

HP 3000 Computer Systems



HP 3000 SYSTEM SUPPORT LOG



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DESCRIPTION AND USE

This binder contains all of the forms necessary to record the complete history of HP 3000 Series System serial number . It is extremely important that the contents of this binder be properly maintained. The binder is partitioned into seven sections, the use of which are described below:

1. The Installation Record section contains the documents that define the constituent parts and configuration of the entire system at the time it was shipped. The index at the beginning of the section describes the documents and lists them in the sequence in which they are filed.
2. The Available Services section provides an area into which a copy of your Maintenance Agreement can be inserted and space for filing the names and phone numbers of local HP representatives. This section can be expanded to include any documents that portray the field support capabilities of Hewlett-Packard.
3. The Preventive Maintenance section provides a convenient means of scheduling, executing and logging preventive maintenance activities. This should help define a good, meaningful preventive maintenance plan that ensures reliable performance after installation.
4. The Historical Records section contains the System and Peripheral History Logs. These forms provide the operator with a means to communicate important information in writing to the Customer Engineer. This section should provide a quick overview of the system's performance.
5. A record of hardware and software revisions to the system is kept in the Change Records section. The hardware record is created and maintained automatically by the Field Change Order (FCO) program. The Customer Engineer (CE) and the software Systems Analyst must create and maintain software records.
6. As remedial maintenance is performed on the system, copies of the Customer Service Orders are filed in the Customer Service Orders section provided for that purpose. These forms are also known as Repair Orders (RO).
7. The Current System I/O Configuration/Segment List section provides a location for the CE to keep a record of on-site configuration changes. As the system expands or changes, it should be reflected in this section.

INSTALLATION RECORD



USE PROCEDURE

The Installation Record section consists of three documents listed in the index below. Initially the Installation and Software Records are completed and filed in this section by the Manufacturing Division at the time that the System Support Log is assembled. If system expansion occurs as equipment is shipped directly from the factory to the customer, new documents will be provided to replace those which are outdated. Additional or replacement pages should be filed in this section when they are provided.

The blank System Installation Report provided in this section will be completed by the HP Customer Engineer after your system is installed. Retain your copy (green) of this report in this section for future reference.

This section is not intended to track the hardware and software revisions made to the system after installation. That function is to be accomplished in the Change Records and Current System I/O Configuration/Segment List sections.

INDEX

- Installation Record: Packing list breakdown of hardware, software, and accessories
- Software Record
- System Installation Report

AVAILABLE SERVICES

This section provides a page for you to file the business cards of your current local Hewlett-Packard representatives and a convenient place for you to list service request phone numbers. HP Service Request Forms have also been filed in this section for your convenience. If you purchased a Maintenance Contract with your system, file your copy of the Maintenance Agreement at the end of this section for future reference.

PREVENTIVE MAINTENANCE

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INTRODUCTION

Degradation of system performance can often be avoided by a sound preventive maintenance (PM) program. This section has been developed in order to help define such a PM plan to support HP systems that have been shipped from the factory and installed at sites. Preventive maintenance plans are essential in obtaining high performance from complex systems and should be implemented on a regularly scheduled basis.

The Preventive Maintenance Section consists of a Preventive Maintenance Timetable Worksheets, Customer Preventive Maintenance Procedure inserts, and Field Preventive Maintenance Procedure inserts. The Preventive Maintenance Procedure inserts for each product are listed on page PM-i.

The Customer Preventive Maintenance Procedure inserts lists the PM routines to be performed by customer personnel, the interval at which these routines should be performed, the amount of time each requires, the special tools and materials that are needed, and instructions for accomplishing each routine. These routines are the sole responsibility of the customer in their effort to help ensure optimum system performance. Since these procedures are the customer's responsibility, HP field personnel will not be involved with the performance thereof unless otherwise contractual specified.

The Field Preventive Maintenance Procedure inserts provide the intervals at which PM routines should be performed, the approximate amount of time each routine requires, the special tools and materials that are needed, and a brief description of what is to be performed at each interval. The descriptions are intended to tell an experienced, trained CE "what" to do as opposed to "how" to do it. If additional information is needed, refer to the maintenance manual. Reference materials are identified for that purpose.

The basic purpose of PM is to keep unscheduled customer interruptions to a minimum. The proper amount of PM is that which accomplishes the basic purpose and does so at minimum cost. Unnecessary PM is not only wasteful of time but also jeopardizing to equipment reliability. Thus, PM should consist only of cleaning, lubricating, visual inspection, replacement of determinable worn parts (air filters, etc.), observation of equipment operation, and one pass of the diagnostic. Only those adjustments which are known to require periodic attention should be checked.

The Preventive Maintenance Timetable Worksheet enables consolidation of all intervals and times from each insert into a twelve month schedule of system maintenance. The intervals provided reflect one shift usage under normal operating conditions. Good judgment and a firm understanding of system usage should influence the use of these figures to arrive at a sensible PM schedule for a particular system.

COMMONLY-USED MATERIALS

<u>Item</u>	<u>HP Stock No. or Vendor</u>
Aerosol degreaser	8500-0232
Light grease	6040-0222
Cotton-tipped applicators	8520-0023
Acid brush	8502-0015
Freon solvent	8500-1251
Anti-static glass cleaner	8500-0039
Isopropyl alcohol, filtered	1535-1432
Light oil	6040-0220
Cleaner/Degreaser (Chemisol Formula 409)	Harrell Corp. "A" Div. So. Norwalk, Connecticut
Mild detergent (Spray-White)	Kelite Chemical Corp. 261 Hamilton Avenue Palo Alto, California
Forced air (Aero-Dust MS-220)	Miller Stevenson Co. 1001 East 1st Street Los Angeles, California
Lint-free tissues (Kimwipe 900-S)	Kimberly-Clark Corp. Neenah, Wisconsin

PREVENTIVE MAINTENANCE TIMETABLE WORK SHEET

[illegible]

PREVENTIVE MAINTENANCE TIMETABLE WORK SHEET

[illegible]

PREVENTIVE MAINTENANCE TIMETABLE WORK SHEET

[illegible]

PREVENTIVE MAINTENANCE TIMETABLE WORK SHEET

[illegible]

CUSTOMER PREVENTIVE MAINTENANCE PROCEDURE

2563A LINE PRINTER

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

The customer need only maintain the printer in a state of general cleanliness. Accumulated dust, bits of paper and lint can lead to serious problems.

Watch for indications of physical damage and report problems or potential problems to your HP Service Representative.

REFERENCE MATERIAL

02563-90901 HP 2563A Operator's Manual

12/83

CUSTOMER PREVENTIVE MAINTENANCE PROCEDURE

2608A/S LINE PRINTER

SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	Vacuum Cleaner	
Test Equipment	None	
Materials	None	



REFERENCE MATERIAL

02608-90901	Operator's Manual, 2608A
02608-90911	Operator's Manual, 2608S
02608-90904	Service Manual (Option 715)
02608-90903	Technical Reference Manual

WEEKLY (0.1 hour)

Manual reference is to Operator's Manual. Clean air filter on cooling fan intake.

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CUSTOMER PREVENTIVE MAINTENANCE PROCEDURE

2611A/2619A LINE PRINTER

SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	Print Head Maintenance Brush	8520-0015
Test Equipment	None	
Materials	None	

REFERENCE MATERIAL

02619-90901	Operator's Manual
02619-90901	Service Manual

The following procedures do not include the normal housekeeping tasks performed by the operator such as changing ribbons and forms or exterior cleaning. Also, the maintenance intervals are based on a daily 8-hour shift and approximately 66 printing hours per month. More than one shift per day or more than 66 printing hours per month will require a more frequent maintenance schedule.

DAILY (0.1 hour)

Manual reference is to Operator's Manual. Vacuum print area.

MONTHLY (0.5 hour)

Manual reference is to Operator's Manual. Clean type faces.

CUSTOMER PREVENTIVE MAINTENANCE PROCEDURE

2613A LINE PRINTER 30127A

SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	None	
Test Equipment	None	
Materials	"Scotch Brand" Type Cleaner #577	1535-2914

REFERENCE MATERIAL

02613-90013	Preventive Maintenance Manual
-------------	-------------------------------

MONTHLY (.75 hour)

Perform Preventive Maintenance Program II in accordance with the Preventive Maintenance Manual.

10/78

CUSTOMER PREVENTIVE MAINTENANCE PROCEDURE

2617A LINE PRINTER 30133A

SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	None	
Test Equipment	None	
Materials	"Scotch Brand" Type Cleaner #577	1535-2914

REFERENCE MATERIAL

02617-90904	Preventive Maintenance Manual
-------------	-------------------------------

The following procedures do not include the normal housekeeping performed by the operator, such as changing ribbon, forms, format tape, and cleaning. The maintenance intervals are based upon 180 hours per month operating time. More hours of operation per month would require a more frequent maintenance schedule.

MONTHLY (1.0 hour)

Perform Preventive Maintenance Program II in accordance with the Preventive Maintenance Manual.

10/78

CUSTOMER PREVENTIVE MAINTENANCE PROCEDURE

2621A INTERACTIVE TERMINAL

SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	None	
Test Equipment	None	
Materials	None	

REFERENCE MATERIAL

02620-90001	Owner's Manual
-------------	----------------

EVERY THREE MONTHS (0.25 hour)

1. Clean the outer housing and display screen using anti-static glass cleaner and lint-free tissues.
2. Manual reference is to Owner's Manual. Check operation of operator function switches.

