

NO. 2125684
 SHEET 0
 OF 27

DIAGNOSTIC TEST

TITLE 1622 CARD INPUT/OUTPUT DIAGNOSTIC TEST - IO2
 MACH. TYPE 1620 BY J.H.M. APPR. G.I.A. DATE 4-11-62

ENGINEERING CHANGE HISTORY

E/C NO.	DATE	SHEETS AFFECTED
404618	5-15-61	1-26
404675	4-11-62	2, 3, 4, 10, 12, 13, 15, 19, 20 22, 23, 24, 25, 26, 27
404839	2-27-63	5, 8

E/C NO.	404618	404675	404839				
DATE	5-15-61	4-11-62	2-27-63				

1622 DIAGNOSTICS

TEST 1002

A. SCOPE:

This test was designed to check all characters in all positions of the buffers in the 1622 punch and read, the last card indicator, and the read and write checks; both in alpha and numeric modes.

B. SET UP:

Sense Switch settings give the same result as standard 1620 diagnostic programs. To obtain the greatest amount of printed information in regard to errors place all Sense Switches in the Off position.

C. TEST METHOD:

The first two cards of the test deck contain loading instructions for the math tables which are contained on the following five cards. The eighth card contains the loading instructions for the program.

The entire deck plus two blank cards at the end are loaded into the reader bed, and with the computer in manual mode the Load Key is depressed.

When the last card has been read, a printout advising of the Sense Switch settings occurs and the computer halts.

Depressing the computer Start key continues the program until instructions are printed out to key in 80 alpha characters. Load the punch bed with a deck of blank cards and depress the card reader Start key on the punch. At this point the operator has a choice of one of two options:

- I. Key in 80 characters, release, start:
- II. Reset, insert, key in: 4907152 Release, Start.
(This causes a ripple deck of 80 cards to be punched.)

Option I allows the operator to select any desired sequence of characters, or any characters except the record mark he may wish including spacings. One need not key in 80 characters. A count of keyed in characters is unnecessary because an automatic function of the program allows only the first 80 characters to be used.

Option II allows the operator to use a table of 80 characters previously placed in core storage by the program. Option II is selected by branching to 07152 for alphameric and to 07188 for numeric.

Option I may be preferable when a trouble is known to exist in a definite sequence.

A write check error occurring during the punching of the ripple deck causes a print out advising of such and a halt. Depression of the computer Start key reinitiates conditions for a restart without the need to reload the program.

When the printout occurs advising completion of the punching, depress Non Process Run out keys on the reader and punch. Remove the last two cards, (they will be unpunched), from the deck and place the deck in the read bed. Removal of last two cards is necessary to check the Last Card Indicator. Depress the reader Start key. Depress computer Start key.

C. TEST METHOD - continued

When the ripple deck is being read a noticeable variation of the reading rate of the cards may be observed. This being due to the searching of the computer through a comparison of a table. The rate may be fluctuated by shuffling the ripple deck prior to placing it in the read bed.

The program provides up to three attempts to successfully transfer the information read from the card from the 1622 to the 1620 in the event of a Read Check on the first attempt. If a Read Check occurs on the first transfer but the second or third attempted transfer is successful, a typeout stating the specific circumstance will occur. If a Read Check occurs on all three attempts, a print out advising of a restart is made. A restart at this point requires reloading of the ripple deck in the read bed.

If a card does not compare correctly after being read and all Sense Switches are off, a branch to error routine H001 is performed. After printing out H001 and the typewriter carriage is returned, a printout of the information contained on the erroneous card is performed followed by a print out of the table with which a comparison was attempted.

The table was generated automatically by the keyed in 80 characters doubled. By visually checking the card erroneously read, the operator can ascertain whether the punch incorrectly punched the data or the reader incorrectly read the punched data. Because each character keyed in passes through the punch and read buffers at least one time a defective punch or read circuit may be located.

Depressing computer Start Key continues the reading of the ripple deck with the card following the erroneous card.

An excellent check of the error portion of this program would be to insert a blank card or a card with known data into the ripple deck prior to loading into the reader and observing the results.

C. TEST METHOD - continued

The reader stops after the 78th card is read. It is necessary to depress the reader Start key to read the final two cards and check the Last Card Indicator.

Two checks of the Last Card Indicator are performed. The first checks that it is on and the second checks that it is turned off after inquiry.

H002 - Last Card indicator not on.

H003 - Last Card indicator not off.

The numeric portion of the test is conducted in the same manner as the alpha.

Option II will be 49 07188

H004 will be analogous to H001

H005 will be analogous to H002

H006 will be analogous to H003.

The ripple deck reading portions of the test may be run individually using prepunched ripple decks by branching to 02796 for alphameric and to 05304 for numeric.

