APPENDIX A

9100A DIAGNOSTIC PROGRAM

The Diagnostic Program exercises every subroutine in the Calculator by program step entry of instructions rather than keyboard entry. Proper operation of the Calculator and the Diagnostic Program is indicated by a flashing display: X = 3., Y = 2.0000, Z = 1.

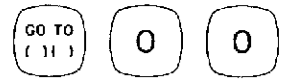
No data entry is necessary for program operation. To run the program:

SWITCH:  POWER ON

 RUN

 FIXED

 RADIANS

PRESS: 

PART NO. 09100-76001

Step		Key	Code	Display x	Storage 7 6 5 4 3 2 1 0
0	0	arc ▾	72		
	1	hyper ▾	67		
	2	SET FLAG	54		
	3	CLEAR	20		
	4	3	03		
	5	.	21		
	6	1	01		
	7	4	04		
	8	1	01		
	9	5	05		
	a	9	11		
	b	2	02		
	c	6	06		
	d	5	05		
1	0	3	03		
	1	6	06		
	2	0	00		
	3	↑	27		
	4	π	56		
	5	IF x=y	50		
	6	1	01		
	7	9	11		
	8	STOP	41		
	9	√x	76		
	a	y→( )	40		
	b	e	12		
	c	ROLL ↓	31		
	d	√x	76		
2	0	ROLL ↑	22		
	1	×	36		
	2	e	12		
	3	CHG SIGN	32		
	4	+	33		
	5	ENTER EXP	26		
	6	CHG SIGN	32		
	7	9	11		
	8	|y|	55		
	9	IF x>y	53		
	a	2	02		
	b	d	17		
	c	STOP	41		
	d	x⇄y	30		

CLEAR CLEARS arc ▾, hyper ▾ & SET FLAG

TEST DIGIT AND π ENTRY

STOP FOR ERROR OF DIGIT ENTRY, π, IF x=y, ↑, or .

COMPARE $(\sqrt{\pi})^2$ TO π

STOP FOR ERROR OF |y|, CHG SIGN, ENTER EXP, ×, ↑ ROLL, ROLL ↓, √x, y→( ), IF x>y, e, or +

PART NO. 09100-76001

Step	Key	Code	Display	Storage
3 0	IF $x<y$	52		
1	3	03		
2	4	04		
3	STOP	41	STOP FOR ERROR OF $x \rightleftarrows y$ or IF $x<y$	
4	.	21		
5	7	07		
6	8	10		
7	↑	27		
8	7	07		
9	8	10	COMPARE .78 AND 78×10^{-1} ENTRIES	
a	ENTER EXP	26		
b	CHG SIGN	32		
c	1	01		
d	−	34		
4 0	IF $x>y$	53		
1	CLEAR x	37		
2	ROLL ↑	22		
3	IF $x=y$	50		
4	STOP	41	STOP FOR ERROR OF DIGIT ENTRY, − or CLEAR x	
5	STOP	41		
6	IF $x<y$	52		
7	STOP	41	STOP FOR ERROR OF IF $x<y$	
8	STOP	41		
9	↓	25		
a	IF $x>y$	53		
b	STOP	41	STOP FOR ERROR OF ↓	
c	STOP	41		
d	IF FLAG	43		
5 0	STOP	41	STOP: CLEAR (STEP 0-3) FAILED TO RESET FLAG OR	
1	STOP	41	ERROR OF IF FLAG	
2	SET FLAG	54		
3	π	56		
4	int x	64		
5	↑	27		
6	$y\rightleftarrows($	24		
7	e	12		
8	↓	25		
9	int x	64		
a	↑	27		
b	CLEAR x	37		
c	e	12		
d	IF $x=y$	50		