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CUSTOMER PREVENTIVE MAINTENANCE PROCEDURE

2622A DISPLAY TERMINAL

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time												.2

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
NONE		

REFERENCE MATERIAL

02622-90001	User's Manual
02622-90002	Reference Manual

YEARLY

The battery should be replaced once a year, or anytime it measures less than 3.2 volts.

9/81

CUSTOMER PREVENTIVE MAINTENANCE PROCEDURE

2624A DISPLAY TERMINAL

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time												.2

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
NONE		

REFERENCE MATERIAL

02624-90001	User's Manual
02624-90002	Reference Manual

YEARLY

The battery should be replaced once a year, or anytime it measures less than 3.2 volts.

9/81

CUSTOMER PREVENTIVE MAINTENANCE PROCEDURE

2626A DISPLAY STATION

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time												.2

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
NONE		

REFERENCE MATERIAL

02626-90001	User's Manual
02626-90002	Reference Manual

YEARLY

The battery should be replaced once a year, or anytime it measures less than 3.2 volts.

CUSTOMER PREVENTIVE MAINTENANCE PROCEDURE

2631A PRINTER

SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	Hex Key	8710-1181
	Print Head Maintenance Brush	8520-0015
	Vacuum Cleaner	
Test Equipment	None	
Materials	None	



REFERENCE MATERIAL

02631-90901	Operator's Manual
02631-90902	Service Manual (Option 715)

WEEKLY (0.1 hour)

Manual reference is to Operator's Manual. Clean air filter on cooling fan intake.

EVERY TWO MONTHS (0.5 hour)

Manual reference is to Operator's Manual. Remove and clean print head. (Refer to Section 5.)
In addition, remove accumulated dust and debris from around and below the guide rails.

CUSTOMER PREVENTIVE MAINTENANCE PROCEDURE

2635A PRINTING TERMINAL

SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	Hex Key	8710-1181
	Print Head Maintenance Brush	8520-0015
	Vacuum Cleaner	
Test Equipment	None	
Materials	None	

REFERENCE MATERIAL

02631-90901	Operator's Manual
02631-90902	Service Manual (Option 715)

WEEKLY (0.1 hour)

Manual reference is to Operator's Manual. Clean air filter on cooling fan intake.

EVERY TWO MONTHS (0.5 hour)

Manual reference is to Operator's Manual. Remove and clean print head. (Refer to Section 5.)
In addition, remove accumulated dust and debris from around and below the guide rails.

CUSTOMER PREVENTIVE MAINTENANCE PROCEDURE

2640A/B/C/N/S DISPLAY TERMINAL

SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	None	
Test Equipment	None	
Materials	None	

REFERENCE MATERIAL

02640-90011	Owner's Manual
-------------	----------------

EVERY THREE MONTHS (0.25 hour)

1. Clean the outer housing and display screen using anti-static glass cleaner and lint-free tissues.
2. Manual reference is to Owner's Manual. Check operation of operator function switches.

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CUSTOMER PREVENTIVE MAINTENANCE PROCEDURE

2641A AND 2645A/S DISPLAY STATIONS

SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	None	
Test Equipment	None	
Materials	None	

REFERENCE MATERIAL

02645-90003	Installation and Service Manual
02645-90005	Reference Manual

THREE TIMES A MONTH (0.25 hour)

The magnetic heads in the Cartridge Tape Unit Transport Assembly should be cleaned after every 50 hours of operation or whenever dust or dirt is detected on the head surfaces. Manual references are to the Reference Manual and to the Installation and Service Manual. Clean the magnetic heads as follows:

1. Raise the housing to its half-open position as described in the Reference Manual. (Location of the magnetic head is shown in figure 4-2 of the Installation and Service Manual.)
2. Saturate cleaning swab with cleaning solvent (Freon or alcohol only).
3. Using right-to-left and left-to-right motion, carefully wipe the magnetic head surface clean with the saturated swab. Do not use an up-and-down motion.
4. Using a dry cleaning swab, carefully wipe and dry the magnetic head surface to remove all film. Do not use an up-and-down motion.
5. Firmly grasp the top housing with one hand and the release safety latch with the other. Release the latch by pressing it inwards. Using both hands, carefully lower the top housing to its closed position.

EVERY THREE MONTHS (0.35 hour)

1. Clean the housing and display screen using anti-static glass cleaner and lint-free tissues.
2. Check operation of operator function switches.

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CUSTOMER PREVENTIVE MAINTENANCE PROCEDURE

2647A GRAPHICS DISPLAY STATION

SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	None	
Test Equipment	None	
Materials	None	

REFERENCE MATERIAL

02647-90002	Reference Manual
02647-90003	Installation and Service Manual

THREE TIMES A MONTH (0.25 hours)

The magnetic heads in the Cartridge Tape Unit Transport Assembly should be cleaned after every 50 hours of operation or whenever dust or dirt is detected on the head surfaces. Manual references are to the Reference Manual and to the Installation and Service Manual. Clean the magnetic heads as follows:

1. Raise the housing to its half-open position as described in the Reference Manual (Location of the magnetic head is shown in figure 4-2 of the Installation and Service Manual.)
2. Saturate cleaning swab with cleaning solvent (Freon or alcohol only).
3. Using right-to-left motion, carefully wipe the magnetic head surface clean with the saturated swab. Do not use an up-and-down motion.
4. Using a dry cleaning swab, carefully wipe and dry the magnetic head surface to remove all film. Do not use an up-and-down motion.
5. Firmly grasp the top housing with one hand and the release safety latch with the other. Release the latch by pressing it inwards. Using both hands, carefully lower the top housing to its closed position.

EVERY THREE MONTHS (0.35 hour)

1. Clean the housing and display screen using anti-static glass cleaner and lint-free tissues.
2. Check operation of operator function switches.

CUSTOMER PREVENTIVE MAINTENANCE PROCEDURE

2648A GRAPHICS DISPLAY STATION

SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	None	
Test Equipment	None	
Materials	None	

REFERENCE MATERIAL :

02648-90002	Reference Manual
02648-90003	Installation and Service Manual

THREE TIMES A MONTH (0.25 hour)

The magnetic heads in the Cartridge Tape Unit Transport Assembly should be cleaned after every 50 hours of operation or whenever dust or dirt is detected on the head surfaces. Manual references are to the Reference Manual and to the Installation and Service Manual. Clean the magnetic heads as follows:

1. Raise the housing to its half-open position as described in the Reference Manual (Location of the magnetic head is shown in figure 4-2 of the Installation and Service Manual.)
2. Saturate cleaning swab with cleaning solvent (Freon or alcohol only).
3. Using right-to-left and left-to-right motion, carefully wipe the magnetic head surface clean with the saturated swab. Do not use an up-and-down motion.
4. Using a dry cleaning swab, carefully wipe and dry the magnetic head surface to remove all film. Do not use an up-and-down motion.
5. Firmly grasp the top housing with one hand and the release safety latch with the other. Release the latch by pressing it inwards. Using both hands, carefully lower the top housing to its closed position.

EVERY THREE MONTHS (0.35 hour)

1. Clean the housing and display screen using anti-static glass cleaner and lint-free tissues.
2. Check operation of operator function switches.

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CUSTOMER PREVENTIVE MAINTENANCE PROCEDURE

2649E CRT TERMINAL CONSOLE

SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	None	
Test Equipment	Display Mask	02600-80001
Materials	None	

REFERENCE MATERIAL

02641-90001	User's Material
-------------	-----------------

EVERY THREE MONTHS (0.5 hour)

1. Clean the outer housing and display screen using anti-static glass cleaner and lint-free tissues.
2. Observe operation of cooling fan.
3. Check operation of all operator function switches.
4. Perform terminal self-test.

CUSTOMER PREVENTIVE MAINTENANCE PROCEDURE

2680A PAGE PRINTER

SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	Vacuum Cleaner	
	Corona Cleaning Tool	02682-60414
Test Equipment	None	
Materials	Toner Disposal Bottle	92181A

REFERENCE MATERIAL

02682-90901	Operator's Manual
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AS REFERENCED IN OPERATOR'S MANUAL

General Cleaning
Corona Cleaning
Disposal Bottle Replacement
Self Test

FIELD PREVENTIVE MAINTENANCE PROCEDURE

2687A/2688A PAGE PRINTER

NO REGULARLY SCHEDULED FIELD MAINTENANCE

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CUSTOMER PREVENTIVE MAINTENANCE PROCEDURE

7911 DISC DRIVE



Table 1. PREVENTIVE MAINTENANCE TIMETABLE

NONE

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>Item</u>	<u>Description</u>	<u>HP Stock No.</u>
NONE		

REFERENCE MATERIAL

10/81

CUSTOMER PREVENTIVE MAINTENANCE PROCEDURE

7933 H DISC DRIVE

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

None

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>Item</u>	<u>Description</u>	<u>HP Stock No.</u>
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REFERENCE MATERIAL

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CUSTOMER PREVENTIVE MAINTENANCE PROCEDURE

7970B MAGNETIC TAPE UNIT 30115A

SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	Vacuum Cleaner	
Test Equipment	None	
Materials	None	

REFERENCE MATERIAL

07970-90383	O&S Manual
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EVERY FOUR MONTHS (1.0 hour)

1. Manual reference is to O&S Manual. Perform Operator Maintenance routines with particular attention given to cleaning the ceramic tape guide washers.
2. Clean general equipment interior with a vacuum cleaner.