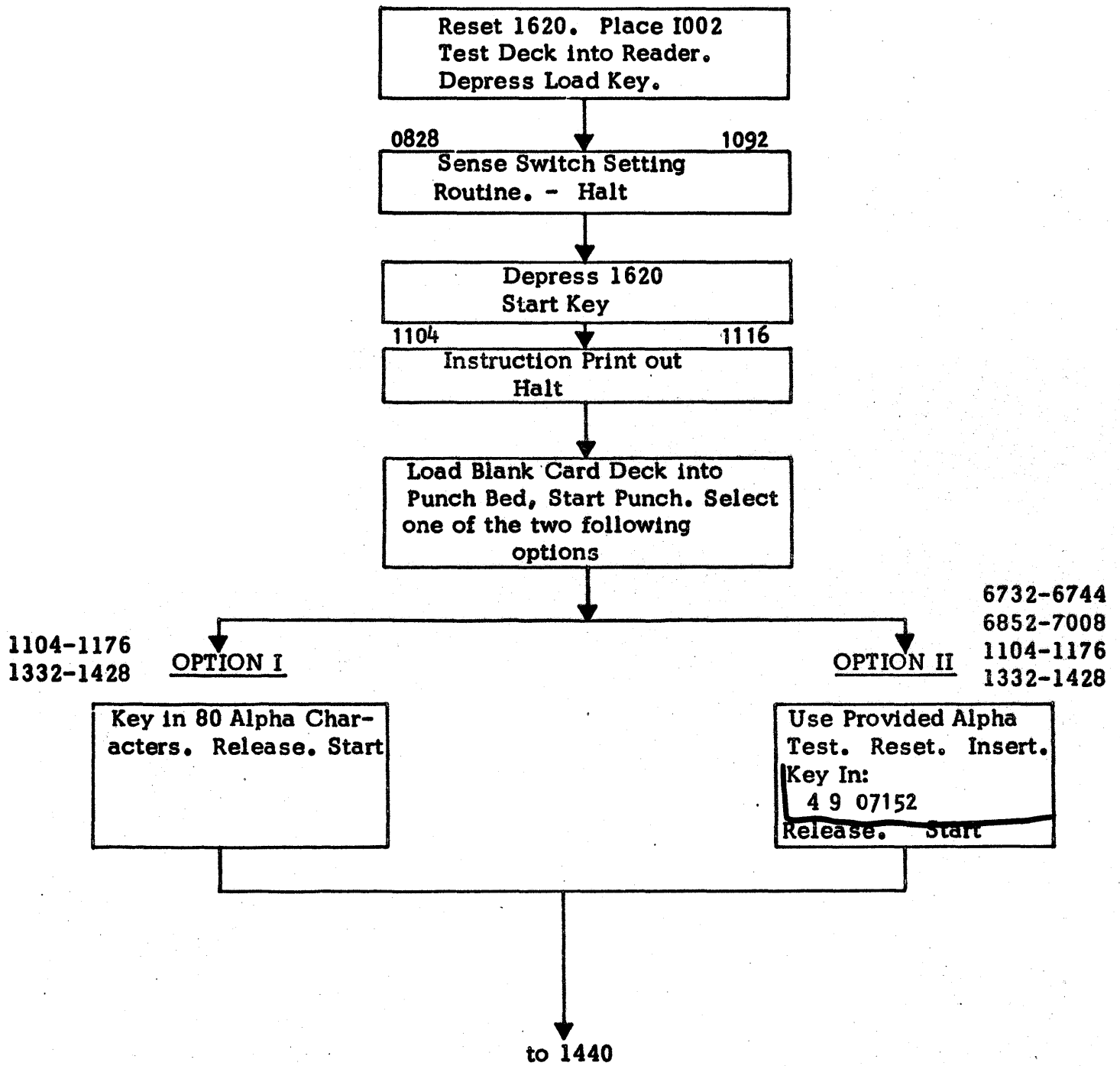
The complete normal typeout information will be as follows: (Note: The specific alphameric and numeric data keyed in is optional to the operator: or options I and/or II may be used.)

