



 **HEWLETT-PACKARD 9830A CALCULATOR**

SYSTEM TEST INSTRUCTIONS

HP Computer Museum
www.hpmuseum.net

For research and education purposes only.

TABLE OF CONTENTS

Introduction	1
Loading the Test Cassette	2
Testing the Calculator	3
Testing Peripherals	5
9860A Card Reader	7
9861A Output Typewriter	10
9862A Plotter	14
9863A Tape Reader	16
9864A Digitizer	18
9865A Cassette Memory System	23
To Test the Internal Cassette System	24
9866A Thermal Printer	25



HEWLETT-PACKARD CALCULATOR PRODUCTS DIVISION
P.O. Box 301, Loveland, Colorado 80537, Tel. (303) 667-5000
Rue du Bois-du-Lan 7, CH-1217 Meyrin 2, Geneva, Tel. (022) 41 54 00

CAUTION

The Model 30 can be severely damaged if it has not been set to the correct voltage; if in doubt, please refer to Appendix A of the Operating and Programming Manual.

INTRODUCTION



This booklet is designed to contain the procedures for verifying the performance of a Model 30 Calculator System. The 9830A Systems Test Cassette (-hp- Part No. 09830-90031) is capable of testing the following:

- 9830A Calculator and ROM's one time.
- 9830A Calculator and ROM's continuously.
- 9800 Series Peripherals any number of times.

Follow the instructions on the next page for loading the 9830A Systems Test Cassette. In most cases it is advisable to test the calculator and internal ROM's before testing your peripheral.

LOADING THE TEST CASSETTE

To open the tape cassette door, flick the switch on the upper right-hand corner of the calculator keyboard. Slide in the cassette through the guide-posts on the cassette door; be sure the cassette is right-side up with the label, 09830-90031 Systems Test Cassette, facing you. Push the door closed and press:

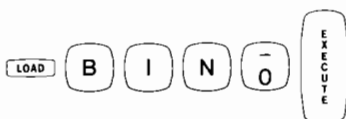
REWIND

Now you're ready to load the test programs into the Calculator. Press:



This checks the memory. If you have a Calculator with 1760 words of memory, you should get the number 1760 in the display; if you have a Calculator with 3808 words of memory, you should get the number 3808 in the display; and so on. If you do not obtain the correct number in the display, do not proceed further, your Calculator is defective.†

Now press:

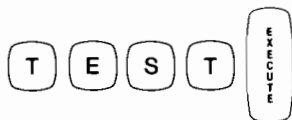


When the $\frac{1}{1}$ symbol appears in the display, the tape has been loaded. If it does not appear in the display, carefully repeat the procedures above. If you are still unable to obtain the symbol, do not proceed further; your Calculator is defective.

†With a terminal ROM in the machine the number displayed will be 10 less, since this ROM uses 10 words of user memory.

TESTING THE CALCULATOR

After loading the test cassette as described earlier, test the calculator one time by pressing:



The display should go blank and the Calculator will begin to beep at five second intervals. After a minute (this time will vary according to the amount of memory) you should have one of the four following displays:

9830A TEST SATISFACTORY

This display assures you that your Calculator is operating correctly and that both the basic ROM and any add-on ROM's are okay.

MEMORY FAILURE-BASIC ROM

This display indicates a failure in the basic ROM of your Calculator.

MEMORY FAILURE-ADD-ON ROM

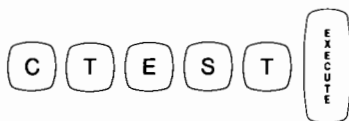
This display indicates a failure in one or more of the add-on ROM's.

MEMORY FAILURE-READ/WRITE

This display indicates READ/WRITE memory failure.

All keyboard control is lost during the test operation.

