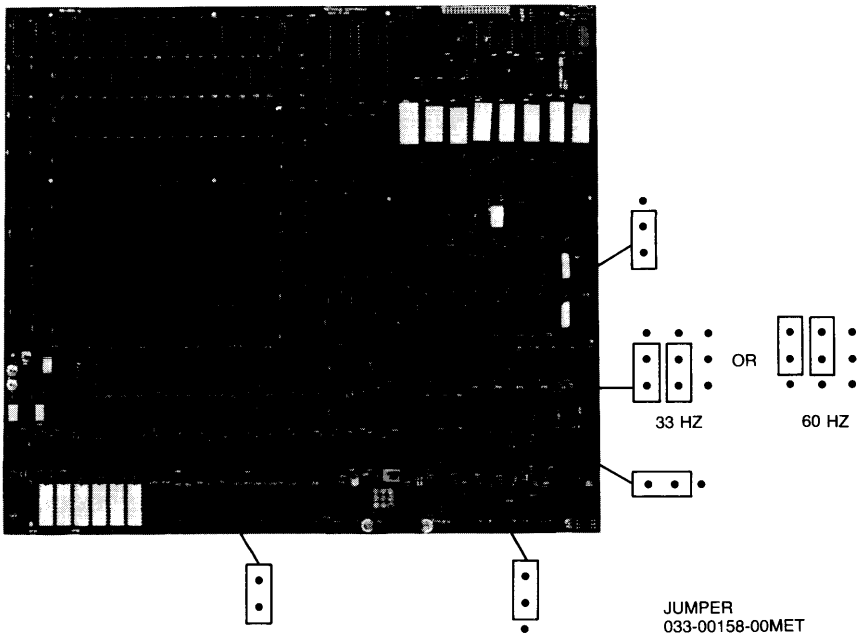
Clean case parts by wiping with a clean, lint-free cloth which has been dampened with a solution of clean water and mild soap. A solution of 80% water and 20% isopropyl alcohol may be used for heavily soiled areas.

Chapter 3

97060A Configuration

33/60 Hz Display Mode

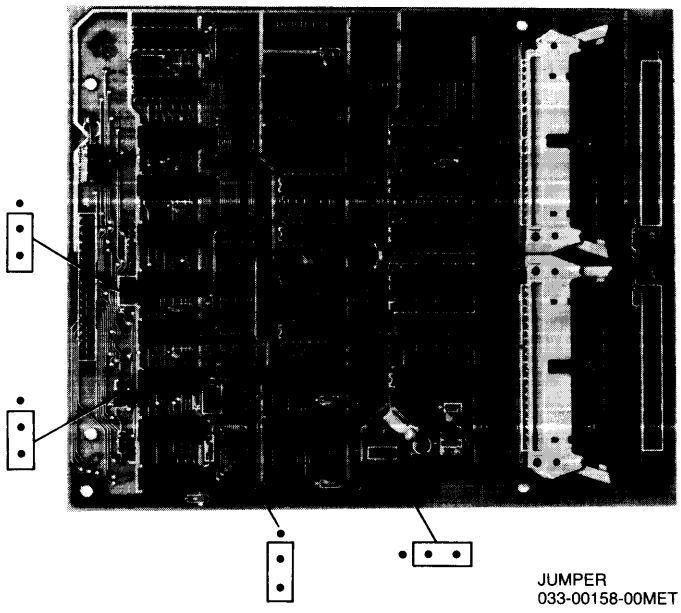
Configure the controller pc assembly as shown in the following figure. Plug in jumpers to select 33 or 60 Hz frame refresh rate. The other four jumpers should be in the positions shown.



Controller Pc Assembly Jumpers

Parallel Interface Pc Assembly

Ensure that the four parallel interface pc assembly jumpers are plugged as shown in the following figure.

