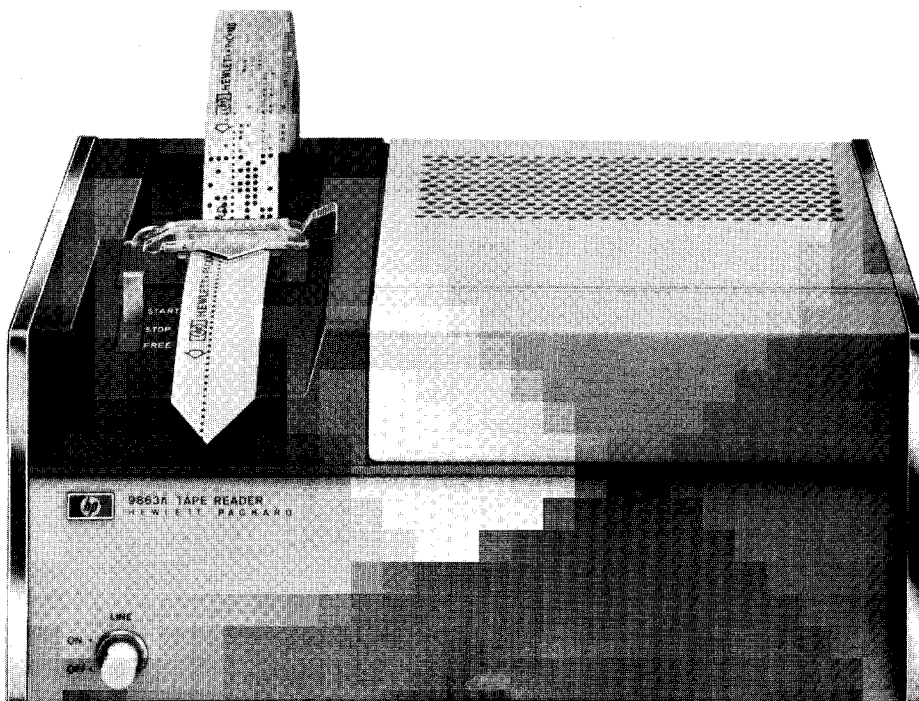


OPERATING MANUAL

HEWLETT-PACKARD

TAPE READER

Model 9863A



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703 BÖBLINGEN, HERRENBERGERSTR. 110, WEST GERMANY

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INTRODUCTION

The HP 9863A Tape Reader has two modes of operation:

Data mode, in which the digits 0 to 9, the minus sign and the decimal point are transferred from punched tape to the X-register of the HP 9810 Calculator. In addition, special characters on the tape can initiate the following operations by the tape reader:

- (i) Stop reading, the tape reader then issues a CONTINUE or a SET FLAG, CONTINUE instruction to the calculator, as desired.
- (ii) Commence to ignore a specific part of the tape (BEGIN DELETION).
- (iii) Recommence reading after the section to be ignored (END DELETION).
- (iv) Enter 10 raised to the power of the number following the ENTER EXPONENT instruction.

Normal mode, in which the calculator is programmed from the punched-tape. The program instructions can be stored in memory or executed when they are read, as desired.

SYSTEM
COMPATIBILITY

The tape reader is compatible with all 9810 calculator systems.

SPECIFICATIONS

SPEED

20 characters per second.

CODE

Reads ASCII/ISO eight-level code.

TAPE

Tape is 1 inch (25.4mm) wide

Tape is fed from a cassette located at the rear of the tape reader.

CALCULATOR COMMANDS

FMT CONTINUE to initiate reading, STOP to stop reading.

GENERAL

Temperature operating range 0 – 45°C

Weight: Net 10.8 lbs (4.9 kg)

Power: 115/230V + 10%, –22%

48 to 440 Hz

44VA max.

Dimensions:

5.5 in high (14.0 cm)

11 in wide (28.0 cm)

8 in deep (20.3 cm)

PART NO.	QTY	
09863-90000	2	Operating Manual
09863-90002	1	Diagnostic Tape
9211-0834	1	Software Box
1251-2050	20	Programming pins
8120-1579	1	Power Cable (IEC, IEC)
2110-0235	1	Spare fuse 0.2A for 230V operation
or 2110-0340	1	Spare fuse 0.4A for 115V operation

ACCESSORIES
SUPPLIED

The tape reader was carefully inspected, both mechanically and electrically, before shipment. It should be physically free of marks and scratches and in perfect electrical order when received. The tape reader should be inspected upon receipt for physical damage incurred in transit. If the tape reader is found to be damaged due to transit, file a claim immediately with the carrier.

INITIAL
INSPECTION

The tape reader requires either 115 or 230 volts, +10%, -22%, 48 to 440 Hz and dissipates 44VA.

POWER
REQUIREMENTS

CAUTION

Do not apply operating power to the tape reader unless the line voltage switch on the rear panel of the tape reader is in the proper position.

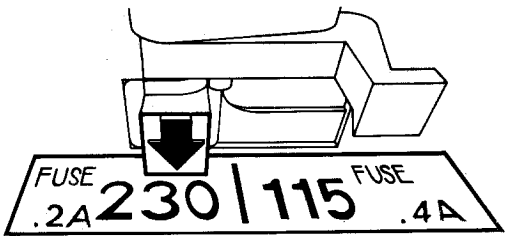
With the tape reader disconnected from the ac power source, check the rating of the fuse installed. To remove the fuse, simply pull the fuse lever and the fuse will be released from its holder.

