



# DIAGNOSTIC FUNCTION TEST

PART NO. 451527  
 SHEET 1 OF 11  
 BLOCK NO. 5080C

REPRODUCTION

## VERTICAL REDUNDANCY CHECK

### A. PURPOSE OF TEST

TO TEST THE VALIDITY CHECK CIRCUITRY IN BOTH THE EVEN-PARITY AND ODD-PARITY MODE.

### B. LOADING PROCEDURES:

#### 1. WHEN RUNNING TEST FROM CARDS

- A. SET WORKING TAPE DRIVE TO 4.
- B. PLACE TEST IN 1402 READ HOPPER AND DEPRESS LOAD KEY. -

#### 2. WHEN RUNNING TEST FROM TAPE:

- A. SET WORKING TAPE DRIVE TO 4
- B. ENTER A 1 IN 1268

### C. PROGRAM CONTROL

#### I. SENSE SWITCHES

- B. ON TO REPEAT FOR SCOPING  
OFF TO CONTINUE
- C. ON TO PRINT CORRECT RESULTS  
OFF TO CONTINUE
- D. ON TO REPEAT PROGRAM FOR INDIVIDUAL CHARACTER  
OFF TO CONTINUE
- E. ON TO STOP ON ERROR  
OFF TO PRINT ERROR
- G. ON TO REPEAT ENTIRE TEST  
OFF TO CONTINUE

### D. TEST PROCEDURE

FIFTY PRINTABLE CHARACTERS STORED BY THE PROGRAM ARE PROCESSED ONE AT A TIME. EACH CHARACTER IS WRITTEN ON TAPE FOUR TIMES AS FOUR SINGLE-CHARACTER RECORDS - TWICE IN EVEN PARITY AND TWICE IN ODD PARITY. THE FOUR TAPE RECORDS ARE THEN READ BACK INTO STORAGE - TWICE IN THE SAME MODE AS IT WAS WRITTEN AND TWICE IN THE OPPOSITE MODE RESULTING IN TWO FORCED ERRORS.

A TABLE COUNTER IS USED TO CONTROL SELECTION AND PROCESSING OF EACH OF THE 50 CHARACTERS IN THE TABLE STORED BY THE PROGRAM IN LOCATIONS 120-169. THE TABLE IS AS FOLLOWS:

1234567890ABCDEFGHIJKLMN<sup>+</sup>OPQR<sup>-</sup>STUVWXYZ \$%\*- / , % # @ 00 +

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 BLOCK NO. 5080C

## REPRODUCTION

### D. (CONTINUED)

THE FIRST CHARACTER IS EXTRACTED FROM THE TABLE AND WRITTEN ON TAPE FOUR TIMES IN THE FOLLOWING MANNER:

- RECORD 1. EVEN PARITY
- RECORD 2. ODD PARITY
- RECORD 3. ODD PARITY
- RECORD 4. EVEN PARITY

THE SINGLE CHARACTER RECORDS ARE THEN BACKSPACED FOUR TIMES TO PLACE THE TAPE RECORDS IN POSITION FOR READING. THE FOUR TAPE RECORDS ARE THEN READ AS FOLLOWS:

- RECORD 1. READ EVEN (WAS WRITTEN EVEN) SHOULD NOT RESULT IN A TAPE ERROR.
- RECORD 2. READ EVEN (WAS WRITTEN ODD) SHOULD RESULT IN A TAPE ERROR.
- RECORD 3. READ ODD (WAS WRITTEN ODD) SHOULD NOT RESULT IN A TAPE ERROR.
- RECORD 4. READ ODD (WAS WRITTEN EVEN) SHOULD RESULT IN A TAPE ERROR.

THE ABOVE PROCEDURE IS REPEATED FOR EACH OF THE 50 CHARACTERS UNDER CONTROL OF THE A PASS COUNTER. THE TEST IS REPEATED FIVE TIMES.