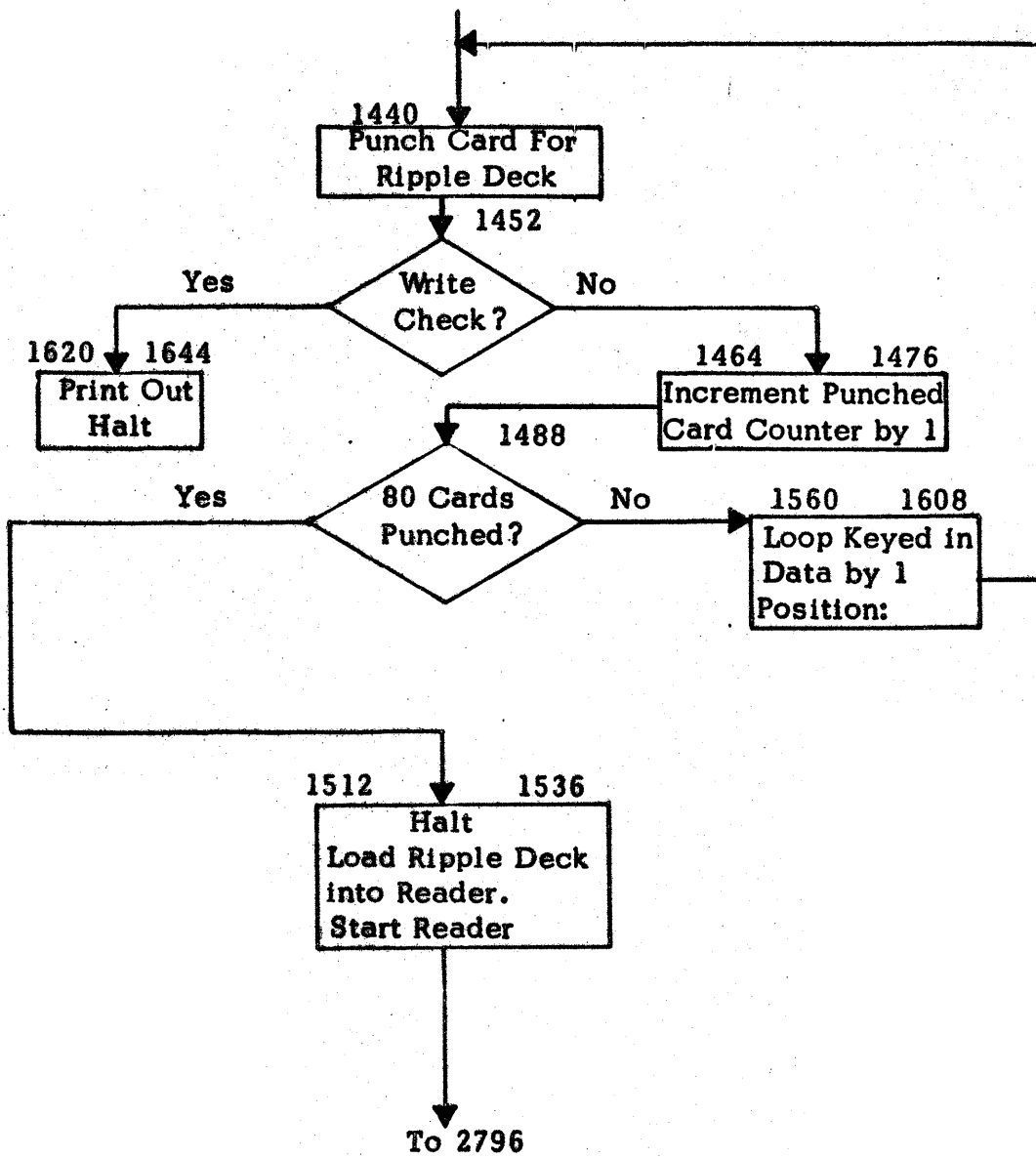
```

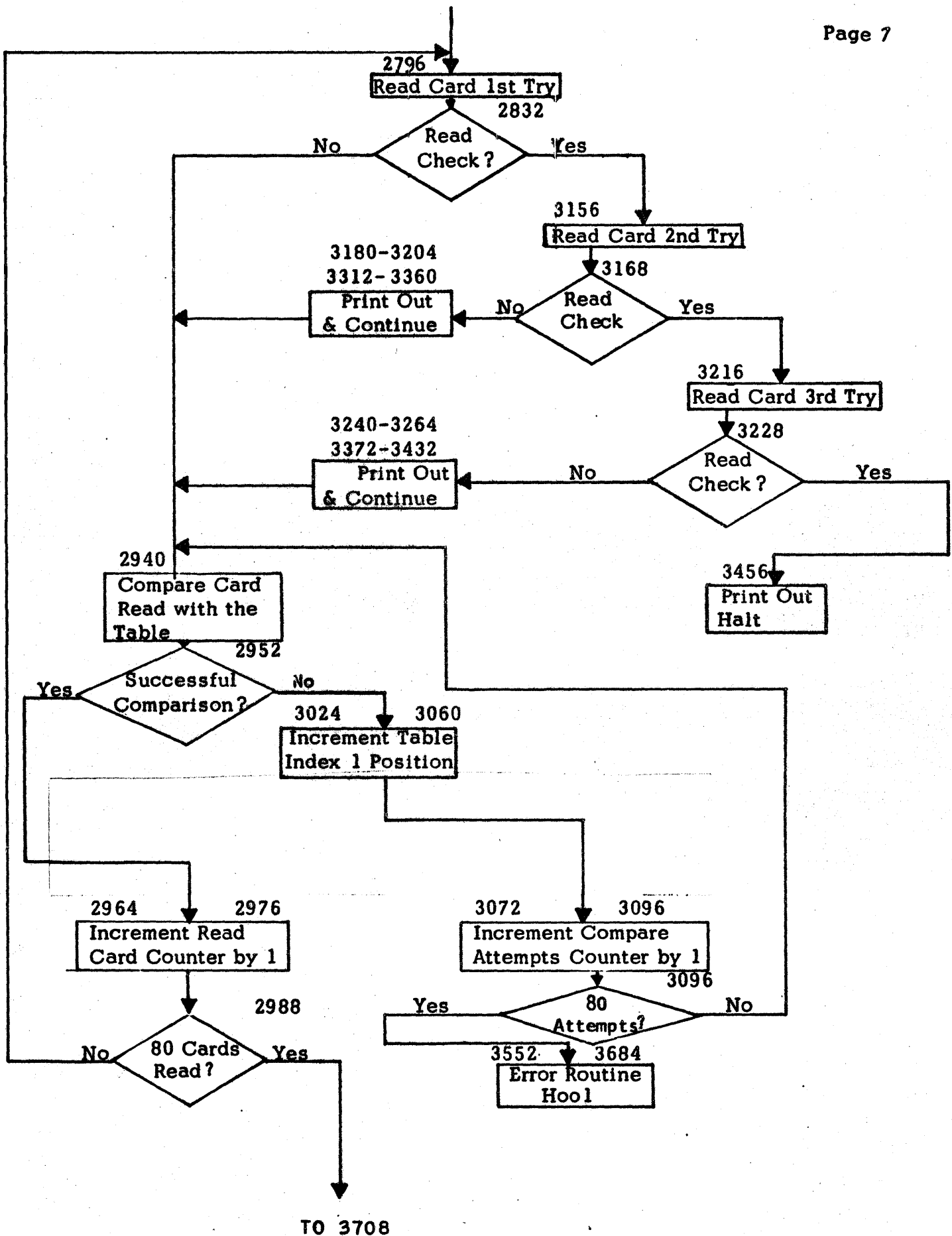
SW 1 OFF SW 2 OFF SW 3 OFF SW 4 OFF SET SWS FOR 1002
THEN START.
KEY IN 80 ALPHA CHARACTERS TO GENERATE RIPPLE DECK.
ABCDEFGHIJKLMN OPQRSTUVWXYZ0123456789@()=*. -+$/.,
ABCDEFGHIJKLMN OPQRSTUVWXYZ0123456