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CUSTOMER PREVENTIVE MAINTENANCE PROCEDURE

7970E/7971 MAGNETIC TAPE UNIT

SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	Vacuum Cleaner	
Test Equipment	None	
Materials	None	

REFERENCE MATERIAL

07970-90765	O&S Manual
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EVERY FOUR MONTHS (1.0 hour)

1. Manual reference is to O&S Manual. Perform operator maintenance routines with particular attention given to cleaning the ceramic tape guide washers.
2. Clean general equipment interior with a vacuum cleaner

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CUSTOMER PREVENTIVE MAINTENANCE PROCEDURE

7974 A MAGNETIC TAPE DRIVE



Table 1. PREVENTIVE MAINTENANCE TIMETABLE

After each 8 hours use: clean tape path to remove oxide build up. Detailed instructions are listed in the Operator's Manual, below.

Weekly: Clean EOT/BOT sensor.

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>Item</u>	<u>Description</u>	<u>HP Stock No.</u>
Mag Tape Head Cleaning Kit		92193H

REFERENCE MATERIAL

07974-90000 Operator's Manual

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CUSTOMER PREVENTIVE MAINTENANCE PROCEDURE

7976A MAGNETIC TAPE DRIVE

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

After each 8-hour shift: clean tape path to remove oxide build up. Detailed instructions are listed in the Operator's Manual, below.

Weekly: Clean EOT/BOT sensor.

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>Item</u>	<u>Description</u>	<u>HP Stock No.</u>
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REFERENCE MATERIAL

07976-90901 Operator's Manual
07976-90907 Programming Manual

CUSTOMER PREVENTIVE MAINTENANCE PROCEDURE

9895A FLEXIBLE DISC DRIVE

There are no particular preventive maintenance procedures required for this unit. Refer to the Operator's Manual for general cleanliness and handling.

REFERENCE

09895-90000

User's Manual

FIELD PREVENTIVE MAINTENANCE PROCEDURE

GENERAL SYSTEM PROCEDURES



Approximately 1.0 hour

The following are general system maintenance procedures that should be performed on every device on every PM visit. This may be inconsistent with, or in some cases repetitive of, the procedures on the individual devices, but they reflect sound overall system PM practice.

1. Review Historical Record for any problems logged since the last visit. Investigate such problems.
2. Check all lamps and indicators.
3. Check all switches and controls.
4. Check all fans and blowers.
5. Check all air filters.
6. Run diagnostics.
7. Perform general housecleaning on equipment exterior.

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FIELD PREVENTIVE MAINTENANCE PROCEDURE

3000/III CPU, MEMORY, I/O, AND 30341A HP-IB INTERFACE MODULE

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time						1.5						1.5

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	None	
Test Equipment	Voltmeter (3 digit accuracy)	
Materials	None	

REFERENCE MATERIAL

30000-90143	System Reference/Training Manual
30000-90147	System Installation Manual
30000-90172	Customer Engineer Handbook
30341-90002	HP 30341A HP-IB Interface Module Reference/ Training Manual
30341-9001	HP 30341A HP-IB Interface Module Installation Manual

EVERY THREE MONTHS (1.5 hours)

1. Clean general equipment interior and exterior. Clean all filters.
2. Check all power supply voltages following procedures in System Service Manual and System Installation Manual.
3. Check all cooling fans in the card cages, cabinets and power supplies.
4. Check all lamps on Maintenance Panels, Power Supplies and Cabinet.
5. Run MEMLOGAN to obtain a copy of memory error logging and take appropriate action as required.
6. Run CPU, Memory and I/O Diagnostics.

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FIELD PREVENTIVE MAINTENANCE PROCEDURE

3000/30 CPU, MEMORY, AND I/O

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time						1.5						1.5

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	None	
Test Equipment	Voltmeter (3 digit accuracy)	
Materials	None	

REFERENCE MATERIAL

30070-60068	Manual of Diagnostics
30070-90003	Reference Training Manual
30080-90001	Installation Manual

EVERY THREE MONTHS (1.5 hours)

1. Clean general equipment interior and exterior. Clean all filters.
2. Check all power supply voltages, following procedures in Reference Training Manual.
3. Check all cooling fans.
4. Run Cold Load Self Test Diagnostic.

FIELD PREVENTIVE MAINTENANCE PROCEDURE

3000/33 CPU, MEMORY, AND I/O

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time						1.5						1.5

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	None	
Test Equipment	Voltmeter (3 digit accuracy)	
Materials	None	

REFERENCE MATERIAL

30070-60068	Manual of Diagnostics
30070-90003	Reference Training Manual
30070-90021	Installation Manual

EVERY SIX MONTHS (1.5 hours)

1. Clean general equipment interior and exterior. Clean all filters.
2. Check all power supply voltages, following procedures in Reference Training Manual.
3. Check all cooling fans.
4. Run Cold Load Self Test Diagnostic.

FIELD PREVENTIVE MAINTENANCE PROCEDURE

3000/39/40/42 CPU, MEMORY, AND I/O

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time						1.0						1.0

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	None	
Test Equipment	Voltmeter (3 digit accuracy)	
Materials	None	

REFERENCE MATERIAL

30070-60068	Manual of Diagnostics
30080-90001	Reference Training Manual
30170-90002	Installation Manual

EVERY THREE MONTHS (1.5 hours)

1. Clean general equipment interior and exterior. Clean all filters.
2. Check all power supply voltages, following procedures in Reference Training Manual.
3. Check all cooling fans.
4. Run CMP/System Self Test Diagnostic.

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FIELD PREVENTIVE MAINTENANCE PROCEDURE

3000/44/48 CPU, MEMORY, AND I/O

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time						1.5						1.5

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	None	
Test Equipment	Voltmeter (3 digit accuracy)	
Materials	None	

REFERENCE MATERIAL

30070-60068	Manual of Diagnostics
30090-90001	Reference Training Manual
30090-90002	Installation Manual

EVERY SIX MONTHS (1.5 hours)

1. Clean general equipment interior and exterior. Clean all filters.
2. Check all power supply voltages, following procedures in Reference Training Manual.
3. Check all cooling fans.
4. Run CMP Self Test diagnostic.

FIELD PREVENTIVE MAINTENANCE PROCEDURE

3000/64/68 SPU

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time						1.0						

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
None		

REFERENCE MATERIAL

30140-90007 System Installation Manual

EVERY SIX MONTHS (1.0 hours)

1. Clean general equipment interior and exterior.
Clean all filters.
2. Run MEMLOGAN to obtain copy of memory error logging and change MMA chips as required.

FIELD PREVENTIVE MAINTENANCE PROCEDURE

2563A LINE PRINTER

NO REGULARLY SCHEDULED FIELD MAINTENANCE

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FIELD PREVENTIVE MAINTENANCE PROCEDURE

2608A LINE PRINTER

NOTE: All preventive maintenance procedures for this product are the responsibility of the owner:
The procedures are listed here for reference purposes only.

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4

Table 2 SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	Vacuum Cleaner	
Test Equipment	None	
Materials	None	

REFERENCE MATERIAL

02608-90901	Operator's Manual
02608-90904	Service Manual (Option 715)
02608-90905	Parts and Diagrams Manual (Option 715)
02608-90903	Technical Reference Manual

WEEKLY (0.1 hour)

Manual reference is to Operator's Manual. Clean air filter on cooling fan intake.

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FIELD PREVENTIVE MAINTENANCE PROCEDURE

2608S LINE PRINTER

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time												

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>Item</u>	<u>Description</u>
Tools	Metric ball-tipped hexagonal drivers (2, 3, 4, and 5mm). Large (#2) pozidriv screwdriver. Small flat-blade screwdriver. 25-pin data comm test connector, pn 02645-60004. 50-pin data comm test connector, pn 02608-60246.

REFERENCE MATERIAL

02608-90911	Operator's Manual
02608-90909	Service Manual
02608-90910	Technical Reference Manual

There is no scheduled preventive maintenance for the 2608S. However, during system maintenance or during repairs, the C.E. should do such housekeeping procedures as changing ribbon cartridges or vacuuming paper and ribbon dust from exposed areas.

FIELD PREVENTIVE MAINTENANCE PROCEDURE

2611A/2619A LINE PRINTER

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time			1.5			2.0			1.5			3.0

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	HP 2619A Service Kit	
Test Equipment	Voltmeter (3-digit accuracy)	
Materials	None	

REFERENCE MATERIAL

02619-90901	Operator's Manual
02619-90902	Service Manual

The following procedures do not include the maintenance procedures that are the responsibility of the owner. Also, the maintenance interval is based on normal usage of up to 66 printing hours per month. From 67 to 99 printing hours per month, the maintenance interval is every six weeks.

EVERY THREE MONTHS (1.5 hour)

Manual reference is to Service Manual. Perform quarterly preventive maintenance routines in accordance with table 3-7. In the case of the 2611A, ignore any reference to the "vacuum bag."

EVERY SIX MONTHS (2.0 hours)

Manual reference is to Service Manual. Perform quarterly and semi-annually preventive maintenance routines in accordance with table 3-7. In the case of the 2611A, ignore any reference to the "vacuum bag."

