

REPRODUCTION

7330 INTER-RECORD-GAP-MEASUREMENT

A. PURPOSE OF TEST:

TO WRITE PAIRS OF RECORDS ON THE 7330 IN HIGH DENSITY AND MEASURE THE INTER-RECORD GAP BETWEEN THE TWO RECORDS IN MILLI-SECONDS. THE TEST IS EXECUTED IN TWO PARTS AND MUST BE RUN CONSECUTIVELY:

PART I - 7330 IRG MEASUREMENT WRITE - WRITES THE RECORDS ON TAPE DRIVE #4 AND FORMS GAPS UNDER SEVEN CONDITIONS OF WRITING.

GROUP	PAIRS OF RECORDS IN GROUPS OF	APPROXIMATE DOWNTIME OF GO LINE BETWEEN WRITES
1	100	MINIMUM DLY
2	100	0-1 MS DLY
3	100	1-3 MS DLY
4	100	3-11 MS DLY
5	100	11 MS DLY
6	100	10-400 MS
7	100	MIN + CREEP

NOTE: DOWNTIMES OF GO LINE SHOWN IN ABOVE TABLE ARE ROUNDED TO THE NEAREST MILLISECOND IN GROUP 7; THE SECOND RECORD OF EACH PAIR IS BACKSPACED AND REWRITTEN ONCE.

PART II - 7330 IRG MEASUREMENT - READ - READS THE RECORDS, MEASURES THE GAPS IN MILLISECONDS, AND PRINTS THE RESULTS FOR EACH OF THE SEVEN CONDITIONS. (SEE PRINTOUT EXAMPLE ON PAGE ).

B. LOADING PROCEDURES

1. WHEN RUNNING TEST FROM CARDS

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

2. WHEN RUNNING TEST FROM TAPE

- A. SET WORKING TAPE DRIVE TO 4 AND HIGH DENSITY
- B. ENTER A 1 IN 1253.

C. PROGRAM CONTROL

1. SENSE SWITCHES

- B ON VARIES THE NUMBER OF CHARACTERS IN THE FIRST RECORD OF EACH PAIR FROM 150 TO APPROXIMATELY 1150 CHARACTERS.
- OFF WRITES A FIXED RECORD OF APPROXIMATELY 150 CHARACTERS AS THE FIRST RECORD OF EACH PAIR.

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ENG. CHG. NO.	110378G	116745	116745A	117628	TA 1976		



# DIAGNOSTIC FUNCTION TEST

PART NO. 451639  
 SHEET 2 OF 22  
 BLOCK NO. 5530B

C. (CONTINUED)

## REPRODUCTION

- D ON REPEATS EITHER THE WRITE OR READ PORTION OF THE TEST. (THIS CAN BE USED TO WRITE AND READ ALL TAPE DRIVES WITHOUT RELOADING THE PROGRAM.) OFF TO CONTINUE
- G ON FOR MACHINES WITH ADVANCED PROGRAM FEATURE  
OFF FOR MACHINES WITHOUT ADVANCED PROGRAM FEATURE.

### D. TEST PROCEDURE

THE FIRST INSTRUCTION IS A STOP CODE IN LOCATION 399. THIS STOP ALLOWS THE OPERATOR TO SET TAPE DRIVE ON 4, SET SENSE SWITCHES B AND G AS DESIRED AND CHANGE THE NUMBER OF BKSP-REWRITES IN GROUP 7 TO ANY NUMBER FROM 1 TO 39 TIMES BY CHANGING THE I (NO WM) IN LOCATION 122 TO APPROPRIATE CHARACTER.

EXAMPLES:        3 FOR 3 BKSP-REWRITES  
                   S FOR 12 BKSP-REWRITES  
                   0 FOR 20 BKSP-REWRITES

THE OPERATION IS CONTINUED BY PRESSING THE START KEY. A TEST FOR A "I" IN S52 IS THEN MADE TO PRINT OR BY-PASS THE TITLE FOR THE WRITE PART OF THE TEST. THIS IS THEN FOLLOWED BY A REWIND INSTRUCTION FOR TAPE DRIVE #4, AFTER WHICH THE INSTRUCTIONS ARE SET UP TO WRITE 100 PAIRS OF RECORDS WITH MINIMUM DELAY FOR GROUP 1. DEPENDING UPON THE SETTING OF SENSE SWITCH B, THE FIRST RECORD OF EACH PAIR MAY BE A FIXED 150-CHARACTER RECORD ALWAYS WRITTEN FROM LOCATIONS /00-S49 (1100-1249) OR MAY BE VARIED TO START THE FIRST PAIR WITH A 150-CHARACTER RECORD AND INCREASE THE FIRST RECORD OF EACH SUCCEEDING PAIR BY 10. THIS IS DONE BY DECREASING THE B ADDRESS OF THE TAPE WRITE INSTRUCTION FROM /00 TO ~~90~~ 80 TO ~~70~~ 60, ETC. THE FIRST RECORD OF THE LAST PAIR (100) IS A 1150-CHARACTER RECORD WRITTEN FROM LOCATIONS 100-1249.

THE SECOND RECORD OF EACH PAIR IS ALWAYS THE SAME. IT STARTS WITH A TAPE MARK STORED BY THE PROGRAM IN LOCATION /19 (1119) AND CONTINUES TO LOCATION 1249. AFTER ALL THE RECORDS FOR GROUP 1 ARE WRITTEN ON TAPE A COMMAND IS THEN GIVEN TO WRITE A SPACER RECORD TO SIGNAL THE END OF THE GROUP. THIS RECORD IS THE SAME AS THE SECOND RECORD OF EACH PAIR EXCEPT THAT IT STARTS WITH THE LETTERS "IRG" STORED IN LOCATIONS 1116-1118.