RIPPLE DECK PUNCHED LOAD INTO READER - START.
ALPHA OK - KEY IN 80 NUMERIC CHARACTERS TO GENERATE
RIPPLE DECK.
01234567890123456789012345678901234567890123456789
01234567890123456789012345678901234567890123456789
RIPPLE DECK PUNCHED LOAD INTO READER - START.
IF NO ETOS 1002 SUCCESSFUL.

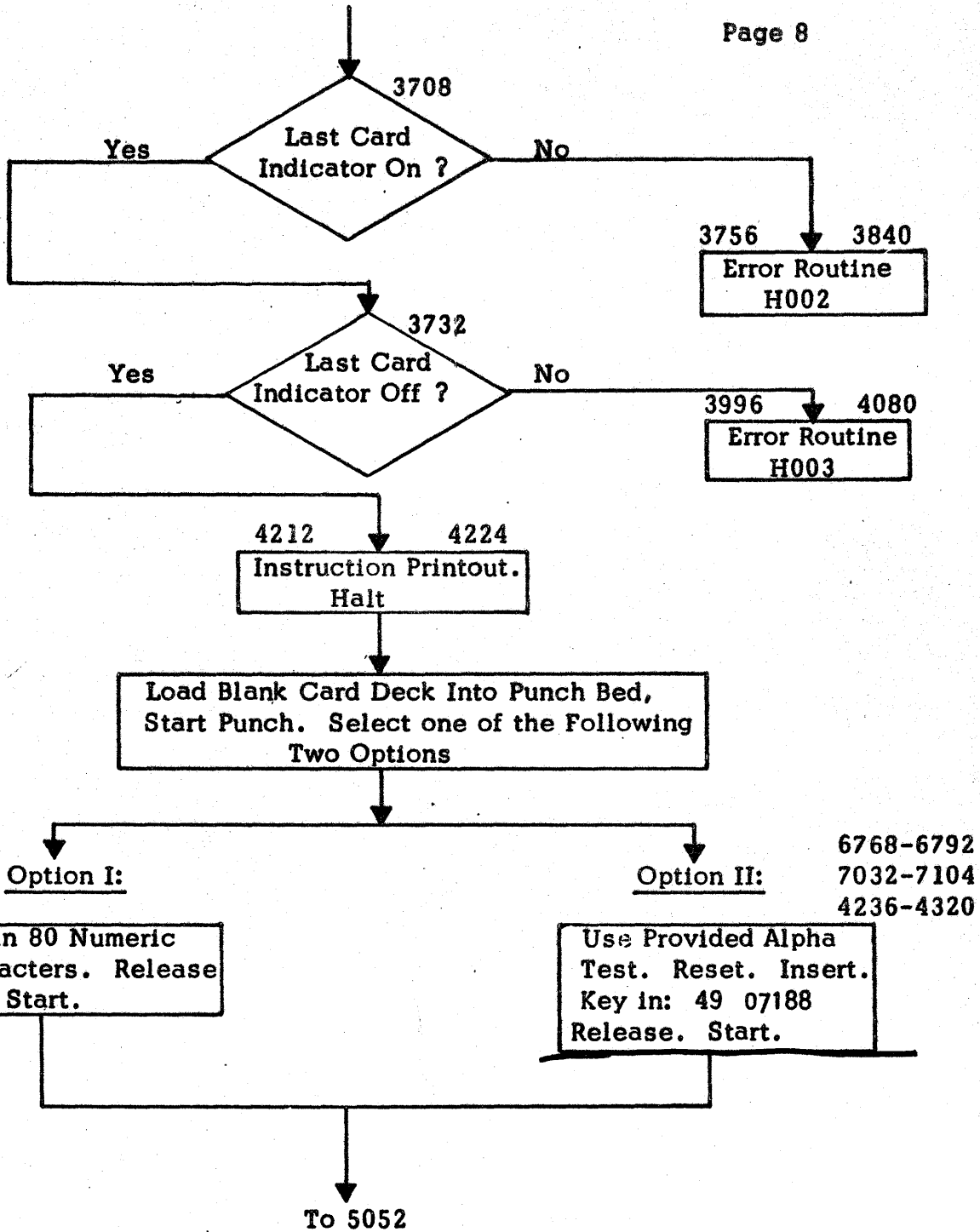
```