### E. STOPS - SENSE E ON

STORAGE ADDRESS REGISTER

919	ERROR RECORD 1
925	ERROR RECORD 2
963	ERROR RECORD 3
987	ERROR RECORD 4

### F. PRINTOUTS

#### I. CORRECT

WRITTEN EVEN	WRITTEN ODD	READ EVEN	READ ODD	INDICATED READ ERROR	CHARACTER WRITTEN	CHARACTER READ
X		X			A	A
	X	X		X	A	A
	X		X	X	A	A
X		X		X	S	S
	X	X		X	S	S
	X		X	X	S	S
X		X		X	W	W
X	X	X		X	W	W
	X		X	X	W	W
X		X		X	Z	Z
X	X	X		X	Z	Z
	X		X	X	Z	Z
X			XX	X	Z	Z

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F. (CONTINUED)

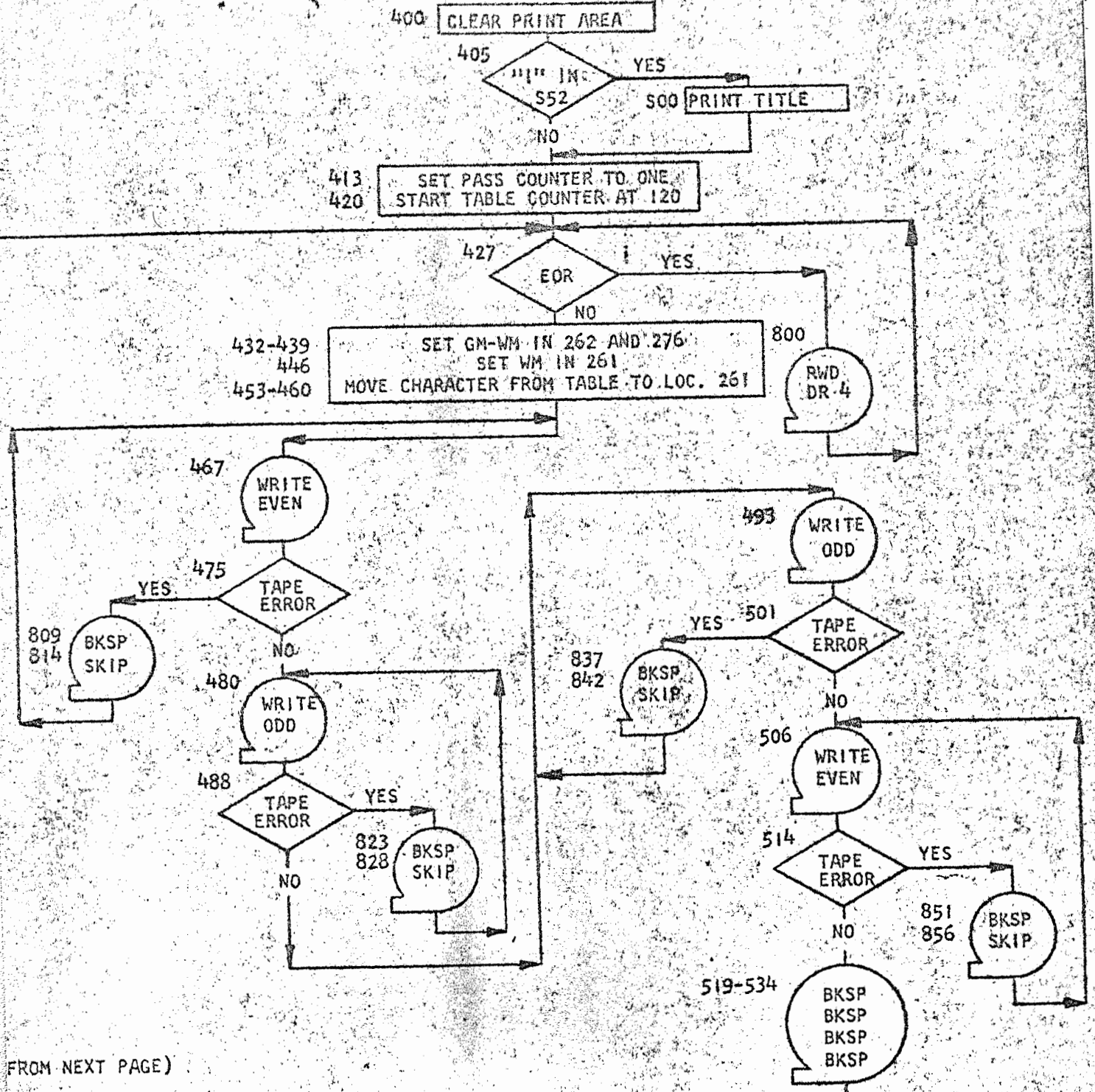