If you want to run a continuous test on your Calculator and all ROM's (useful for locating intermittent troubles), press:



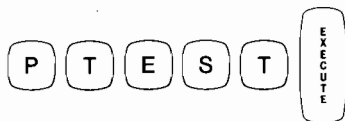
Once again, the calculator display will blank and the calculator will begin beeping. For each complete satisfactory test, the calculator will flash:

9830A TEST SATISFACTORY N

where "N" is equal to the number of times the test has been successfully completed. Failure to complete the test successfully will cause the calculator to stop and display one of the failure messages previously described. The continuous loop of this test can be interrupted by pressing STOP. The Calculator will complete that run of the test and then stop.

TESTING PERIPHERALS

Refer to the separate peripheral manuals for turn-on procedures. Then, after loading the test cassette as described earlier, test your peripheral by pressing:



The display will request the model number of your peripheral. This requires the four-digit number associated with your peripheral (i.e. 9864 for the digitizer). The 9800 Series peripherals which can be tested are listed below:†

- 9860 Card Reader
- 9861 Typewriter
- 9862 Plotter
- 9863 Tape Reader
- 9864 Digitizer
- 9865 Cassette Memory
- 9866 Printer

Type in the model number of your peripheral and press:



Another message will appear in the display asking for the select code. If you wish to specify the factory select code, type in 0; otherwise type in your peripheral's select code and press:



†The 9868A I/O Expander has no special test procedure because it is essentially a 'junction box'. The expander is operating properly if the peripheral devices connected to it operate. If a device does not work when connected to the expander but does work connected directly to the calculator, the expander can be assumed to be defective.

The final display request will be for the number of times you wish to test your peripheral. Type this in and press:

EXECUTE

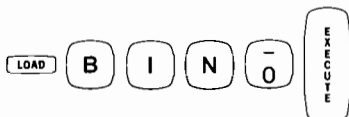
At this point the test routine will be loaded into the calculator and executed. Refer to the section dedicated to your peripheral for more specific information. These sections follow.

9860A CARD READER

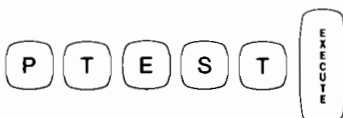
Chapter 1 and Appendix D of the 9830A Operating and Programming Manual contain the respective procedures for switching on the Calculator and Marked Card Reader.

To test the Card Reader:

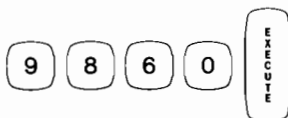
1. Ensure that the Card Reader is properly connected to the Calculator.
2. Switch the Calculator and Card Reader ON.
3. With the test cassette in your Calculator, press:



When the display returns, press:



4. Type in:



5. Type in the select code and EXECUTE it. (To specify the factory select code type in 0.)
6. Type in the number of times you want to run the test and EXECUTE it.
7. Enter the Model 30 System/9860A Exerciser Card, in the direction indicated by the arrow on the card.

NOTE

Entering the card before the display requests it will result in a test failure and a display of:


9860A FAILED TEST

8. The Card Reader motor should begin to run as the card is inserted, and the card must pass completely through the Card Reader and into the basket.
9. The Calculator display should be:

9860A TEST SATISFACTORY

10. If the Card Reader or display differ from that described in steps 8 and 9, the Card Reader is defective.

Should your exerciser not be available, a substitute card can be created by filling out an HP Calculator Program Card (-hp- Part No. 9320-2085) in the same way as the card shown in Figure 1. Be sure not to completely fill in each square; rather, mark a solid pencil line through each square, as shown.