EVERY TWELVE MONTHS (3.0 hours)

Manual reference is to Service Manual. Perform quarterly, semi-annually, and annually preventive maintenance routines in accordance with table 3-7. In the case of the 2611A, ignore any reference to the "vacuum bag."

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FIELD PREVENTIVE MAINTENANCE PROCEDURE

2613A LINE PRINTER 30127A

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time	.75	.75	.75	.75	.75	1	.75	.75	.75	.75	.75	1

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	None	
Test Equipment	Voltmeter (3-digit accuracy)	
Materials	"Scotch Brand" Type Cleaner #577	1535-2914

REFERENCE MATERIAL

02613-90013 Preventive Maintenance Manual

MONTHLY (.75 hour)

Perform Preventive Maintenance Program II in accordance with the Preventive Maintenance Manual.

EVERY SIX MONTHS (1.0 hour)

Perform Preventive Maintenance Program II in accordance with the Preventive Maintenance Manual.

FIELD PREVENTIVE MAINTENANCE PROCEDURE

2617A LINE PRINTER
30133A

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time	1	1	1	1	1	1.5	1	1	1	1	1	1.5

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	None	
Test Equipment	Voltmeter (3-digit accuracy)	
Materials	"Scotch Brand" Type Cleaner #577	1535-2914

REFERENCE MATERIAL

02617-90904 Preventive Maintenance Manual

The following procedures do not include the normal housekeeping performed by the operator, such as changing ribbon, forms, format tape, and cleaning. The maintenance intervals are based upon 180 hours per month operating time. More hours of operation per month would require a more frequent maintenance schedule.

MONTHLY (1.0 hour)

Perform Preventive Maintenance Program II in accordance with the Preventive Maintenance Manual.

EVERY SIX MONTHS (1.5 hours)

Perform Preventive Maintenance Program II in accordance with the Preventive Maintenance Manual.

FIELD PREVENTIVE MAINTENANCE PROCEDURE

2621A INTERACTIVE TERMINAL

NOTE: All preventive maintenance procedures for this product are the responsibility of the owner.
The procedures are listed here for reference purposes only.

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time			.25			.25			.25			.25

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	None	
Test Equipment	None	
Materials	None	

REFERENCE MATERIAL

02620-90002	Service Manual
02620-90001	Owner's Manual

EVERY THREE MONTHS (0.25 hour)

1. Clean the outer housing and display screen using anti-static glass cleaner and lint-free tissues.
2. Check operation of operator function switches.

FIELD PREVENTIVE MAINTENANCE PROCEDURE

2622A DISPLAY TERMINAL

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time												

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
NONE		

REFERENCE MATERIAL

02622-90003	Service Manual
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FIELD PREVENTIVE MAINTENANCE PROCEDURE

2624A DISPLAY TERMINAL

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time												

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
NONE		

REFERENCE MATERIAL

02624-90003	Service Manual
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FIELD PREVENTIVE MAINTENANCE PROCEDURE

2626A DISPLAY STATION

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time												

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
NONE		

REFERENCE MATERIAL

02626-90003	Service Manual
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FIELD PREVENTIVE MAINTENANCE PROCEDURE

2631A PRINTER

NOTE: All preventive maintenance procedures for this product are the responsibility of the owner.
The procedures are listed here for reference purposes only.

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time	.4	.9	.4	.9	.4	.9	.4	.9	.4	.9	.4	.9

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	Hex Key	8710-1181
	Print Head Maintenance Brush	8520-0015
	Vacuum Cleaner	
Test Equipment	None	
Materials	None	

REFERENCE MATERIAL

02631-90901	Operator's Manual
02631-90902	Service Manual (Option 715)

WEEKLY (0.1 hour)

Manual reference is to Operator's Manual. Clean air filter on cooling fan intake.

EVERY TWO MONTHS (0.5 hour)

Manual reference is to Operator's Manual. Remove and clean print head. (Refer to Section 5.)
In addition, remove accumulated dust and debris from around and below the guide rails.

FIELD PREVENTIVE MAINTENANCE PROCEDURE

2635A PRINTING TERMINAL

NOTE: All preventive maintenance procedures for this product are the responsibility of the owner.
The procedures are listed here for reference purposes only.



Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time	.4	.9	.4	.9	.4	.9	.4	.9	.4	.9	.4	.9

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	Hex Key	8710-1181
	Print Head Maintenance Brush	8520-0015
	Vacuum Cleaner	
Test Equipment	None	
Materials	None	

REFERENCE MATERIAL

02631-90901	Operator's Manual
02631-90902	Service Manual (Option 715)

WEEKLY (0.1 hour)

Manual reference is to Operator's Manual. Clean air filter on cooling fan intake.

EVERY TWO MONTHS (0.5 hour)

Manual reference is to Operator's Manual. Remove and clean print head. (Refer to Section 5.)
In addition, remove accumulated dust and debris from around and below the guide rails.

FIELD PREVENTIVE MAINTENANCE PROCEDURE

2640A/B/C/N/S DISPLAY TERMINAL

NOTE: All preventive maintenance procedures for this product are the responsibility of the owner.
The procedures are listed here for reference purposes only.

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time			.25			.25			.25			.25

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	None	
Test Equipment	None	
Materials	None	

REFERENCE MATERIAL

02640-90012 (2640A only)	Installation and Service Manual
02640-90115 (2640B/C/N/S)	Installation and Service Manual
30000-90056	Verification Program Manual (D469)

EVERY THREE MONTHS (0.25 hour)

1. Clean the outer housing and display screen using anti-static glass cleaner and lint-free tissues.
2. Check operation of operator function switches.

FIELD PREVENTIVE MAINTENANCE PROCEDURE

2641A AND 2645A/S DISPLAY STATIONS

NOTE: All preventive maintenance procedures for this product are the responsibility of the owner.
The procedures are listed here for reference purposes only.

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time	.25	.25	.6	.25	.25	.6	.25	.25	.6	.25	.25	.6

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	None	
Test Equipment	None	
Materials	None	

REFERENCE MATERIAL

02645-90003	Installation and Service Manual
02645-90005	Reference Manual

THREE TIMES A MONTH (0.25 hour)

The magnetic heads in the Cartridge Tape Unit Transport Assembly should be cleaned after every 50 hours of operation or whenever dust or dirt is detected on the head surfaces. Manual references are to the Reference Manual and to the Installation and Service Manual. Clean the magnetic heads as follows:

1. Raise the housing to its half-open position as described in the Reference Manual. (Location of the magnetic head is shown in figure 4-2 of the Installation and Service Manual.)
2. Saturate cleaning swab with cleaning solvent (Freon or alcohol only).
3. Using right-to-left and left-to-right motion, carefully wipe the magnetic head surface clean with the saturated swab. Do not use an up-and-down motion.
4. Using a dry cleaning swab, carefully wipe and dry the magnetic head surface to remove all film. Do not use an up-and-down motion.
5. Firmly grasp the top housing with one hand and the release safety latch with the other. Release the latch by pressing it inwards. Using both hands, carefully lower the top housing to its closed position.

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EVERY THREE MONTHS (0.35 hour)

1. Clean the housing and display screen using anti-static glass cleaner and lint-free tissues.
2. Check operation of operator function switches.

FIELD PREVENTIVE MAINTENANCE PROCEDURE

2647A GRAPHICS DISPLAY STATION

NOTE: All preventive maintenance procedures for this product are the responsibility of the owner.
The procedures are listed here for reference purposes only.

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time	.25	.25	.6	.25	.25	.6	.25	.25	.6	.25	.25	.6

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	None	
Test Equipment	None	
Materials	None	

REFERENCE MATERIAL

02647-90002	Reference Manual
02647-90003	Installation and Service Manual

THREE TIMES A MONTH (0.25 hours)

The magnetic heads in the Cartridge Tape Unit Transport Assembly should be cleaned after every 50 hours of operation or whenever dust or dirt is detected on the head surfaces. Manual references are to the Reference Manual and to the Installation and Service Manual. Clean the magnetic heads as follows:

1. Raise the housing to its half-open position as described in the Reference Manual (Location of the magnetic head is shown in figure 4-2 of the Installation and Service Manual.)
2. Saturate cleaning swab with cleaning solvent (Freon or alcohol only).
3. Using right-to-left and left-to-right motion, carefully wipe the magnetic head surface clean with the saturated swab. Do not use an up-and-down motion.
4. Using a dry cleaning swab, carefully wipe and dry the magnetic head surface to remove all film. Do not use an up-and-down motion.
5. Firmly grasp the top housing with one hand and the release safety latch with the other. Release the latch by pressing it inwards. Using both hands, carefully lower the top housing to its closed position.

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EVERY THREE MONTHS (0.35 hour)

1. Clean the housing and display screen using anti-static glass cleaner and lint-free tissues.
2. Check operation of operator function switches.

FIELD PREVENTIVE MAINTENANCE PROCEDURE

2648A GRAPHICS DISPLAY STATION

NOTE: All preventive maintenance procedures for this product are the responsibility of the owner.
The procedures are listed here for reference purposes only.

