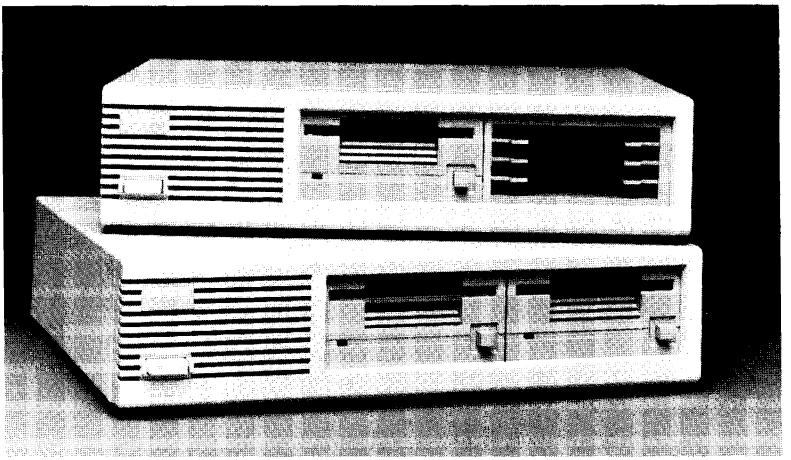
HP 9121 and 9122 D/S



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NOTICE

This Handbook is intended only for service personnel trained in its use by Hewlett-Packard. It is designed as a quick reference guide to commonly used service information. The information contained here is highly condensed from other manuals and this volume is not intended to be a substitute, but rather a supplement to those manuals.

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Section X

REFERENCE

For information on the drive mechanism, refer to the tabbed Reference Section of this handbook.

Section XI

SECTION I

PRODUCT INFORMATION

[1] INTRODUCTION

The HP 9121D/S and HP 9122D/S Disc Drives are random access data storage devices. The HP 9121 uses a single-sided 3 1/2-inch disc drive; the HP 9122 uses a double-sided drive. S and D denote single-drive and dual-drive configurations, respectively.

[2] TECHNICAL SPECIFICATIONS

POWER REQUIREMENTS

Voltage (selected by rear panel switch)	86-125VAC 195-250VAC
Frequency	48-66Hz
Power consumption (max)	67W

[3] ACCESSORIES

DESCRIPTION	PART NUMBER
3 1/2-inch flexible discs (pkg. of ten):	
Single-sided	92191A
Double-sided	92192A
HP-IB cables:	
1 metre	10833A
2 metres	10833B
4 metres	10833C
0.5 metres	10833D

[4] SERVICE KITS

PART NUMBER	DESCRIPTION
09121-69510	Controller Board
09121-69521	3 1/2 in., Single-sided Drive
09121-68511	Fan Assembly
09121-61611	Ribbon Cable assembly
09121-61612	DC power cable

Necessary parts to be added to the HP 9121 D/S FSI to support the HP 9122 D/S:

09122-69501	Controller Board
09114-69511	3 1/2-in., Double-sided drive

SECTION II

ENVIRONMENTAL/INSTALLATION/PM

[1] ENVIRONMENTAL CONSIDERATIONS

Operating Limits Temperature:	10° C to 40° C(50° F to 104° F) with maximum wet bulb temperature not to exceed 29° C(85° F)
Altitude:	0 to 4572 m (0 to 15,000 ft)
Non-operating Limits (Storage and Transit) Temperature:	-40°C to 60°C(-40° to 140° F)
Altitude:	-304 to 15240 m (-1000 to 50,000 ft)

[2] INSTALLATION CONSIDERATIONS

Installation is normally a customer responsibility. Refer to the configuration section for information on HP-IB address settings.

Fuse:	115 VAC	1A 250 VAC normal blow	2110-0001

[3] PREVENTIVE MAINTENANCE

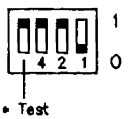
No preventive maintenance is required.

