

Hewlett-Packard

System 45B

Desktop Computer



System Exerciser

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System Exerciser



HP System 45 Desktop Computer

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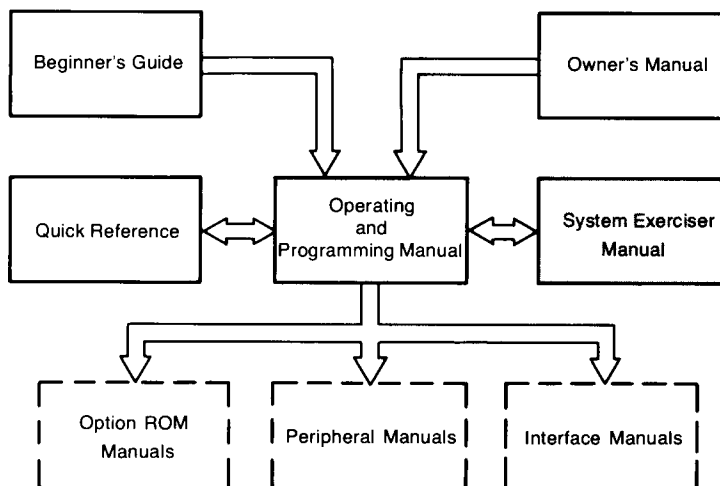
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Manual Map



Exerciser Selection

Introduction

The programs on the System Exerciser Cartridge (P/N 09845-91041) are designed to assure you that your System 45B is operating properly. They are not intended to diagnose problems. If any exerciser which is described in this manual fails, please note the error and contact your local HP Sales and Service Office. Office locations are listed at the back of this manual.

The exercisers are divided into three types --

- **System 45B Internal Exercisers**

Checks the Computer, Tape Drive, Display, Graphics, Printer, and Memory.

- **System 45B Peripheral Exercisers**

Checks the operation of peripheral devices connected to your System 45B.

- **System 45B Interface Exercisers**

Checks the operation of the interfaces connected to your System 45B.

The internal exercisers should be run first to exercise the System 45B mainframe thoroughly before running any of the external peripheral or interface exercisers.

Chapter 1

Starting Procedure

Before starting, use the following checklist to ensure that your system is ready for testing.

- On the computer and peripherals, check to ensure that the line voltage selector switch is set, and that the correct fuse is installed. This information can be found in the appropriate Operating Manual for each device.
- Configure the interfaces as shown for the interface exercisers in Chapter 4, if needed.
- Verify that the System 45 has its ROMs and Interfaces properly installed.
- Be sure that each peripheral is properly connected to the computer and the proper interface. When this is done, switch on the peripherals.
- On the System 45, latch the **AUTO ST** key.
- Insert the Systems Exerciser Cartridge in the right hand cartridge drive (T15) so the cartridge label faces up and out when the cartridge is installed.
- Switch on power to the System 45. The System 45 should begin to load and run the supervisory exerciser program. If this does not happen, or if the blinking cursor on the CRT does not appear within about 20 seconds after turn-on, and cannot be obtained by resetting the computer, call HP for assistance. The office locations are listed at the back of this manual.

If it is necessary, the exerciser supervisory program can also be loaded by typing

```
LOAD "AUTOST:T15" EXC
```

The System 45B exerciser is structured so that you always return to the supervisory program after completing each section of the program.

If for some reason, you wish to terminate a portion of the exerciser while it is running, press **STOP**. Returning to the supervisory program can be accomplished by pressing **RUN**.

Exerciser Selection

When the supervisory program begins to run, the following information is displayed.

```
9845B SYSTEMS EXERCISER  
Do you want PRINTED output (Y,N)?
```

At this point, the exerciser waits for you to answer Y for YES or N for NO, and then press the  key.

If you answer Y (YES), the exerciser then asks –

Please enter the PRINTER select code . . .

At this point, the exerciser waits for you to answer with a select code and then press the  key.

For example, if you had a 9871A Printer (HP-IB option only) with its address set to 6, connected on interface 7, enter 706 before pressing . Secondary addressing of HP-IB devices is not allowed in the system exerciser.

The exerciser is not looking for select code 16 (the CRT) to be entered. If you wish your printout to appear on the CRT, answer N (NO) to the question about the printed output.

If you enter an improper select code, the System 45B responds with

INCORRECT SELECT CODE

and then returns to the printed output question.

The choices of the exercisers are printed on the specified printer.

The choices are -

MAINFRAME	PERIPHERAL	INTERFACE	MEMORY
COMP	7905A	98032A	MEMORY
DISPLA	7906A	98033A	
TAPE	7920A	98034A	
PRNTR	9866A	98035A	
GRPHC	9866B	98036A	
	9871A	98040A	
	9874A		
	9883A		
	9884A		

An asterisk (*) appearing before any of the options (PRNTR or GRPHC) shows that the particular option is not installed.

The System 45B waits for you to select the specific exerciser followed by the select code and parameters when needed.

Special Considerations

The Systems Exerciser allows you to enter up to eight (8) exercisers. The maximum number of repetitions for each exerciser (except MEMORY) is 25.

Due to the comprehensive nature of the MEMORY exerciser, the following special considerations exist –

1. There is no printed output available. Test results are displayed on the CRT.
2. The MEMORY exerciser can only be run one time. Multiple repetitions of MEMORY are not allowed.
3. There is no long or short MEMORY exerciser.
4. The MEMORY exerciser must be the only exerciser selected, when you wish to run it.

Internal Mainframe Exercisers

Selection

There are five internal mainframe exercisers --

- Memory Exerciser (MEMORY)
- Display Exerciser (DISPLA)
- Tape Exerciser (TAPE)
- Printer Exerciser (PRINTR)
- Graphics Exerciser (GRPHC)

Selecting CUMF as the model number results in four (DISPLA, TAPE, PRNTR, GRPHC) of the exercisers being run.

Exerciser Description

The following section describes each of the mainframe exercisers.

Memory Exerciser

This exerciser performs a checksum on the System 45B ROMs and also checks the read/write memory. The exerciser takes approximately 2 minutes for 64k memory. Error messages are displayed when they occur. Pressing any keys on the keyboard while the exerciser is running may cause an error. Pressing  aborts the exerciser, but may also cause an error.

- 1 Option 560 or 561 required
- 2 Graphics ROM required

Chapter 2

NOTE

The display may have a random pattern on it for a short period of time during the MEMORY exerciser.

Display Exerciser

This exerciser checks the CRT display functions. If the parameter "ADJ" is entered, the test pattern of "He" is output to the CRT print area.