LINE FUSE

FUSE DESCRIPTION	HP PART NO:
POWER SOURCE: 230 Volts 0,2 Ampere 250 Volt Slow Blow	2110-0235
POWER SOURCE: 115 Volts 0,4 Ampere 250 Volts Slow Blow	2110-0340

**LINE
VOLTAGE SWITCH**

With the fuse removed, the line voltage switch should be slid to the position where the arrow points to the voltage to be applied to the tape reader. Having moved the switch to the correct position, the appropriate fuse must be reinstalled and the fuse lever pushed back into the space provided.

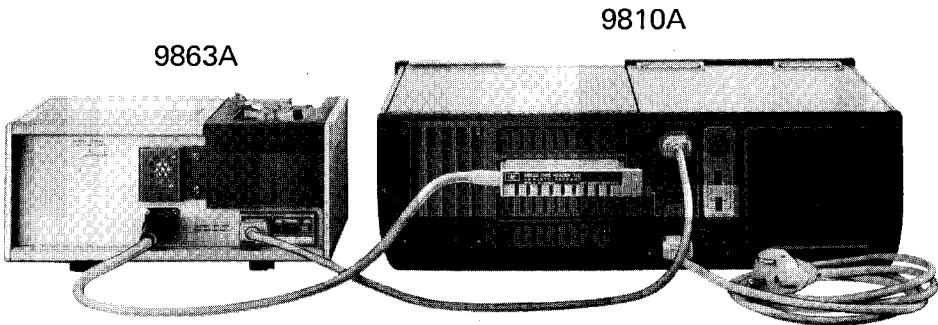


**GROUNDING
REQUIREMENTS**

To protect operating personnel, the National Manufacturer's Association (NEMA) recommends that the tape reader's cabinet be grounded. The tape reader is equipped with a three conductor power cable which, when plugged into an appropriate receptacle, grounds the tape reader's cabinet. The center pin on the power cable's three pronged connector is the ground connection.

**TAPE READER/
CALCULATOR
SYSTEM**

Place the calculator and tape reader on the surface where they are to be used. Insert the tape reader's signal connector into any of the four plug-in slots on the rear of the calculator. Link a calculator power outlet to the tape reader power inlet by means of the power cable supplied.



TAPE READER CONTROLS AND PROGRAM BOARD

Press on/press off power supply switch with built-in indicator lamp.

Switch on the calculator first !

This switch has three settings:

FREE: where the tape may be moved freely to allow the tape to be loaded, retarded or advanced. The calculator exerts no control over the tape reader when the selector is set to FREE.

STOP: in this setting the tape reader cannot be controlled by the calculator, neither can the tape be advanced or retarded. This setting should be used to stop the tape reader in emergencies — such as the tape becoming twisted.

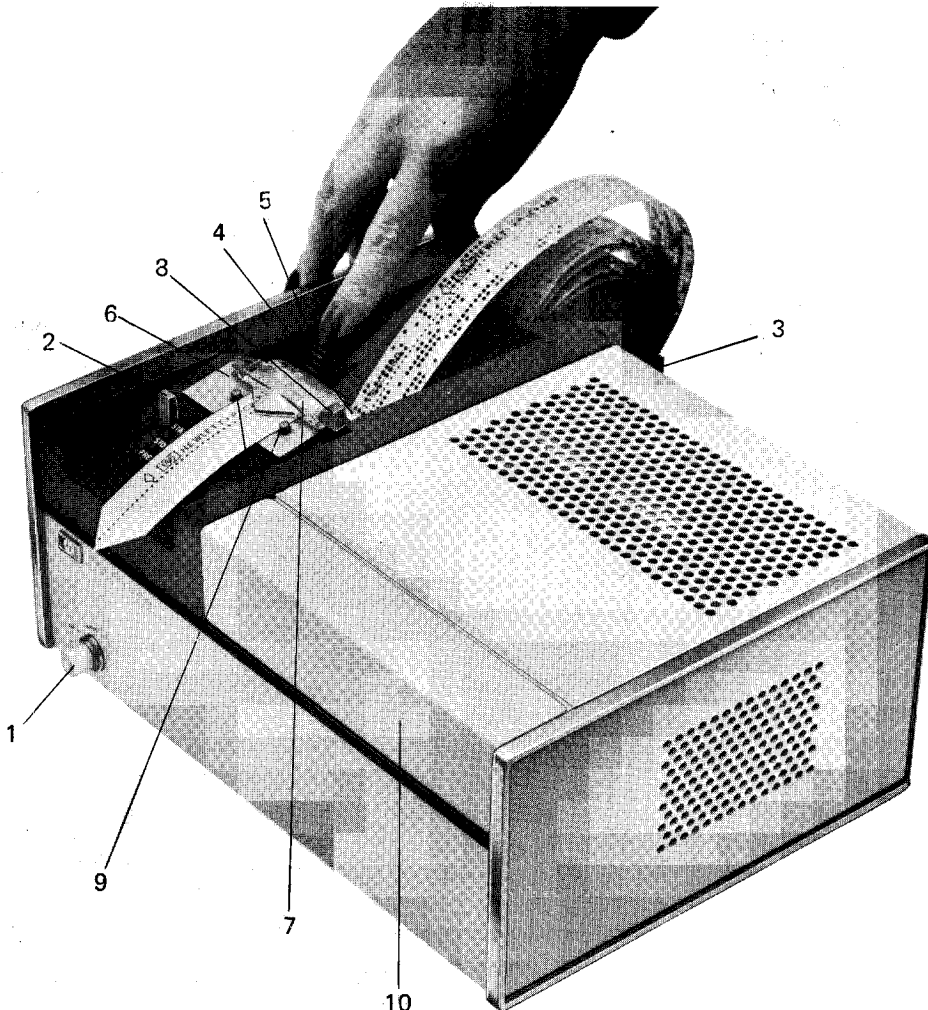
START: where the tape reader is controlled by the calculator.