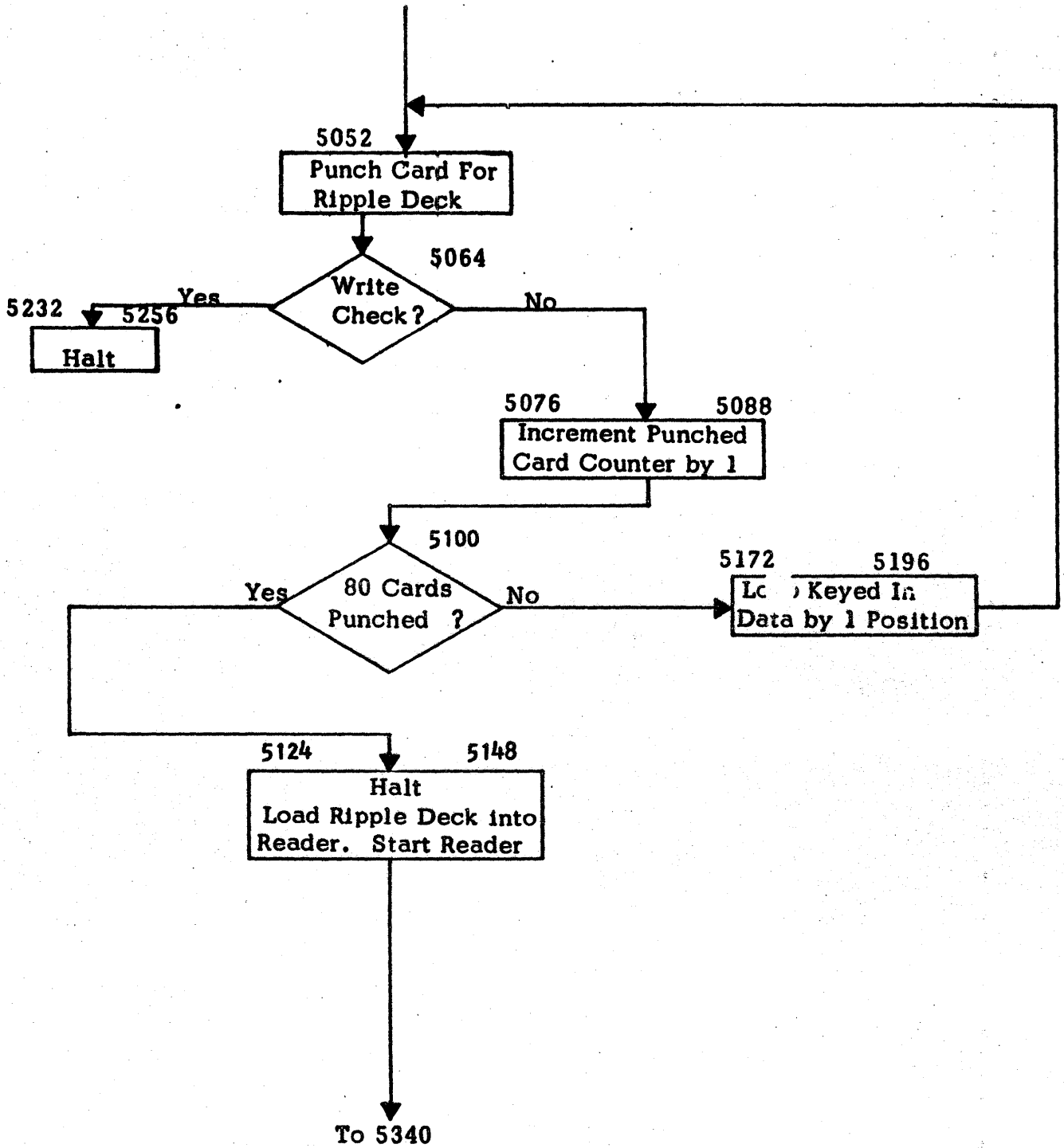
I002

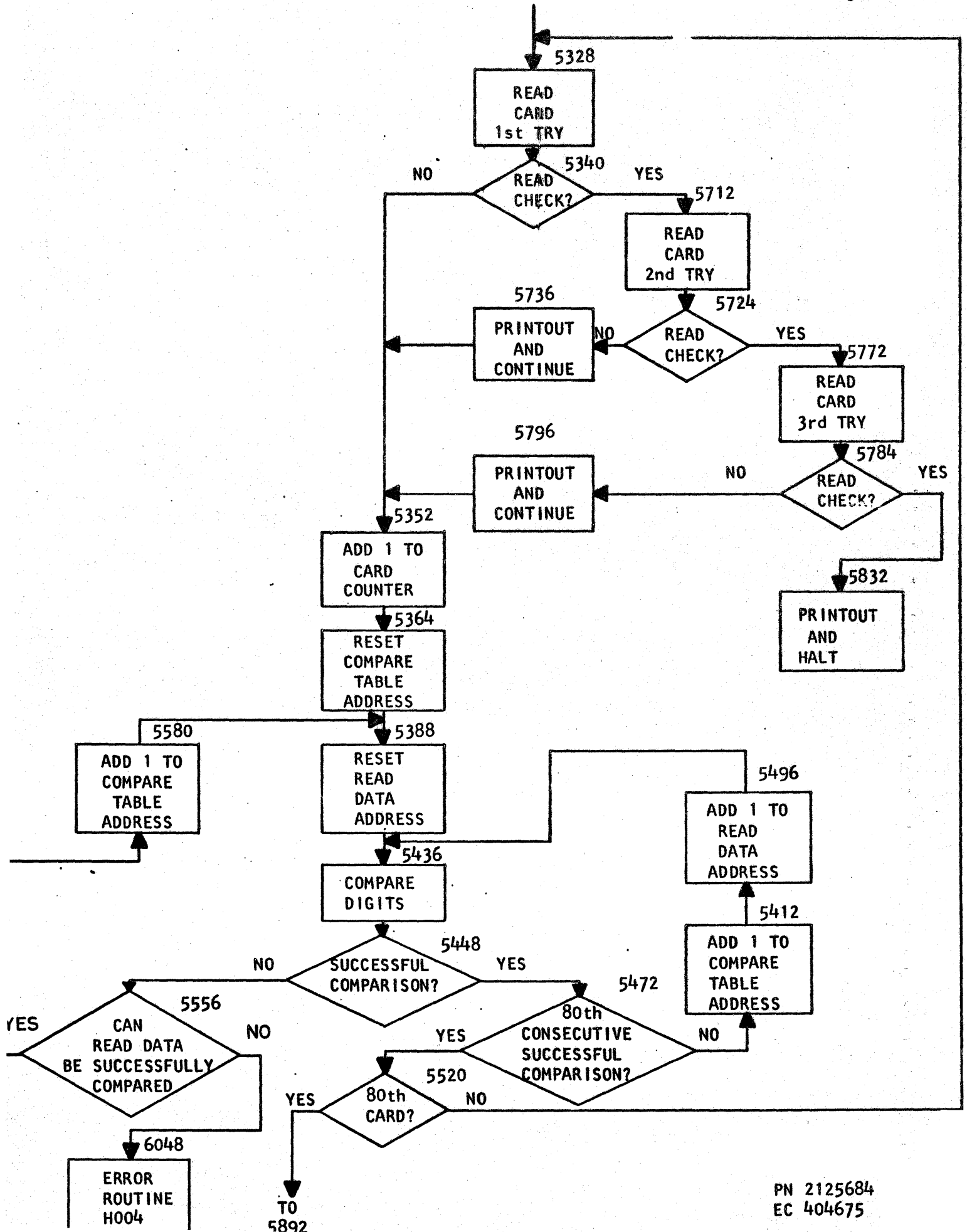


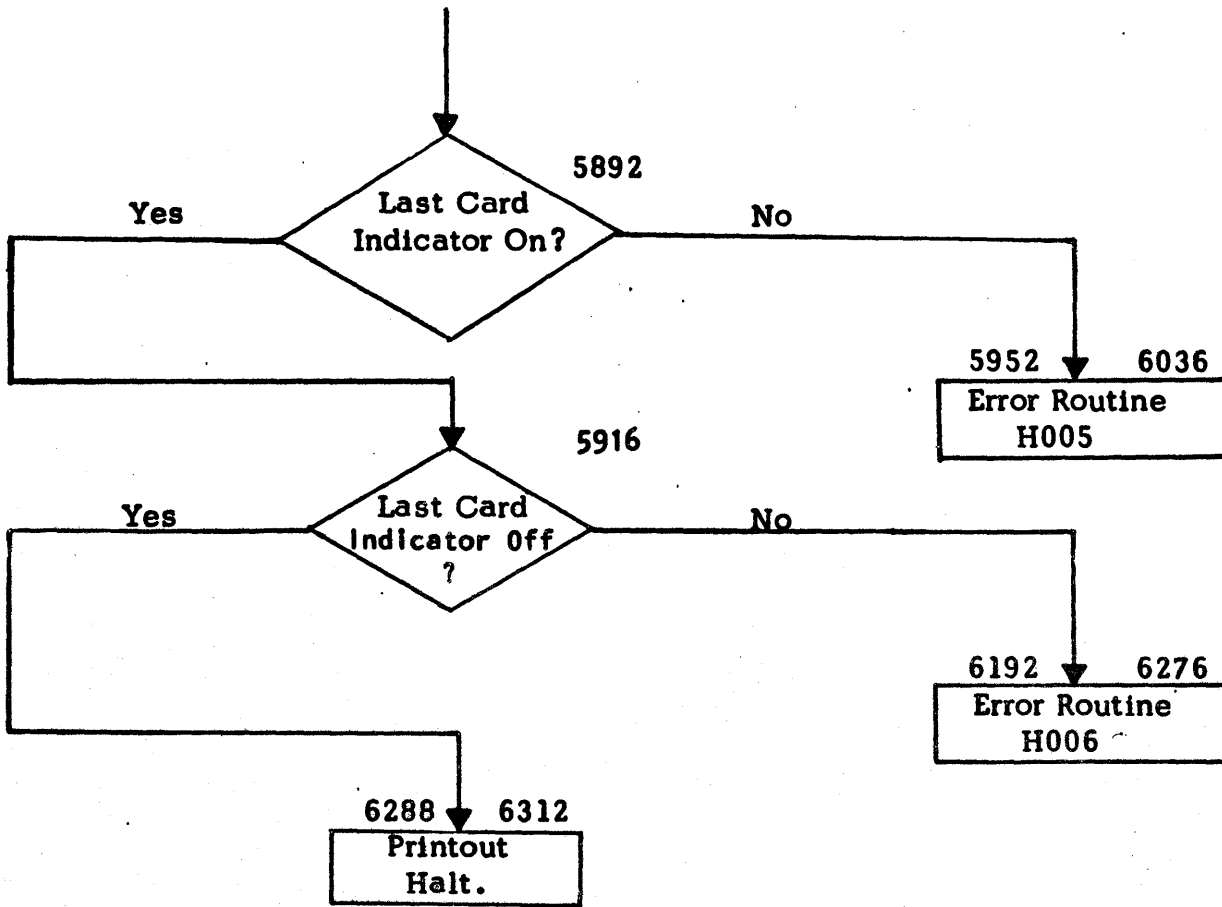












1 0 0 2

36	00060	00500	RN	1st Card
36	00100	00500	RN	
36	00160	00500	RN	
36	00220	00500	RN	
36	00280	00500	RN	
36	00340	00500	RN	2nd Card
36	00000	00500	RN	
49	00000		B	
00	00000	00000		3rd Card
10	20304	00020		
40	60800	03060		
90	21004	08021		
61	00500	15102		
00	60218	14200		4th Card
70	41128	20080		
61	42230	09081		
72	63000	00000		
00	50607	08090		
01	21416	18151		5th Card
81	12427	20242		
82	23635	20353		
04	54036	32484		
45	53249	46536		
04	84654	62754		6th Card
45	36271	80123		
45	67891	23456		
78	90234	56789		
01	34567	89012		
45	67890	12356		7th Card
78	90123	46789		
01	23457	89012		
34	56890	12345		
67	90123	45678		
36	00612	00500	RN	8th Card
11	00006	00060	AM	
14	00006	07212	CM	
46	00828	01200	BI	
49	00000	00000	B	

0912	39	00651	00100	W A	S W 2 on
24	49	00948		B	
36	39	00669	00100	W A	S W 2 off
48	46	00972	00300	B I	Check S W 3 on
60	47	00996	00300	BNI	Check S W 3 off
0972	39	00689	00100	W A	S W 3 on
84	49	01008		B	
96	39	00707	00100	W A	S W 3 off
1008	46	01032	00400	B I	Check S W 4 on
20	47	01056	00400	BNI	Check S W 4 off
1032	39	00727	00100	W A	S W 4 on
44	49	01068		B	
56	39	00745	00100	W A	S W 4 off
68	39	00765	00100	W A	
80	34		00102	K	Carriage return
1092	48			H	
1104	39	01213	00100	W A	Key in 80 alpha etc.
16	34		00102	K	carriage return
28	37	01933	00100	R A	place 80 char in buffers
40	15	02093	0000 7	TDM	set R M