Tape Exerciser

This exerciser checks the tape drive(s) on the System 45B. It first exercises T15, and upon completion, checks for the presence of T14. If T14 is present it also is exercised.

The tape cartridge must be write enabled (tab slid to right) to properly complete this test.

Printer Exerciser

This exerciser checks the thermal printer. There are no parameters.

Graphics Exerciser

This exerciser checks the System 45B CRT graphics. The ADJ parameter is the only parameter available for GRPHC. Its result is the entire plotting area is illuminated, for adjustment purposes. The only way out of this portion of the exerciser is to press .

Entering Your Choice

Once you have decided which exerciser(s) you wish to run, you would type it in and then press . Entering a parameter for the test is done as shown here –

DISPLA, ADJ

This enters the parameter ADJ for the DISPLAY exerciser. You should note that the select code was automatically left out, it did not need an additional comma in its list.

Multiple Exerciser Entries

The System 45B exerciser can accept up to eight (8) entries at a time for its exerciser routines. Each can be delimited with the divide symbol (/).

The form is simple:

```
PRNTR/TAPE/GRPHC,ADJ
```

runs the PRINTER exerciser, followed by the TAPE exerciser followed by the GRAPHICS exerciser.

Continuing Onward

Once you have selected the exerciser and pressed , the supervisory program returns with

```
Enter # of times to run.
```

Here you would enter the number of repetitions for each exerciser. The maximum number of repetitions is 25. MEMORY is limited to one run.

Exerciser Results

After the exerciser has completed its operation, the following message is displayed –

```
0 message(s). # runs= 1 Press CONT
```

This is the total number of error messages which occurred during the total number of exerciser repetitions.

Pressing returns you to the supervisory program.

Memory Exerciser

The memory exerciser displays the following information to you while it is running.

The exerciser begins with a blinking

```
ROM CHECKSUM TEST RUNNING
```

A ROM checksum failure is indicated by the message

```
ROM CHECKSUM FAILURE BLK X ADDRESS XXXXXX-XXXXXX
```

This information should be noted for your service representative, since it can result in less time being spent on the service call. Press after this message to continue the exerciser. The R/W memory check is run next while the CRT displays a blinking

```
R/W MEMORY EXERCISER RUNNING
```

During the R/W memory check, the CRT displays various characters and lines on its print area. This is normal.

A R/W memory failure is indicated by the message

```
MEMORY ERROR BLK X ADDRESS XXXXXX HAS XXXXXX NOT XXXXXX
```

This information should also be noted for your representative.

When the exerciser is complete, the display is

```
MEMORY EXERCISER COMPLETE PRESS 'CONT'.
```

Press to return to the beginning of the Systems Exerciser program.

10 Internal Mainframe Exercisers

with the THIS LINE SHOWS portion having the specified features.

This is followed by the available alphanumeric character set.

	!	"	#	\$	%	&	'	(	)	*	+	,	-	.	/
0	1	2	3	4	5	6	7	8	9	:	;	<	=	>	?
@	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O
P	Q	R	S	T	U	V	W	X	Y	Z	[	\	]	^	_
`	a	b	c	d	e	f	g	h	i	j	k	l	m	n	o
p	q	r	s	t	u	v	w	x	y	z	{		}	~	*

Tape Exerciser

The tape exerciser begins by prompting you with these messages

```
CREATING FILE DATA1
CREATING FILE DATA2
CREATING FILE DATA3
CREATING FILE DATA4
CREATING FILE DATA5
```

which is then followed by

```
ASSIGNING & FILLING FILE DATA1
ASSIGNING & FILLING FILE DATA2
ASSIGNING & FILLING FILE DATA3
ASSIGNING & FILLING FILE DATA4
ASSIGNING & FILLING FILE DATA5
```

followed by the various reads and writes as shown here.

READING FILE DATA2: 2	READING FILE DATA5: 11
READING FILE DATA3: 3	READING FILE DATA5: 12
READING FILE DATA3: 4	READING FILE DATA5: 13
READING FILE DATA1: 1	READING FILE DATA5: 14
READING FILE DATA3: 2	READING FILE DATA5: 15
READING FILE DATA3: 3	READING FILE DATA5: 16
READING FILE DATA3: 4	READING FILE DATA5: 7
WRITING FILE DATA3: 2	READING FILE DATA5: 8
WRITING FILE DATA3: 3	READING FILE DATA5: 9
WRITING FILE DATA3: 4	READING FILE DATA5: 10
READING FILE DATA1: 1	READING FILE DATA5: 11
READING FILE DATA3: 4	READING FILE DATA5: 12
READING FILE DATA4: 7	READING FILE DATA5: 13
READING FILE DATA4: 8	READING FILE DATA5: 14
READING FILE DATA5: 1	READING FILE DATA5: 15
READING FILE DATA5: 2	READING FILE DATA5: 16
READING FILE DATA5: 3	WRITING FILE DATA2: 2
READING FILE DATA5: 4	READING FILE DATA4: 1
READING FILE DATA5: 5	READING FILE DATA4: 2
READING FILE DATA5: 6	READING FILE DATA4: 3
READING FILE DATA5: 7	READING FILE DATA4: 4
READING FILE DATA5: 8	READING FILE DATA4: 5
READING FILE DATA5: 9	READING FILE DATA4: 6
READING FILE DATA5: 10	READING FILE DATA4: 7
READING FILE DATA5: 11	READING FILE DATA4: 8
READING FILE DATA5: 12	READING FILE DATA2: 1
READING FILE DATA5: 13	READING FILE DATA2: 2
READING FILE DATA5: 14	READING FILE DATA2: 1
READING FILE DATA5: 15	READING FILE DATA2: 2
READING FILE DATA5: 16	READING FILE DATA4: 7
WRITING FILE DATA2: 2	READING FILE DATA4: 8
READING FILE DATA1: 1	WRITING FILE DATA4: 4
READING FILE DATA1: 1	WRITING FILE DATA4: 5
READING FILE DATA5: 8	WRITING FILE DATA4: 6
READING FILE DATA5: 9	WRITING FILE DATA4: 7
READING FILE DATA5: 10	WRITING FILE DATA4: 8

When the T15 test is completed, the following message is displayed:

```
TAPE VERIFY DONE :T15
```

At this point, the exerciser checks for the presence of T14. If it is present, then the exerciser is re-executed for T14. If T14 is not present the exerciser continues normal operation. If your System 45B has the T14 option installed but the cartridge is not installed in the tape drive, then the following message is displayed.

```
TAPE CARTRIDGE OUT : T14 EXERCISER ABORTED
```

Followed by

```
1 message(s). # run(s) = 1 Press CONT
```


When the test is complete, the message

```
@ message(s). # run(s) = 1 Press CONT appears.
```

Graphics Exerciser

The Graphics exerciser consists of ten sections which takes approximately 2 1/2 minutes to run.