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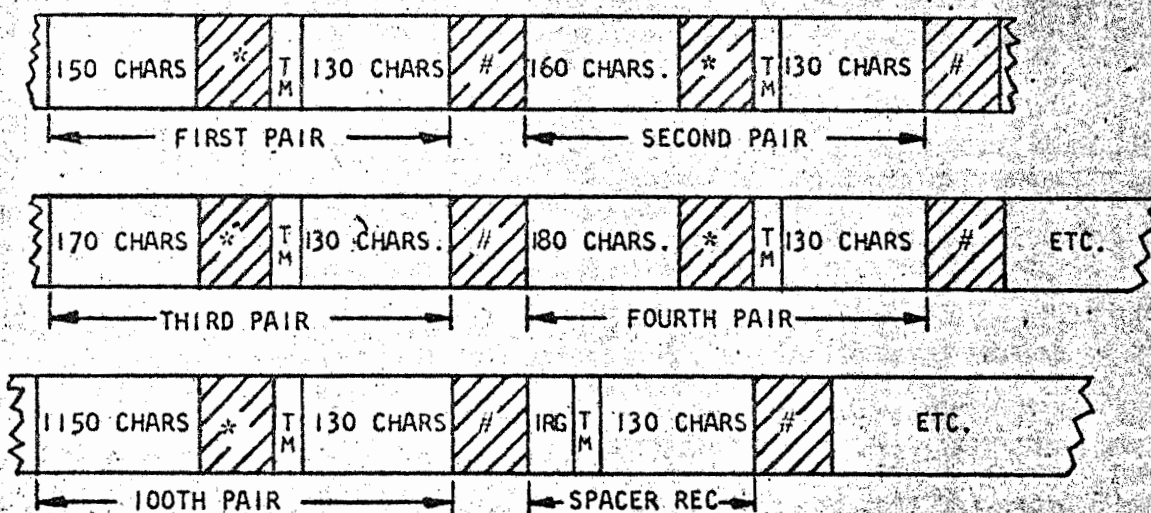
DUPLICATE

THE PROGRAM THEN BRANCHES TO A SET OF INSTRUCTIONS TO VARY THE DELAY FOR GROUP 2 AND PROCEED TO WRITE 100 PAIRS OF RECORDS IN THE SAME MANNER AS FOR GROUP 1. THE PROCEDURE IS REPEATED FOR GROUPS 3, 4, 5 AND 6 AFTER MODIFYING THE DELAY INSTRUCTIONS FOR EACH GROUP AS REQUIRED.

FOR GROUP 7 THE PROCEDURE IS THE SAME AS FOR GROUP 1 EXCEPT THAT THE SECOND RECORD OF EACH PAIR IS BACKSPACED AND REWRITTEN ONCE TO TEST FOR CREEP.

THE LAST SET OF INSTRUCTIONS EXECUTED IN THE WRITE PROGRAM WRITES A TAPE MARK, REWINDS TAPE DRIVE 4, AND LOADS THE IRG MEASUREMENT - READ PROGRAM IMMEDIATELY FOLLOWING.

SCHEMATIC OF TAPE WRITTEN WITH SENSE SWITCH B ON



NOTE: \* INDICATES INTER-RECORD GAPS MEASURED.  
 # INDICATES INTER-RECORD GAPS NOT MEASURED.

THE IRG MEASUREMENT - READ PROGRAM IS EXECUTED IN THE FOLLOWING MANNER:

AFTER CLEARING THE PRINT AREA, TESTING FOR A "I" IN S52 TO PRINT OR BY-PASS THE TITLE, AND AGAIN REWINDING TAPE DRIVE #4, THE PROGRAM BRANCHES TO A SERIES OF INSTRUCTIONS TO SET UP THE ROUTINE FOR MEASURING THE GAPS.

THE FOLLOWING AREAS ARE SET UP IN STORAGE TO CONTROL THE OPERATION FOR EACH GROUP:

1. A GROUP COUNTER TO COUNT EACH GROUP AND CONTROL THE SETTING UP OF INSTRUCTIONS FOR EACH OF THE SEVEN GROUPS IN THE TEST.
2. A GAP COUNTER TO COUNT THE NUMBER OF GAPS IN A GROUP.
3. AN AREA FOR MINIMUM GAP USED TO STORE THE SHORTEST GAP IN MILLISECONDS WITHIN A GROUP.

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DIAGNOSTIC FUNCTION TEST

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4. AN AREA FOR MAXIMUM GAP USED TO STORE THE LONGEST GAP IN MILLISECONDS WITHIN A GROUP.
5. A COUNTER TO ACCUMULATE THE TOTAL TIME IN MILLISECONDS FOR ALL GAPS MEASURED WITHIN A GROUP.
6. A DELAY LOOP COUNTER TO KEEP TRACK OF THE NUMBER OF TIMES THE LOOP IS EXECUTED BEFORE A TAPE MARK IS SENSED.
7. SET UP TIME FACTOR TO BE USED FOR EACH DELAY LOOP. THIS IS UNDER CONTROL OF SENSE SWITCH G. FOR A SYSTEM WITHOUT INDEXING (SWITCH OFF), THE TIME FACTOR IS 529 USEC: WITH INDEXING (SWITCH ON). THE TIME FACTOR IS 541 USEC. THE TIME FACTOR USED IS ADDED INTO THE ACCUMULATING COUNTER (ITEM 5) EACH TIME THE LOOP IS EXECUTED. AT THE END OF THE GROUP THIS COUNTER WILL CONTAIN THE TOTAL TIME IN MILLISECONDS FOR ALL GAPS MEASURED WITHIN THE GROUP.