2. ERROR

WRITTEN EVEN	WRITTEN ODD	READ EVEN	READ ODD	INDICATED READ ERROR	CHARACTER WRITTEN	CHARACTER READ	
X		X		X	A	A	ERROR (MACHINE)
	X		X	X	S	E	ERROR (MACHINE)
X			X		W	W	ERROR (MACHINE)
	X	X			Z	Z	ERROR (MACHINE)

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# DIAGNOSTIC FUNCTION TEST

## VERTICAL REDUNDANCY CHECK FLOW CHART



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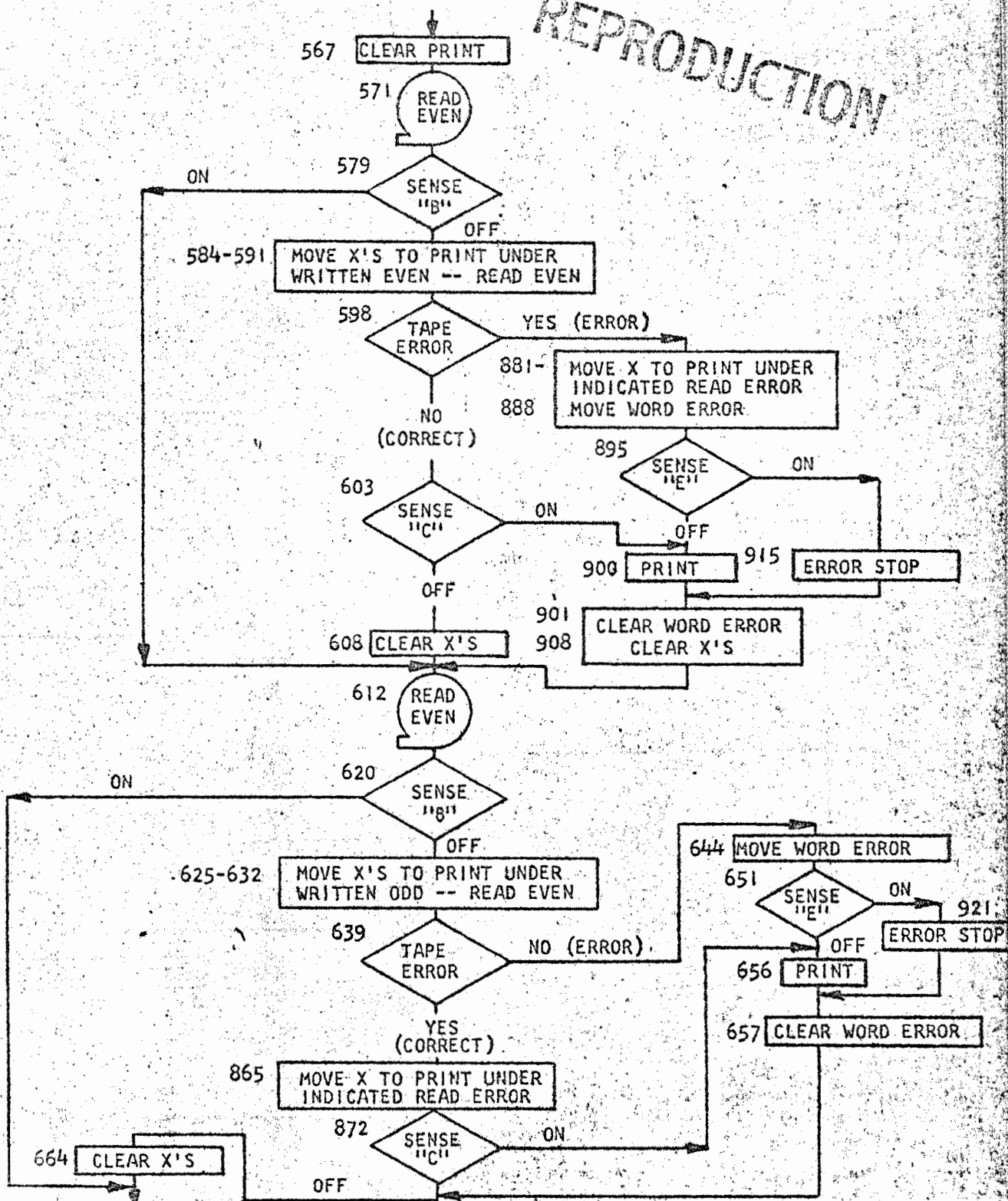
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DIAGNOSTIC FUNCTION TEST

