

CARDIAC

ASSEMBLY INSTRUCTIONS

1. Remove all parts from the die cut sheet. The 5 "bugs" and the 4 input/output cards won't be needed for the assembly and should be set aside for now. Incidentally, 4 of the bugs are spares, as are 2 of the input/output cards.

2. Punch out all the die cut holes—including the 100 circular holes in the memory section. Be sure to punch out *all* 5 windows on the "Op Code" slide.

Holes are black with rounded edges.

3. Fold CARDIAC along the 3 score marks. Run your finger over the folds to make sure they "take."

Score marks are highlighted with dashed lines.

4. Unfold CARDIAC and lay it face down (blank side up) on a clean surface (see Fig. 1). The windows and slots should be on the lower right page. Notice the 4 sets of slots cut into the top and bottom edges of this page. These will accommodate the 4 function slides, which are to be inserted (printed sides down) in the following order:

A. Slip the "Op Code" slide into the 3rd pair of slots (top and bottom) from the left (see Fig. 2). *This slide must be inserted first.*

B. Slip the "Address (2)" slide into the 2nd pair of slots from the left.

C. Slip the "Address (1)" slide into the 1st pair of slots from the left.

D. Slip the "Accumulator Test" slide into the 4th pair of slots from the left.

5. Fold the top half of CARDIAC down over the bottom half. Check the slides for free movement and correct position (see Fig. 3). If everything is in order, run a thin bead of glue along the full length of the bottom edge of CARDIAC. Repeat this assembly on left-hand side (back of CARDIAC and memory cells). *Be careful not to get any glue on the slides or the slots.* Now, fold up the bottom edge and hold, or weight, it until the glue dries. Your CARDIAC should now look like Fig. 4.

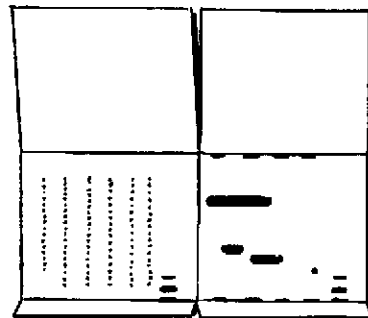


Fig. 1

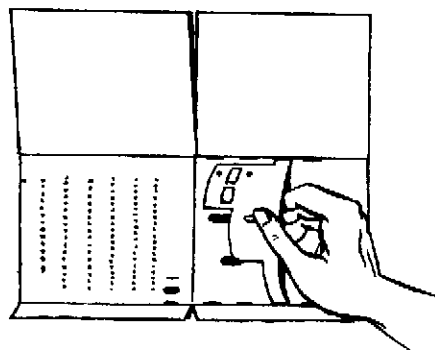


Fig. 2

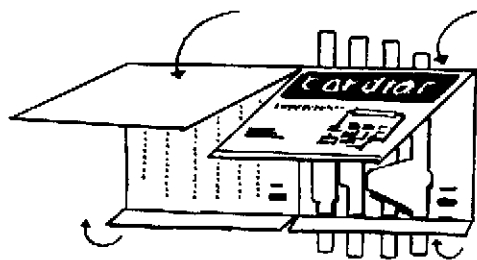


Fig. 3

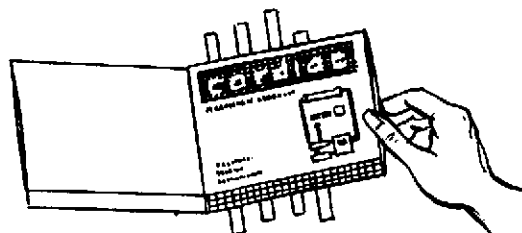


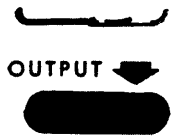
Fig. 4

M E M O R Y C E L L S

CELL NO.	CONTENTS	CELL NO.	CONTENTS	CELL NO.	CONTENTS	CELL NO.	CONTENTS	CELL NO.	CONTENTS
00	001	17		34		51		68	
01		18		35		52		69	
02		19		36		53		70	
03		20		37		54		71	
04		21		38		55		72	
05		22		39		56		73	
06		23		40		57		74	
07		24		41		58		75	
08		25		42		59		76	
09		26		43		60		77	
10		27		44		61		78	
11		28		45		62		79	
12		29		46		63		80	
13		30		47		64		81	
14		31		48		65		82	
15		32		49		66		83	
16		33		50		67		84	
									85
									86
									87
									88
									89
									90
									91
									92
									93
									94
									95
									96
									97
									98
									99

OP CODE

Code	Abbr.	Meaning
0	INP	Input
1	CLA	Clear and add
2	ADD	Add
3	TAC	Test Accumulator contents
4	SFT	Shift
5	OUT	Output
6	STO	Store
7	SUB	Subtract
8	JMP	Jump
9	HRS	Halt and reset