THE FIRST RECORD OF EACH PAIR IS READ IN THE NORMAL MANNER. IMMEDIATELY FOLLOWING THIS INSTRUCTION, A DIAGNOSTIC READ INSTRUCTION (U%U4A) IS EXECUTED. THIS INSTRUCTION ALLOWS EXECUTION OF THE DELAY LOOP INSTRUCTIONS REPEATEDLY WHILE THE GAP IS PASSING THE READ HEAD UNTIL THE TAPE MARK (FIRST CHARACTER OF THE SECOND RECORD OF EACH PAIR) IS SENSED. TWO ERROR CONDITIONS, IF ANY, ARE DETECTED DURING DIAGNOSTIC READ:

1. IF THE EOR (TAPE MARK) INDICATOR REMAINED ON IMMEDIATELY AFTER THE DIAGNOSTIC READ (LOOP COUNTER 00). THE CONDITION IS FLAGGED BY THE SYMBOL \* ERROR IN THE PRINTOUT LINE FOR THE GROUP.
2. IF THE EOR INDICATOR NEVER CAME ON AFTER THE DIAGNOSTIC READ AND THE LOOP COUNTER REACHES 100 (APPROXIMATELY 50 MS). THE CONDITION IS FLAGGED BY THE SYMBOL ERROR \* IN THE PRINTOUT LINE FOR THE GROUP.

GAP TIME FOR EITHER OF THE ABOVE CONDITIONS IS NOT INCLUDED IN THE ACCUMULATING COUNTER. EACH GAP MEASURED WITHIN THE GROUP IS TESTED FOR MAXIMUM AND MINIMUM AS WELL AS ADDED INTO THE ACCUMULATING COUNTER. WHEN THE LAST GAP OF A GROUP HAS BEEN MEASURED, AN INSTRUCTION IS THEN EXECUTED TO READ THE SPACER RECORD WHICH TRAILS THE GROUP, LOAD IRG (FIRST THREE CHARACTERS) AND COMPARE THEM WITH IRG IN STORAGE. AN EQUAL COMPARISON INDICATES THAT THE TAPE AND THE PROGRAM ARE IN STEP IN WHICH CASE THE PROGRAM PROCEEDS TO LOAD AND PRINT THE RESULTS FOR THE GROUP AND CONTINUE WITH THE NEXT GROUP.

A TAPE READ ERROR BACKSPACES THE TAPE AND RE-READS THE SPACER RECORD FOR ANOTHER TRY. A COMPARE ERROR STOPS THE MACHINE AT LOCATION 755 AND INDICATES THAT THE TAPE AND THE PROGRAM ARE OUT OF STEP, POSSIBLY CAUSED BY READING A NOISE RECORD. IN THIS CASE, IT IS ADVISABLE TO RE-RUN THE WRITE PORTION OF THE TEST.

THE TEST IS COMPLETED AT THE END OF GROUP 7 AT WHICH TIME DRIVE #4 IS RE-WOUND AND THE PROGRAM FOR THE NEXT TEST IS LOADED.

E STOPS

STORAGE ADDRESS REGISTER

400  
 756  
 730

HALT- SET UP DRIVE 4  
 ERROR WHEN READING SPACER RECORD  
 HALT- NO PRINTER OR NO 1 IN 1252

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F. PRINTOUT

REPRODUCTION

7330 IRG MEAS. - WRITE 5530A

7330 IRG MEAS. - READ 5530A

WRITE CONDITION	MAX	MIN	AVG	RANGE IN MS	
MINIMUM DLY	20.6	20.1	20.4	0.5	
0.1 MS DLY	20.6	20.3	20.4	0.3	
1-3 MS DLY	20.6	20.1	20.4	0.5	
3-11 MS DLY	22.8	20.3	20.8	2.5	
11 MS DLY	22.1	21.7	21.9	0.4	*ERROR (1)
10-400 MS	22.8	21.0	21.5	1.8	ERROR *(2)
MIN AND CREEP	22.4	21.2	21.8	1.3	(3)

(RESULTS ROUNDED TO NEAREST 0.1 MS AND ARE ACCURATE TO ±0.1 MS)

- (1) AT LEAST ONCE DURING THIS GROUP, EOR (TAPE MARK) INDICATOR WAS ON IMMEDIATELY AFTER DIAGNOSTIC READ.
- (2) AT LEAST ONCE DURING THIS GROUP, EOR INDICATOR NEVER CAME ON AFTER DIAGNOSTIC READ. IN BOTH CASES, MAX, MIN, AND RANGE FIGURES ARE CORRECT, BUT THE AVG IS IN ERROR ON THE LOW SIDE BECAUSE THE TOTAL TIME ACCUMULATED FOR THE GROUP IS ALWAYS DIVIDED BY 100, EVEN THOUGH TIME FOR ONE OR MORE GAPS WITH ERROR INDICATION WAS NOT INCLUDED IN THE TOTAL TIME FOR THE GROUP. IN SUCH CASES, THE TEST SHOULD BE RE-RUN.
- (3) IN THIS CASE, THE SECOND RECORD OF EACH PAIR IS BACKSPACE AND REWRITTEN ONCE. THE AVERAGE CREEP, THEREFORE, IS 1.4 MS (DIFFERENCE BETWEEN MINIMUM DELAY AVG. AND MIN AND CREEP AVG.)