Step		Key	Code	
6	0	π	56	THESE STEPS CHECK sin x, cos x, tan x, arc tan x, sin x, arc tan x, cos x, AND arc tan x, tan x FOR X = π/3 RADIANS.
	1	$x \rightleftarrows y$	30	
	2	÷	35	
	3	↓	25	
	4	↑	27	
	5	sin x	70	
	6	x→( )	23	
	7	e	12	
	8	arc tan	72	
	9	sin x	70	
	a	cos x	73	
	b	x→( )	23	
	c	f	15	
	d	arc tan	72	
7	0	cos x	73	STOP FOR ERROR OF SET FLAG, int x, y≠x, arc tan, sin x, cos x, tan x, ÷, or f
	1	tan x	71	
	2	arc tan	72	
	3	tan x	71	
	4	−	34	
	5	|y|	55	
	6	$x \rightleftarrows y$	30	
	7	↑	27	
	8	ENTER EXP	26	
	9	CHG SIGN	32	
	a	9	11	
	b	IF x<y	52	
	c	STOP	41	
	d	STOP	41	
8	0	3	03	THESE STEPS CHECK e^x AND ln x
	1	$x \rightleftarrows y$	30	
	2	3	03	
	3	e^x	74	
	4	ln x	65	
	5	−	34	
	6	ENTER EXP	26	
	7	CHG SIGN	32	
	8	9	11	
	9	|y|	55	
	a	IF x<y	52	
	b	STOP	41	STOP FOR ERROR OF e^x or ln x
	c	STOP	41	
	d	3	03	

Step	Key	Code	Display	Comments
9 0	hyper ▾	67		THESE STEPS CHECK hyper ▾ sin x, hyper ▾ cos x, hyper ▾ tan x, arc ▾ hyper ▾ sin x, arc ▾ hyper ▾ cos x, AND arc ▾ hyper ▾ tan x FOR X = 3.
1	sin x	70		
2	arc ▾	72		
3	hyper ▾	67		
4	sin x	70		
5	hyper ▾	67		
6	cos x	73		
7	arc ▾	72		
8	hyper ▾	67		
9	cos x	73		
a	hyper ▾	67		
b	tan x	71		
c	arc ▾	72		
d	hyper ▾	67		
a 0	tan x	71		THESE STEPS CHECK log x
1	log x	75		
2	x⇄y	30		
3	1	01		
4	0	00		
5	ln x	65		
6	×	36		
7	↓	25		
8	e^x	74		
9	↑	27		
a	3	03		
b	−	34		
c	|y|	55		
d	ENTER EXP	26		
b 0	CHG SIGN	32		
1	9	11		
2	x⇄y	30		
3	IF x>y	53		
4	STOP	41		STOP FOR ERROR OF hyper ▾ or log x
5	STOP	41		
6	RCL	61		
7	TO POLAR	62		
8	ROLL ↓	31		
9	−	34		
a	|y|	55		
b	ENTER EXP	26		
c	CHG SIGN	32		
d	9	11		

Step		Key	Code	Display	Storage
c	0	IF $x<y$	52		
	1	STOP	41	STOP FOR ERROR OF [TO POLAR] or [RCL]	
	2	STOP	41		
	3	π	56		
	4	$x \rightleftarrows y$	30		
	5	3	03		
	6	$\div$	35		
	7	$\downarrow$	25		
	8	$x \rightleftarrows y$	30		
	9	TO RECT	66		
	a	ACC $-$	63		
	b	$+$	33		
	c	$\downarrow$	25		
	d	int x	64		
d	0	$\uparrow$	27		
	1	2	02		
	2	ACC $+$	60		
	3	$x \rightleftarrows y$	30		
	4	RCL	61		
	5	$\uparrow$	27		
	6	3	03		
	7	PAUSE	57	DOES NOT DISPLAY 1. 2.0000 3. ; ERROR OF [ACC +], [ACC −], [PAUSE] or [TO RECT]	
	8	PAUSE	57		
	9	PAUSE	57		
	a	GO TO [ ][ ]	44		
	b	0	00		
	c	0	00		
	d	END	46		
	0				
	1				
	2				
	3				
	4				
	5				
	6				
	7				
	8				
	9				
	a				
	b				
	c				
	d				

APPENDIX B

9100B DIAGNOSTIC PROGRAM

This program exercises every calculator operation to verify that the calculator is functioning correctly.