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time	.25	.25	.6	.25	.25	.6	.25	.25	.6	.25	.25	.6

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	None	
Test Equipment	None	
Materials	None	

REFERENCE MATERIAL

02648-90002	Reference Manual
02648-90003	Installation and Service Manual

THREE TIMES A MONTH (0.25 hour)

The magnetic heads in the Cartridge Tape Unit Transport Assembly should be cleaned after every 50 hours of operation or whenever dust or dirt is detected on the head surfaces. Manual references are to the Reference Manual and to the Installation and Service Manual. Clean the magnetic heads as follows:

1. Raise the housing to its half-open position as described in the Reference Manual (Location of the magnetic head is shown in figure 4-2 of the Installation and Service Manual.)
2. Saturate cleaning swab with cleaning solvent (Freon or alcohol only).
3. Using right-to-left and left-to-right motion, carefully wipe the magnetic head surface clean with the saturated swab. Do not use an up-and-down motion.
4. Using a dry cleaning swab, carefully wipe and dry the magnetic head surface to remove all film. Do not use an up-and-down motion.
5. Firmly grasp the top housing with one hand and the release safety latch with the other. Release the latch by pressing it inwards. Using both hands, carefully lower the top housing to its closed position.

EVERY THREE MONTHS (0.35 hour)

1. Clean the housing and display screen using anti-static glass cleaner and lint-free tissues.
2. Check operation of operator function switches.

FIELD PREVENTIVE MAINTENANCE PROCEDURE

2649E CRT TERMINAL CONSOLE

NOTE: All preventive maintenance procedures for this product are the responsibility of the owner.
The procedures are listed here for reference purposes only.

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time			.5			.5			.5			.5

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	None	
Test Equipment	Display Mask	
Materials	None	

REFERENCE MATERIAL

02641-90001 User's Material

EVERY THREE MONTHS (0.5 hour)

1. Clean the outer housing and display screen using anti-static glass cleaner and lint-free tissues.
2. Observer operation of cooling fan.
3. Check operation of all operator function switches.
4. Perform terminal self-test.
5. Firmly grasp the top housing with one hand and the release safety latch with the other. Release the latch by pressing it inwards. Using both hands, carefully lower the top housing to its closed position.

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FIELD PREVENTIVE MAINTENANCE PROCEDURE

2680A PAGE PRINTER

CAUTION

Only qualified and authorized personnel are permitted to service this unit.

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	Frequency of P.M. is based upon the number of drum rotations.											
Time	Refer to the service manual for details.											

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

ITEM

DESCRIPTION

HP STOCK NO.

NOTE: Refer to the service manual for special tools, test equipment,
and materials.

REFERENCE MATERIAL

02682-90904

HP2680A Service Manual

CUSTOMER PREVENTIVE MAINTENANCE PROCEDURE

2687A/2688A PAGE PRINTER

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

At every 20,000 page interval, the OPC belt and ozone filters should be replaced. In addition, general cleaning should be performed as per section IV of the 2687/2688 operator's manual "Operator Preventive Maintenance".

REFERENCE MATERIAL

26087-90901 HP 2687A Operator's Manual
26088-90901 HP 2688A Operator's Manual

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FIELD PREVENTIVE MAINTENANCE PROCEDURE

2748B PAPER TAPE READER 30104A

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time	.1	.1	.7	.1	.1	.7	.1	.1	.7	.1	.1	.7

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	None	
Test Equipment	Voltmeter (3-digit accuracy)	
Materials	None	

REFERENCE MATERIAL

02748-90032	O&S Manual
30104-90003	Manual of Diagnostics
30104-90006	On-Line Verification Program Manual

MONTHLY (0.1 hour)

Clean tape path.

EVERY THREE MONTHS (0.7 hour)

1. Clean air filter with a hot water cleaning solution.
2. Visually inspect for loose, worn, binding, or missing parts. Pay particular attention to glazing or scoring of capstan surface, binding pinch roller and guide rollers, and deterioration of capstan clutch.
3. Check parallel alignment of pinch roller to capstan and runout of capstan shaft.
4. Check tape guide wire on read head assembly for proper clearance to read head base.
5. Lubricate oil wick at back end of motor housing.
6. Operate unit and listen for excessive clutch or bearing noise. Observe tape tracking in continuous and start/stop mode. Correct any problems.

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7. Check power supply outputs for the amplitudes indicated below. Adjust only if out of specification.
 - a. +12 volts plus/minus 0.1 volts
 - b. -12 volts plus/minus 0.1 volts
 - c. -45 volts plus/minus 2.0 volts
 - d. -5 volts plus/minus 0.5 volts
8. Check head bias at pin F and record below. Change in bias reflects aging of read head lamps. The significance of bias change is not the same for every read head, but knowing the rate of change is helpful in ascertaining when head adjustment or replacement is necessary.

FIELD PREVENTIVE MAINTENANCE PROCEDURE

2893A CARD READER 30106A



Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time	.5	.5	.5	.5	.5	.8	.5	.5	.5	.5	.5	.8

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	None	
Test Equipment	Voltmeter (3-digit accuracy)	
Materials	Fan Screen	1535-1937

REFERENCE MATERIAL

02892-90001	O&S Manual (Page 7-1)
30106-90003	Manual of Diagnostics
30106-90008	On-Line Verification Program Manual

MONTHLY (0.5 hour)

1. Replace fan screen or clean with a hot water cleaning solution.
2. Inspect picker sector for plugged vacuum holes or glazed surface. Clean with a lint-free tissue and Freon solvent if necessary.
3. Clean card track area with a vacuum cleaner and a soft-bristled brush.
4. Check operation of all switches and indicators.
5. Run card reader diagnostic using procedures provided in Manual of Diagnostics. Observe the riffling, feeding, and stacking action. Any problems should be corrected.

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EVERY SIX MONTHS (0.3 hour)

1. Lubricate pick solenoid rollers sparingly with a light grease.
2. Visually inspect for loose, worn, binding, or missing parts. Pay particular attention to worn drive and stacker belts and pulleys.
3. Check +5V supply output for +5.2 volts plus/minus .25 volts. Adjust R1 only if outside specified range.
4. Clean hopper and stacker follower shafts with a lint-free tissue and Freon solvent.

FIELD PREVENTIVE MAINTENANCE PROCEDURE

2894A CARD READER PUNCH 30119A

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time	.8	.8	.8	.8	.8	5.0	.8	.8	.8	.8	.8	5.0

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	None	
Test Equipment	80-Column Card Gauge Belt Tension Spring Scale, 5 lbs (3 kg) capacity, graduated in ounces (grams) Feeler Gauge, 0.002" to 0.042" (0.05 mm to 1.07 mm)	9320-3143
Materials:	None	

REFERENCE MATERIAL

02894-90004	Service Manual
30119-90010	Verification Manual (D479)

GENERAL GUIDELINES

The following guidelines are provided as a matter of good maintenance practice. References are to the Service Manual.

1. Observe all hazard warnings in Sections 2 to 6.
2. Remove foreign objects, such as paper clips, that may be in the machine.
3. Do not excessively torque hardware in the input hopper or other areas made of soft aluminum.
4. Before using test decks, verify the punched holes are properly positioned by using the 80-column Card Guide.

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5. After performing preventive maintenance, run the test decks through the machine to check for proper operation and to determine that other machine areas do not require corrective maintenance.

WARNING

THE INTERLOCK SWITCH SHOULD NOT BE
DEFEATED WHILE WORKING ON AN ENERGIZED
MACHINE, UNLESS REQUIRED BY A PROCEDURE,
AS MECHANISM OPERATION CAN BE STARTED
BY ACCIDENTALLY STRIKING A KEY.

MONTHLY (0.8 hour)

This procedure should be completed by the operator or supervisor on a monthly basis or after 100,000 cards have been processed by a machine. It should also be performed by the Customer Engineer during service calls.

1. Use a sash brush and a vacuum cleaner to remove dust and other deposits from input hoppers, stackers, and the entire card path. Use a lint-free cloth moistened with isopropyl alcohol or an alcohol pad to remove solidified deposits.
2. Remove dust, finger marks, and other foreign matter from the read station, parabola, and the card detectors (see figure 3-1 for parts location). Ink buildup caused by transfer from cards can usually be removed with isopropyl alcohol.
3. Check the ink cartridge for an adequate ink supply.

EVERY SIX MONTHS (5.0 hours)

1. Perform items 1, 2, and 3 of the monthly procedure.
2. Check connectors for tight fit and both wiring and connectors for apparent damage.
3. Inspect belts for fray, wear, and proper tracking (see Section 5 for belt replacement procedures).
4. Check belts for the tensions shown in table 3. If required, adjust the belts according to the procedure referenced in the adjustment column.
5. Check the clearances and gaps for the clearances specified in table 4. Each check is keyed to a test point location in figure 3-1 of the Service Manual. If required, adjust according to the procedure referenced in the adjustment column.

TABLE 3. BELT TENSIONS

Belt	Tension	Adjustment
Main Drive	11 ounces for 1/16" to 3/32" deflection (312 grams for 1.59 mm to 2.38 mm deflection)	4.9.3
Input Roller Timing	See service manual procedure	4.2.6
Read Roller Timing	3.5 to 4 pounds for 1/8" deflection (1.6 to 1.8 kilograms for 3.18 mm deflection)	4.3.5
Camshaft Timing	12 ounces for 1/16" to 3/32" deflection (340 grams for 1.59 mm to 2.38 mm deflection)	4.4.8

TABLE 3. (Continued)

Belt	Tension	Adjustment
Post Punch Advance Index	16 ounces for 1/16" to 3/32" deflection (454 grams for 1.59 mm to 2.38 mm deflection)	4.4.9
*Printer Drive and Typewheel Drive	3.1 ounces for 5/64" to 7/64" deflection (90 grams for 2.00 mm to 2.80 mm deflection)	4.6.10
Printer Belt **	3.1 ounces for 5/64" to 7/64" deflection (90 grams for 2.00 mm to 2.80 mm deflection)	4.6.11
* Two-belt configuration; applies to both belts. ** Single belt configuration.		