G. COMMENTS

FOR THE 7330 MAGNETIC TAPE UNIT THE IDEAL GAP LENGTH IS A .75 INCHES, OR 20.8 MS CONVERTED TO MILLISECONDS ACCEPTABLE GAPS MAY VARY AS FOLLOWS:

MINIMUM	NOMINAL	MAXIMUM
19.1 MS	20.8 MS	<del>24.3 MS</del> 23.8

CREEP (GROUP 7 AS COMPARED TO GROUP 1 OF THE PRINTOUT) MUST BE POSITIVE.

NOTE: MACHINES WITHOUT PRINTERS MAY OBTAIN A PUNCH OUT OF THE IRG MEASUREMENTS BY ALTERING THE FOLLOWING INSTRUCTIONS:

INST	IS NOW	CHANGE TO
926	.931	N 931
930	2	4

THE VALUES WILL APPEAR IN PUNCHED CARDS AS FOLLOWS: (ALL OTHER INFORMATION IS INSIGNIFICANT.)

COL	WR COND	GRP	AVG	MAX	MIN	RANGE
		6	12-14	19-21	24-26	32-34
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DIAGNOSTIC FUNCTION TEST

MILLISECOND TO INCH CONVERSION TABLE

MSEC	7330	729-2	729-4	MSEC	7330	729-2	729-4
0.1	.0036	.0075	.01125	4.9	.1764	.3675	.55125
0.2	.0072	.0150	.02250	5.0	.1800	.3750	.56250
0.3	.0108	.0225	.03375	5.1	.1836	.3825	.57375
0.4	.0144	.0300	.04500	5.2	.1872	.3900	.58500
0.5	.0180	.0375	.05625	5.3	.1908	.3975	.59625
0.6	.0216	.0450	.06750	5.4	.1944	.4050	.60750
0.7	.0252	.0525	.07875	5.5	.1980	.4125	.61875
0.8	.0288	.0600	.09000	5.6	.2016	.4200	.63000
0.9	.0324	.0675	.10125	5.7	.2052	.4275	.64125
1.0	.0360	.0750	.11250	5.8	.2088	.4350	.65250
1.1	.0396	.0825	.12375	5.9	.2124	.4425	.66375
1.2	.0432	.0900	.13500	6.0	.2160	.4500	.67500
1.3	.0468	.0975	.14625	6.1	.2196	.4575	.68625
1.4	.0504	.1050	.15750	6.2	.2232	.4650	.69750
1.5	.0540	.1125	.16875	6.3	.2268	.4725	.70875
1.6	.0576	.1200	.18000	6.4	.2304	.4800	.72000
1.7	.0612	.1275	.19125	6.5	.2340	.4875	.73125
1.8	.0648	.1350	.20250	6.6	.2376	.4950	.74250
1.9	.0684	.1425	.21375	6.7	.2412	.5025	.75375
2.0	.0720	.1500	.22500	6.8	.2448	.5100	.76500
2.1	.0756	.1575	.23625	6.9	.2484	.5175	.77625
2.2	.0792	.1650	.24750	7.0	.2520	.5250	.78750
2.3	.0828	.1725	.25875	7.1	.2556	.5325	.79875
2.4	.0864	.1800	.27000	7.2	.2592	.5400	.81000
2.5	.0900	.1875	.28125	7.3	.2628	.5475	.82125
2.6	.0936	.1950	.29250	7.4	.2664	.5550	.83250
2.7	.0972	.2025	.30375	7.5	.2700	.5625	.84375
2.8	.1008	.2100	.31500	7.6	.2736	.5700	.85500
2.9	.1044	.2175	.32625	7.7	.2772	.5775	.86625
3.0	.1080	.2250	.33750	7.8	.2808	.5850	.87750
3.1	.1116	.2325	.34875	7.9	.2844	.5925	.88875
3.2	.1152	.2400	.36000	8.0	.2880	.6000	.90000
3.3	.1188	.2475	.37125	8.1	.2916	.6075	.91125
3.4	.1224	.2550	.38250	8.2	.2952	.6150	.92250
3.5	.1260	.2625	.39375	8.3	.2988	.6225	.93375
3.6	.1296	.2700	.40500	8.4	.3024	.6300	.94500
3.7	.1332	.2775	.41625	8.5	.3060	.6375	.95625
3.8	.1368	.2850	.42750	8.6	.3096	.6450	.96750
3.9	.1404	.2925	.43875	8.7	.3132	.6525	.97875
4.0	.1440	.3000	.45000	8.8	.3168	.6600	.99000
4.1	.1476	.3075	.46125	8.9	.3204	.6675	1.00125
4.2	.1512	.3150	.47250	9.0	.3240	.6750	1.01250
4.3	.1548	.3225	.48375	9.1	.3276	.6825	1.02375
4.4	.1584	.3300	.49500	9.2	.3312	.6900	1.03500
4.5	.1620	.3375	.50625	9.3	.3348	.6975	1.04625
4.6	.1656	.3450	.51750	9.4	.3384	.7050	1.05750
4.7	.1692	.3525	.52875	9.5	.3420	.7125	1.06875
4.8	.1728	.3600	.54000	9.6	.3456	.7200	1.08000