SECTION III

CONFIGURATION

[1] ADDRESS CONFIGURATION

Configuration consists of setting the HP-IB address only. Configure the unit for the desired address as shown below. See the Selftest section for information on selftest selection.



* 9121: Up for normal operation. Up-Down-Up for User Confidence Test

* 9122: Switches 1,2,4 select HP-IB address Test switch is used when selecting selftest. (see Diagnostic section.)

HP-IB Address Switch Configuration

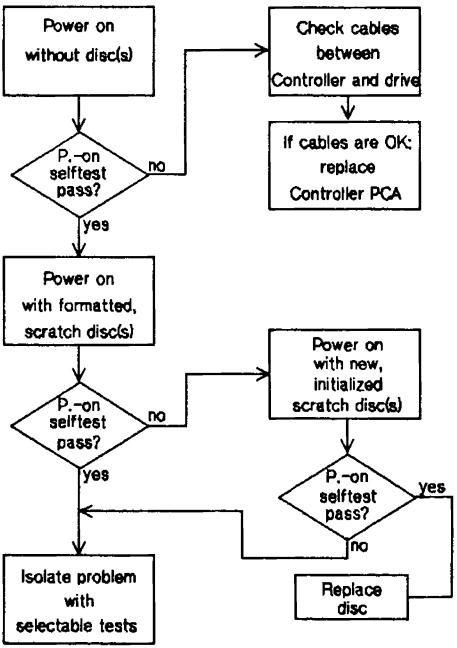
SECTION IV

TROUBLESHOOTING

[1] TROUBLESHOOTING TREE

The HP 9121 and HP 9122 have unique selftest procedures as described in the Diagnostic section. The HP-85 Amigo protocol diagnostics will work with the HP 9121, but not with the HP 9122.

The Power-on Selftest can be used to isolate the control PCA or the drive mechanism as follows.



[2] Disc Interchanging

It is possible for a drive to pass all READ/WRITE tests, yet fail when reading a disc which has been initialized or written on by another drive. This type of failure can be caused by misalignment of the drive mechanism or of the PLL frequency.

To determine which drive is misaligned, test with a disc that has been initialized and written on by a known-good drive.

SECTION V

DIAGNOSTICS

[1] SELFTESTS

HP 9121D/S

POWER-ON SELFTEST

Activated when power is applied: Checks RAM, ROM, and FDC circuitry. Test pass indications: The red self-test LED (behind the grill, near the power switch) blinks on 5 times, then off. If a test fails, the LED stays on for 5 seconds.

If the ROM or RAM is defective: the LED will never come on.
If the FDC is defective: the LED comes on for 5 seconds, then off.

USER CONFIDENCE TEST

Activated by setting the "TEST" switch (far left segment of the HP-IB address switch) to the downward, then upward position after the Power-on Self-test has completed. With no discs inserted, RAM, ROM, HP-IB and FDC chips are tested. If a disc which is NOT write-protected is inserted into a 9121S or into BOTH drives of a 9121D, the seek track 0, motor speed, format, and verify tests are performed.

Expected indications: The complete test lasts 1 minute for the 9121D, 30 seconds for the 9121S. Drive access LED(s) show disc activity, the selftest LED blinks 10 times, then goes off. If any test fails, Selftest LED comes on for 5 seconds, then off.

Always return the TEST switch to the upward, normal operating position. This switch is used for the User Confidence test only.

SERVICE TEST

The Service test is selected by setting the HP-IB address switch to the desired test address as shown below. Start the test by momentarily shorting the SELFTEST pins on the Control PCA. Keeping the LOOP pins shorted will cause the 9121 to loop on the selected test.

The TEST segment of the HP-IB switch must remain in the up position (refer to the illustration on page 3-1).