The sections, and their approximate times are:

Section	Approximate Time in Seconds	
Overhead	20	
Full Plotting Area On	17*	
Full Plotting Area Off	11	
Vertical Lines #1	18	
Vertical Lines #2	3	
Pattern #1	21	
Pattern #2	20	
Plotted Points	5	
Cursor	14	
Plotted Points	3	* ADJ stops the exerciser here.

And, as with all the exercisers, you receive the following message when the exerciser is through.

```
@ message(s). # run(s) = 1 Press CONT
```


Peripheral Exercises

Selection

1. Read and write 10 words from the list.

2. Write 10 words from the list.

3. Write 10 words from the list.

4. Write 10 words from the list.

5. Write 10 words from the list.

6. Write 10 words from the list.

7. Write 10 words from the list.

8. Write 10 words from the list.

9. Write 10 words from the list.

10. Write 10 words from the list.

Chapter 3

Exerciser Description

7905A

The 7905A exerciser performs a checkread on the disc.

7906A

The 7906A exerciser performs a checkread on the disc.

7920A

The 7920A exerciser performs a checkread on the disc.

9866A

The 9866A exerciser checks the 9866A for proper character generation.

9866B

The 9866B exerciser checks the 9866B printer for proper character set generation and checks the printout by generation of a binary pattern.

9871A

The 9871A exerciser checks the 9871A printer's character set and its plotting ability.

9874A

The 9874A exerciser checks the internal electronics of the digitizer, the audio tone generation system and the digitizing capability of the 9874A.

9883A

The 9883A exerciser checks the operation of the paper tape reader.

9884A

The 9884A exerciser checks the operation of the paper tape punch.

Entering Your Choice

Once you have decided which exerciser(s) you wish to run, type it and then press .

Entering a parameter for the test is done as shown here –

9866A,6,ADJ

Multiple Exerciser Entries

The System 45 exerciser can accept up to eight (8) entries at a time for the exerciser routines. Each exerciser can be delimited with the divide symbol (/).

The form is simple:

9871A,6/9866B,2

runs the 9871A test followed by the 9866B test.

Continuing Onward

Once you have selected the exerciser and pressed the supervisory program returns with

Enter # of times to run.

Here you would enter the number of repetitions for each exerciser. The maximum number of repetitions is 25.

Some exercisers require the linking of programs. This linking is done automatically, but it does result in tape motion. Wait until the TEST COMPLETE message is output before terminating an exerciser.

Exerciser Results

After the exerciser has completed its operation, the following message is displayed –

```
0 message(s). # run(s)= 1 Press CONT
```

This is the total number of error messages which occurred during the total number of exerciser repetitions.

Pressing  returns you to the supervisory program.

Disc Drive Exercisers

The disc drive exercisers are used with the 7905A, 7906A and 7920A disc drives. The exercisers typically take the following amounts of time to run –

7905A	15 seconds
7906A	15 seconds
7920A	1 minute

Each exerciser performs a checkread on the disc surface by reading the data on the disc surface and generating a checksum. This checksum is compared with the checksum recorded on the disc to verify the data.

When the prompt

```
Enter MODEL # , select code, and desired parameters...
```

appears, you must enter the following information

Model number, interface select code and the bus address, unit number, surface to be checked [, continuous operation option]

- The model number can be either 7905A, 7906A or 7920A.
- The interface select code and the bus address are entered together as a three or four digit number. The interface select code can be a one or two digit number which represents a valid select code. The bus address **must** be a two digit number. For example, a disc on interface 12 with a bus address of 0 would be entered as 1200, or else an ERROR 100 is generated.
- The unit number has an acceptable range of 0 thru 7.

- The head surface to be verified has the following limits –

7905A	0 thru 2
7906A	0 thru 3
7920A	all heads are exercised

- The continuous operation option is requested by using the letter `C` as the parameters.

NOTE

You can **not** skip mandatory parameters on the disc exercisers. If you wish to run the 7920A exerciser continuously you must enter a value for the head surface to be verified even though all head surfaces are being checked.

If you enter the continuous operation option, the parameter for the number of runs prompt is ignored.

The continuous operation option is exited by pressing `ko`.

When an exerciser is complete, the message

```
MEDIA VERIFY COMPLETE
```

is displayed, followed by a message like

```
0 message(s). # run(s) = 1 Press CONT
```

1999

Figure 1

100

M.M.M.M.M.M.M.M.M.M! "\$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMN O PQRSTU VWXYZ[\]^_`abcdefghijklmnopqrstu vwxyz{|~M.M.M.M.M.M.M.M.M.M

9871A Exerciser Printout

9874A Digitizer Exerciser

The 9874A Digitizer exerciser is an interactive exerciser which typically takes between four and six minutes to run. The variance in the run times is due to the amount of time which you take to press the various buttons and position the cursor.

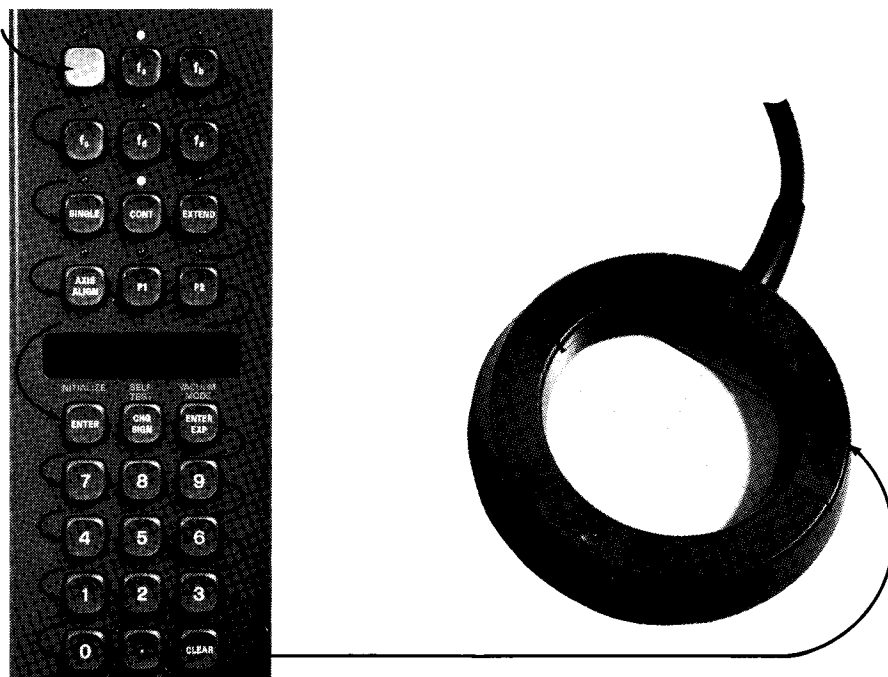
The first display of the exerciser on the System 45 is

Watch the digitizer display.