The tape cassette (situated at the rear of the tape reader) holds the tape in a manner designed to prevent the tape twisting as it is read.

LINE (1)

SELECTOR (2)

**TAPE
CASSETTE (3)**



OPERATING INSTRUCTIONS

TAPE READER CONTROLS AND PROGRAM BOARD

TENSION-ARM ROLLER (4)

LEVER (5)

READ-HEAD (6)

This roller ensures that the tape is kept taut while it is being read.

Use this lever to raise and lower the tension-arm roller.

The read-head has eight mechanical contacts to sense the holes in the tape. A feed sprocket drives the tape by means of the (smaller) transport holes. An end-of-read contact (situated under the read-head cover 7) is kept depressed by the tape tension. Near the end of the tape, as the tape tension lessens, the end-of-read contact releases and causes the tape reader to stop.

NOTE

To prevent the end-of-read contact being released before the last data on the tape is read, leave at least 3 inches (7.5 cm) of blank tape after the last character.

READ-HEAD COVER (7)

A plastic cover keeps the tape in contact with the read-head's feed sprocket and read-contacts. It also protects the read-head against damage.

RELEASE KEY (8)

Press the release key to raise read-head cover 7.

TAPE GUIDE PIN (9)

The tape guide pins ensure that the tape runs in a direction perpendicular to the row of read-contacts.

Loading a tape

Loading a tape

1. Set selector 2 to FREE.
2. Roll tape with the pointed end outside. Place in the cassette as shown in the photograph.
3. Lift the tension-arm roller 4 with lever 5.
4. Press release key 8 and lift the read-head cover 7.
5. Pass tape under roller and over read-head 6 and between the guide pins 9. Engage feed holes with the sprocket.
6. Close read-head cover 7.
7. Lower roller 4 on the tape.
8. Set selector 2 to START.

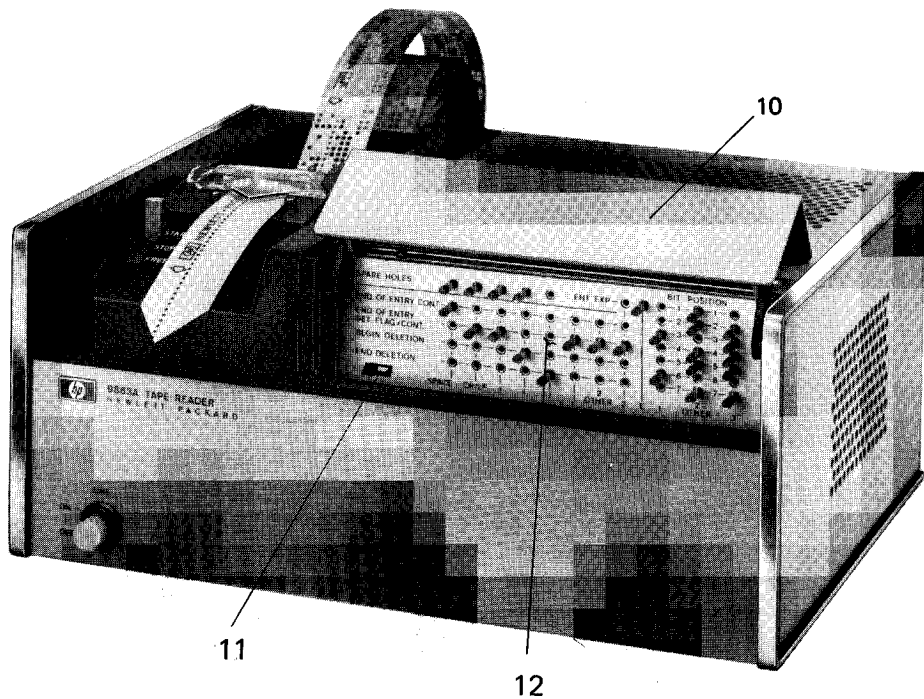
PROGRAM BOARD COVER (10)

This cover protects the program board 12 against dust and damage. It is recommended that the cover be closed after the program board has been set-up to avoid accidental displacement of the program pins.

TAPE READER CONTROLS AND PROGRAM BOARD

The mode switch has two positions: DATA (for data transfer) and NORMAL (to program the calculator from punched-tape instructions).

MODE SWITCH (11)



The program board enables the operator to select characters (termed 'delimiters') on the tape to initiate calculator and tape reader operations.