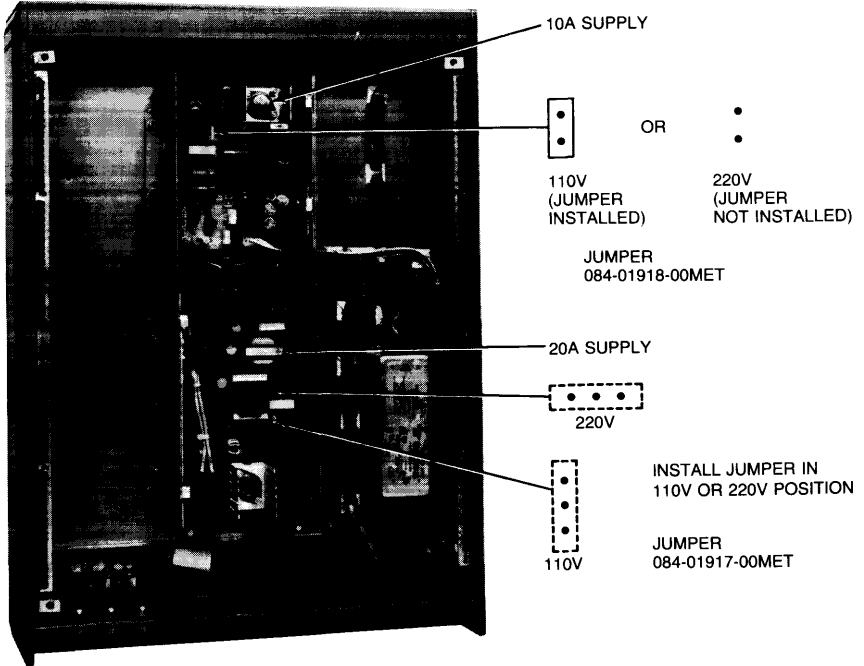


Parallel Interface Pc Assembly Jumpers

Voltage Options

Voltage Configuration Part Numbers

Description	110V	220V
Power cord	8120-1378	Country dependent
Fan	050-00342-00MET	050-00694-00MET
Line fuse	2110-0055	2110-0002



Power Supply Voltage Jumpers

3-4 97060A Configuration

Chapter 4

97060A Troubleshooting

Symptom	Probable Cause
Fan not running.	Faulty line fuse.
Fan running and front panel red ON LED off.	Faulty +5V power supply.*
LEDs D12 and D13 off.	Faulty -5V power supply.*
Op codes don't function correctly.	Faulty parallel interface pc assembly.

* Each power supply has its own fuse.

4-2 97060A Troubleshooting

Chapter 5

97060A Diagnostics

Self Test

The built-in self test starts on powerup of the 97060A. The self test may be run with or without any other device connected to the 97060A. If no errors are found, the green **READY** LED on the front panel lights after several seconds and stays on after the self test is complete. If a monitor is connected to the 97060A, a small star pattern is displayed on the CRT after the **READY** LED lights.

The self test **DOES**:

- Detect more than 90% of IC failures.
- Check data bus counter.
- Check bit slice register increment.
- Check loop counter.
- Check I/O loopback.
- Check scratchpad RAM, load with address.
- Test memory; write all 1s, 0s, 1s, 0s; read back.
- Write mask, write data, check with read back.
- Test vector drawing followed by signature read.

The self test **DOES NOT**:

- Detect I/O buffer errors.
- Detect some DAC errors.
- Detect internal RGB cable failures.
- Detect rear panel connector failures.

Diagnostic LEDs

Nine LEDs on the controller pc assembly indicate a more detailed definition of the failure. Most of the failures are caused by a faulty controller pc assembly which should be replaced. The following LED configurations could result from other conditions:

- All LEDs "on" indicate self test passed.
- LEDs D12 and D13 "off" indicate a faulty -5V power supply.
- LEDs D9 and D11 "on" indicate an I/O problem. Check the following in the order indicated:
 1. Parallel interface pc assembly not plugged in.
 2. Parallel interface pc assembly failure.
 3. Controller pc assembly failure.

System Integrity Test

The System Integrity Tests have a 97060 diagnostic. You can use this diagnostic if you have an HP 9000 Model 520 Computer and the System Integrity Tests.

Chapter 6

97060A Adjustments

There are no adjustments on the 97060A.

6-2 97060A Adjustments

Chapter 7

97060A Peripherals

There is no information for this chapter.