This is followed by the 9874A completing its internal electronics checks. There are two checks made here, taking approximately two minutes. This is followed by the 9874A momentarily lighting all of the LED segments in the display sequentially. You should verify that all of the character segments light up.

The second portion of the exerciser checks each of the indicator LEDs beginning with the one on the cursor, and then sequentially from the top row of the 9874A keyboard to the bottom row.

The third portion of the exerciser requires that the digitizer's keyboard switches be depressed sequentially. The following photos show the proper sequence, in addition to the display prompt on the digitizer's keyboard display.



The first keyboard prompt is

```
PRESS SHIFT
```

which is located in the upper-left hand corner of the digitizer keyboard.

If a key is malfunctioning or if you should depress the wrong key, the 9874A beeps and directs you to depress the key again. This prompting sequence can be repeated up to four additional times before the exerciser aborts.

After the keyboard keys are depressed, the prompt directs you to depress the two remaining keys on the cursor. You are first prompted to

```
PRESS DIG
```

which is the D key on the digitizer cursor. If your 9874A is configured with the stylus, press the stylus down. The next prompt is

```
PRESS VAC
```

which refers to the A key on the cursor. This prompt does not appear if you have the stylus installed.

The last portion of the exerciser checks the digitizing capability of the 9874A. The System 45 prompts you with

```
Place the cursor or stylus on the platen.
```

followed by

```
Press the digitize switch, and locate X=0, y=0.
```

At this point, you should have placed the cursor or stylus on the platen, and pressed the D switch on the cursor. You now must locate the X,Y intersection of 0,0 which is located at the center of the platen. Both the System 45 and the 9874A display the current X,Y coordinates of the cursor or stylus. The X coordinate is the first coordinate value in the 9874A display, with the Y coordinate being the second coordinate displayed.

If you have the cursor, it may be necessary for you to depress the A switch on the cursor to move the cursor along the platen. When point 0,0 (± 10) is located, the 9874A generates an audio tone pattern.

When the 9874A exerciser is complete, the System 45 displays

```
9874A EXERCISER PASSED.
```

followed by the message

```
0 message(s). # run(s)= 1 Press CONT
```

9883A Paper Tape Reader Exerciser

The 9883A Paper Tape Reader Exerciser takes approximately 2 minutes to run.

The exerciser prompts you with

```
"LOAD THE PAPER TEST TAPE, PRESS CONTINUE."
```

At this time, you should load the tape (P/N 09883-90030) which was shipped with your 9883A. When the tape has been loaded, simply press , and the tape is read.

When the exerciser is complete, the message

```
"9883A TEST PASSED."
```

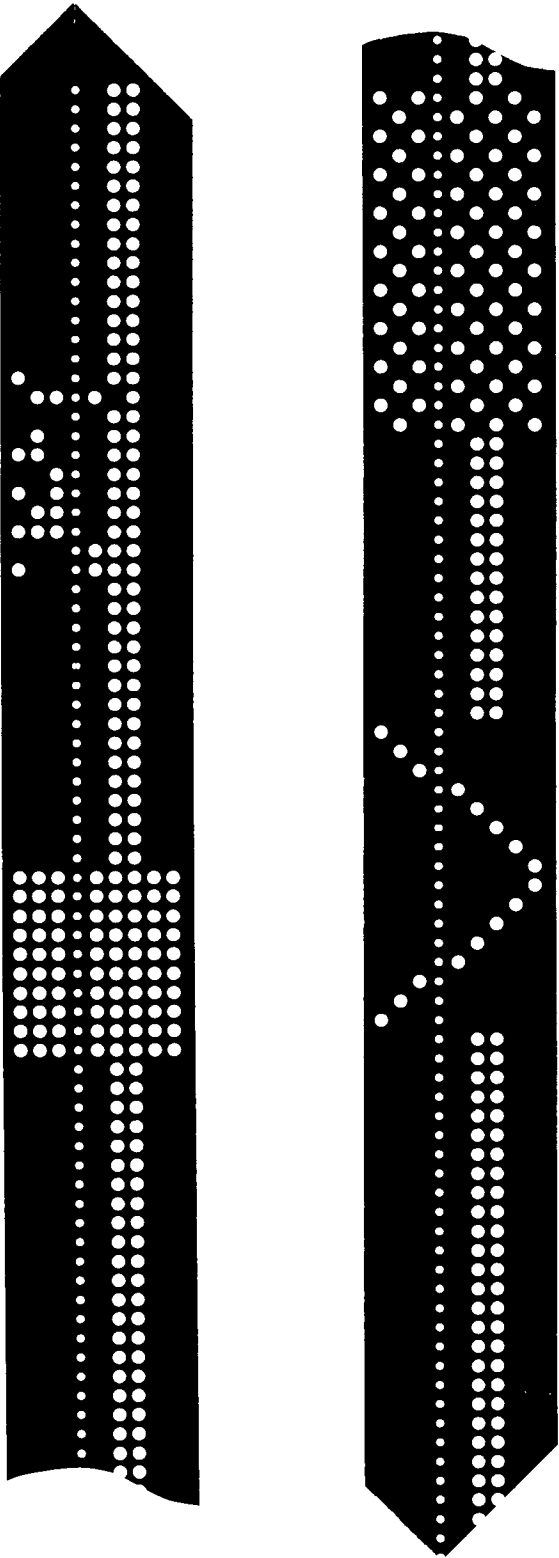
is displayed.

9884A Paper Tape Punch Exerciser

The 9884A Paper Tape Punch Exerciser takes approximately ½ minute to run. The actual punching of the tape only takes about four seconds.

There are no parameters to select for this exerciser.

The punched tape is shown on the following page.



Interface Exercisers

Selection

There are six interface exercisers:

- 98032A 16 Bit Interface
- 98033A Binary Coded Decimal Interface (BCD)
- 98034A HP-IB Interface (IEEE 488-1975)
- 98035A Real Time Clock Interface
- 98036A RS 232 Interface
- 98040A Incremental Plotter Interface

The operation of the interface systems exerciser requires that special interface cards be installed to adequately check the specified interface.