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DIAGNOSTIC FUNCTION TEST

MSEC	7330	729-2	729-4	MSEC	7330	729-2	729-4
9.7	.3492	.7275	1.09125	14.5	.5220	1.0875	1.63125
9.8	.3528	.7350	1.10250	14.6	.5256	1.0950	1.64250
9.9	.3564	.7425	1.11375	14.7	.5292	1.1025	1.65375
10.0	.3600	.7500	1.12500	14.8	.5328	1.1100	1.66500
10.1	.3636	.7575	1.13625	14.9	.5364	1.1175	1.67625
10.2	.3672	.7650	1.14750	15.0	.5400	1.1250	1.68750
10.3	.3708	.7725	1.15875	15.1	.5436	1.1325	1.69875
10.4	.3744	.7800	1.17000	15.2	.5472	1.1400	1.71000
10.5	.3780	.7875	1.18125	15.3	.5508	1.1475	1.72125
10.6	.3816	.7950	1.19250	15.4	.5544	1.1550	1.73250
10.7	.3852	.8025	1.20375	15.5	.5580	1.1625	1.74375
10.8	.3888	.8100	1.21500	15.6	.5616	1.1700	1.75500
10.9	.3924	.8175	1.22625	15.7	.5652	1.1775	1.76625
11.0	.3960	.8250	1.23750	15.8	.5688	1.1850	1.77750
11.1	.3996	.8325	1.24875	15.9	.5724	1.1925	1.78875
11.2	.4032	.8400	1.26000	16.0	.5760	1.2000	1.80000
11.3	.4068	.8475	1.27125	16.1	.5796	1.2075	1.81125
11.4	.4104	.8550	1.28250	16.2	.5832	1.2150	1.82250
11.5	.4140	.8625	1.29375	16.3	.5868	1.2225	1.83375
11.6	.4176	.8700	1.30500	16.4	.5904	1.2300	1.84500
11.7	.4212	.8775	1.31625	16.5	.5940	1.2375	1.85625
11.8	.4248	.8850	1.32750	16.6	.5976	1.2450	1.86750
11.9	.4284	.8925	1.33875	16.7	.6012	1.2525	1.87875
12.0	.4320	.9000	1.35000	16.8	.6048	1.2600	1.89000
12.1	.4356	.9075	1.36125	16.9	.6084	1.2675	1.90125
12.2	.4392	.9150	1.37250	17.0	.6120	1.2750	1.91250
12.3	.4428	.9225	1.38375	17.1	.6156	1.2825	1.92375
12.4	.4464	.9300	1.39500	17.2	.6192	1.2900	1.93500
12.5	.4500	.9375	1.40625	17.3	.6228	1.2975	1.94625
12.6	.4536	.9450	1.41750	17.4	.6264	1.3050	1.95750
12.7	.4572	.9525	1.42875	17.5	.6300	1.3125	1.96875
12.8	.4608	.9600	1.44000	17.6	.6336	1.3200	1.98000
12.9	.4644	.9675	1.45125	17.7	.6372	1.3275	1.99125
13.0	.4680	.9750	1.46250	17.8	.6408	1.3350	2.00250
13.1	.4716	.9825	1.47375	17.9	.6444	1.3425	2.01375
13.2	.4752	.9900	1.48500	18.0	.6480	1.3500	2.02500
13.3	.4788	.9975	1.49625	18.1	.6516	1.3575	2.03625
13.4	.4824	1.0050	1.50750	18.2	.6552	1.3650	2.04750
13.5	.4860	1.0125	1.51875	18.3	.6588	1.3725	2.05875
13.6	.4896	1.0200	1.53000	18.4	.6624	1.3800	2.07000
13.7	.4932	1.0275	1.54125	18.5	.6660	1.3875	2.08125
13.8	.4968	1.0350	1.55250	18.6	.6696	1.3950	2.09250
13.9	.5004	1.0425	1.56375	18.7	.6732	1.4025	2.10375
14.0	.5040	1.0500	1.57500	18.8	.6768	1.4100	2.11500
14.1	.5076	1.0575	1.58625	18.9	.6804	1.4175	2.12625
14.2	.5112	1.0650	1.59750	19.0	.6840	1.4250	2.13750
14.3	.5148	1.0725	1.60875	19.1	.6876	1.4325	2.14875
14.4	.5184	1.0800	1.62000	19.2	.6912	1.4400	2.16000