OUTPUT

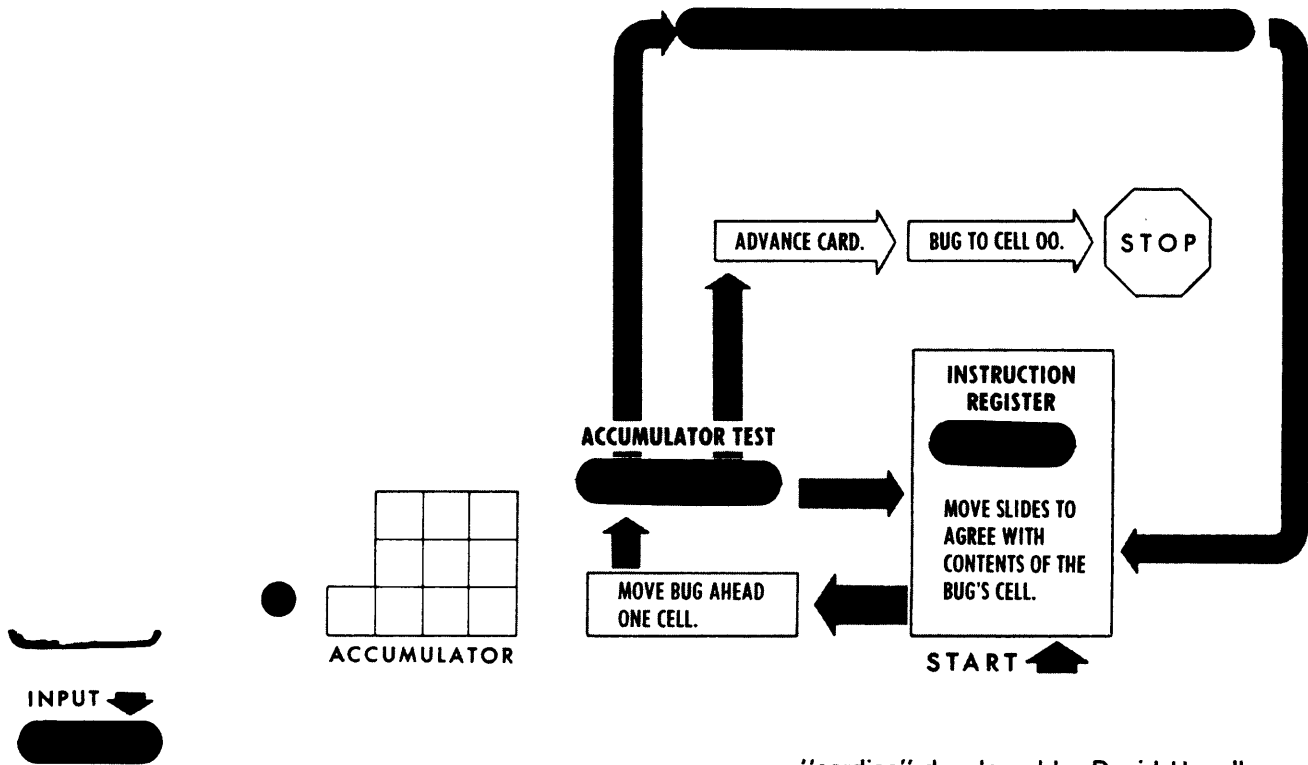


8--

cardiac

Copyright © 1966, 1968 Bell Telephone Laboratories, Incorporated

INSTRUCTION DECODER

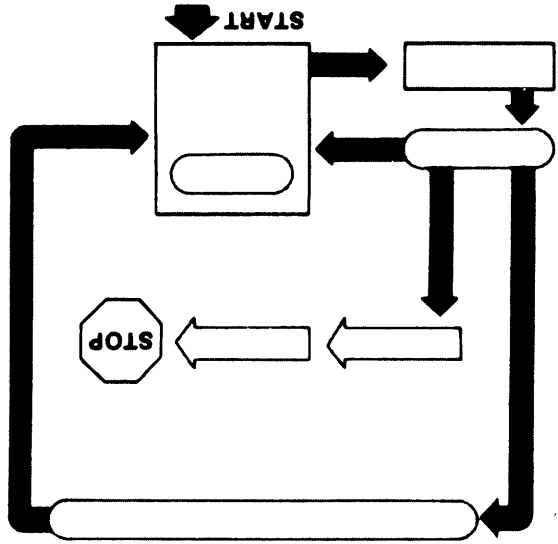


"cardiac" developed by David Hagelbarger

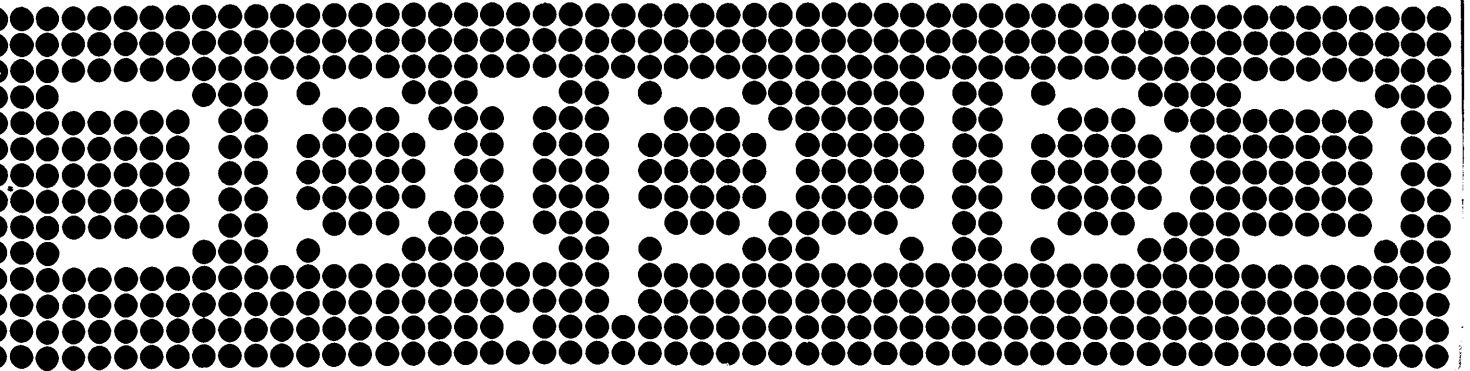


/

Bell System Educational Aid
Developed by
Bell Telephone Laboratories



A cardboard illustrative aid to computation



0
1
2
3
4
5
6
7
8
9

0
1
2
3
4
5
6
7
8
9

0
1
2
3
4
5
6
7
8
9

0
1
2
3
4
5
6
7
8
9

0
1
2
3
4
5
6
7
8
9

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24

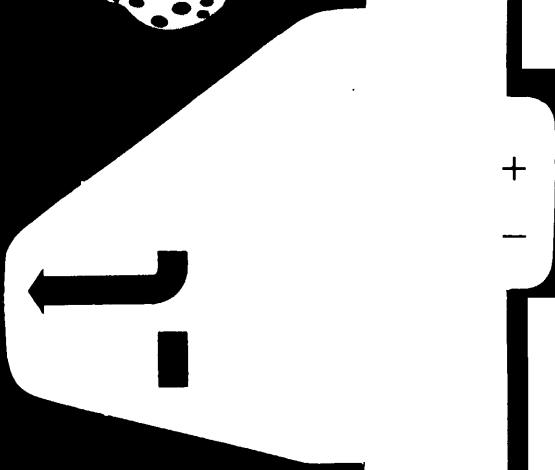
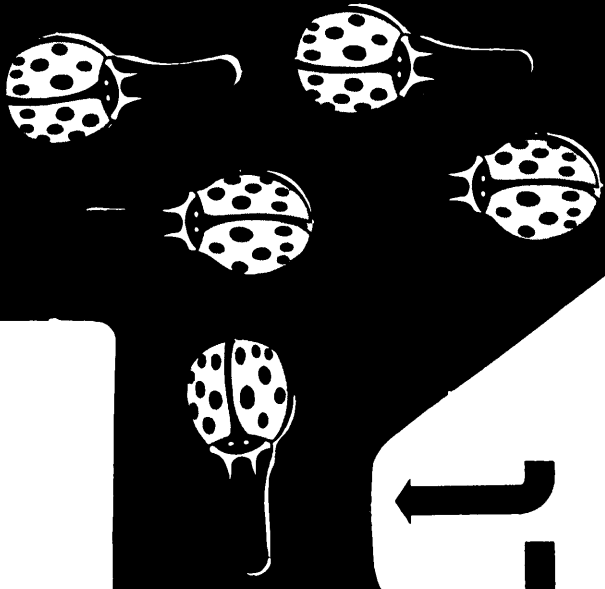


ADDRESS (1)



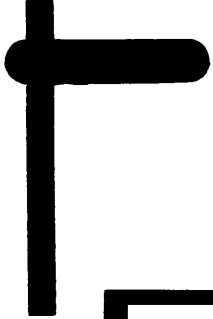
ADDRESS (2)

ACCUMULATOR TEST



COPY INPUT CARD INTO CELL		ADVANCE CARD.
ERASE ACCUMULATOR COPY CONTENTS OF CELL		INTO ACCUMULATOR.
ADD CONTENTS OF CELL		INTO ACCUMULATOR.
MOVE BUG TO CELL		
SHIFT ACCUMULATOR LEFT ● PLACES		THEN RIGHT ● PLACES.
COPY CONTENTS OF CELL		ON OUTPUT CARD AND ADVANCE CARD.
COPY ACCUMULATOR INTO CELL		
SUBTRACT CONTENTS OF CELL		FROM ACCUMULATOR.
WRITE BUGS CELL NO. IN CELL 99: MOVE BUG TO CELL		
MOVE BUG TO CELL		STOP.

NO YES
IS INPUT CARD BLANK?



- 0
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9



OP CODE