TABLE 4. CLEARANCE AND GAP DIMENSIONS

Key (Fig. 3-1)	Description	Gap/Clearance	Adjustment
1	Throat Knife Gap	0.009"-0.010" Clearance (0.23 mm-0.25 mm)	4.2.3
2	Read Roller Card Guides	Secondary: 0.010"-0.014" (0.25 mm-0.36 mm) Primary (set after secondary): 0.035"-0.042" (0.89 mm- 1.07mm)	4.2.7
3	Cantilever Feed Rollers	0.002"-0.003" Clearance (0.05 mm-0.08 mm)	4.3.4
4	Read Station Reluctance Pickup	0.003"-0.005" Clearance* (0.08 mm-0.12 mm)	4.3.5
5	Punch Index Pressure Roll Gap	See Service Manual procedure	4.4.12
6	Punch Sprocket Reluctance Pickup	0.006"-0.008" Clearance* (0.15 mm-0.20 mm)	4.6.16
7	Printer Reluctance Pickups	0.003"-0.005" Clearance* (0.08 mm-0.13 mm)	4.6.2
8	Eject Capstan Assembly Alignment	See Service Manual procedure	4.7.2
9	Stacker Paddle and Card Gate Alignment	See Service Manual procedure	4.7.4
10	Stacker Entry Gap	0.020"-0.025" Clearance (0.51 mm-0.64 mm)	4.7.5
* At highest point of eccentricity.			

FIELD PREVENTIVE MAINTENANCE PROCEDURE

2895B PAPER TAPE PUNCH 30105A

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time	.3	.3	.3	.3	.3	2.3	.3	.3	.3	.3	.3	2.3

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	Punch pin feeler gauge 1.85 mm and 2.0 mm	1535-0779
	Pliers (for retainer rings)	8710-0009
	Hex key wrench set (metric)	1535-0751
	Punch registration gauge	1535-0268
	Grease nipple	1535-0771
	Punch head turning tool	1535-0768
Test Equipment	None	
Materials	Grease, Rocol MT-320	1535-0773

REFERENCE MATERIAL

02895-90008	O&S Manual (Page I.6:15)
30105-90003	Manual of Diagnostics
30104-90006	On-Line Verification Program Manual

NOTE: The O&S Manual expresses preventive maintenance intervals in terms of tape rolls punched. For the benefit of the preventive maintenance timetable, normal usage was estimated at 1000 rolls per year.

MONTHLY (0.3 hour)

1. Clean all accessible areas of the unit, especially around the punch head, with a vacuum cleaner and a soft-bristled brush.
2. Check operation of all switches and indicators.
3. Run paper tape punch diagnostic using procedures provided in Manual of Diagnostics.

NOTE: If mylar or metalized-mylar tape is being used in lieu of paper tape, the six-month preventive maintenance procedures should be performed every three months.

EVERY SIX MONTHS (2.0 hours)

1. Feed a few feet of tape through the unit while observing the supply, feeding, and take-up action. Punch a few inches of tape and inspect for frayed or otherwise unacceptable punching. Check the tape for inter-row and lateral registration using a punch registration gauge. Correct any problems.
2. Remove the punch/feed unit to:
 - a. Clean motor brake.
 - b. Grease punch head with HP Stock No. 1535-0773.
 - c. Visually inspect for loose, worn, binding, or missing parts. Pay particular attention to play in punch pin drivers, end-play in incremental motor shaft, worn brake springs, and surface wear of capstan and pinch roller.
3. Remove the supply and take-up flanges to:
 - a. Clean winding motor.
 - b. Lubricate surge take-up arm.
 - c. Visually inspect for loose, worn, binding or missing parts. Pay particular attention to wear on take-up and supply flanges, supply flange brake, and pinch roller cable.

FIELD PREVENTIVE MAINTENANCE PROCEDURE

7260A OPTICAL MARK READER



Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time		1.5		1.5		1.5		1.5		1.5		1.5

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	Hopper Adjustment Gauge	07261-20005
	Tension Gauge, 150-gram	8750- 0091
	Feeler Gauge, 10-mil	8750-0045
	Vacuum Cleaner	
Test Equipment	VTVM	427
	Oscilloscope	1201
	Counter	5300
	Silicon Grease	6040-0297
Materials		
<u>REFERENCE MATERIAL</u>		
07260-90001	Service Manual	

EVERY TWO MONTHS (1.5 hours)

Perform preventive maintenance procedures in accordance with Section V of the Service Manual.

FIELD PREVENTIVE MAINTENANCE PROCEDURE

7902A DISC DRIVE

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time												1.0

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	Alignment Flexible Disc	9164-0098
	Cartridge Guide Adjustment Tool	1150-1310
	Spanner Wrench	50377-1
	Bail Adjustment Tool	1535-3875
Test Equipment	Disc Service Unit	12748-60008
	Oscilloscope	1702A
Materials	91% Isopropyl Alcohol	8500-0559
	Masking Tape	0460-0030
	Kimwipe Tissues	9300-0001
	Q-Tips	8520-0023

REFERENCE MATERIAL

07902-90001 Service Manual

EVERY 12 MONTHS (1.0 hour)

References in the procedures are to the Service Manual.

1. Clean actuator assembly using isopropyl alcohol and kimwipes.
2. Check drive belt for frayed or weakened areas. Replace as necessary.
3. Remove all dust and dirt from base. Check for loose screws, connectors, and switches.

CAUTION

Do not touch or attempt to clean the heads.

4. Check head amplitude and radial alignment. (Refer to paragraphs 7-16 and 7-17.)

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FIELD PREVENTIVE MAINTENANCE PROCEDURE

7906A DISC DRIVE

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time						1.5						1.5

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

ITEM	DESCRIPTION	HP STOCK NO.
Tools	Air Pressure Measuring Gauge	0101-0374
	Air Pressure Probe Assembly	12995-60013
	Head Cleaning Tool	07900-0091
	Inspection Mirror	8830-0005
	Torque Wrench, 3 in.-lbs	8710-0665
	CE Head Alignment Cartridge	12995-60030
	Actuator Assembly Radial Alignment Tool	12995-20022
	Head/Index Transducer Alignment Tool	12995-60007
Test Equipment	Disc Service Unit (DSU)	12995-60001
	Digital Voltmeter	3439A
	DC Multi-Function Unit	3444A
Materials	91% Isopropyl Alcohol	8500-0559
	Masking Tape	0460-0030
	Kimwipe Tissues	9300-0001
	Q-Tips	8520-0023

REFERENCE MATERIAL

07906-90901	Users Manual
07906-90903	Installation and Service Manual
30070-60068	3000/33 Computer System Diagnostic Manual Set

EVERY SIX MONTHS (1.5 hours)

When the disc drive is placed in a severe environment, a greater frequency of preventive maintenance may be required. An environment containing an unusual amount of dust, smoke, moisture, oil vapor, or other foreign matter is considered severe.

The general operation of the disc drive should be verified before regular scheduled preventive maintenance is performed and again after it has been completed. Run the stand-alone subsystem diagnostic tests in accordance with the instructions provided in the Diagnostic Manual.

Manual references in the procedures are to the Installation and Service Manual.

1. Clean prefilter and air inlet screen with vacuum cleaner (refer to paragraph 2-13).
2. Measure absolute filter output air pressure (refer to paragraph 2-14). Replace as required (refer to paragraph 6-12).

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3. Inspect data and servo heads for contamination (see figure 2-3). If necessary, clean with Kimwipe tissue dampened with filtered 91-percent isopropyl alcohol (refer to paragraph 2-15).
4. Inspect head cables and connectors for looseness and/or damage.
5. Inspect disc brushes for contamination, excessive wear, and/or damage (see figure 2-4). Replace as necessary (refer to paragraph 6-22).
6. Clean carriage rails and bearings with cotton-tipped applicators dampened with filtered 91-percent isopropyl alcohol (refer to paragraph 2-16). Inspect bearings for excessive wear and ease of rotation.
7. Remove all foreign particles from the spindle assembly by pressing the sticky side of masking tape against all exposed magnetic surfaces. Clean the top surface with Kimwipe tissue dampened with filtered 91-percent isopropyl alcohol (refer to paragraph 2-17).
8. Inspect spindle ground contact and spring for excessive wear and/or looseness.
9. Clean all main casting and receiver assembly surfaces with Kimwipe tissue dampened with filtered 91-percent isopropyl alcohol (refer to paragraph 2-18).
10. Check all power supply voltages; if necessary, adjust the +5V power supply (refer to paragraph 5-3).
11. Inspect mainframe switches and solenoids for proper operation (refer to paragraphs 3-4 through 3-10).
12. Check alignment of all adjustable parameters; adjust if necessary (refer to paragraph 3-11 through 3-17).
13. Inspect operator control panel lamps and switches for proper operation.