SWITCH: RUN RADIANS FLOATING

PRESS: END

ENTER PROGRAM: Side A

SWITCH: PROGRAM

DISPLAY: -0.0 XX → z*

SWITCH: RUN

ENTER PROGRAM: Side B

SWITCH: PROGRAM

DISPLAY: 0.0 20 → z*

SWITCH: RUN

PRESS: CONT

CORRECT DISPLAY FLASHING

```
--.---------- → z
n.nnnnnnnnn nn → y
-- ---------- → x
```

n = 0, 1, 2 . . . 9; CYCLIC

*XX indicates any two digits. The program counter's location (−0-0 and 0-0) must be correct. An incorrect location indicates a defective magnetic card reader assembly or magnetic program card. Use the substitution troubleshooting technique to determine which is at fault.

PART NO. 09100-76501 9100B ONLY

HEWLETT-PACKARD

Step	Key	Code	Display
00	CLEAR	20	
(+) 01	IF x=y	50	
02	0	00	
03	5	05	
04	STOP	41	
05	IF FLAG	43	
06	STOP	41	
07	STOP	41	
08	SET FLAG	54	
09	IF FLAG	43	
0a	0	00	
0b	d	17	
0c	STOP	41	
0d	IF FLAG	43	
10	STOP	41	
(+) 11	STOP	41	
12	3	03	
13	•	21	
14	1	01	
15	4	04	
16	1	01	
17	5	05	
18	9	11	
19	2	02	
1a	6	06	
1b	5	05	
1c	3	03	
1d	6	06	
20	0	00	
(+) 21	↑	27	
22	π	56	
23	IF x=y	50	
24	2	02	
25	7	07	
26	STOP	41	
27	√x	76	
28	y↔( )	40	
29	e	12	
2a	ROLL ↓	31	
2b	√x	76	
2c	ROLL ↑	22	
2d	×	36	
30	e	12	
(+) 31	CHG SIGN	32	
32	+	33	
33	a	13	
34	|y|	55	
35	IF x>y	53	
36	3	03	
37	9	11	
38	STOP	41	
39	x⇄y	30	
3a	IF x<y	52	
3b	4	04	
3c	0	00	
3d	STOP	41	
40	•	21	
(+) 41	7	07	
42	8	10	
43	↑	27	
44	7	07	
45	8	10	
46	ENTER EXP	26	
47	CHG SIGN	32	
48	1	01	
49	−	34	
4a	IF x>y	53	
4b	CLEAR x	37	
4c	ROLL ↑	22	
4d	IF x=y	50	
50	STOP	41	
(+) 51	STOP	41	
52	IF x<y	52	
53	STOP	41	
54	STOP	41	
55	↓	25	
56	IF x>y	53	
57	STOP	41	
58	STOP	41	
59	π	56	
5a	int x	64	
5b	↑	27	
5c	y⇄( )	24	
5d	e	12	
60	↓	25	
(+) 61	int x	64	
62	↑	27	
63	CLEAR x	37	
64	x←( )	67	
65	e	12	
66	IF x=y	50	
67	CLEAR x	37	
68	3	03	
69	IF x=y	50	
6a	6	06	
6b	d	17	
6c	STOP	41	
6d	π	56	
70	x⇄y	30	
(+) 71	÷	35	
72	×	36	
73	π	56	
74	IF x=y	50	
75	7	07	
76	8	10	
77	STOP	41	
78	CLEAR	20	
79	π	56	
7a	↑	27	
7b	+	33	
7c	ACC +	60	
7d	ACC +	60	