REPRODUCTION

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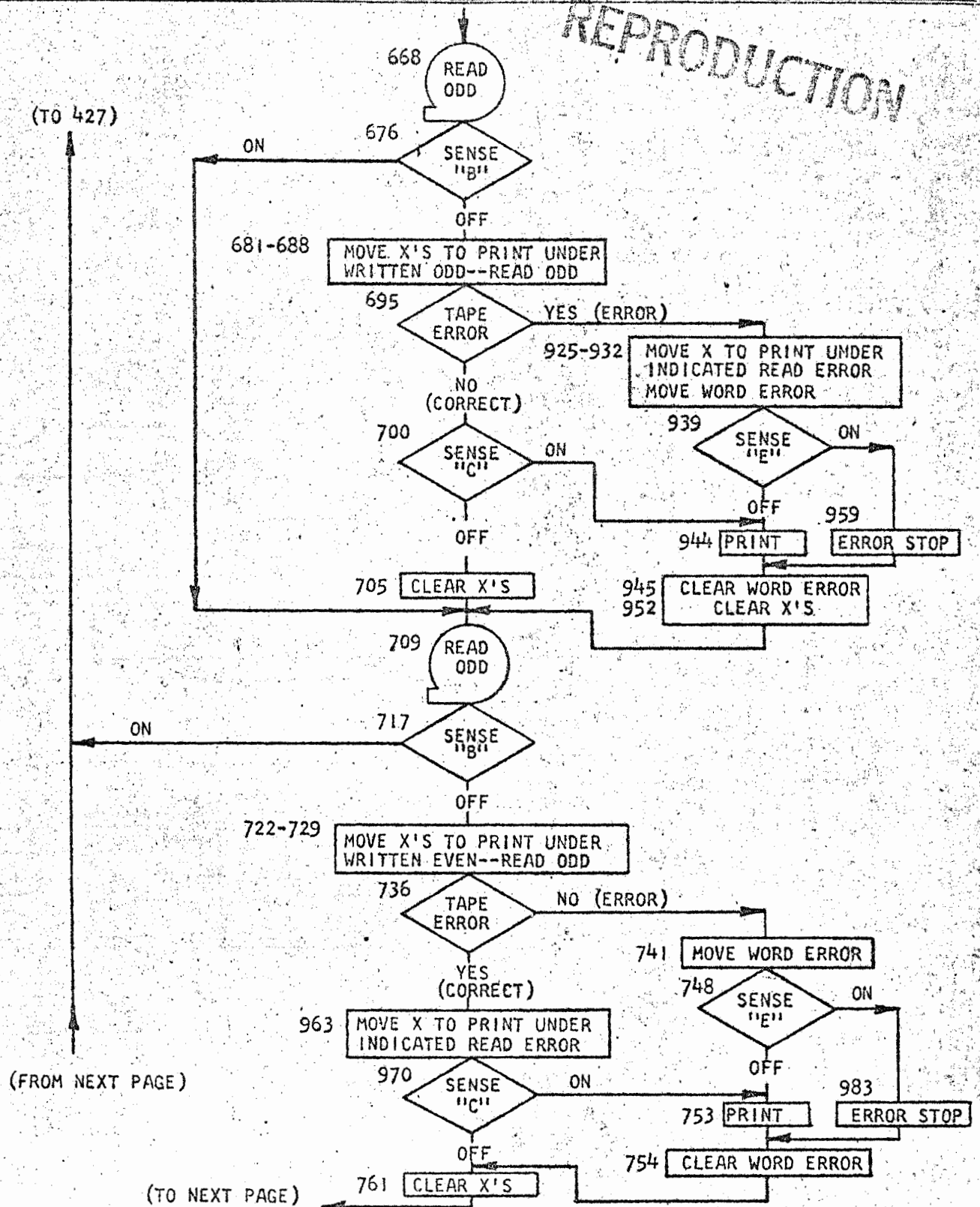
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DIAGNOSTIC FUNCTION TEST