PROGRAM BOARD (12)

What operations can be chosen?

1. END OF ENTRY, CONTINUE: Upon reading the chosen delimiter, the tape reader stops and sends a CONTINUE command to the calculator.

NOTE

If the tape reader is operating under program control, the CONTINUE commands the program to run. If the tape reader is operating under manual FMT, CONT command from the calculator keyboard, the END OF ENTRY, CONTINUE operation simply stops the tape reader and does not send a CONTINUE command to the calculator.

OPERATING INSTRUCTIONS

TAPE READER CONTROLS AND PROGRAM BOARD

2. END OF ENTRY, SET FLAG, CONTINUE. As above, but the tape reader also sends a SET FLAG command to the calculator.

NOTE

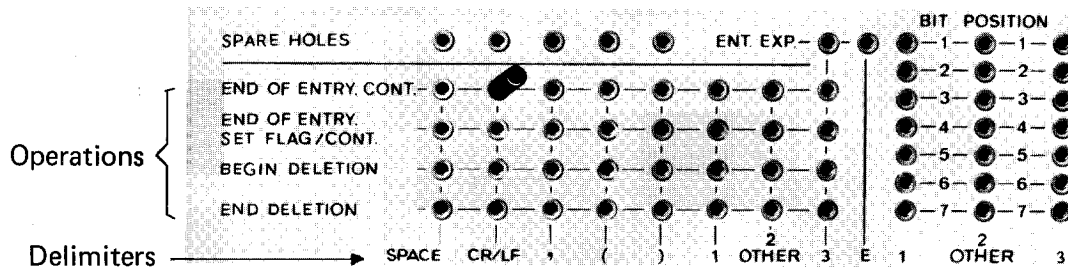
If the tape reader is operating under program control, the tape reader stops reading the tape and sends a SET FLAG command followed by a CONTINUE command to the calculator. The CONTINUE starts the program and, if the program has an IF FLAG instruction, the SET FLAG command from the tape reader causes the program to act accordingly. If the tape reader is operating under manual FMT, CONT command from the calculator's keyboard, the tape reader simply stops and no SET FLAG, CONTINUE is sent to the calculator.

3. ENTER EXPONENT: Upon reading the chosen delimiter, the following data (n) is entered into the calculator as 10 to the power n (10^n). For example, data written on the tape as 1.23E4 would be interpreted as 1.23×10^4 ; 123E4 would be interpreted as 1.23×10^6 .
4. BEGIN DELETION: Upon reading the chosen delimiter, the tape reader will not transfer subsequent data to the calculator until an END DELETION character is read on the tape.
5. END DELETION: Upon reading the chosen delimiter, the tape reader transfers the next data to the calculator.

TAPE READER CONTROLS AND PROGRAM BOARD

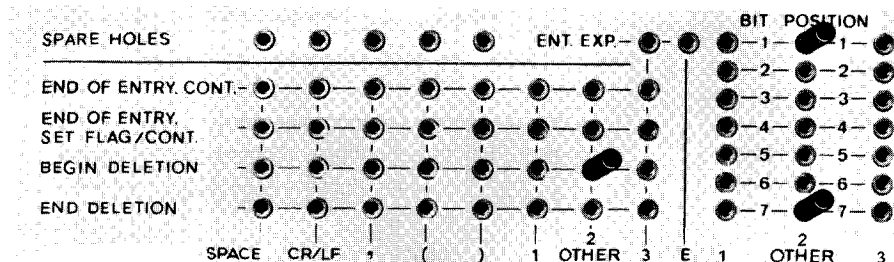
How are the delimiters chosen?

In general, a pin inserted in one of the delimiter columns (space, CR/LF comma left bracket or right bracket) will initiate the operation defined in the corresponding row (end of entry, continue; end of entry, set flag, continue; begin deletion and end deletion) when the delimiter is read. For example, if CR/LF is required to initiate END OF ENTRY, CONTINUE, the program board should look like this:



Note that, only one pin can be inserted in any column (i. e. delimiter may not initiate more than one operation).

The columns OTHER 1, OTHER 2 and OTHER 3 allow the choice of delimiter character to be extended to any ASCII or ISO character. A pin in one of these columns initiates an operation when the character set on the corresponding BIT POSITION column is read. For example, if A is required to initiate BEGIN DELETION through the agency of OTHER 2, pins should be installed in the program board as follows:



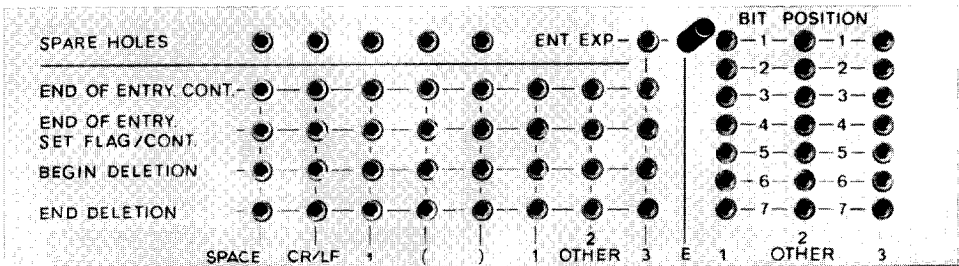
Note that, the program pins are inserted in a BIT POSITION hole when the ASCII/ISO codes, reproduced in Tables 1 and 2, give the corresponding bit as '1'.