Storage

f	
e	
d	
c	
b	
a	
9	
8	
7	
6	
5	
4	
3	
2	
1	
0	

HEWLETT·PACKARD

Step	Key	Code	Display
8 0	ACC −	63	
(+) 1	ACC +	60	
2	RCL	61	
3	↑	27	
4	π	56	
5	—	34	
6	↓	25	
7	—	34	
8	—	34	
9	—	34	
a	IF x=y	50	
b	b	14	
c	8	10	
d	STOP	41	
9 0	sin x	70	
(+) 1	arc ▾	72	
2	sin x	70	
3	cos x	73	
4	arc ▾	72	
5	cos x	73	
6	tan x	71	
7	arc ▾	72	
8	tan x	71	
9	GO TO ( )	44	
a	▲SUB▼	77	
b	b	14	
c	0	00	
d	RETURN	77	
a 0	0	00	
(+) 1	0	00	
2	0	00	
3	0	00	
4	0	00	
5	0	00	
6	0	00	
7	0	00	
8	0	00	
9	1	01	
a	9	11	
b	CLEAR	20	
c	0	00	
d	0	00	

Step	Key	Code	Display
b 0	—	34	
(+) 1	|y|	55	
2	a	13	
3	IF x<y	52	
4	SET FLAG	54	
5	x→( )	23	
6	RETURN	77	
7	STOP	41	
8	3	03	
9	÷	35	
a	↓	25	
b	↑	27	
c	x→( )	23	
d	—	34	
c 0	e	12	
(+) 1	GO TO ( )	44	
2	▲SUB▼	77	
3	9	11	
4	0	00	
5	IF FLAG	43	
6	STOP	41	
7	STOP	41	
8	x←( )	67	
9	—	34	
a	e	12	
b	↑	27	
c	GO TO ( )	44	
d	▲SUB▼	77	
d 0	—	34	
(+) 1	b	14	
2	a	13	
3	IF FLAG	43	
4	STOP	41	
5	STOP	41	
6	y⇄( )	24	
7	—	34	
8	e	12	
9	↓	25	
a	↑	27	
b	SET FLAG	54	
c	GO TO ( )	44	
d	▲SUB▼	77	

Step	Key	Code	Display
0 0	—	34	
(−) 1	8	10	
2	6	06	
3	—	34	
4	|y|	55	
5	a	13	
6	IF x<y	52	
7	STOP	41	
8	STOP	41	
9	GO TO ( )	44	
a	▲SUB▼	77	
b	3	03	
c	3	03	
d	CLEAR	20	
1 0	SET FLAG	54	
(−) 1	e	12	
2	f	15	
3	y→( )	40	
4	—	34	
5	f	15	
6	y⇄( )	24	
7	—	34	
8	f	15	
9	ACC +	60	
a	ACC +	60	
b	ACC −	63	
c	RCL	61	
d	0	00	

Storage
f
e
d
c
b
a
9
8
7
6
5
4
3
2
1
0

PART NO. 09100-76501 9100B ONLY

HEWLETT·PACKARD

Step	Key	Code	Display x	Display y	Display z
20	0	00			
(-)21	0	00			
22	0	00			
23	0	00			
24	0	00			
25	0	00			
26	0	00			
27	0	00			
28	0	00			
29	IF x=y	50			
2a	2	02			
2b	d	17			
2c	STOP	41			
2d	GO TO ( )	44			
30	+	33			
(-)31	0	00			
32	0	00			
33	CLEAR	20			
34	ENTER EXP	26			
35	1	01			
36	2	02			
37	x→( )	23			
38	f	15			
39	1	01			
3a	↑	27			
3b	GO TO ( )	44			
3c	▲SUB▼	77			
3d	8	10			
40	6	06			
(-)41	RCL	61			
42	CLEAR x	37			
43	IF x=y	50			
44	7	07			
45	a	13			
46	9	11			
47	IF x=y	50			
48	7	07			
49	3	03			
4a	RCL	61			
4b	x⇄y	30			
4c	↑	27			
4d	↓	25			