1152	34		00102	K	
64	32	01932		S F	
76	49	01332		B	
88					
1200					
1212	52	4568	4955		Key in
24		7870	4153		80 Al
36	57	4841	4348		Pha Ch
48	41	59414	36345		aracte
60	59	62 6	356		rs To
1272	47	45554	55941		Genera
84	63	45 5	94957		te Rip
96	57	4345	4445		ple De
1308	43	5203	0 7		ck. 7
20					
1332	31	02112	01932	T R	Generate work area
44	31	02472	01932	T R	Generate table'
56	31	02632	01932	T R	look - up
68	33	02632		C F	area
80	46	01392	01400	B I	Turn off overflow

1392	46	01404	00600	B I	turn off R/C ind
1404	46	01416	00700	B I	turn off W/C ind
16	46	01428	00900	B I	turn off L/C ind
28	46	06612	01900	B I	check Any latch.
40	39	02113	00400	W A	punch ripple deck
1452	46	01620	00700	B I	W/C error
64	11	06347	01	A M	Add 1 to punched card counter
76	14	06347	80	C M	
88	47	01560	01200	BNI	ripple deck complete?
1500	16	06347	00	TFM	reset punched card counter
1512	39	01669	00100	W A	ripple deck has been punched etc.
24	34		00102	K	
36	48			H	
48	49	02796		B	
60	31	02110	02112	T R	
1572	26	02271	02111	T F	
84	33	02270		C F	
96	32	02112		S F	
1608	49	01440		B	
20	39	01765	00100	W A	W/C error etc.
1632	34		00102	K	
44	48			H	
56	49	01104		B	
68	59	49575	75345		Ripple
80		44454	352		Deck
1692	57	64554	34845		Punche
1704	44	535	64144		d Load
16		49556	356		Into
28	59	45414	44559		Reader
40		20 6	26341		- Sta
1752	59	6303	0≠		RT . ≠
64	66	2143	4559		W/C Er
76	59	5659	20		ror -
88	59	45626	34159		restar
1800	63	03 0	≠		t. ≠
1812					
24					
36					
48					
60					