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MSLC	7330	729-2	729-4	MSEC	7330	729-2	729-4
19.3	.6948	1.4475	2.17125	24.1	.8676	1.8075	2.71125
19.4	.6984	1.4550	2.18250	24.2	.8712	1.8150	2.72250
19.5	.7020	1.4625	2.19375	24.3	.8748	1.8225	2.73375
19.6	.7056	1.4700	2.20500	24.4	.8784	1.8300	2.74500
19.7	.7092	1.4775	2.21625	24.5	.8820	1.8375	2.75625
19.8	.7128	1.4850	2.22750	24.6	.8856	1.8450	2.76750
19.9	.7164	1.4925	2.23875	24.7	.8892	1.8525	2.77875
20.0	.7200	1.5000	2.25000	24.8	.8928	1.8600	2.79000
20.1	.7236	1.5075	2.26125	24.9	.8964	1.8675	2.80125
20.2	.7272	1.5150	2.27250	25.0	.9000	1.8750	2.81250
20.3	.7308	1.5225	2.28375	25.1	.9036	1.8825	2.82375
20.4	.7344	1.5300	2.29500	25.2	.9072	1.8900	2.83500
20.5	.7380	1.5375	2.30625	25.3	.9108	1.8975	2.84625
20.6	.7416	1.5450	2.31750	25.4	.9144	1.9050	2.85750
20.7	.7452	1.5525	2.32875	25.5	.9180	1.9125	2.86875
20.8	.7488	1.5600	2.34000	25.6	.9216	1.9200	2.88000
20.9	.7524	1.5675	2.35125	25.7	.9252	1.9275	2.89125
21.0	.7560	1.5750	2.36250	25.8	.9288	1.9350	2.90250
21.1	.7596	1.5825	2.37375	25.9	.9324	1.9425	2.91375
21.2	.7632	1.5900	2.38500	26.0	.9360	1.9500	2.92500
21.3	.7668	1.5975	2.39625	26.1	.9396	1.9575	2.93625
21.4	.7704	1.6050	2.40750	26.2	.9432	1.9650	2.94750
21.5	.7740	1.6125	2.41875	26.3	.9468	1.9725	2.95875
21.6	.7776	1.6200	2.43000	26.4	.9504	1.9800	2.97000
21.7	.7812	1.6275	2.44125	26.5	.9540	1.9875	2.98125
21.8	.7848	1.6350	2.45250	26.6	.9576	1.9950	2.99250
21.9	.7884	1.6425	2.46375	26.7	.9612	2.0025	3.00375
22.0	.7920	1.6500	2.47500	26.8	.9648	2.0100	3.01500
22.1	.7956	1.6575	2.48625	26.9	.9684	2.0175	3.02625
22.2	.7992	1.6650	2.49750	27.0	.9720	2.0250	3.03750
22.3	.8028	1.6725	2.50875	27.1	.9756	2.0325	3.04875
22.4	.8064	1.6800	2.52000	27.2	.9792	2.0400	3.06000
22.5	.8100	1.6875	2.53125	27.3	.9828	2.0475	3.07125
22.6	.8136	1.6950	2.54250	27.4	.9864	2.0550	3.08250
22.7	.8172	1.7025	2.55375	27.5	.9900	2.0625	3.09375
22.8	.8208	1.7100	2.56500	27.6	.9936	2.0700	3.10500
22.9	.8244	1.7175	2.57625	27.7	.9972	2.0775	3.11625
23.0	.8280	1.7250	2.58750	27.8	1.0008	2.0850	3.12750
23.1	.8316	1.7325	2.59875	27.9	1.0044	2.0925	3.13875
23.2	.8352	1.7400	2.61000	28.0	1.0080	2.1000	3.15000
23.3	.8388	1.7475	2.62125	28.1	1.0116	2.1075	3.16125
23.4	.8424	1.7550	2.63250	28.2	1.0152	2.1150	3.17250
23.5	.8460	1.7625	2.64375	28.3	1.0188	2.1225	3.18375
23.6	.8496	1.7700	2.65500	28.4	1.0224	2.1300	3.19500
23.7	.8532	1.7775	2.66625	28.5	1.0260	2.1375	3.20625
23.8	.8568	1.7850	2.67750	28.6	1.0296	2.1450	3.21750
23.9	.8604	1.7925	2.68875	28.7	1.0332	2.1525	3.22875
24.0	.8640	1.8000	2.70000	28.8	1.0368	2.1600	3.24000

DATE	2-5-62	3-17-63	4-25-63	7-1-63	17.10.63		
ENG. CHG. NO.	11Q378G	116745	116745A	117628	TA 1976		



REPRODUCTION

IRG MEASUREMENT - WRITE  
 FLOW CHART

399 STOP TO SET UP DR 4; CHANGE  
 BKSP TIMES IF DESIRED

405 "1" IN  
 552

YES

500 PRINT TITLE

NO

413 RWD  
 DR 4

850-897 SET UP INSTRUCTIONS IN LOC 456-482 TO WRITE 100  
 PAIRS OF RECORDS WITH MINIMUM DELAY (GROUP 1)

426 SET B ADDR OF INST. 448 TO /00  
 433 SET GAP COUNTER TO 001  
 440 CLEAR PRINT AREA

444 CLEAR WM FROM LOC 452 (B ADDR OF  
 INST 448)

448 WRITE  
 1ST REC  
 OF PAIR

901 INSTRUCTIONS USED  
 DURING VARIABLE DELAY

MINIMUM DELAY  
 USED FOR GROUPS  
 1 AND 7

461 VARYING DELAYS USED  
 482 FOR GROUPS 2 - 6

489 WRITE  
 2ND REC  
 OF PAIR

497 WRITE  
 ERROR

YES

NO

550 BKSP

502 INSTRUCTIONS TO INCREASE  
 516 DELAY IN INST 456-482 FOR  
 GROUPS 2,3,4 AND 6

555 BKSP  
 560 SKIP

523 LAST  
 GAP OF  
 GROUP

YES

NO

(TO NEXT PAGE)