CAUTION

ANY INTERFACE CONFIGURATION OR CONNECTION SHOULD BE DONE WITH POWER OFF TO THE SYSTEM 45 AND THE INTERFACES. FAILURE TO DO THIS MAY DAMAGE THE EQUIPMENT.

If you do not configure these special interface cards, running a peripheral exerciser successfully may be adequate to determine if the interface is good.

The interface exercisers do require that the I/O ROM be loaded into your System 45B.

Chapter 4

Exerciser Description

98032A

The 98032A 16 Bit Interface exerciser performs three different checks on the 98032A card.
The checks are -

- Data Patterns
- I/O Line
- Extended Control and Status

98033A

The 98033A Binary Coded Decimal Interface exerciser checks the 98033A card.

98034A

The 98034A HP-IB Interface exerciser performs eleven different checks on the 98034A card.
The checks are -

- Status
- Control Byte
- Self Address
- Handshake
- Data Transfer1
- Data Transfer2
- Pass Control
- External Address
- Service Request
- Interrupt
- Parallel Poll

98035A

The 98035A Real Time Clock Interface exerciser performs nine different checks on the 98035A card. The checks are -

- Format
- Clock Hardware
- Read
- Illegal Format
- Interrupt and A, D, P Check
- Interrupt
- C, G, H, I-1, 2, V Check
- L, N
- A, D, F, M, O, P Check

98036A

The 98036A RS-232 Interface exerciser performs three different checks on the 98036A card. The checks are -

- Default Modes
- Mode Check
- R6 Testing

98040A

The 98040A Incremental Plotter Interface exerciser checks the various pen control functions on the 98040A card. The checks are -

- +X
- -X
- +Y
- -Y
- Pen Up
- Pen Down

Entering Your Choice

Once you have decided which exerciser(s) you wish to run, you would type its name and then press  as shown here -

98036A, 3 

All of the interface exercisers require a select code to be entered as well as the MODEL #, or else the System 45B responds with the message

Please EDIT incorrect select code:

Multiple Exerciser Entries

The System 45B exerciser can accept up to eight (8) entries at a time for its exerciser routines. Each can be delimited with the divide symbol (/).

The form is simple:

98032A, 2/98034A, 7/98035A, 5

runs the 98032A exerciser, followed first by the 98034A exerciser then the 98035A exerciser.

Continuing Onward

Once you have selected the exerciser and pressed  the supervisory program returns with

```
Enter # of times to run.
```

Here you would enter the number of repetitions for each exerciser. The maximum number of repetitions is 25.

After the exerciser has completed its operation, the following message is displayed –

```
0 message(s). # run(s)= 1 PRESS CONT
```

This is the total number of error messages which occurred during the total number of exerciser repetitions.

Pressing  returns you to the supervisory program.

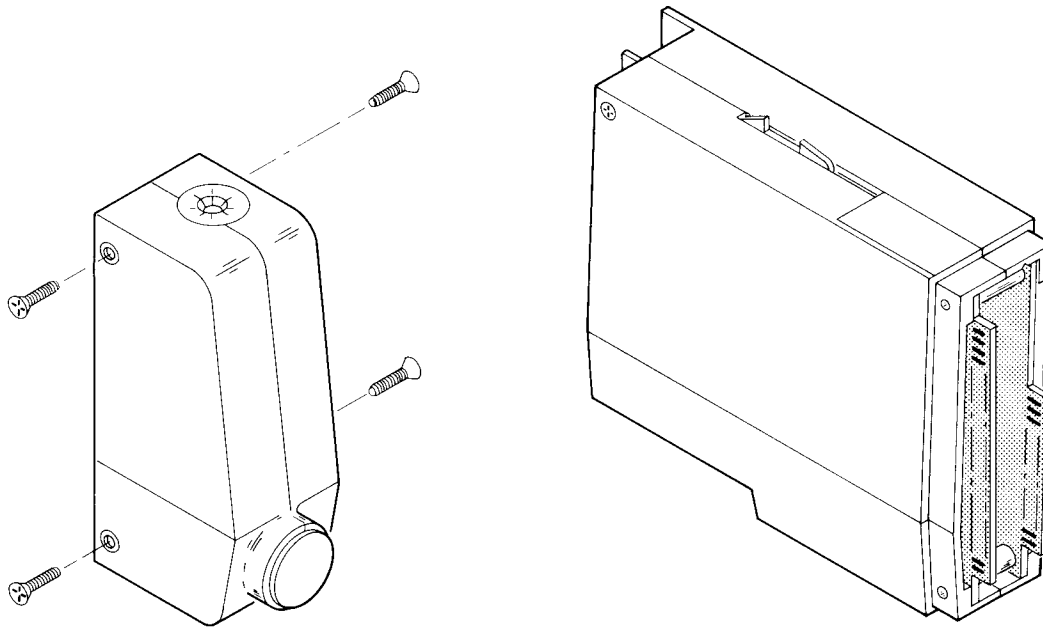
Some of the interface exercisers require the linking of programs from the test tape. This is done automatically, so don't be alarmed by any tape motion. Always wait for the exerciser to display its message of

```
0 message(s). # run(s) = 1 PRESS CONT
```

before conducting your next exerciser.

98032A 16 Bit I/O Interface Exerciser

This exerciser takes approximately 5 minutes to run. To configure the interface, remove the Peripheral Configuration Assembly and install the Test Connector (P/N 98241-67932).



If you select the 98032A interface exerciser, the following messages are displayed, in this sequence.

```
DOING 98032A DATA PATTERNS TEST
```

```
DOING I/O LINE TEST
```

```
DOING EXTENDED CONTROL AND STATUS
```