1872
84
96
1908
20

1932
44
56
68
80

Keyed in data area

1992
2004
16
28
40

2052
64
76
88

07

2112
24
36
48
60

Data xferred from 1932

2172
84
96
2208
20

2232
44
56
68
80

07

2292
2304
16
28
40

Read in area for comp

2352
64
76
88
2400

2412
24
36
48
60

0≠

2472
84
96
2508
20

table look up area

2532
44
56
68
80

2592
2604
16
28
40

2652
64
76
88
2700

2712
24
36
48
60

2772
84
96
2808
20

16 06371
16 06407
37 02293

0≠
00
00
00500

Reset read card ctr to 0
Reset attempts ctr to 0
R A read card 1st try

2832
44
56
68
80

46 03156
32 02292
26 02874
33
32 02472

00600
06395

B I
S F
T F
C F
S F

R/C ind on ?
set flag in read in area
set up compare position
clear flag from last used table pos
set flag in comp pos

2892	26	06431	06419	T F	set up comp pos.
2904	26	06395	06383	T F	reset flag in table area
16	16	06407	00	TFM	reset comp attempts str to a
28	26	02946	06419	T F	
40	24	02631	02451	C	Compare read with table
2952	47	03024	01200	BNI	Compare ?
64	11	06371	01	A M	add 1 to read completed cont
76	14	06371	80	C	80 completed?
88	47	02820	01200	BNI	read next card
3000	16	06371	00	TFM	reset read card counter to 0.
3012	49	03708		B	
24	26	03042	06395	T F	
36	33		-	C F	
48	11	06395	02	A M	Shift comp area in table
60	11	06431	02	A M	
3072	11	06407	01	A M	add to #comp attempted
84	14	06407	80	C	
96	46	03552	01200	B I	
3108	26	02946	06431	T F	
20	26	03138	06395	T F	
3132	32			S F	
44	49	02940		B	
56	37	02293	00500	R A	read card 2nd try
68	46	03216	00600	B I	
80	39	03313	00100	W A	
3192	34		00102	K	
3204	49	02844		B	
16	37	02293	00500	R A	read card 3rd try
28	46	03280	00600	B I	
40	39	03373	00100	W A	
3252	34		00102	K	
64	49	02844		B	
76					
80	39	03457	00100	W A	
3300	49	01524		B	
3312	59	2143	5655		R/C on
24		71626	3 63		1st t
36	59	6823	7255		ry, 2 n
48	44	635	968		d try
60	56	5203	0≠		o k . ≠

3372	59	2143	5655		R/C on
84		71626	3 10		1st +
96		72554	4 63		2nd T
3408	59	49456	223		ries,
20	73	5944	6359		3rd tr
3432	68	565	2030 ≠		Y ok. ≠
44					
56	59	2143	5655		R/C on
68	73	5944	63		3 rd t
80	59	68 2	0 59		ry - r
3492	45	53564	144		e load
3504	59	49575	75345		ripple
16		44454	352		deck
28	20	594	56263		- rest
40	41	59630	3 0 ≠		art . . ≠
3552	46	03672	00100	B I	Check S W 1
64	39	03685	00100	W A	H001 No compare
76	34		00102	K	
88	39	02293	00100	W A	type out card contents
3600	34		00102	K	
3612	39	02473	00100	W A	type out table contents
24	34		00102	K	
36	48			H	
48	46	02940	00200	B I	
60	49	02964		B	
3672	47	03648	00300	BNI	
84	48	70707	1 0 ≠	H	
96					
3708	46	03732	00900	B I	Check L/C indicator
20	49	03756		B	
3732	46	03996	00900	B I	Check L/C ind off
44	49	04212		B	
56	46	03780	00100	B I	
68	39	03793	00100	W A	H002 L/C not on
80	47	03804	00300	BNI	
3792	48	70707	2 0 ≠	H	
3804	47	04164	00200	BNI	continue to numeric
16	39	03925	00100	W A	
28	34		00102	K	
40	49	03708		B	

3852

64

76

88

3900

3912

24	53	2143	4955
36	44	49434	16356
48	59	624	85664
60	53	44 4	245

L/C in
dicato
r shou
ld be

3972 56 5503 0~~7~~

on . ~~7~~

84

96 46 04020 00100

B I

4008 39 04033 00100

W A

H003 L/C not off

20 47 04044 00300

BNI

4032 48 70707 3 0~~7~~

H

44 47 04164 00200

BNI

56 39 04093 00100

W A

68 34 00102

K

80 49 03708

B

4092 53 2143 4955

L/C in

4104 44 49434 16356

dicato

16 59 555 663

r not

28 63 64595 54955

turnin

40 47 564 64603

g off.

4152 0~~7~~

~~7~~

64 39 04357 00100

W A

76 49 04224

B

88

4200

4212 39 04333 00100

W A

24 34 00102

K

36 36 04512 00100

R N

read in numeric

48 15 04592 0000~~7~~

TDM

set R M

60 34 00102

K

4272 41

NOP

84 31 04596 04512

T R

96 31 04692 04512

T R

4308 31 04772 04512

T R

20 49 04956

B

4332	41	53574	841	Alpha
44	56	52 2	0	o k -
5t	2	4568	4955	key in
68		7870	5564	80 nu
80	54	45594	943	meric

4392	43	48415	94143	charac
4404	63	45596	2 63	ters t
16	56	474	55545	o gene
28	59	41634	5 59	rate r
40	49	57575	345	ipple

4452	44	45435	203	deck.
64	0 7			≠
76				
88				
4500				

4512				
24				keyed in
36				numeric
48				data
60				

4572				
84			≠	
96				
4608				
20				

4632				xierred data
44				
56				
68			≠	
80				

4692				
4704				
16				
28				
40				table
				area

4752				
64				
76				
88				
4800				

4812					
24					
36					
48		≠			
60					
4872					
84					read in area
96					
4908					
20					
4932					
44			≠		
56	46	04968	00600	B I	
68	46	04980	00700	B I	
80	46	04992	00900	B I	
4992	46	05004	01400	B I	
5004	46	05016	01600	B I	
16	46	05028	01700	B I	
28	46	06588	01900	B I	
40	46	06708	00900	B I	
5052	38	04596	00400	W N	punch ripple deck
64	46	05232	00700	B I	W/C error
76	11	06443	01	A M	
88	14	06443	80	C M	
5100	47	05172	01200	BNI	
5112	16	06443	00	TFM	
24	39	01669	00100	W A	ripple deck punched etc
36	34		00102	K	
48	48			H	
60	49	05304		B	
5172	31	04595	04596	T R	loop numeric work
84	25	04675	04595	T D	area for ripple deck
96	49	05052		B	
5208					
20					