 CALCULATOR PROGRAM CARD

CARD NO. _____

STEP	KEY	CODE	SKIP	100	40	20	10	4	2	1
0	1	61	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	2	62	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	3	63	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	4	64	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	4	64	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5	5	65	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6	6	66	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
7	6	66	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	7	67	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	7	67	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
0	8	70	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1	8	70	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	9	71	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	0	60	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4	EXEC	13	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
5	SKIP	177	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
6	9	71	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7	8	70	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
8	7	67	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
9	6	66	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
0	5	65	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
1	4	64	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	3	63	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	2	62	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	1	61	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	0	60	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6	9	71	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
7	9	71	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
8	9	71	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
9	9	71	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

1. USE SOFT PENCIL
2. ERASE COMPLETELY
3. INSERT THIS SIDE UP
4. MARKING SKIP COLUMN CAUSES THAT ROW TO BE SKIPPED.

TITLE
 09830-90033
TINING MARK METER

Part No. 9320-2085
ZBBZBH WEI



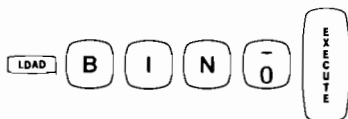
MODEL 30 SYSTEM/9860A EXERCISER CARD

Figure 1

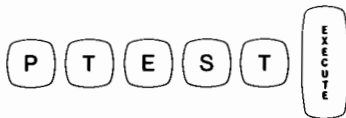
9861A OUTPUT TYPEWRITER

To test the Typewriter:

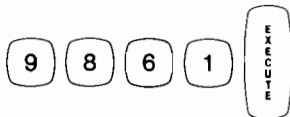
1. Switch the calculator, the typewriter, and the typewriter interface ON.
2. Set up the typewriter as follows:
 - a. the RIBBON SELECTOR should be set to the blue position.
 - b. the PAPER GUIDE should be at 0.
 - c. set the LEFT MARGIN to 12.
 - d. set the RIGHT MARGIN to 75.
 - e. set the LINE SPACE SELECTOR to 1.
 - f. load paper which is 8½" X 11" or larger into the typewriter.
3. With the test cassette in your Calculator, press:



When the display returns, press:

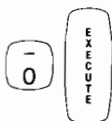


4. Type in:

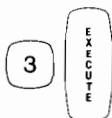


5. Type in the select code and EXECUTE it. (To specify the factory select code, type in 0.)
6. Type in the number of times you want to run the test and EXECUTE it.

For example, if you want to repeat the third line of the printout, press:



when the display requests the number of times to run the test. When the display returns and asks which line number to repeat, press:



The printout follows:

```
LINE 3, FORWARD, BACK SPACE CHECK, RED AND BLACK RIBBON CHECK:  
□□□□□□□□□□□□□□□□□□□□□□□□  
  
□□□□□□□□□□□□□□□□□□□□□□□□
```

(STOP was pressed after the second time through.)

- 7. If either type-out still cannot be duplicated, the typewriter or the typewriter interface may be defective. Perform the following steps to determine which device is at fault.
 - a. Verify that all connectors between the Calculator and the typewriter are properly seated.
 - b. Check the fuse on the typewriter interface. Information on the fuse is contained in the 9861A Typewriter Peripheral Manual.

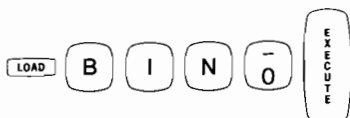
<p>WARNING</p> <p>Before checking the fuse, be sure the interface is disconnected from the AC power source.</p>
--

- c. Carefully compare your type-out with the sample shown, in order to determine which characters and/or functions have failed. If you are unable to determine why the exerciser is failing, contact the nearest -hp-Sales and Service Office for assistance; office locations are listed at the back of the Model 30 Operating and Programming Manual.
- d. If you have located one or more faulty operations, turn the typewriter interface OFF, disconnect the two cables which go to the interface, and connect the typewriter to an appropriate ac receptacle using the power cord supplied with the typewriter.
- e. Attempt to perform each faulty operation from the typewriter keyboard. If the operations which failed in the exerciser program also fail when performed from the typewriter keyboard, call the FACIT Service Representative for assistance (refer to the list of addresses supplied with your typewriter).