FIELD PREVENTIVE MAINTENANCE PROCEDURE

7911 DISC DRIVE

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

NONE

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>Item</u>	<u>Description</u>	<u>HP Stock No.</u>
NONE		

REFERENCE MATERIAL

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FIELD PREVENTIVE MAINTENANCE PROCEDURE

7920A DISC DRIVE

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time						1.5						1.5

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	Air Pressure Measuring Gauge	0101-0374
	Air Pressure Probe Assembly	12995-60013
	Cam Alignment Assembly	13354-60001
	CE Pack Assembly	13398A
	Formatted Disc Pack	13394A
	Torque Wrench, 0-12 in.-lbs	1535-2653
	Head Alignment Tool	13354-20007
	Head Cleaning Tool	07900-00091
	Inspection Mirror	8830-0005
Test Equipment	Disc Service Unit (DSU)	13354-00011
	Digital Voltmeter	3439A
	DC Multi-Function Unit	3444A
Materials	91% Isopropyl Alcohol	8500-0559
	Masking Tape	0460-0030
	Kimwipe Tissues	9300-0001
	Q-Tips	8520-0023

REFERENCE MATERIAL

07920-90001	Operating and Service Manual
12962-90001	Diagnostic Reference Manual

EVERY SIX MONTHS (1.5 hours)

These preventive maintenance procedures are for a six month period of 1080 hours of operation. However, if the disc drive is installed in an environment that contains abnormal amounts of dust, smoke, oil vapor, or other foreign matter, the procedures should be performed more frequently. A general cleaning is required when an excessive amount of foreign matter is present.

Manual references in the procedures are to the Operating and Service Manual.

1. Disconnect the power cord, remove doors, panels, top cover, and disc pack (refer to paragraph 5-12).
2. Measure absolute filter output air pressure (refer to paragraph 5-13). Replace as required (refer to section VIII).
3. Inspect data and servo heads for contamination (refer to figure 5-7). If required, clean with the head cleaning tool and Kimwipe tissue dampened in alcohol (refer to paragraph 5-14).
4. Inspect head cables and connectors for looseness and/or damage. Replace as necessary.
5. Clean carriage rails and bearings with Q-tips slightly dampened with alcohol (see paragraph 5-15). Inspect bearings for excessive wear and ease of operation.
6. Remove all foreign particles from the spindle assembly and pack loading assembly by pressing the adhesive side of tape to all exposed surfaces (refer to paragraph 5-16). Clean the surfaces with Kimwipe tissue slightly dampened with alcohol.
7. Inspect the spindle ground contact and spring for excessive wear and/or looseness. Replace as necessary.
8. Check all power supply voltage values (refer to table 1-1).
9. Inspect main frame switches and solenoids for proper operation (refer to section VI).
10. Check alignment of all adjustable parameters (refer to section VI). Adjust as required.
11. Inspect all indicators for proper operation. Replace as required.
12. Run the diagnostic tests, in accordance with the instructions provided in the Diagnostic Manual, or the off-line checkout (refer to section VII).

FIELD PREVENTIVE MAINTENANCE PROCEDURE

7925A DISC DRIVE

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time						1.5						1.5

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	Air Pressure Measuring Gauge	0101-0374
	Air Pressure Probe Assembly	12995-60013
	Cam Alignment Assembly	13354-60001
	CE Pack Assembly	13358A
	Formatted Disc Pack	13356A
	Torque Wrench, 0-12 in.-lbs	1535-2653
	Head Alignment Tool	13354-20007
	Head Cleaning Tool	07900-00091
	Head Loading Tool	13354-60023
	Inspection Mirror	8830-0005
Test Equipment	Disc Service Unit (DSU)	13354-00011
	Digital Voltmeter	970A
	DC Multi-Function Unit	3444A
Materials	91% Isopropyl Alcohol	8500-0559
	Masking Tape	0460-0030
	Kimwipe Tissues	9300-0001
	Q-Tips	8520-0023

REFERENCE MATERIAL

07925-90903	Service Manual
12962-90001	User's Manual

EVERY SIX MONTHS (1.5 hours)

These preventive maintenance procedures are for a six month period of 1080 hours of operation. However, if the disc drive is installed in an environment that contains abnormal amounts of dust, smoke, oil vapor, or other foreign matter, the procedures should be performed more frequently. A general cleaning is required when an excessive amount of foreign matter is present.

Manual references in the procedures are to the Service Manual.

1. Disconnect the power cord, remove doors, panels, top cover, and disc pack (refer to paragraph 2-12).
2. Measure absolute filter output air pressure (refer to paragraph 2-13). Replace as required (refer to section V).
3. Inspect data and servo heads for contamination (refer to figure 2-7). If required, clean with the head cleaning tool and Kimwipe tissue dampened in alcohol (refer to paragraph 2-14).
4. Inspect head cables and connectors for looseness and/or damage. Replace as necessary.
5. Clean carriage rails and bearings with Q-tips slightly dampened with alcohol (see paragraph 2-15). Inspect bearings for excessive wear and ease of operation.
6. Remove all foreign particles from the spindle assembly and pack loading assembly by pressing the adhesive side of tape to all exposed surfaces (refer to paragraph 2-16). Clean the surfaces with Kimwipe tissue slightly dampened with alcohol.
7. Inspect the spindle ground contact and spring for excessive wear and/or looseness. Replace as necessary.
8. Check all power supply voltage values (refer to paragraph 4-3).
9. Inspect main frame switches and solenoids for proper operation (refer to section III).
10. Check alignment of all adjustable parameters (refer to section III). Adjust as required.
11. Inspect all indicators for proper operation. Replace as required.
12. Run the diagnostic tests, in accordance with the instructions provided in the Diagnostic Manual, or the off-line checkout (refer to section IV).

FIELD PREVENTIVE MAINTENANCE PROCEDURE

7933H DISC DRIVE

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time												

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>Item</u>	<u>Description</u>	<u>HP Stock No.</u>
Tools	Cleaning wipes	9310-4865
	Cleaning sleeves	9310-5074

REFERENCE MATERIAL

There is no regularly scheduled preventative maintenance. However, when the disc drive displays a message that an air filter change is needed, the C.E., in addition to changing the filter, should clean the data and servo heads, clean the carriage rails and bearings, and clean the media module chamber and motor-spindle assembly.

FIELD PREVENTIVE MAINTENANCE PROCEDURE

7970B MAGNETIC TAPE UNIT 30115A

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time				1.0				1.0				2.0

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	None	
Test Equipment	Counter	5245L
	Control and status PCA	13191-60010
	Write test PCA	13192-60010
	Write program PCA	13192-60020
	Scratch tape	9162-0026
	Skew tape	9162-0027
	Speed tape	5080-4525
	Voltmeter (3-digit accuracy)	
Materials	Photo sense lamp	2140-0203
	Tension arm lamps (2 Required)	2140-0351
	Capstan	07970-20390
	Tape guide and bearing assemblies (4 required)	07970-60130

REFERENCE MATERIAL

07970-90383	O&S Manual
30115-90003	On-Line Diagnostic Manual
30115-90014	Stand-Alone Diagnostics

EVERY 4 MONTHS (1.0 hour)

1. Perform Operator Maintenance routines with particular attention given to cleaning the ceramic tape guide washers.
2. Clean general equipment interior with a vacuum cleaner.
3. Check that the hold-down reel assemblies correctly secure the reel to the hub and that the rubber seal has not deteriorated.

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4. Check the complete tape path for correctness of tape tracking, scored or nicked areas, noisy bearings, defective component parts, such as tape guides, head cleaner, capstan, and head assembly. Check correct positioning of tension arms.
5. Check the Write Enable assembly for correct positioning of the Write Enable pawl, the solenoid freedom of operation, and the micro switches for correct operation and adjustments.
6. Check transport control electronics for correct adjustment of the offset, tape speeds, tension arm adjustments, and stop/start ramp.
7. Check adjustment of the data electronics read preamp gains, read skew delay, read character gate, and write skew delay.
8. Check static and dynamic skew performance.
9. Check operation of all switches, controls, and indicators.
10. Run magnetic tape unit diagnostic using procedures provided in Manual of Diagnostics.

EVERY TWELVE MONTHS (1.0 hour)

1. Replace photo sense lamps in the tension arm, and load point assemblies.
2. Check condition of capstan. Replacement is generally required every two years.
3. Check operation of tape guide and bearing assemblies. Replacement is generally required every two years.

FIELD PREVENTIVE MAINTENANCE PROCEDURE

7970E/7971 MAGNETIC TAPE UNIT

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time				1.0				1.0				2.0

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	None	
Test Equipment	Counter	5245L
	Control and status PCA	13191-60010
	Voltmeter (3-digit accuracy)	
	Write formatter PCA	13195-60000
	Write formatter test PCA	13196-60001
	Read Data Test PCA	13196-60000
	Phase-encoded read circuits test tape	5080-4555
	Scratch tape	9162-0026
	Skew tape	9162-0027
	Transport Speed test tape	5080-4525
Materials	Photo sense lamp	2140-0203
	Tension arm lamps (2 Required)	2140-0351
	Capstan	07970-20390
	Tape guide and bearing assemblies (4 Required)	07970-60130

REFERENCE MATERIAL

07970-90765	O&S Manual
30115-90003	On-Line Diagnostic Manual
30115-90014	Stand-Alone Diagnostics

EVERY FOUR MONTHS (1.0 hour)

1. Perform operator maintenance routines with particular attention given to cleaning the ceramic tape guide washers. In the case of the 7971, check the rear air filter and change if necessary.
2. Clean general equipment interior with a vacuum cleaner.