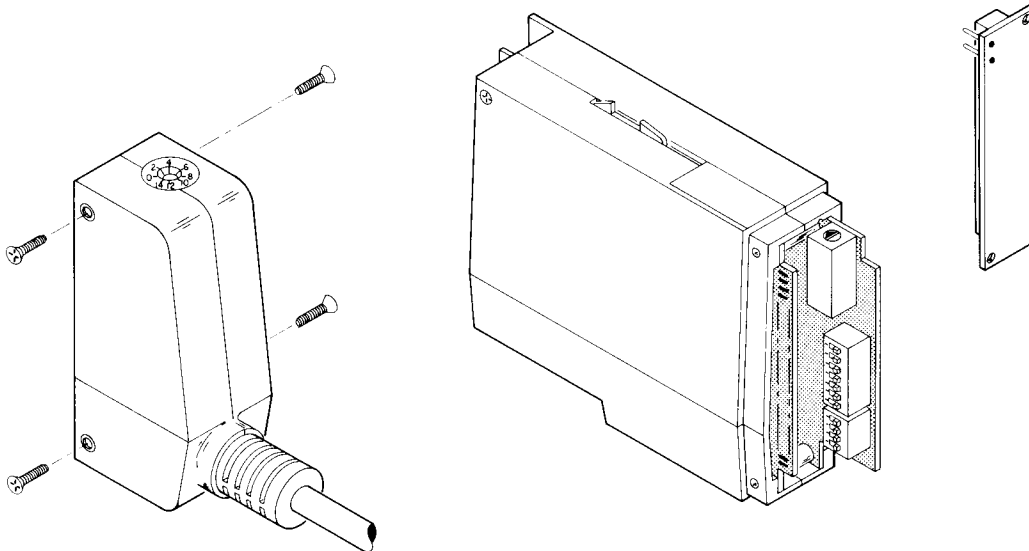
```
98032A TEST COMPLETE
```

Followed by the number of messages and the number of repetitions of the exerciser as shown here.

```
0 message(s). # run(s) = 1 Press CONT
```

98033A Binary Coded Decimal Interface Exerciser

This exerciser takes approximately 4 minutes to run. To configure the interface, remove the rear housing and install the Test Connector (P/N 98241-67933) and set all of the configuration switches to OFF (refer to the 98033A BCD Interface Installation and Service Manual).



If you select the 98033A interface exerciser, the following messages are displayed in this sequence.

```
98033A BCD INTERFACE TEST
```

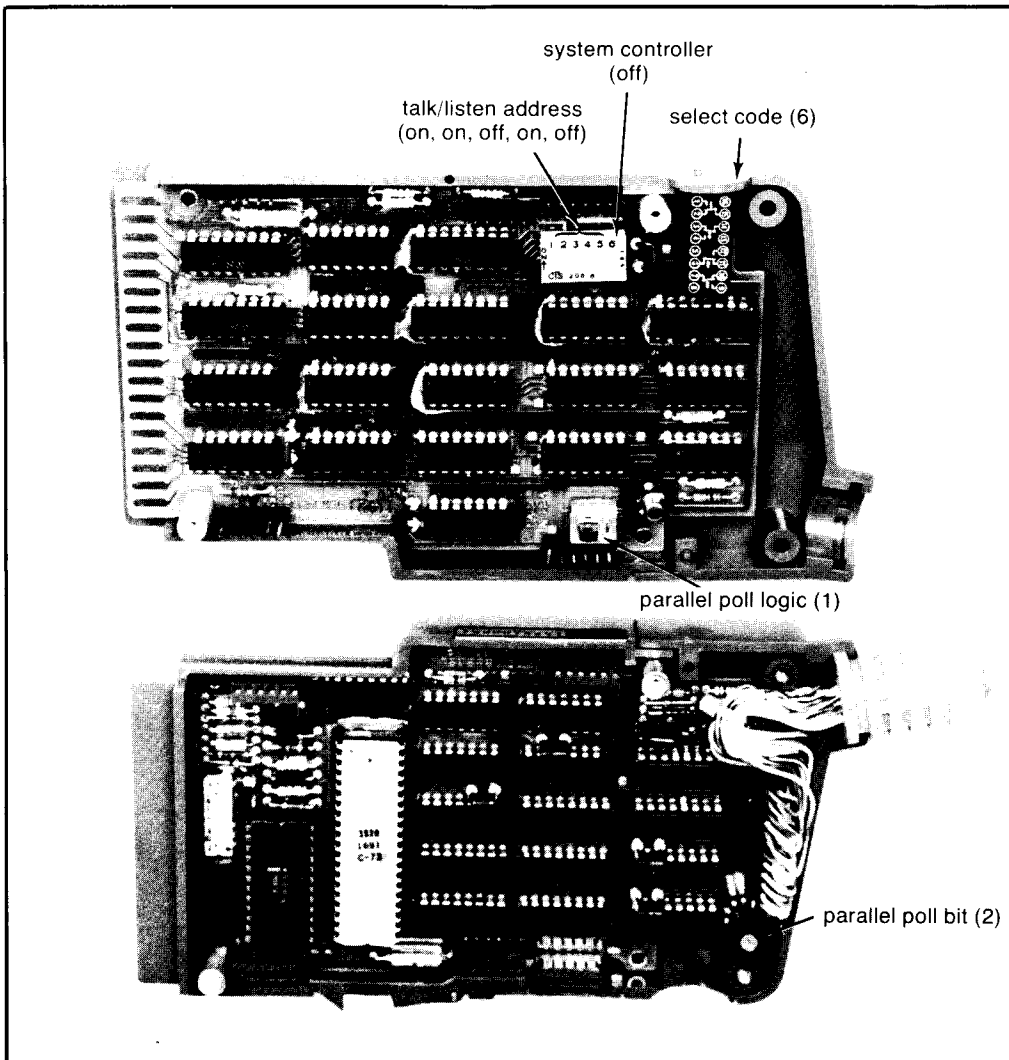
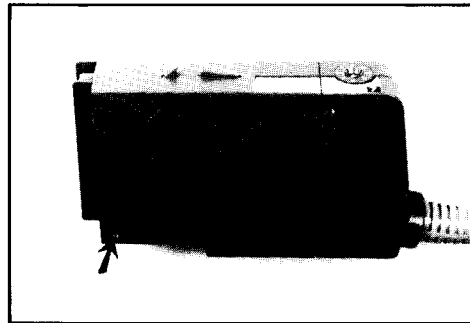
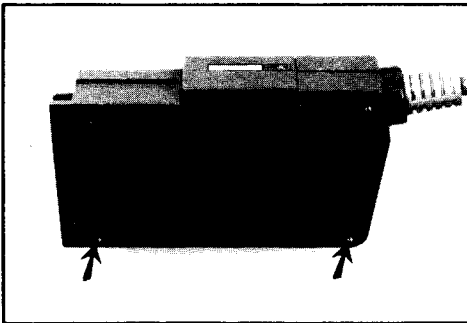
```
98033A TEST COMPLETE
```

Followed by the number of messages and the number of exerciser repetitions, as shown here.

```
0 message(s). # run(s)=1 Press CONT
```

98034A HP-Interface Bus Exerciser

This exerciser takes approximately 5 minutes to run. It does require that two HP-IB interfaces be connected to the System 45B. One interface is a standard HP-IB interface set to the factory configuration. Factory configuration can be found in the 98034A Installation and Service Manual. The other interface has its select code set to 6. The HP-IB test interface is configured as shown in the following photos.