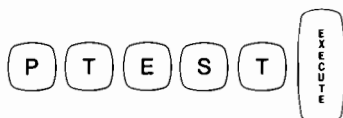
9862A PLOTTER

To test the Plotter:

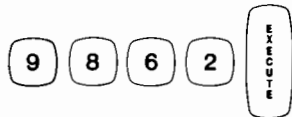
1. Switch the Plotter and Calculator ON. The LINE indicator on the Plotter should light.
2. On the Plotter:
 - a. Place a sheet of 10 X 15 inch plotter paper, -hp- Part No. 9270-1004, on the platen and align the paper against the bottom and left-edge paper guides. Press CHART HOLD and smooth the paper on the platen.
 - b. Adjust the 'LOWER LEFT' Graph Limit controls to align the pen exactly over the lower left corner of the grid on the paper. Then adjust the 'UPPER RIGHT' Graph Limit controls to align the pen over the upper-right corner of the grid.†
3. With the test cassette in your Calculator, press:



When the display returns, press:



4. Type in:



5. Type in the select code and EXECUTE it. (To specify the factory select code, type in 0.)
6. Type in the number of times you want the test to run and EXECUTE it.

†This procedure must be completed very carefully, as the accuracy of the plot depends on it.

The resulting plot should duplicate the sample plot shown in Figure 2.

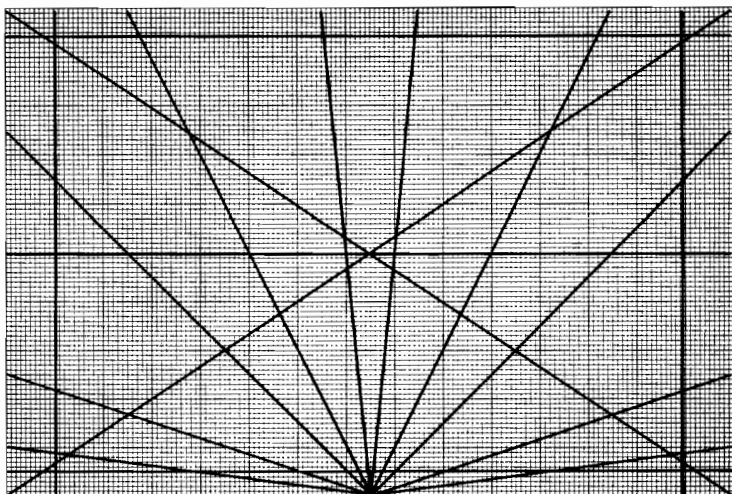


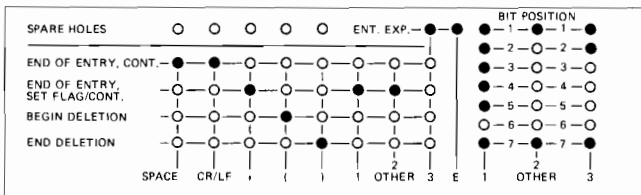
Figure 2

7. Plotter alignment can be verified by comparing the plot with the following specifications:
 - a. Alignment Verification — all vertical and horizontal lines (6) align within 0.010 in. of preprinted grid.
 - b. Retrace Verification — all retraced lines (10 radiating from bottom center) are open less than 0.015 in.
 - c. Servo Matching Verification — the single horizontal trace (at bottom of plot) has inflections less than 0.015 in. in amplitude.
 - d. All angular lines bowed no more than 0.040 in from the true straight line between end points.
8. If the plotter fails to duplicate the sample plot, verify that the paper is properly positioned and that the lower-left and upper-right corners are properly aligned; then repeat the foregoing procedure. If the sample plot cannot be duplicated, contact the nearest -hp- Sales and Service Office.