REPRODUCTION



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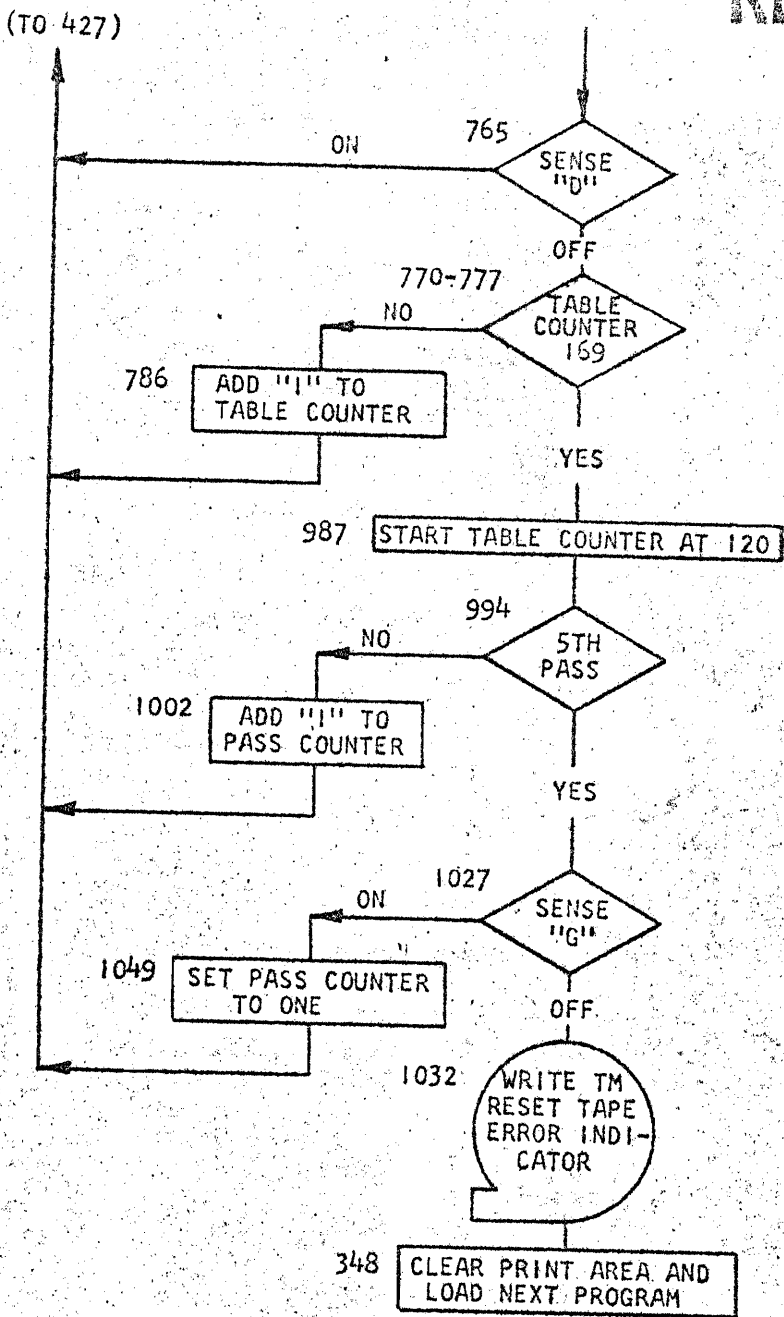
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REPRODUCTION