All (or any two or only one) OTHER facilities may be used at the same time, if desired.

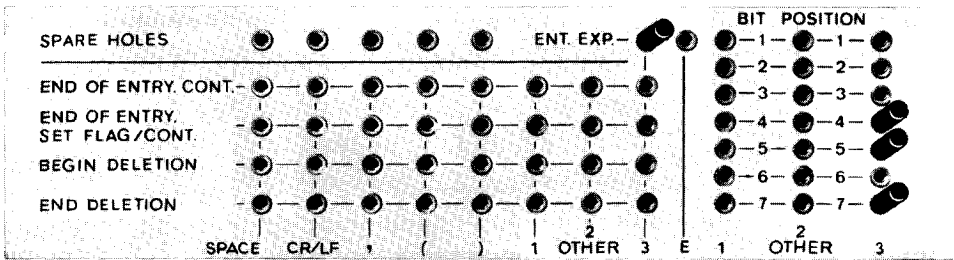
TAPE READER CONTROLS AND PROGRAM BOARD

If the ENTER EXPONENT operation is required, then either:

the letter E be chosen as delimiter and the program board set as follows:



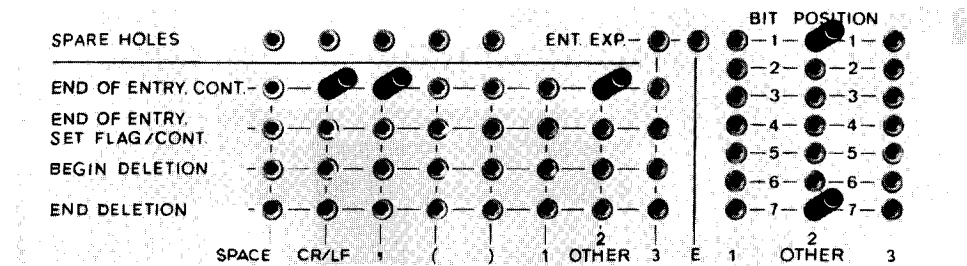
or a delimiter defined by the OTHER 3 facility (OTHER 1 and OTHER 2) cannot be used for this task) as in the following example where X is chosen as the delimiter:



Note that, the use of OTHER 3 to enter the exponent, precludes its use for any other operation. Use of the letter E, however, permits OTHER 3 to initiate any other operation.

TAPE READER CONTROLS AND PROGRAM BOARD

If any operation is to be initiated by more than one delimiter, pins should be inserted in the appropriate row, as required. For example, END OF ENTRY, CONTINUE will be initiated by CR/LF, or a comma, or the letter A when the program board is set as follows:



OPERATING IN THE DATA MODE

A FMT CONTINUE instruction from the calculator will cause the tape reader to start reading the data tape (and a STOP instruction can be used at any time to halt the process).
In addition to transferring numeric data to the calculators X-register, the tape reader will also re-act to single delimiters and the first and second (different) delimiters in a string. Suppose SPACE, COMMA, (and A are chosen as delimiters in the following examples:

Example 1: Single delimiters are always recognized.

FMT CONT from
calculator (↓) ↓
Tape data space ↓ data, ↓ data A ↓ data
Recognized
delimiter (*) * * *

Example 2: A second delimiter is always recognized, whether or not the first delimiter is repeated two or more times.

↓ data space ↓ ↓ data , ↓ A ↓ data , , , A ↓ data
* * * *

Example 3: The third and subsequent delimiters in a string are ignored.

↓ data ↓ A ↓ space (data (space ↓ ((A , data
* * * *

Example 4: Alpha-characters and control characters not declared as delimiters will be ignored.

↓ data B data , ↓ C C (data CR/LF ↓ A ↓ data
* * * *

(in this example, the data following B will be written onto the preceding data and, therefore, the data entered into the calculator will not be meaningful. In other words, each data entry MUST be followed by a delimiter).

OPERATING IN THE NORMAL MODE

A FMT CONTINUE instruction from the calculator will cause the tape reader to start reading a program tape (and a STOP instruction can be used at any time to halt the process).

If the program tape commences with an instruction to set the calculator in the program mode, subsequent instructions on the tape will be loaded into successive calculator memory locations. (Table 3 relates the calculator keys to the ASCII/ISO characters assigned to them).

Alternatively, if the initial instruction leaves the calculator in the run mode, the instructions are executed as they are read.

When the tape reader comes to the END OF ENTRY, CONTINUE delimiter (the only delimiter available in the normal mode), the tape reader halts.

In order to increase the lifespan of paper program tapes so that they can be read more than 50 times, the tape reader can be operated at half-speed.

To change the speed:

- Remove the top cover (see instructions on the rear panel).

- Remove the printed-circuit board with the yellow and grey levers (lift up the levers, then lift out the board).

- Set the switch located on the bottom of the board to the 10 (characters per second) position.

- Replace the board (slide the board into the plastic guides, position the board connector in the socket, press the board down firmly into the socket).