9863A TAPE READER

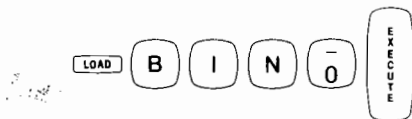
To test the Tape Reader:

1. Switch the calculator and the tape reader ON.
2. Set the program board on the tape reader as shown:

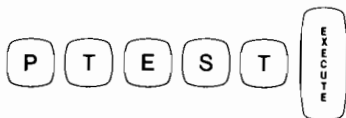


9863A L-50327

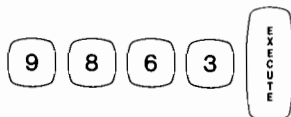
3. Set the Mode Switch to Data, and set the Selector switch to stop.
4. Load the last section of the diagnostic tape supplied with the tape reader (-hp- Part No. 09863-90002) and set the Selector switch to START.
5. With the test cassette in your Calculator, press:



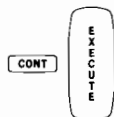
When the display returns, press:



6. Type in:



7. Type in the select code (to specify the factory select code, type in 0) and EXECUTE it.
8. Type in the number of times you want to run the test and EXECUTE it.
9. The display will give you instructions to load the tape (if you have not already done so in step 4) and then to press:



The tape reader should read the entire tape and the display should show:

9863A TEST SATISFACTORY

10. If the tape reader stops and the display reads:

9863A FAILED TEST

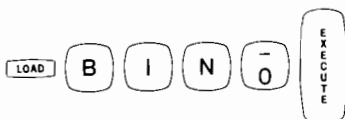
carefully repeat the entire procedure. If the exercise still cannot be successfully run, the tape reader may be defective. For assistance, contact the nearest -hp- Sales and Service Office; locations are listed at the back of the Model 30 Operating and Programming Manual.



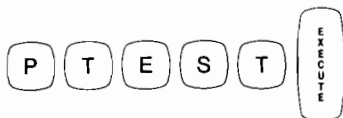
9864A DIGITIZER

To test the Digitizer:

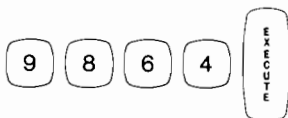
1. Make sure that the Model 30/Digitizer System is properly connected.
2. Switch the Calculator and Digitizer ON. You should hear a beep from the Digitizer and the LINE switch should light.
3. With the test cassette in your Calculator, press:



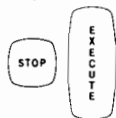
When the display returns, press:



4. Type in:



5. Type in the select code and EXECUTE it. (To specify the factory select code, type in 0.)
6. Type in the number of times you want to run the test and EXECUTE it. The test may be terminated by pressing:



NOTE

From this point until the end of this procedure, move the cursor only as directed. When directed to move the cursor from one point to another, do so by sliding the cursor; do not lift the cursor from the digitizing surface unless specifically instructed to do so. Also, do not slide the cursor outside the digitizing area unless instructed to do so.

Data Entry Checks

- Place the cursor over point A (see Figure 3) such that the cross-hairs are positioned exactly over the black dot. While being careful not to move the cursor, press \square . The red sample light on the cursor should light if it was off.

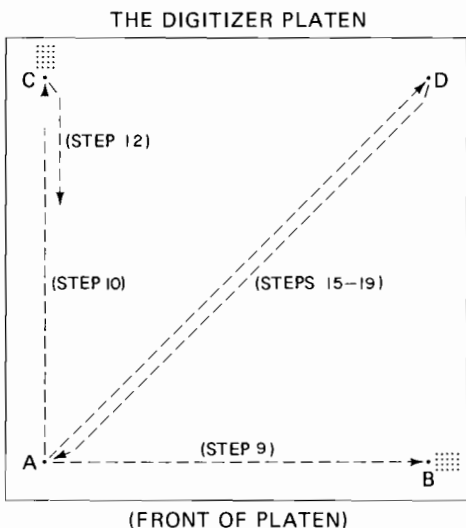


Figure 3

- Press \square . The sample light should begin to blink, and the calculator display should be blinking and appear as shown below.

X=0

Y=0

If the display is not as shown, repeat steps 7 and 8.