Chapter 8

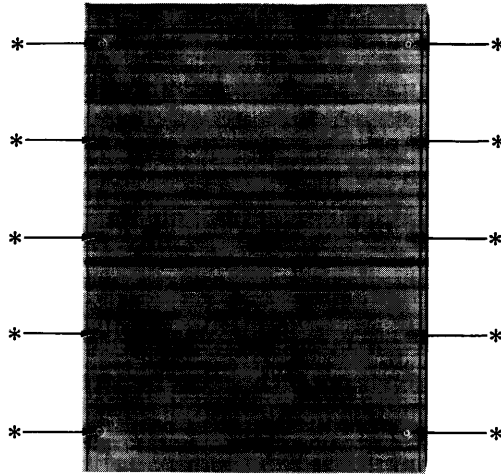
97060A Replaceable Parts

Exchange Part

Part Number	Description
080-01201-01MET	Controller Pc Assembly

Non-Exchange Parts

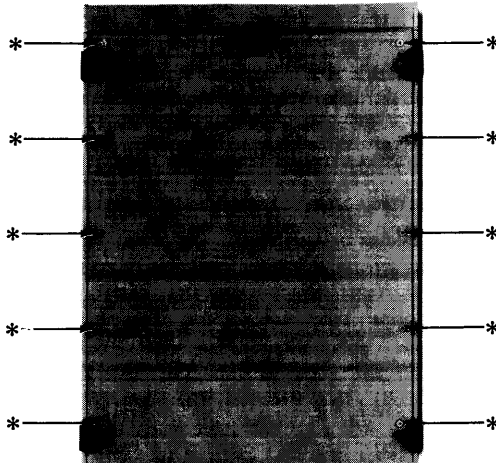
Part Number	Description
038-01507-00MET	Screw, 6-32 x 3/4" flat head, #1 Pozidriv
039-00367-00MET	Washer, #6 nylon, 0.03"
038-01473-00MET	Screw, 6-32 x 5/16" pan head, slotted
039-00366-00MET	Washer, #6 nylon, 0.06"
044-02040-00MET	Standoff, 6-32 x 1/2", female/female
044-00056-00MET	Standoff, 6-32 x 1/2", male/female
044-01745-00MET	Sleeve, standoff
033-00158-00MET	Jumper, 2-pin
084-01918-00MET	Jumper, 10A power supply configuration
084-01917-00MET	Jumper, 20A power supply configuration
048-01787-00MET	Power supply, -5V, 10A
048-01788-00MET	Power supply, +5V, 20A
045-00347-00MET	Switch, ac power, DPST, with cable
056-01825-00MET	Power cable
056-01806-00MET	Video cable, 26"
056-00512-00MET	Coax cable
026-00417-00MET	LED, red, ON
026-00418-00MET	LED, green, READY
085-01189-00MET	Front panel
085-01190-00MET	Rear panel, 110V
085-01824-00MET	Rear panel, 220V
080-00841-05MET	GPIO tablet interface pc assembly
056-00673-02MET	GPIO cable
080-00784-02MET	Parallel interface pc assembly
056-01119-00MET	GPIO host interface cable, 12", 40-pin
056-01120-00MET	GPIO host interface cable, 8.5", 40-pin
080-01129-01MET	GPIO interconnect assembly
042-01198-00MET	Line filter
050-00342-00MET	Fan, 110V
050-00694-00MET	Fan, 220V
023-01387-00MET	Area pattern PROM, U148
023-00916-01MET	Line pattern PROM, U149
023-00914-00MET	Character set PROM, U150
078-01200-00MET	Microcode kit PROM, U83-U90
0363-0170	RFI gasketing, strip fingers, 16 inches
2110-0002	Fuse, line, 2A, 220V
2110-0055	Fuse, line, 4A, 110V
2110-0003	Fuse, power supply, 3A
2110-0010	Fuse, power supply, 5A
8120-1351	Power cord, Great Britain
8120-1369	Power cord, Australia
8120-1689	Power cord, Europe
8120-1378	Power cord, U.S.A., 110V
8120-0698	Power cord, U.S.A., 220V
8120-2104	Power cord, Switzerland
8120-2956	Power cord, Denmark
8120-4211	Power cord, South Africa