HEWLETT·PACKARD

Step	Key	Code	Display x	Display y	Display z
50	÷	35			
(-)51	↓	25			
52	+	33			
53	ENTER EXP	26			
54	1	01			
55	1	01			
56	×	36			
57	1	01			
58	x⇄y	30			
59	ACC +	60			
5a	x→( )	23			
5b	f	15			
5c	↓	25			
5d	9	11			
60	GO TO ( )	44			
(-)61	▲SUB▼	77			
62	b	14			
63	0	00			
64	RCL	61			
65	•	21			
66	1	01			
67	×	36			
68	↓	25			
69	↑	27			
6a	GO TO ( )	44			
6b	3	03			
6c	b	14			
6d	STOP	41			
70	STOP	41			
(-)71	STOP	41			
72	STOP	41			
73	RCL	61			
74	↑	27			
75	GO TO ( )	44			
76	▲SUB▼	77			
77	b	14			
78	1	01			
79	RETURN	77			
7a	1	01			
7b	x→( )	23			
7c	E	12			
7d	GO TO ( )	44			

HEWLETT·PACKARD

Step	Key	Code	Display x	Display y	Display z
80	▲SUB▼	77			
(-)81	b	14			
82	0	00			
83	GO TO ( )	44			
84	3	03			
85	b	14			
86	TO POLAR	62			
87	TO RECT	66			
88	e^x	74			
89	log x	75			
8a	↑	27			
8b	ENTER EXP	26			
8c	1	01			
8d	ln x	65			
90	×	36			
(-)91	↓	25			
92	IF FLAG	43			
93	x←( )	67			
94	RETURN	77			
95	SET FLAG	54			
96	GO TO ( )	44			
97	▲SUB▼	77			
98	b	14			
99	a	13			
9a	IF FLAG	43			
9b	STOP	41			
9c	STOP	41			
9d	RETURN	77			

Storage

f	
e	
d	
c	
b	
a	
9	
8	
7	
6	
5	
4	
3	
2	
1	
0	

PART NO. 09100-76501 9100B ONLY

Step	Key	Code	Display x	Display y	Display z
a 0	CHG SIGN	32			
(-) 1	CHG SIGN	32			
2	CHG SIGN	32			
3	CHG SIGN	32			
4	CHG SIGN	32			
5	CHG SIGN	32			
6	CHG SIGN	32			
7	CHG SIGN	32			
8	CHG SIGN	32			
9	CHG SIGN	32			
a	CHG SIGN	32			
b	CHG SIGN	32			
c	CHG SIGN	32			
d	CHG SIGN	32			
b 0	÷	35			
(-) 1	x←( )	67			
2	—	34			
3	a	13			
4	↑	27			
5	ROLL ↓	31			
6	PAUSE	57			
7	PAUSE	57			
8	PAUSE	57			
9	RETURN	77			
a	hyper ▾	67			
b	sin x	70			
c	arc ▾	72			
d	hyper ▾	67			
c 0	sin x	70			
(-) 1	hyper ▾	67			
2	cos x	73			
3	arc ▾	72			
4	hyper ▾	67			
5	cos x	73			
6	hyper ▾	67			
7	tan x	71			
8	arc ▾	72			
9	hyper ▾	67			
a	tan x	71			
b	IF FLAG	43			
c	d	17			
d	6	06			

Step	Key	Code	Display x	Display y	Display z
d 0	GO TO ( )	44			
(-) 1	▲SUB▼	77			
2	+	33			
3	b	14			
4	0	00			
5	RETURN	77			
6	GO TO ( )	44			
7	▲SUB▼	77			
8	+	33			
9	9	11			
a	0	00			
b	RETURN	77			
c	END	46			
d					
0					
1					
2					
3					
4					
5					
6					
7					
8					
9					
a					
b					
c					
d					
0					
1					
2					
3					
4					
5					
6					
7					
8					
9					
a					
b					
c					
d					

Step	Key	Code	Display x	Display y	Display z
0					
1					
2					
3					
4					
5					
6					
7					
8					
9					
a					
b					
c					
d					
0					
1					
2					
3					
4					
5					
6					
7					
8					
9					
a					
b					
c					
d					

Storage

f	
e	
d	
c	
b	
a	
9	
8	
7	
6	
5	
4	
3	
2	
1	
0	