- Slowly slide the cursor toward point B. When the cursor is over point B, the X value displayed must be 17.00 or greater. Slide the cursor into the shaded region (see above drawing); you should hear a 'beep' and the sample light should go out.

10. Return the cursor to point A and repeat steps 7 and 8, then slowly move the cursor toward point C. When the cursor is positioned over point C, the Y value displayed must be 17.00 or greater. Slide the cursor into the shaded region; you should hear a 'beep' and the sample light should go out.
11. Reposition the cursor over point C. Press **[O]**; the sample light should resume blinking and both X and Y values should be approximately 0.
12. Slowly move the cursor toward point A. After verifying that the Y value displayed is negative, press **[C]**; the sample light should stop blinking.
13. Press **[S]**; allow a few seconds and then press **[S]** again. Repeat this several times. Each time **[S]** is pressed, the sample light and the display should flash.
14. Lift the cursor off the platen; you should hear a 'beep' and the sample light should go out.

NOTE

Steps 15 through 19 constitute a single check. If you make an error during the check, begin again at step 15.

[O] and **[H]** Check

15. Place the cursor over point A, then press **[O]** and **[C]**. Slide cursor toward point D. After positioning the cursor over point D, press **[H]** and note the numbers displayed.
16. Lift the cursor off the platen; you should not hear a 'beep' and the sample light and display should continue to flash. Place the cursor over point A. Press **[H]** and slide the cursor toward point D; the numbers displayed should increment beyond that noted in Step 15.
17. Repeat steps 15 and 16 until the numbers displayed are just under 99.99.
18. About midway between points A and D, the numbers displayed should change from 99.99 to .00; it is not necessary to see the actual change.

19. Press **H** . Pick up the cursor and, while holding it above the platen, press **H** again. You should hear a 'beep' and the sample light should go out.

Accuracy check

20. Place the Sample Data Overlay, -hp- Part No. 09107-90002, on the digitizing area (see Figure 4 below). Place a piece of tape across the upper left-hand corner of the overlay. Prepare three other short pieces of tape for the other corners; they will be used later.

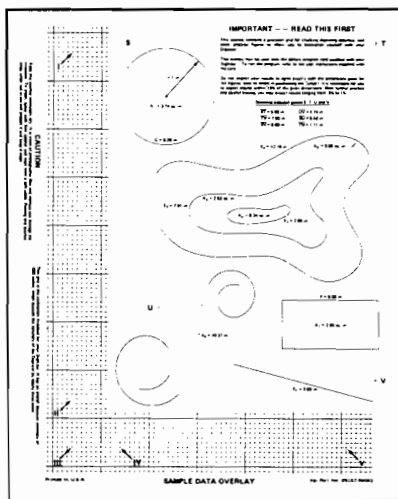



Figure 4

21. Place the cursor exactly over point I. Without moving the cursor or the overlay, press **O** and **C** ; the display should appear as shown below:

X=0

Y=0

- If either number is not 0, you probably moved the cursor. Reposition the cursor over point I and repeat step 21.
22. After obtaining the correct display, slide the cursor to point III (do not move the overlay). Note the value for X. If X is not 0, slide the overlay and cursor by a small amount to the right or left. Continue this process until X equals 0.
 23. Without moving the overlay, tape its lower-left corner.
 24. Position the cursor exactly over point I again. If X is not still equal to 0, return to step 21 and try again; otherwise, continue.
 25. Tape the remaining corners of the overlay; it is now aligned with the platen.
 26. Slide the cursor to point III; position the cross-hairs exactly over point III. Without moving the cursor, press .
 27. Slide the cursor to each of the points I, II, IV, and V. At each point, position the cross-hairs exactly over the point. Note the values for X and Y. These numbers should be within the range indicated in the table below:

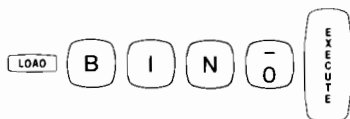
Point Number	Tolerance
I	X = .00 ± .01 Y = 8.20 ± .01
II	X = .00 ± .01 Y = 1.00 ± .01
III	X = .00 ± .01 Y = .00 ± .01
IV	X = 1.00 ± .01 Y = .00 ± .01
V	X = 5.70 ± .01 Y = .00 ± .01

The tolerance of $\pm .01$ assumes that the ambient temperature is within the range of 15°C to 30°C . If the ambient temperature is within the range of 0°C to 15°C , or within 30°C to 50°C , the tolerance is $\pm .03$.