* #1 POZIDRIV SCREW
SCREW 038-01507-00MET
WASHER 039-00367-00MET

FOUR #8 TINNEMAN
CLIPS INSIDE COVER

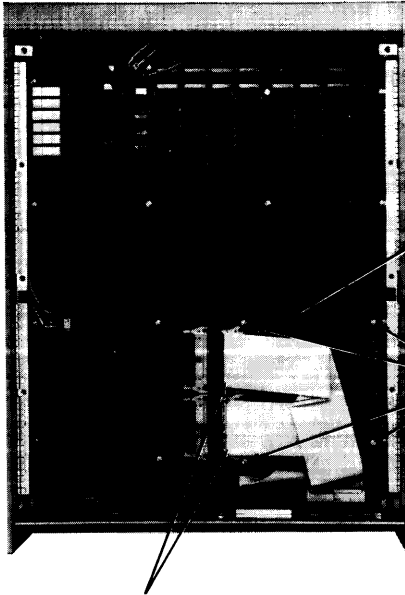
Top Cover



* #1 POZIDRIV SCREW
SCREW 038-01507-00MET
WASHER 039-00367-00MET

FOUR #8 TINNEMAN
CLIPS INSIDE COVER

Bottom Cover



PARALLEL INTERFACE
PC ASSEMBLY
080-00784-02MET

SCREW
038-01473-00MET
WASHER
039-00366-00MET

GPIO HOST INTERFACE CABLES
056-01119-00MET, 12-INCH
056-01120-00MET, 8.5-INCH

Parallel Interface Pc Assembly

GPIB TABLET
INTERFACE
PC ASSEMBLY
080-00841-05MET



SCREW
038-01473-00MET

WASHER
039-00366-00MET

STANDOFF
044-02040-00MET
SCREW
038-01473-00MET
WASHER
039-00366-00MET

GPIB CABLE
056-00673-02MET

GPIB Tablet Interface Pc Assembly

8-6 97060A Replaceable Parts

LED CABLE