5232	39	01765	00100	W A	W/C error etc
44	34		00102	K	
56	48			H	
68	39	04357	00100	W A	
80	49	04248		B	
05292					
05304	16	05528	$\bar{0}0$	T F M	Reset Card Counter
05316	16	05375	$\bar{0}4691$	T F M	Set Compare Table Address
05328	36	04872	00500	R N	Read a Card
05340	46	05712	00600	B I	Check for Read Check
05352	11	05528	$\bar{0}1$	A M	Add 1 to Card Counter
05364	16	05435	$\bar{0}4691$	T F M	Set Compare-to Table Address
05376	16	05480	$\bar{0}0$	T F M	Reset
05388	16	05411	$\bar{0}4872$	T F M	Set Read Table Address
05400	25	05444		T D	Transmit Read Digit
05412	11	05435	$\bar{0}1$	A M	Add 1 to Compare-to Table Address
05424	25	05447		T D	Transmit Compare-to Digit
05436	14	05444	$\bar{0}0 \bar{0}0$	C M	Compare Digits
05448	47	05556	01200	B N I	
05460	11	05480	$\bar{0}1$	A M	Add 1 to successful Compare Counter
05472	14	05480	$\bar{0}0 \bar{8}0$	C M	80th Consecutive Successful Compare?
05484	46	05520	01200	B I	
05496	11	05411	$\bar{0}1$	A M	Add 1 to Read Digit Address
05508	49	05400		B	
05520	14	05528	$\bar{0}0 \bar{8}0$	C M	80th Card?
05532	47	05316	01200	B N I	
05544	49	05892		B	
05556	14	05435	$\bar{0}4772$	C M	Can Card be Compared?
05568	46	06048	01100	B I	
05580	11	05375	$\bar{0}1$	A M	Add 1 to Compare-to Table Address

5592	49	05364		B	
5604					
16					
28					
40					
5652					
64					
76					
88					
5700					
5712	36	04872	00500	R N	read card 2st try
24	46	05772	00600	B I	
36	39	03313	00100	W A	
48	34		00102	K	
60	49	05352		B	
5772	36	04872	00500	R N	read card 3rd tr.
84	46	05832	00600	B I	
96	39	03373	00100	W A	
5808	34		00102	K	
20	49	05352		B	
5832	39	03457	00100	W A	R/C on 3rd try reload etc.
44	49	05136		B	
56					
68					
80					
5892	46	05916	00900	B I	Check L/C ind
5904	49	05952		B	
16	46	06192	00900	B I	Check L/C ind off
28	49	06288		B	
40					
5952	46	05976	00100	B I	
64	39	05989	00100	W A	
76	47	06000	00300	BNI	
88	48	70707	5 0	H	
6000	47	06288	00200	BNI	
6012	39	03925	00100	W A	
24	34		00102	K	
36	49	05892		B	
48	46	06168	00100	B I	
60	39	06181	00100	W A	type out H004

6072	34		00102		K	
84	38	04872	00100	W	N	type out card contents
96	34		00102		K	
6108	38	04692	00100	W	N	Type out table contents
20	34		00102		K	
6132	48				H	
44	46	05436	00200	B	I	
56	49	05520			B	
68	47	06144	00300	B	I	
80	48	70707	4 0≠		H	
6192	46	06116	00100	B	I	
6204	39	06229	00100	W	A	
16	47	06240	00300	BNI		
28	48	70707	6 0≠		H	
40	47	06288	00200	B N I		
6252	39	04093	00100	W	A	
64	34		00102		K	
76	49	05892			B	
88	39	06529	00100	W	A	
6300	34		00102		K	
6312	48				H	
24						
36			00			alpha punched card counter
48						
60			00			alpha read card counter
6372			02472			1st mem pos of alpha table look up
84			02472			
96			00			alpha comp attempted
6408			02631			1st comp area alpha
20						
6432			00			card count for num punch cards
44			04692			1st mem pos num of table look up
56			04692			
68			04771			1st num comp area
6492			00			counter num for comp attempts
6504			00			card read num counter
16						
28	49	46 5	556			if no
40	45	63566	2 49			etos I
6552	56	7072	6264			0 0 2 s u
64	43	43456	26246			c c e s s f
76	64	5303	0≠			u l. ≠
6588	39	06723	00100			
6600	47	06624	00600			

6612	39	06753	00100	W A	
24	47	06648	00700	B N I	
36	39	06771	00100	W A	
48	47	06672	01600	B N I	
60	39	06789	00100	W A	
6672	47	06696	01700	B N I	
84	39	06813	00100	W A	
96	48			H	
6708	39	06837	00100	W A	
20	48	41556	80044	H	Any D
6732	41	63410	04348		ATA CH
44	52	03000	#5944		K. # RD
56	00	43485	20300		CHK.
68	0#	66590	04348		# WR CH
80	52	03000	#5442		K. # MB
6792	59	20450	04348		R-E CH
6804	52	03000	#5442		K. # MB
16	59	20560	04348		R-O CH
28	52	03000	#5321		K. # L/
40	43	00565	5030#		C ON. #

6852	41	42434	44546		
64	47	48495	15253		
76	54	55565	75859		
88	62	63646	56667		
6900	68	69 7	07172		Dummy alpha read in data

6912	73	74757	677 78.
24	79	03041	01314
36	20	21232	43334
48	41	42434	44546
60	47	48495	15253

6972	54	55565	75859
84	62	63646	56667
96	68	69 5	07172
7008	73	740#	
20			

07032	01	23456	78901		
44	23	45678	90123		dummy numeric read in data
56	45	67890	12345		
68	67	89012	34567		
80	89	01234	56789		

07092	01	23456	78901
7104	23	45678	9#
16			
28			
40			

07152	31	01932	06852	T R
64	49	01140		B
76				
88	31	04512	07032	T R
07200	49	04248		B