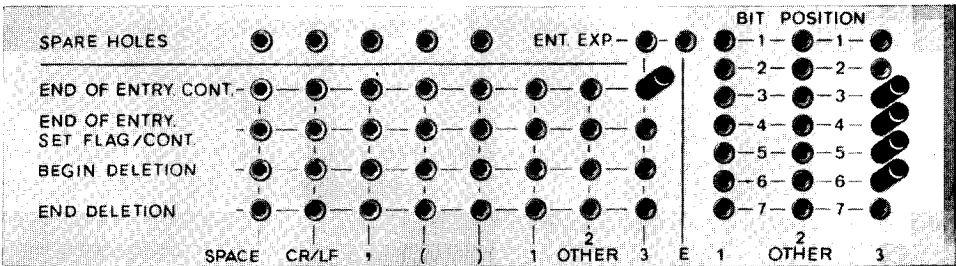
- Replace the top cover.

SYSTEM TEST

The diagnostic tape supplied with the tape reader contains a program and the data necessary to test the operation of the tape reader when coupled to a calculator. When the tape reader is first installed, and subsequently whenever a fault is suspected, perform the following test procedure:

1. Disconnect all other peripherals from the calculator.

2. Set the program board as follows:



3. Load the diagnostic tape.

4. Switch on calculator and then tape reader.

5. Set mode switch 11 to NORMAL.

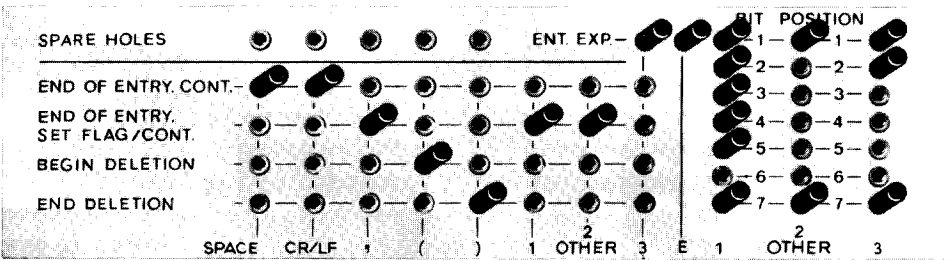
6. Press the following calculator keys in turn:
RUN
FLOAT
FMT
CONT

7. The tape reader should then read a section of the tape. When the tape stops, verify that the contents of memory locations 0000 to 0039 are as follows:

0030--CLR---20	0014-- 2 ---02	0028-- 3 ---03
0031-- 1 ---01	0015-- 1 ---01	0029-- 7 ---07
0032--EEX---26	0016--GT0---44	0030--CLX---37
0033--CHS---32	0017-- 0 ---00	0031--KEY---30
0034-- 7 ---07	0018-- 0 ---00	0032--GT0---44
0035--XT0---23	0019-- 0 ---00	0033-- 0 ---00
0036-- 6 ---14	0020-- 7 ---07	0034-- 0 ---00
0037--CLX---37	0021--DN---25	0035-- 0 ---00
0038--FMT---42	0022-- + ---33	0036-- 7 ---07
0039--CNT---47	0023--UP---27	0037--CLX---37
0010-- + ---33	0024-- 6 ---14	0038--KEY---30
0011--IFG---43	0025--Z=Y---50	0039--END---46
0012-- 0 ---00	0026-- 0 ---00	
0013-- 0 ---00	0027-- 0 ---00	

SYSTEM TEST

8. Reset the program board:



9. Set mode switch 11 to DATA.

10. Press CONT on the calculator keyboard. The tape reader should commence to read the last section of the tape. When the tape stops, verify that the calculator display is as follows:

z 1.1 00 000 00 1 02
y 0. 00
x 1.000 -07

11. Press FMT and CONT on the calculator keyboard. Verify that the tape advances, and then stops before the tape leaves the read-head.

If the correct results are not obtained in steps 7, 10 and 11, check the installation and perform the test again. If an error still persists, call your nearest HP Sales and Service Office (see list at end of manual).

GENERAL

The tape reader is designed for use with the following tape codes:

- a. eight-level ASCII code
- b. eight-level ISO code

The codes are listed in the following tables 1 and 2 in which '1' represents a hole punched in the tape, and '0' represents blank tape. The blank parts of the code tables represent bit combinations that are reserved for national characters.

Each key of the calculator keyboard is assigned an ASCII or ISO character, as shown in table 3.

Table 1. 8-Level ASCII (American Standard Code for Information Interchange)

This code provides seven information bits (b₁ to b₇) and an even-parity check bit (b₈). The position of the bits on punched tape is b₁b₂b₃•b₄b₅b₆b₇b₈ where • represents a feed-hole.