7/82



3. Check that the hold-down reel assemblies correctly secure the reel to the hub and that the rubber seal has not deteriorated.
4. Check the complete tape path for correctness of tape tracking, scored or nicked areas, noisy bearings, defective component parts, such as tape guides, head cleaner, capstan, and head assembly. Check correct positioning of tension arms.
5. Check the Write Enable assembly for correct positioning of the Write Enable pawl, the solenoid freedom of operation, and the micro switches for correct operation and adjustment.
6. Check transport control electronics for conformance to performance specifications of the offset, tape speeds, tension arm, and stop/start ramp.
7. Check data electronics preamp gains and write skew delays for conformance to performance specifications.
8. Check operation of all switches, controls and indicators.
9. Run magnetic tape unit diagnostic using procedures provided in Manual of Diagnostics.

EVERY TWELVE MONTHS (1.0 hour)

1. Replace photo sense lamps in the tension arm, and load point assemblies.
2. Check condition of capstan. Replacement is generally required each two years.
3. Check operation of tape guide and bearing assemblies. Replacement is generally required each two years.

CAUTION

When a check of the preamp gains indicates that they are outside the specified range, make sure that the tape path is clean and in good physical condition before you make an adjustment. Also make sure that the scope is calibrated correctly.

If the PE write skew delays do not meet specifications prior to making the write skew adjustment, ensure there are no malfunctions in the data electronics, preamps, tape or tape path which might introduce erroneous readings.

FIELD PREVENTIVE MAINTENANCE PROCEDURE

7974A MAGNETIC TAPE DRIVE

NO REGULARLY SCHEDULED FIELD MAINTENANCE

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FIELD PREVENTIVE MAINTENANCE PROCEDURE

7976A MAGNETIC TAPE DRIVE

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time		1		1		2		1		1		2

REFERENCE MATERIAL

07976-90902 Installation And Service Manual
07976-90906 Subsystem Diagnostic
07976-90903 ICU Service And Parts
07976-90904 MTU Service Manual
07976-90905 FCU Service Manual

EVERY TWO MONTHS OR 700 HOURS

1. Check file reel hub for free operation and proper clearance.
2. Clean and inspect tape guide components.
3. Clean tape cleaner block.
4. Inspect pneumatic drive belt in MTU.
5. Check filters in MTU and FCU.
6. With power on, check cooling fans.

(CONTINUED)

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FIELD PREVENTIVE MAINTENANCE PROCEDURE

EVERY SIX MONTHS OR 2100 HOURS

1. Perform all operations listed under "two months or 700 hours."
2. Check and adjust pneumatic drive belt for proper tension.
3. Check and adjust power supply output levels in MTU, FCU, and ICU.
4. Check pneumatic operation levels for proper air pressure, etc.
5. Check BOT/EOT sensor; adjust as needed.
6. Check reel servo operation levels; adjust as needed.
7. Check capstan speed and ramp; adjust as needed.
8. Check file protect mechanism for proper operation.
9. Check rewind mechanism for proper operation.
10. Check for proper tape tracking.
11. Check read/write head and adjust skew as necessary. Note that this step is crucial if any capstan alignment was required in step 7.
12. Read 3200 FRPI all 1's in P.E. mode, and scope the read preamp test points. Replace read/write head if read signal peak-to-peak amplitude falls below .5 volt (1.0 volt is nominal). Replace read/write head if forward/backward signal ratio exceeds 2-to-1.
13. Check all connectors for secure contact.
14. Run all diagnostics.

FIELD PREVENTIVE MAINTENANCE PROCEDURE

9895A FLEXIBLE DISC DRIVE

NOTE: All preventive maintenance procedures for this product are the responsibility of the owner.
The unit is listed here for reference purposes only.

Table 1. PREVENTIVE MAINTENANCE TIMETABLE

Month	1	2	3	4	5	6	7	8	9	10	11	12
Time												

Table 2. SPECIAL TOOLS, TEST EQUIPMENT, AND MATERIALS

<u>ITEM</u>	<u>DESCRIPTION</u>	<u>HP STOCK NO.</u>
Tools	None	
Test Equipment	None	
Materials	None	

REFERENCE MATERIAL

09895-90000	User's Manual
09895-90030	Service Manual

SYSTEM HISTORY LOG

[illegible]

SYSTEM HISTORY LOG

[illegible]

For: SEP / 76
mo. yr.

Typical Information Coding:

- * System halt with console message — enter error number.
- † System halt without console message — enter contents of status register if available. Underline bits 8-15 (segment number).
- ‡ System looping in run mode and no response — enter “L.”
- Δ System down and not in operation mode — enter “D.”

Exact details of error printouts and all system malfunctions, mainframe and peripheral, should be entered in the Console Log.

For: _____ / _____
mo. yr.

[illegible]

MONTHLY REPORT OF HARD SYSTEM FAILURES

For: / mo. yr.

<u>Environment -- Changes</u>		<u>Date</u>																															
MPE Version:		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Hardware Changes:																																	
Software Changes:																																	
PM Done:																																	
<u>System</u>	07:00																																
<u>Halts</u>	08:00																																
<u>Due To</u>	09:00																																
<u>Malfunctions/</u>	10:00																																
<u>Maintenance</u>	11:00																																
	12:00																																
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		<u>Date</u>																														
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31		

MONTHLY REPORT OF HARD SYSTEM FAILURES

For: _____ / _____ / _____
 mo. yr.

		Date																															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
Environment — Changes MPE Version: Hardware Changes: Software Changes: PM Done:	07:00																																
	08:00																																
	09:00																																
	10:00																																
System Halts Due To Malfunctions/ Maintenance	11:00																																
	12:00																																
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CONSOLE LOG

DATE	TIME	NAME	SYSTEM CRASH					SOFTWARE PROBLEM	HARDWARE PROBLEM	PREVENTATIVE MAINTENANCE	SOFTWARE UPGRADE	REMEDIAL MAINTENANCE	COMMENTS
April 5/79	14:00	Customer	X										Error #20, status 140052, Δ P002317 dump taken – tape #7
April 7/79	17:00	Customer							X				Error #52, log. dev. #1 went offline
April 8/79	08:00	HP							X				Run diagnostic on LDEV 1, replaces encod. PCA
April 8/79	10:00	Customer											System back on-line
April 12/79	09:00	Customer	X										Error #20, status 140052, Δ P002317, dump taken – tape #8. Tape and loadmap sent to A. Florin HP Toronto
April 25/79	10:00	Customer	X										No error message on console. System halt light on. Tried sys. dump no go. status reg. 000012. Tried warm start – same thing status reg. 000012.
April 25/79	10:10	Customer							X				Called HP Service
April 25/79	13:00	HP							X				Changed 8K Memory Board – module #1 (1F2404)
April 25/79	13:00	Customer											System back on-line
April 30/79	08:00	HP										X	Prev. maintenance on LDEV #1, 4, 6, and 5
April 30/79	12:00	Customer											System back on-line

EXAMPLE

[illegible][illegible]

CONSOLE LOG

[illegible]

CONSOLE LOG

[illegible]

CONSOLE LOG

[illegible]

CONSOLE LOG

[illegible]

CONSOLE LOG

[illegible]

DISC DRIVE HISTORY LOG

[illegible]

MAG TAPE HISTORY LOG

[illegible]

MAG TAPE HISTORY LOG

[illegible]

LINE PRINTER HISTORY LOG

TO BE COMPLETED BY USER

TO BE COMPLETED BY USER

[illegible]

LINE PRINTER HISTORY LOG

[illegible]

[illegible][illegible]

CARD READER HISTORY LOG

[illegible]

TERMINAL HISTORY LOG

[illegible]

TERMINAL HISTORY LOG

TO BE COMPLETED BY USER -

TO BE COMPLETED BY HP.

[illegible]

HISTORY LOG

[illegible]

HISTORY LOG

[illegible]

CHANGE RECORDS

The Change Records section consists of Product Record Sheets and Software Record Sheets.

On the Product Record Sheet, record the configuration change history and the field change order (FCO) history of each hardware product. The section is filled as FCO's are installed; as a result, eventually there may be one or more sheets per product. This section should contain a complete history of configuration changes. If a configuration change is initiated in the field, note this fact on the form and return a copy to Systems Engineering in the manufacturing division. A quantity of blanks are provided for this reason. These sheets reflect the beginning and on-going history of each product. If an installed FCO causes a change in the systems I/O configuration or segment list, this change must be logged in the Current System I/O Configuration/Segment List section.

On the Software Record Sheet, record the software product changes (versions, updates, and fixes) that have been installed. These sheets are provided in tablet form and must be supplied by the Customer Engineer or Systems Analyst. The form is designed so that one copy should exist for each software product in the system. The forms should be initiated when the system is installed or when a change is installed on a software product for which no form exists.

PRODUCT RECORD SHEET

System Serial Number	Product Number
Sales Order Number	Serial Number
Initial Date Shipped	Warranty Code

ASSEMBLY REVISION LEVELS		
Part Number	Date Code	Last FCO Installed

CONFIGURATION	WHEN SHIPPED	CHANGED TO
Device Number		
Interrupt Request Number		
Service Request Number		
Data Poll Sequence		
Rack Location		
Interrupt Mask		

OPTIONS		

LIST FCO's INSTALLED		
FCO Date	FCO Number	Date Installed

GENERAL REMARKS

[illegible]