Following the procedure in the Installation and Service Manual, remove the interface cover on the test interface.

Separate case halves as shown. On the 98034-66502 board, change the parallel poll bit from 1 to 2 (as shown). Note the switch positions before you change them. On the 98034-66501 board, change the talk/listen address switches to ON, ON, OFF, ON, OFF (as shown). Set the system controller switch OFF. Keep the parallel poll logic switch at the 1 position. Change the select code to 6.

Reassemble the test interface. Plug both interfaces into the back of the computer. Plug HP-IB connectors together and turn computer power ON.

If you have any questions concerning the configuration of your HP-IB interfaces, please call your Sales and Service Office.

The HP-IB interface exerciser checks the following items -

- STATUS
- CONTROL BYTE
- SELF ADDRESS
- HANDSHAKE
- DATA TRANSFER1
- DATA TRANSFER2
- PASS CONTROL
- EXTERNAL ADDRESS
- SERVICE REQUEST
- INTERRUPT
- PARALLEL POLL

As each item is tested, the current test is displayed on the CRT, as shown here.

STATUS TEST

When each item being tested is complete, then a test complete message is displayed, as shown here.

STATUS TEST COMPLETE

When the exerciser has been completed, the message

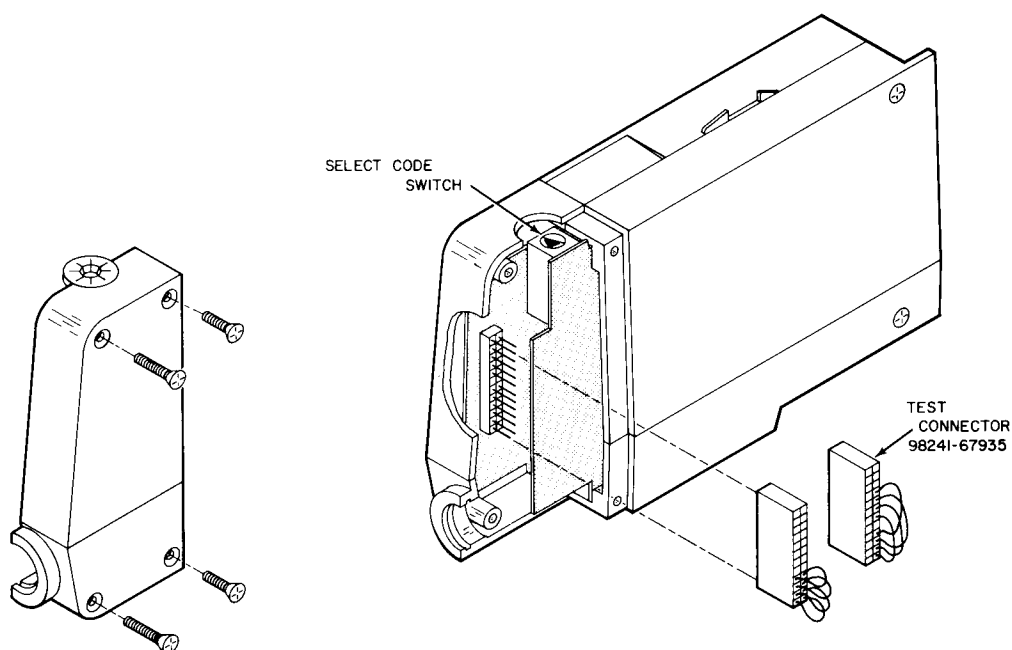
TEST COMPLETE

is displayed.

98035A Real Time Clock Interface Exerciser

The 98035A Real Time Clock exerciser takes approximately 5 minutes to run. Configure the interface as shown with the test connector installed.

If you do select this 98035A Real Time Clock Exerciser, be careful - the time setting is changed on the clock during this test. You will have to reset your 98035A Real Time Clock after running this exerciser if you want the correct time.



While running this exerciser, the following messages are displayed in this order.

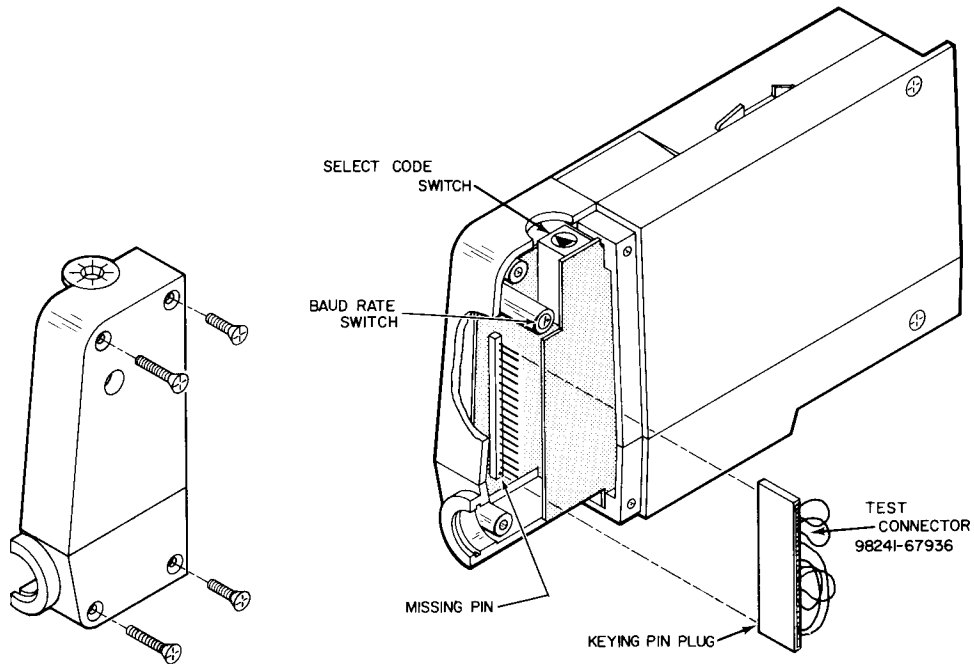
```
FORMAT TEST  
TIME SET  
CLOCK HARDWARE TEST  
SETTING TIME  
READ TEST  
ILLEGAL FORMAT TEST  
INTERRUPT AND A,D,P CHECK  
INTERRUPT TEST <30 SECONDS  
C G H I-1, 2 V CHECK  
L N TEST  
A, D, F, M, O, P CHECK  
TEST COMPLETE
```

NOTE

Remember to reset the 98035A Real Time Clock to the correct time after running the exerciser.