				<table><tr><td>b₇</td><td>0</td><td>0</td><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td><td>1</td></tr><tr><td>b₆</td><td>0</td><td>0</td><td>1</td><td>1</td><td>0</td><td>0</td><td>1</td><td>1</td></tr><tr><td>b₅</td><td>0</td><td>1</td><td>0</td><td>1</td><td>0</td><td>1</td><td>0</td><td>1</td></tr></table>								b ₇	0	0	0	0	1	1	1	1	b ₆	0	0	1	1	0	0	1	1	b ₅	0	1	0	1	0	1	0	1
b ₇	0	0	0	0	1	1	1	1																														
b ₆	0	0	1	1	0	0	1	1																														
b ₅	0	1	0	1	0	1	0	1																														
b ₁	b ₂	b ₃	b ₄																																			
0	0	0	0	NULL	DC ₀	b	0	@	P	UNASSIGNED	UNASSIGNED	UNASSIGNED																										
1	0	0	0	SOM	DC ₁	!	1	A	Q																													
0	1	0	0	EOA	DC ₂	"	2	B	R																													
1	1	0	0	EOM	DC ₃	#	3	C	S																													
0	0	1	0	EOT	DC ₄ (STOP)	\$	4	D	T	UNASSIGNED	UNASSIGNED	UNASSIGNED																										
1	0	1	0	WRU	ERR	%	5	E	U																													
0	1	1	0	RU	SYNC	&	6	F	V																													
1	1	1	0	BELL	LEM	(APOS)	7	G	W																													
0	0	0	1	FE ₀	S ₀	(8	H	X	UNASSIGNED	UNASSIGNED	UNASSIGNED																										
1	0	0	1	HT/SK	S ₁)	9	I	Y																													
0	1	0	1	LF	S ₂	*	:	J	Z																													
1	1	0	1	V _{TAB}	S ₃	+	;	K	[
0	0	1	1	FF	S ₄	(COMMA)	<	L	\	UNASSIGNED	UNASSIGNED	UNASSIGNED																										
1	0	1	1	CR	S ₅	-	=	M]																													
0	1	1	1	SO	S ₆	.	>	N	↑																													
1	1	1	1	SI	S ₇	/	?	O	←																													
										ACK ① ESC DEL																												

Example: R is represented by

b ₁	b ₂	b ₃	b ₄	b ₅	b ₆	b ₇	b ₈
0	1	0	0	1	0	1	1

NULL	Null/Idle	DC ₁ -DC ₃	Device Control
SOM	Start of message	DC ₄ (Stop)	Device control (stop)
EOA	End of address	ERR	Error
EOM	End of message	SYNC	Synchronous idle
EOT	End of transmission	LEM	Logical end of media
WRU	"Who are you? "	S ₀ -S ₇	Separator (information)
RU	"Are you ...? "	b	Word separator (space, normally non-printing)
BELL	Audible signal	<	Less than
FE ₀	Format effector	>	Greater than
HT	Horizontal tabulation	↑	Up arrow (Exponentiation)
SK	Skip (punched card)	←	Left arrow (Implies/Replaced by)
LF	Line feed	\	Reverse slant
V _{TAB}	Vertical tabulation	ACK	Acknowledge
FF	Form feed	↑	Unassigned control
CR	Carriage return	ESC	Escape
SO	Shift out	DEL	Delete/Idle
SI	Shift in		
DC ₀	Device control reserved for data link escape		

Table 2. 8-Level ISO (International Standards Organization) Code

This code provides seven information bits (b_1 to b_7) and an even-parity check bit (b_8). This position of the bits on punched tape is: $b_1b_2b_3\bullet b_4b_5b_6b_7b_8$ where \bullet represents a feed-hole.

b_7	0	0	0	0	1	1	1	1			
b_6	0	0	1	1	0	0	1	1			
b_5	0	1	0	1	0	1	0	1			
b_1	b_2	b_3	b_4								
0	0	0	0	NUL	(TC)DLE	SP	0	@	P	\	p
1	0	0	0	(TC)SOH	DC	!	1	A	Q	a	q
0	1	0	0	(TC)STX	DC	"	2	B	R	b	r
1	1	0	0	(TC)ETX	DC	£	3	C	S	c	s
0	0	1	0	(TC)EOT	DC	\$	4	D	T	d	t
1	0	1	0	(TC)ENQ	(TC)NAK	%	5	E	U	e	u
0	1	1	0	(TC)ACK	(TC)SYN	&	6	F	V	f	v
1	1	1	0	BEL	(TC)ETB	'	7	G	W	g	w
0	0	0	1	FE ₀ (BS)	CAN	(	8	H	X	h	x
1	0	0	1	FE ₁ (HT)	EM	)	9	I	Y	i	y
0	1	0	1	FE ₂ (LF)	SUB	*	:	J	Z	j	z
1	1	0	1	FE ₃ (VT)	ESC	+	;	K		k	
0	0	1	1	FE ₄ (FF)	IS (FS)	.	<	L		l	
1	0	1	1	FE ₅ (CR)	IS (GS)	-	=	M	I	m	
0	1	1	1	SO	IS (RS)	^	>	N	.	n	-
1	1	1	1	SI	IS (US)	/	?	O	-	o	DEL

Example: R is represented by

b_1	b_2	b_3	b_4	b_5	b_6	b_7	b_8
0	1	0	0	1	0	1	1

ACK	Acknowledge	GS	Group Separator
BEL	Bell	HT	Horizontal Tabulation
BS	Backspace	IS	Information Separator
CAN	Cancel	LF	Line Feed
CR	Carriage Return	NAK	Negative Acknowledge
DC	Device Control	NL	New Line
DEL	Delete	NUL	Null
DLE	Data Link Escape	RS	Record Separator
EM	End of Medium	SI	Shift-in
ENQ	Enquiry	SO	Shift-out
EOT	End of Transmission	SOH	Start of Heading
ESC	Escape	SP	Space
ETB	End of Transmission Block	STX	Start of Text
ETX	End of Text	SUB	Substitute
F	Function	SYN	Synchronous Idle
FE	Format Effector	TC	Transmission Control
FF	Form Feed	US	Unit Separator
FS	File Separator	VT	Vertical Tabulation

Table 3. Allocation of ASCII/ISO characters to calculator keyboard.