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1401 DATA PROCESSING SYSTEM  
DIAGNOSTIC FUNCTION TEST

PART NO. 451527  
SHEET 8 OF 11  
BLOCK NO. 5080C

REPRODUCTION

PROGRAM LISTING FOR USE WITH FLOW CHART

VERT. REDUNDANCY CHECK 5080C

INSTRUCTION ADDRESS	OP	A	B	REMARKS
082	082	0	1	CONSTANT ONE
084	084	X	X	PASS COUNTER
086	086	X	XX	TABLE COUNTER
089	089	1	20	CONSTANT START TABLE ADDR.
092	092	X		CONSTANT X
093	093	E	RRO R	CONSTANT
098	098			CONSTANT BLANKS
104	104	1	69	CONSTANT STOP TABLE ADDR.
120	120	1	234	567890ABCDEFGHIJ TABLE
140	140	K	LMN	OPQRSTUVWXYZ.□+§ TABLE
160	160	*	-/, %#@+-*	TABLE
171	171	E	VEN	CONSTANT
175	175	O	DD	CONSTANT
178	178	R	EAD	ERROR
188	188	W	RIT	TEN
377	377	B	400	S681
385	385	B	S88	
400	400	/	332	CLEAR PRINT
404	404	/		
405	405	B	S00	S521
413	413	L	083	085
420	420	L	091	088
427	427	B	800	K
432	432	L	S50	262
439	439	L	S50	276
446	446	,	261	261
453	453	M	088	463
460	460	M	XXX	261
467	467	M	%U4	261W
475	475	B	809	L
480	480	M	%B4	261W
488	488	B	823	L
493	493	M	%B4	261W
501	501	B	837	L
506	506	M	%U4	261W
514	514	B	851	L
519	519	U	%U4	B
524	524	U	%U4	B
529	529	U	%U4	B
534	534	U	%U4	B
539	539	B	S67	
567	567	/	250	
571	571	M	%U4	272R

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1401 DATA PROCESSING SYSTEM  
DIAGNOSTIC FUNCTION TEST

REPRODUCTION

579	579	B 612	B	B ON TO SCOPE	SS
584	584	M 092	204	MOVE X TO PRINT AREA	
591	591	M 092	227	''	
598	598	B 881	L	BRANCH ON TAPE ERROR	
603	603	B 900	C	C ON CORRECT PRINT	
608	608	/	250	CLEAR PRINT	SS
612	612	M 8U4	272R	READ EVEN	
620	620	B 668	B	B ON TO SCOPE	SS
625	625	M 092	215	MOVE X TO PRINT AREA	
632	632	M 092	227	''	
639	639	B 865	L	BRANCH ON TAPE ERROR	
644	644	M 097	285	MOVE WORD ERROR TO PRINT	
651	651	B 921	E	E ON TO ERROR STOP	
656	656	2		PRINT	SS
657	657	M 102	285	CLEAR WORD ERROR	
664	664	/	250	CLEAR XS FROM PRINT AREA	
668	668	M 8B4	272R	READ TAPE ODD	
676	676	B 709	B	B ON TO SCOPE	SS
681	681	M 092	215	MOVE X TO PRINT AREA	
688	688	M 092	235	''	
695	695	B 925	L	BRANCH ON TAPE ERROR	
700	700	B 944	C	C ON FOR CORRECT PRINT	SS
705	705	/	250	CLEAR XS FROM PRINT AREA	
709	709	M 8B4	272R	READ TAPE ODD	
717	717	B 427	B	B ON TO SCOPE	SS
722	722	M 092	204	MOVE X TO PRINT AREA	
729	729	M 092	235	''	
736	736	B 963	L	BRANCH ON TAPE ERROR	
741	741	M 097	285	MOVE WORD ERROR TO PRINT	
748	748	B 983	E	E ON TO ERROR STOP	
753	753	2		PRINT	SS
754	754	M 102	285	CLEAR WORD ERROR FROM PRINT	
761	761	/	250	CLEAR XS FROM PRINT AREA	
765	765	B 427	D	D ON TO REPEAT	SS
770	770	C 088	106	COMPARE FOR END OF TABLE	
777	777	B 786	/	BRANCH IF NOT END OF TABLE	
782	782	B 987		BRANCH IF END OF TABLE	
786	786	A 083	088	ADD ONE TO TABLE COUNTER	
793	793	B 427		BRANCH	
800	800	U 8U4	R	REWIND TAPE DRIVE 4	
805	805	B 427		BRANCH	
809	809	U 8U4	B	BACKSPACE, TAPE DRIVE 4	
814	814	U 8U4	E	SKIP	
819	819	B 467		BRANCH	
823	823	U 8U4	B	BACKSPACE	
828	828	U 8U4	E	SKIP	
833	833	B 480		BRANCH	
837	837	U 8U4	B	BACKSPACE	
842	842	U 8U4	E	SKIP	
847	847	B 493		BRANCH	
851	851	U 8U4	B	BACKSPACE	
856	856	U 8U4	E	SKIP	