98036A RS-232 Interface Exerciser

The 98036A exerciser takes approximately 5 minutes to run. The interface should be configured as shown, with the test connector 98241-67936 installed.



There are three basic checks in this exerciser -

- Default Modes Test
- Mode Check
- R6 Testing

When the default modes test is being run, the display is -

TESTING DEFAULT MODES

When the mode check is being run, the display is -

TESTING MODE XXX

The modes check verifies all valid modes -

When the modes check is complete, the display is -

TESTING R4D

Followed by

TESTING R6

The exerciser is complete when the

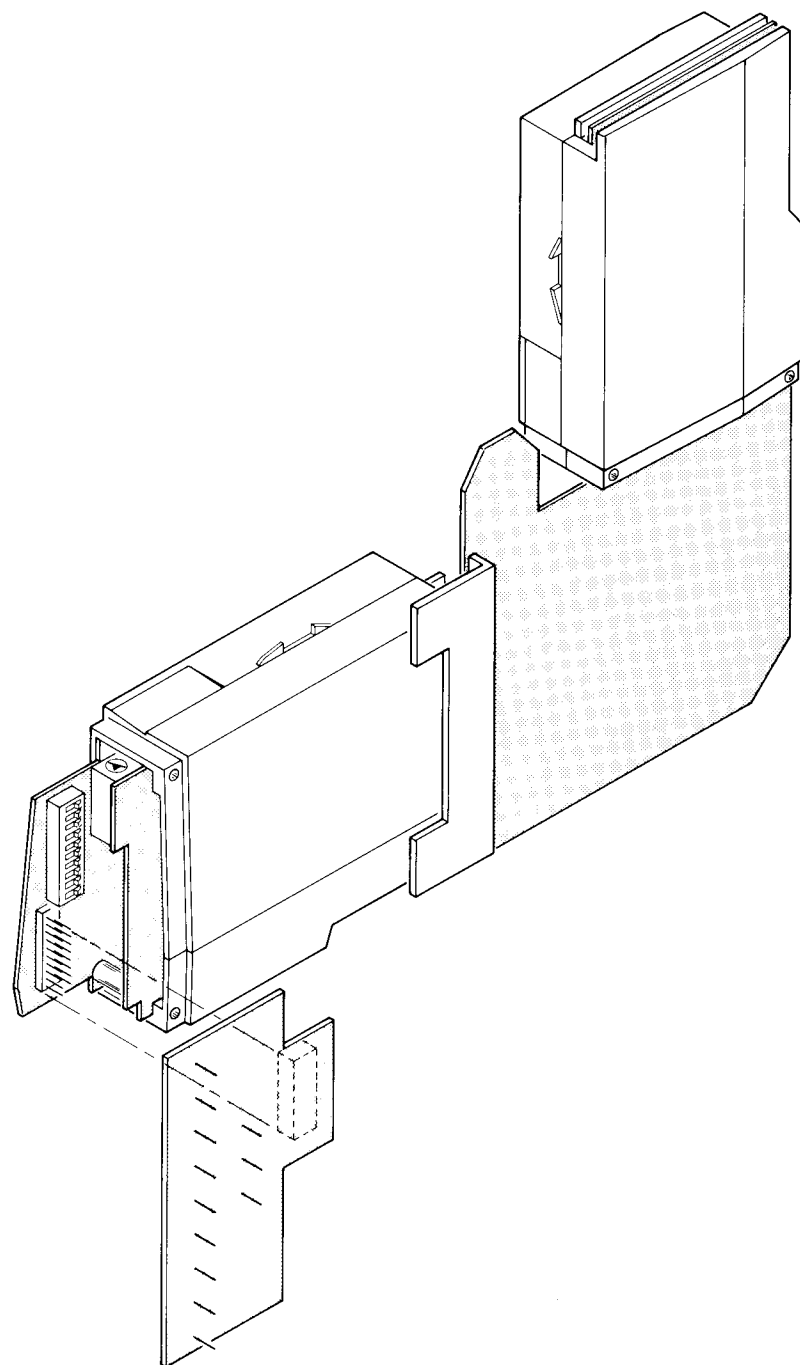
TEST COMPLETE

message is displayed.

98040A Incremental Plotter Interface Exerciser

The 98040A exerciser generates timing pulses which must be monitored with an oscilloscope. The waveforms are shown in the 98040A Incremental Plotter Interface Service Manual.

To configure the interface, remove the rear housing and install the test connector (HP pn 98241-67940) to the interface card. Connect the 98040A interface card to a card extender as shown on the following page.



To run the exerciser, press the appropriate SFK to generate the timing pulse.

System Exerciser Table

Exerciser	ROM/Option Required	Items Exercised	Parameters	Typical Run Times
COMP				7 min 15 sec
	Option 560 or 561 Graphics ROM 2 Options 560 & 561	DISPLA TAPE PRNTR GRPHC		
MEMORY		Checksum R/W Memory		2 min
DISPLA		Display Features Character Set	ADJ	1 min 15 sec
TAPE		TTS T14 if available		2 min 30 sec 30 sec
PRNTR	Option 560 or Option 561	Character Sets Special Printer Features		1 min
GRPHC	Graphics ROM		ADJ	2 min
7905A		Checksum	UNIT NUMBER	15 sec
7906A		Checksum	Surface To Be Checked	15 sec
7920A		Checksum	Continuous Operation (C)	1 min

Appendix

Exerciser	ROM / Option Required	Items Exercised	Parameters	Typical Run Times
9866A		Character Generation	ADJ	1 min
9866B		Character Generation and Binary Pattern	ADJ	4 min
9871A	HP-IB Printer requires I/O ROM	Printing and Plotting		1 min
9874A	I/O ROM	Electronics, Tone Generation, Digitizing		4 min to 6 min
9883A		Tape Reader		2 min
9884A		Tape Punch		15 sec
98032A	I/O ROM	Data Patterns I/O Line Extended Control		5 min
98033A	I/O ROM	Interface		4 min
98034A	I/O ROM	Status Control Byte Self Address Handshake Data Transfer Pass Control External Address Service Request Interrupt Parallel Poll		5 min
98035A	I/O ROM	Format Clock Hardware Read Illegal Format Interrupt Various Checks		5 min

Exerciser	ROM/Option Required	Items Exercised	Parameters	Typical Run Times
98036A	I/O ROM	Default Modes Mode Check R6 Testing		5 min
98040A	I/O ROM	+X -X +Y -Y Pen Up Pen Down		N/A

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