Calculator Key	Teleprinter Key (s)	ASCII/ISO			Character			Octal Character (as in calculator display)
		b ₁	b ₂	b ₃	•b ₄	b ₅	b ₆ b ₇	
FLOAT	CONTROL H	0	0	0	1	0	0 0	111
FIX	CONTROL G	1	1	1	0	0	0 0	110
RUN	CONTROL F	0	1	1	0	0	0 0	107
PRGM	CONTROL E	1	0	1	0	0	0 0	106
KEYLOG	CONTROL D	0	0	1	0	0	0 0	105
LIST	CONTROL C	1	1	0	0	0	0 0	104
LOAD	CONTROL B	0	1	0	0	0	0 0	103
RECORD	CONTROL A	1	0	0	0	0	0 0	102
A	A	1	0	0	0	0	0 1	62
B	B	0	1	0	0	0	0 1	66
C	C	1	1	0	0	0	0 1	61
D	D	0	0	1	0	0	0 1	63
E	E	1	0	1	0	0	0 1	60
F	F	0	1	1	0	0	0 1	16
G	G	1	1	1	0	0	0 1	15
H	H	0	0	0	1	0	0 1	74
I	I	1	0	0	1	0	0 1	65
J	J	0	1	0	1	0	0 1	75
K	K	1	1	0	1	0	0 1	55
L	L	0	0	1	1	0	0 1	72
M	M	1	0	1	1	0	0 1	70
N	N	0	1	1	1	0	0 1	73
O	O	1	1	1	1	0	0 1	71
π	P	0	0	0	0	1	0 1	56
b	Q	1	0	0	0	1	0 1	14
a	R	0	1	0	0	1	0 1	13
y \rightarrow ()	S	1	1	0	0	1	0 1	40
x \rightarrow ()	T	0	0	1	0	1	0 1	23
1/x	U	1	0	1	0	1	0 1	17
INT x	V	0	1	1	0	1	0 1	64
IND	W	1	1	1	0	1	0 1	31
y \leftrightarrow ()	X	0	0	0	1	1	0 1	24
x \leftarrow ()	Y	1	0	0	1	1	0 1	67
x ²	Z	0	1	0	1	1	0 1	12
ROLL \uparrow	@	0	0	0	0	0	0 1	22
\downarrow	CONTROL K	1	1	0	1	0	0 0	25
x \rightleftharpoons y	CONTROL I	1	0	0	1	0	0 0	30
\uparrow	=	1	0	1	1	1	1 0	27

Exceptionally, this group of numbers will NOT appear on the calculator display.

CODES

Calculator Key	Teleprinter Key (s)	ASCII/ISO			Character				Octal (as in calculator display)
		b ₁	b ₂	b ₃	•b ₄	b ₅	b ₆	b ₇	
\sqrt{x}	[	1	1	0	1	1	0	1	76
\div	/	1	1	1	1	0	1	0	35
x	*	0	1	0	1	0	1	0	36
-	-	1	0	1	1	0	1	0	34
+	+	1	1	0	1	0	1	0	33
CHS	]	1	0	1	1	1	0	1	32
7	7	1	1	1	0	1	1	0	07
4	4	0	0	1	0	1	1	0	04
1	1	1	0	0	0	1	1	0	01
0	0	0	0	0	0	1	1	0	00
EEX	↑	0	1	1	1	1	0	1	26
8	8	0	0	0	1	1	1	0	10
5	5	1	0	1	0	1	1	0	05
2	2	0	1	0	0	1	1	0	02
0	0	0	0	0	0	1	1	0	00
CLX	,	0	0	1	1	0	1	0	37
9	9	1	0	0	1	1	1	0	11
6	6	0	1	1	0	1	1	0	06
3	3	1	1	0	0	1	1	0	03
.	.	0	1	1	1	0	1	0	21
CLR	LF	0	1	0	1	0	0	0	20
CONT	SPACE	0	0	0	0	0	1	0	47
SFL	CR	1	0	1	1	0	0	0	54
LABEL	\$	0	0	1	0	0	1	0	51
FMT	CONTROL Y	1	0	0	1	1	0	0	42
PRINT	CONTROL Z	0	1	0	1	1	0	0	45
SUB	←	1	1	1	1	1	0	1	77
IFL	?	1	1	1	1	1	1	0	43
$x < y$	(	0	0	0	1	0	1	0	52
$x = y$	%	1	0	1	0	0	1	0	50
$x > y$	"	0	1	0	0	0	1	0	53
GTO	#	1	1	0	0	0	1	0	44
END	;	1	1	0	1	1	1	0	46
PAUSE	)	1	0	0	1	0	1	0	57
STOP	!	1	0	0	0	0	1	0	41
BACK	CONTROL T	0	0	1	0	1	0	0	101
STEP	CONTROL U	1	0	1	0	1	0	0	100

Exceptionally, this group of numbers will NOT appear on the calculator display.

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