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1401 DATA PROCESSING SYSTEM  
DIAGNOSTIC FUNCTION TEST

PART NO. 451527  
SHEET 10 OF 11  
BLOCK NO. 5080C

REPRODUCTION

861	861	B 506	BRANCH	
865	865	M 092 247	MOVE X TO PRINT	
872	872	B 656 C	C ON FOR CORRECT PRINT	SS
877	877	B 664	BRANCH	
881	881	M 092 247	MOVE X TO PRINT	
888	888	M 097 285	MOVE WORD ERROR TO PRINT	
895	895	B 915 E	E ON TO ERROR STOP	SS
900	900	2	PRINT	
901	901	M 102 285	CLEAR WORD ERROR FROM PRINT	
908	908	/ 612 250	CLEAR XS FROM PRINT AND BRANCH	
915	915	. 901	ERROR STOP	
919	919		WORD MARK	
921	921	. 657	ERROR STOP	
925	925	M 092 247	MOVE X TO PRINT	
932	932	M 097 285	MOVE WORD ERROR TO PRINT	
939	939	B 959 E	E ON TO ERROR STOP	SS
944	944	2	PRINT	
945	945	M 102 285	CLEAR WORD ERROR FROM PRINT	
952	952	/ 709 250	CLEAR XS FROM PRINT AND BRANCH	
959	959	. 945	ERROR STOP	
963	963	M 092 247	MOVE X TO PRINT	
970	970	B 753 C	C ON FOR CORRECT PRINT	SS
975	975	B 761	BRANCH	
983	983	. 754	ERROR STOP	
987	987	L 091 088	START TABLE AT 120	
994	994	B 427 0855	BRANCH IF FIFTH PASS	
1002	402	A 083 085	ADD ONE TO PASS COUNTER	
1009	409	B 427	BRANCH	
1027	427	B 449 G	G ON TO REPEAT ENTIRE TEST	SS
1032	432	U 804 M	WRITE TM AND RESET TAPE ERROR INDICATOR	
1037	437	/ 348 299	CLEAR AND BR TO PROG CHAINING ROUTINE	
1049	449	L 083 085	SET PASS COUNTER TO ONE	
1056	456	B 427	BRANCH	
1060	460	M 174 205	MOVE WORD EVEN TO PRINT	
1067	467	M 177 216	MOVE WORD ODD TO PRINT	
1074	474	M 174 228	MOVE WORD EVEN TO PRINT	
1081	481	M 177 235	MOVE WORD ODD TO PRINT	
1088	488	M 187 252	MOVE WORDS READ-ERROR TO PRINT	
1095	495	M 194 264	MOVE WORD WRITTEN TO PRINT	
1102	502	M 181 274	MOVE WORD READ TO PRINT	
1109	509	2	PRINT THIRD LINE OF HEADING	
1110	510	/ 299	CLEAR PRINT AREA	
1114	514	F 413 J	SPACE AND BRANCH	
1119	519		WORD MARK	
1120	520	W R I T E N	WRITTEN	CONSTANT
1140	540	READ	READ	CONSTANT
1160	560	I N D I C A T E D	CHAR	CONSTANT
1180	580	A C T E R	CHARACTER	CONSTANT
1250	550		GROUP MARK WORD MARK IN LOC. 1250	

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TABLE OF UNPRINTABLE CHARACTERS