VIDEO CABLE
056-01806-00MET

CONTROLLER PC ASSEMBLY
080-01201-01MET

*

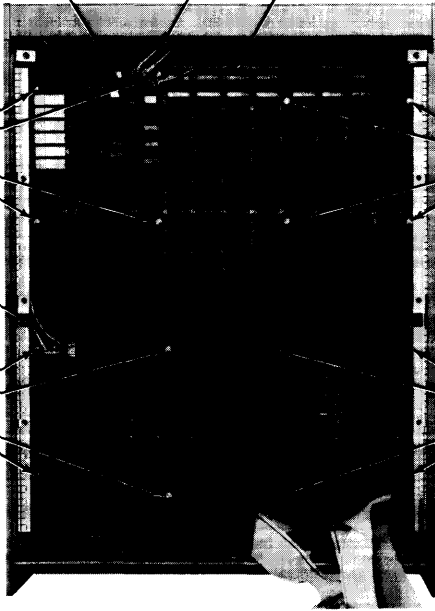
*

POWER CABLE
056-01825-00MET

*

STANDOFF
044-00056-00MET

WASHER
039-00367-00MET

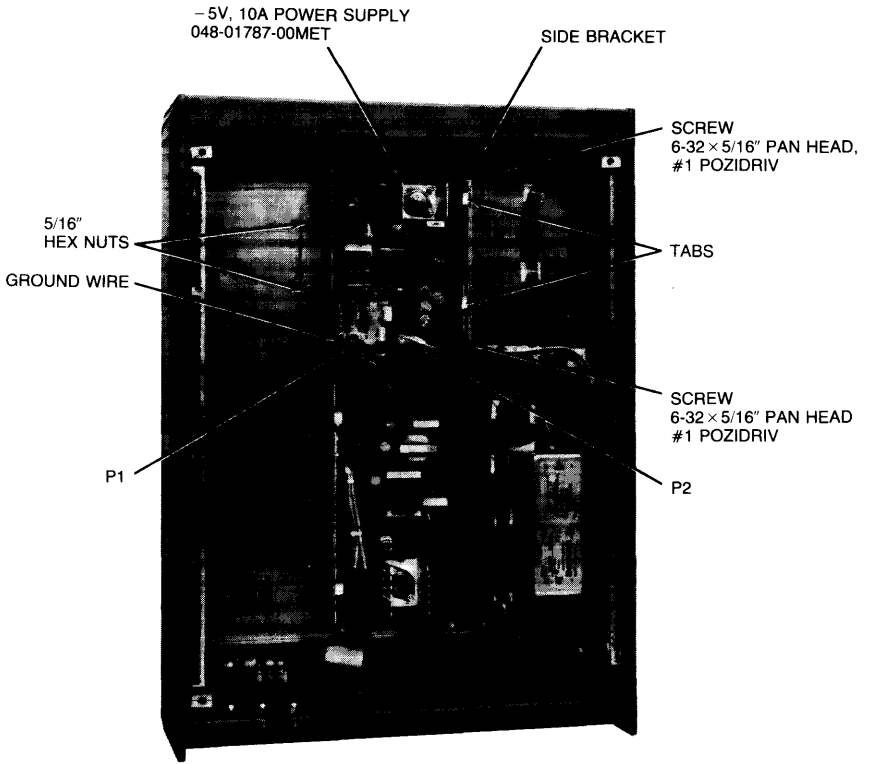


* SCREW
038-01473-00MET

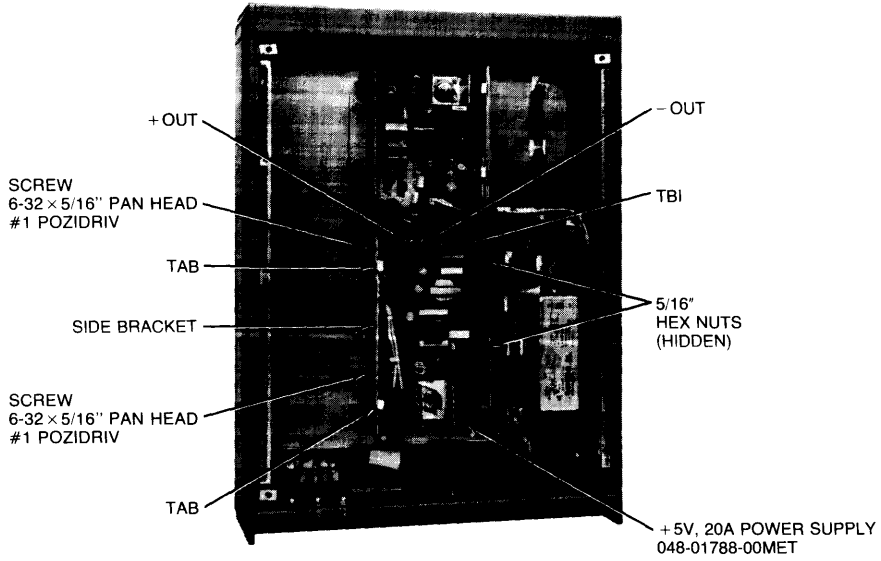
WASHER
039-00366-00MET

SLEEVE OVER STANDOFFS
UNDER CONTROLLER PC ASSEMBLY
044-01745-00MET

Controller Pc Assembly



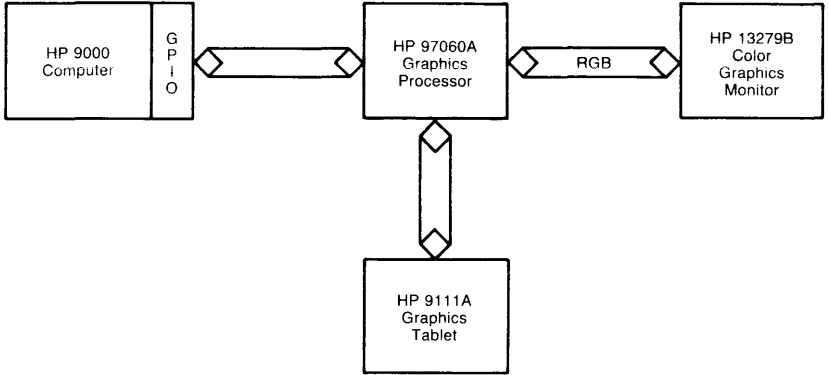
-5V, 10A Power Supply



+ 5V, 20A Power Supply

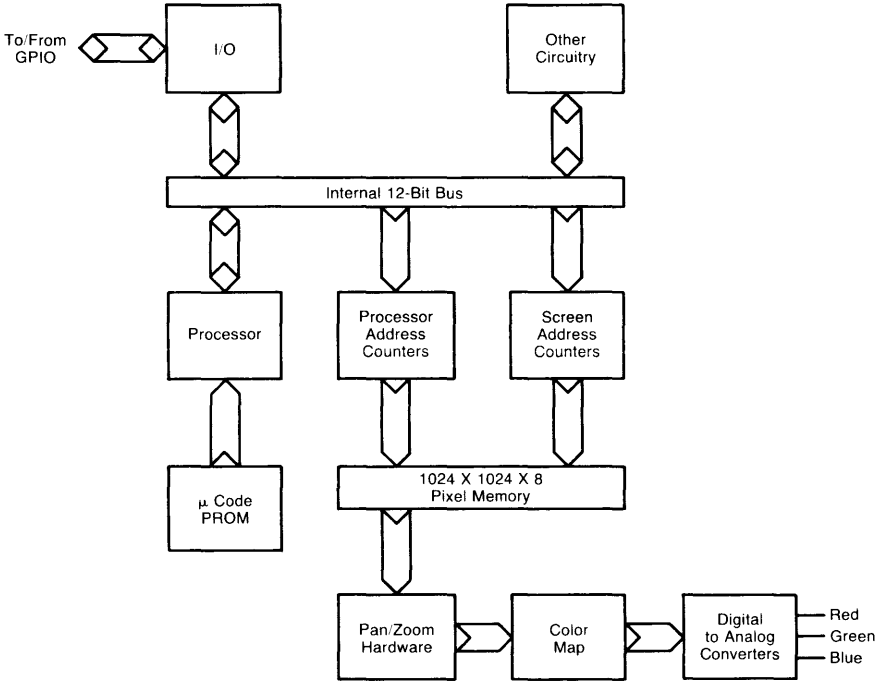
Chapter 9

97060A Diagrams



System Block Diagram

9-2 97060A Diagrams



97060A Block Diagram

Chapter 10

97060A References

There is no information for this chapter.

Chapter **11**

97060A Service Notes