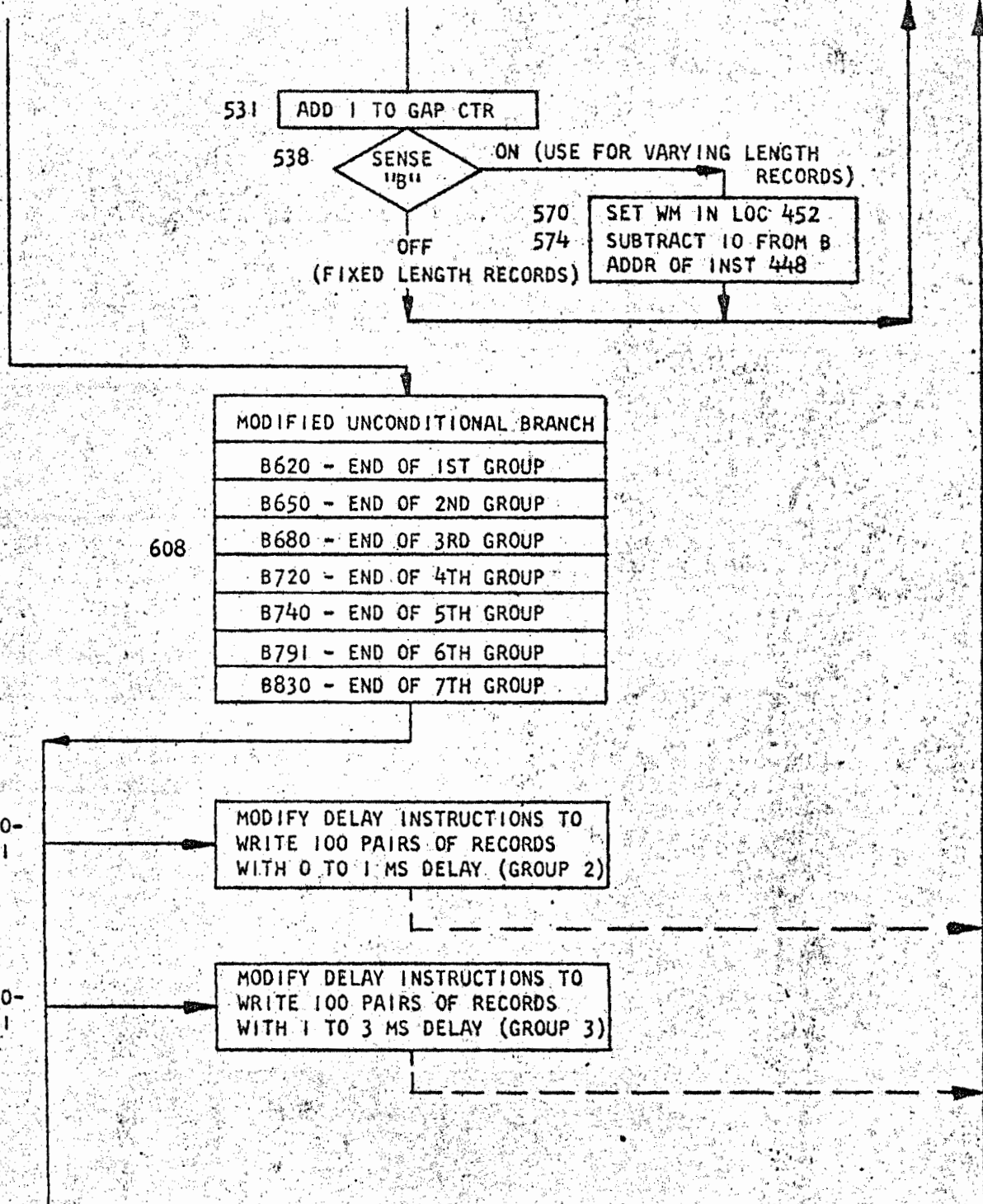
(FROM  
 NEXT PAGE)

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ENG. CHG. NO.	110378G	116745	116745A	117628	TA-1976		