LP-LEFT PARENTHESIS	12 5 8	SE-SEMICOLON	11 6 8	DE-DELTA	11 7 8
WS-WORD SEPARATOR	0 5 8	LT-LESS THAN	12 6 8	PZ-PLUS ZERO	12 0
TS-TAPE SEGMENT MARK	0 7 8	GT-GREATER THAN	6 8	TM-TAPE MARK	7 8
GM-GROUP MARK	12 7 8	MZ-MINUS ZERO	11 0	CO-COLON	5 8
RP-RIGHT PARENTHESIS	11 5 8	AP-APOSTROPHE	0 6 8		

.008015,022029,033033N	1001	VERT. REDUNDANCY CHECK	5080C 0A
.008015,022029,033033N	1001	SET WORDMARK CARD	5080C 02
L054103,084086,089092,093098100101XXXXX120XERROR			5080C 03
L068139,120120,120120,1201201001169		1234567890ABCDEFGHIJ	5080C 04
L070177,160171,175175,1751751001KLMNOPQRSTUVWXYZ.□+*-/,%#@PM#		EVENODD	5080C 05
		ZZ	
L054199,188188,188188,1881881001READ ERRORWRITTEN			5080C W6
L067367,340344,348349,3573611001,008012,00110011B361080AB348/340080			5080C 07
L069404,377385,400404,4054051001)	B400S681BS88	/332/	5080C 08
L066438,413420,427432,4394391001BS00S521L083085L091088B800KLS50262			5080C 09
L068474,446453,460467,4754751001LS50276,261261M088463MXXX261M%U4261W			5080C 10
L071513,480488,493501,5065141001B809LM%84261WB823LM%84261WB837LM%U4261W			5080C 11
L072553,519524,529534,5395391001B851LU%U4BU%U4BU%U4BU%U48B567			5080C 12
L069590□554554,567571,5795841001	/250M%U4272RB612BM092204		5080C 13
L066624,598603,608612,6206251001M092227B881LB900C/250M%U4272RB668B			5080C 14
L071663,632639,644651,6566571001M092215M092227B8865LM0972858921E2M102285			5080C 15
L068699,668676,681688,6957001001/250M%84272RB709BM092215M092235B925L			5080C 16
L068735,705709,717722,7297361001B944C/250M%84272RB427BM092204M092235			5080C 17
L066769,741748,753754,7617651001B963LM097285B983E2M102285/250B427D			5080C 18
L071808,77782,786793,8008051001C0881068786/B987A083088B427	UZU4RB427		5080C 19
L065841,814819,823828,8338371001UZU4BU%U4EB467UZU4BU%U4EB480UZU4B			5080C 20
L067876,847851,856861,8658721001UZU4EB493UZU4BU%U4EB506M092247B656C			5080C 21
L070914,881888,895900,9019081001B664M092247M0972858915E2M102285/612250			5080C 22
L062944,919921,925932,9399441001.901	.657M092247M0972858959E2		5080C 23
L070982,952959,963970,9759831001M102285/709250.945M092247B753CB761			5080C 24
L072*22,987994,*02*09,*09*091001.754L091088B*270855A083085B427			5080C 25
L065*55□*23*23,*27*32,*37*491001	B*49GU%U4M/348299	L083085	5080C 26
L071*94,*60*67,*74*81,*88*951001B427M174205M177216M174228M177235M187252			5080C 27
L072/34,/02/09,/10/14,/19/201001M194264M1812742/299F413J WRITTEN		WRIT	5080C 28
L072/74□/35/35,/40/60,/60/601001TEN	READ	READ	INDICATED
L069S11□/75/75,/80S00,S01S051001 CHARACTER	CHARACTER	2,049L077277	5080C 30
L057S36,S13S17,S18S25,S29S3610012/2772□/40/60□/80L/992802			5080C 31
L046S50,S41S45,S50S50,S50S501001/280B*60	G		5080C 32
	M		
/333080N		CLEAR WORDMARK CARD	5080C 33
.019027,031,038042B031T98GB400L046352BW04BS88		VERT. REDUNDANCY CHECK	5080C 34

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