Address	Test	#Blinks for pass
0	RAM	1
1	ROM	2
2	HP-IB	3
3	FDC	4
4	SEEK TRK 0	5
5	MOTOR SPEED	6
6	FORMAT	7
7	READ/VERIFY	8

The Selftest LED goes on for 5 seconds at the beginning of the test. If the test passes, the LED blinks the number of times indicated, then off.
If the test fails, the LED goes on for 5 seconds, then off.

Remote Diagnostics

AMIGO PROTOCOL EXERCISER

Refer to the Amigo Exerciser section in this handbook.

HP 9122D/S

The service diagnostic testing function allows selection and looping of any of the test choices in the following table.

To initiate a test, perform the following.

1. Apply power to the unit and allow the power-on selftest to complete.

2. Install formatted, unprotected discs if tests 4 through 14 are to be performed. (Note: Scratch discs should be used, as some tests destroy the data and format)

3. Set the HP-IB ADDRESS switch to the desired test number. See test descriptions on the following page.

4. Short the TEST jumper pins J7, with the jumper to start the test; LEAVE J7 SHORTED TO LOOP ON THE SELECTED TEST.

The fault LED will blink once at the beginning of the test, followed by:

Test pass indication	Fault-LED blinks 5 times
Test fail indication	Fault-LED stays on

Test results are displayed for 5 seconds followed by a complete power-up sequence.

When looping on a test, the following occurs:

1. A power-up sequence; indicated by the blinking LED

2. Test execution; indicated as follows

   A. If the test passes; the LED blinks The test is repeated until the loop jumper is removed.

   B. If the test fails; the LED stays on. The test is not repeated.

NOTE

A disc must be in the drives to perform test 6 through 14. Ensure that the discs are not write protected and that they are initialized scratch discs.

Available Test

		Test Time	
0	RAM	2s	All patterns are written in all locations of RAM
1	ROM	2s	A checksum calculation is performed
2	HP-IB chip	2s	Two of the registers are written and their content verified.
3	FDC chip	2s	Two of the registers are written and their content verified.
4	Drive 0 Seek	3s	Commands are given to the FDC to move the head on and off of track 0. The track 0 indicator is checked to see that movement occurred.
5	Drive 1 seek	3s	Same as above but on drive 1.
6	Motor 0 speed	3s	The head is stepped to track 35 and loaded. The period of the index pulse is measured and compared against the specification. No test if no disc in drive.
7	Motor 1 speed	3s	Same as above but on drive 1.
8	Write/verify disc 0	80s	Write on every sector of the disc and verify the data written.
9	Write/verify disc 1	80s	Same as above but on drive 1.
10	Verify disc 0	35s	All sectors in the data area of the disc are checked for CRC errors.
11	Verify disc 1	40s	Same as above but on drive 1.

12 Format disc 0	75s	The disc is re-initialized with a 011 data pattern.
13 Format disc 1	75s	Same as above but on drive 1.
14 PLL test	3s	The free-running frequency of the PLL is checked. The disc in drive 0 is used for the test, and its format is destroyed by the testing procedure.

SECTION VI

ADJUSTMENTS

The electrical and mechanical adjustments for the HP 9121 and 9122 products are not normally performed in the field. Refer to the product's service manual for adjustment information.

SECTION VII

PERIPHERALS

This section intentionally left blank.

SECTION VIII

REPLACEABLE PARTS

[1] EXCHANGE ASSEMBLIES

09121-69510	HP 9121D/S Controller PCA
09122-69501	HP 9122D/S Controller PCA
09121-69521	3 1/2-inch Drive (single-sided)
09114-69511	3 1/2-inch Drive (double-sided)

[2] NON-EXCHANGE ASSEMBLIES

2110-0012	Fuse 0.5A 250V
2110-0001	Fuse 1.0A 250V
09121-61611	Ribbon Cable
09121-61612	DC Power Cable

SECTION IX
DIAGRAMS

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SECTION X
REFERENCE

For information on the drive mechanism, refer to the tabbed Reference section of this handbook.

SECTION XI

SERVICE NOTES/IOSMs

This section of the handbook may be used to file service notes.