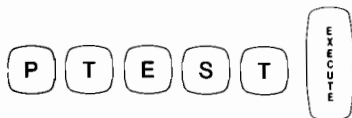
9865A CASSETTE MEMORY SYSTEM

To test the Cassette Memory:

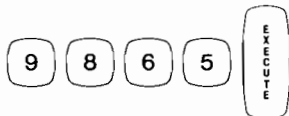
1. Verify that the Cassette Memory and the Calculator are properly installed, then switch them both ON.
2. Load the Cassette Memory with a known-good, unprotected tape cassette (this test will fail if a damaged, worn, or protected tape cassette is used).
3. With the test cassette in your Calculator, press:



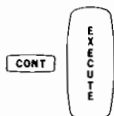
When the display returns, press:



4. Type in:



5. Type in the select code and EXECUTE it. (To specify the factory select code, type in 0.)
6. Type in the number of times you want to run the test and EXECUTE it.
7. The display will give you instructions to load an unprotected cassette (if you have not already done so in step 2). Rewind the tape in the cassette memory and then press:



After a series of tests on the Cassette Memory the display should read:

9865A TEST SATISFACTORY

8. Any other display would indicate that the Cassette Memory System has failed the test. Repeat the entire procedure after:
 - a. checking all cable connections
 - b. substituting a different cassette
9. If the test cannot be successfully completed, the Cassette Memory may be defective. For assistance, contact the nearest -hp- Sales and Service Office; locations are listed at the back of the Model 30 Operating and Programming Manual.

To test the internal cassette:

1. Follow the display instructions.
2. Specify a select code of 10.
3. Remove the test cassette and insert an unprotected cassette.

CAUTION

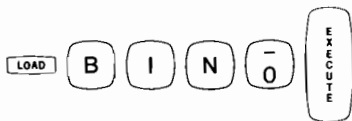
If the Systems Test Cassette is not replaced at this point with a blank, unprotected cassette, the test cassette will be destroyed if it, too, is unprotected.

4. If the test cannot be successfully run, the internal cassette may be defective. For assistance, contact the nearest -hp- Sales and Service Office; locations are listed at the back of the Model 30 Operating and Programming Manual.

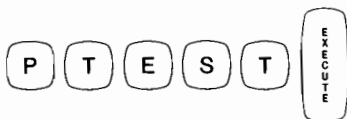
9866A THERMAL PRINTER

To test the Printer:

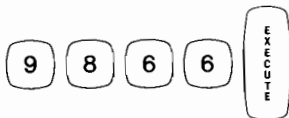
1. Turn the Printer and Calculator ON. The white light above the power ON switch indicates that the printer is ON. If the amber light below the Paper Advance switch lights, you do not have any paper. Start the test with a fresh roll.
2. With the test cassette in your Calculator, press:



When the display returns, press:



3. Type in:



4. Type in the select code and EXECUTE it. (To specify the factory select code, type in 0.)
5. Type in the number of times you want the test to run and EXECUTE it.
The printout should appear as shown (see next page).
6. Compare the printout with the sample shown. If the printout differs from the sample, carefully repeat the entire procedure. Should the printout still fail to duplicate the sample, carefully compare each line of the sample with the finished printout. Note any characters which are missing or incompletely printed. If the same errors are repeated line-after-line in your printout, the printer is probably defective.



PART NO. 09830-90032
MICROFICHE NO. 09830-99032

PRINTED IN U.S.A.
FEB 1973