DIAGNOSTIC FUNCTION TEST

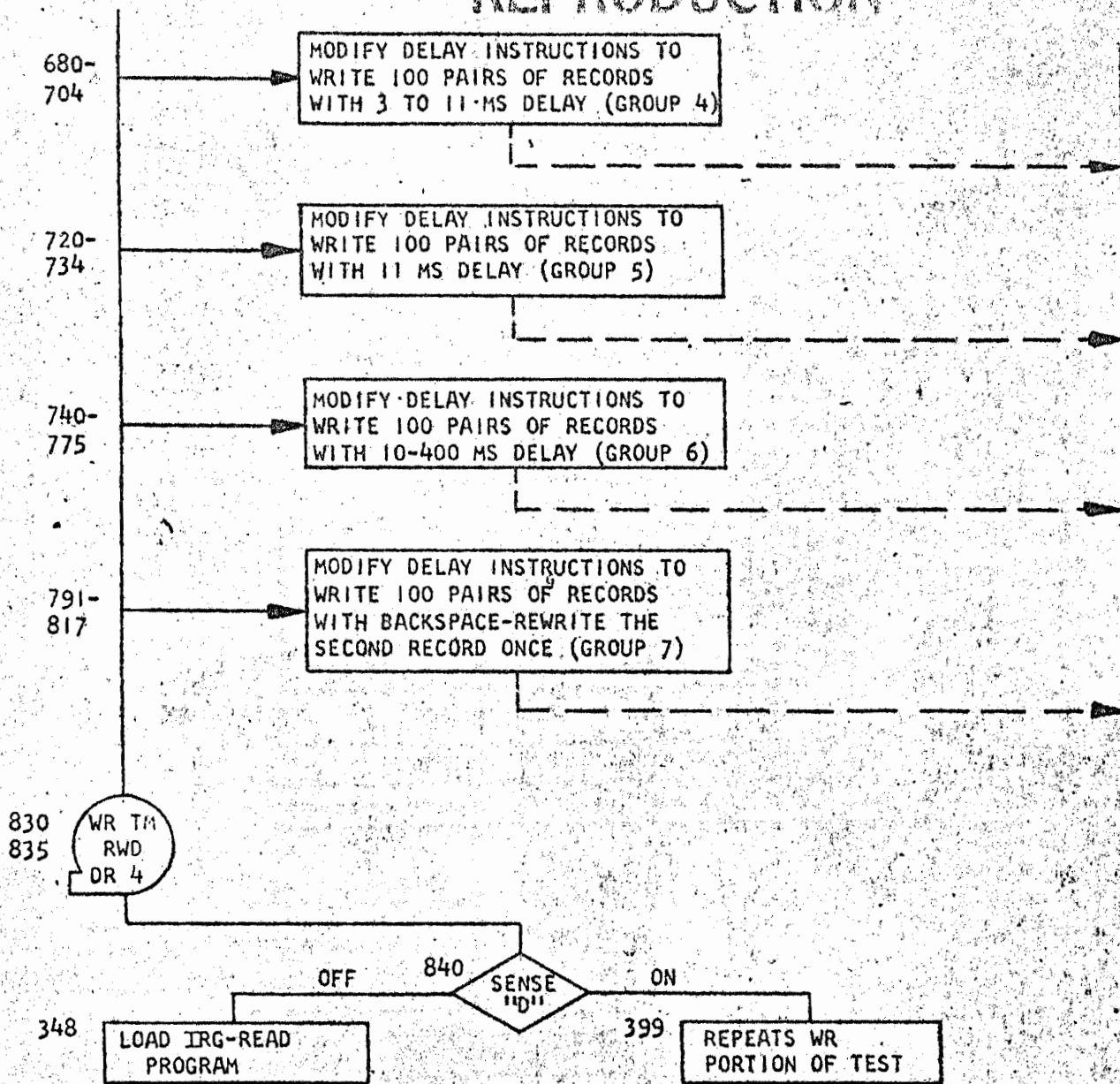
REPRODUCTION

(TO 426)



DATE	2-5-62	3-17-63	4-25-63	7-1-63	17.10.63		
ENG. CHG. NO.	110378G	116745	116745A	117628	TA 1976		

REPRODUCTION



DATE	2-5-62	3-17-63	4-25-63	7-1-63	17. 10. 63		
ENG. CHG. NO.	110378G	116745	116745A	117628	TA 1976		

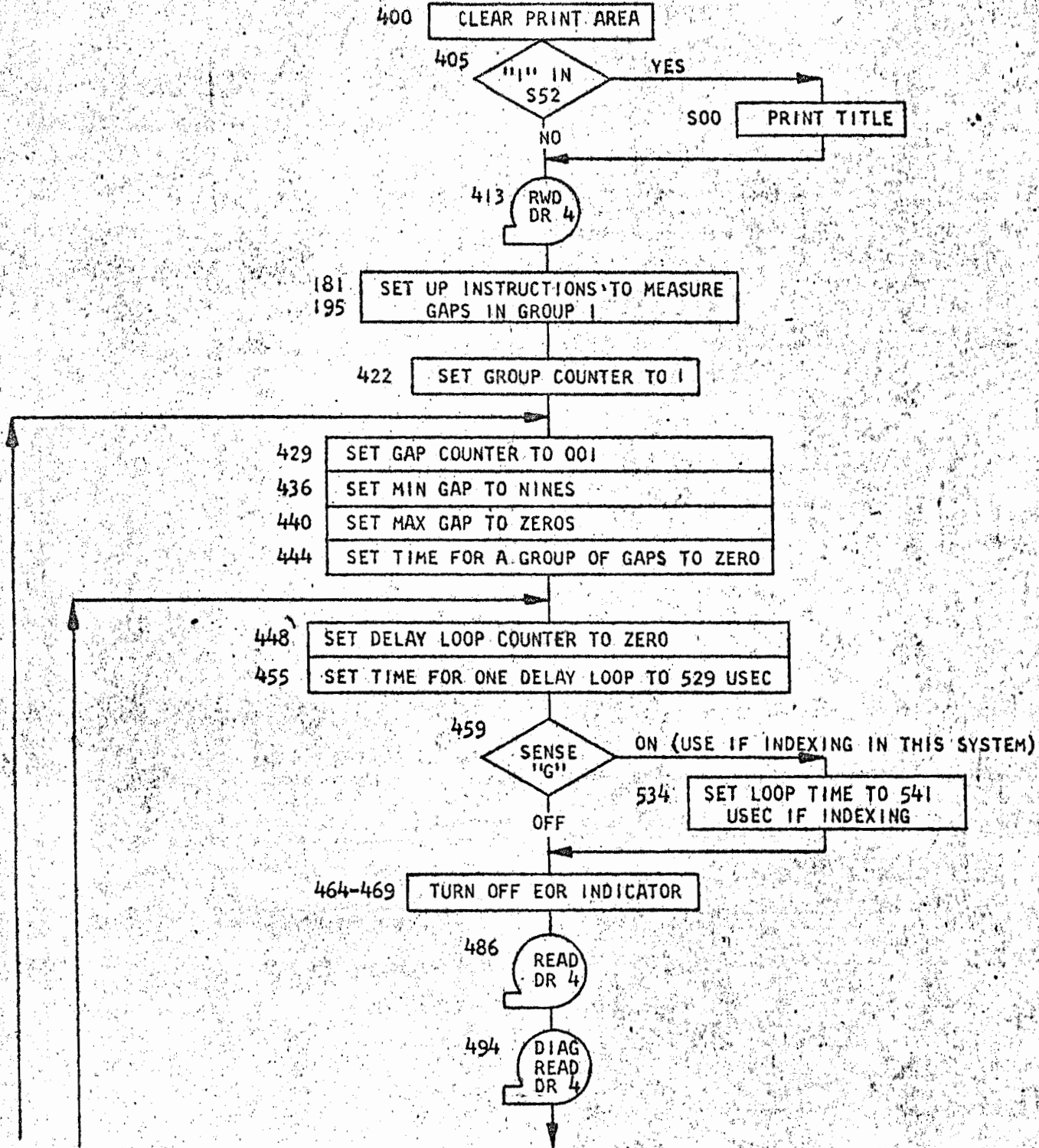


DIAGNOSTIC FUNCTION TEST

FART NO. 451639  
 SHEET 12 OF 22  
 BLOCK NO. 5530B

REPRODUCTION

IRG MEASUREMENT - READ  
 FLOW CHART



(FROM NEXT PAGE)

( TO NEXT PAGE)

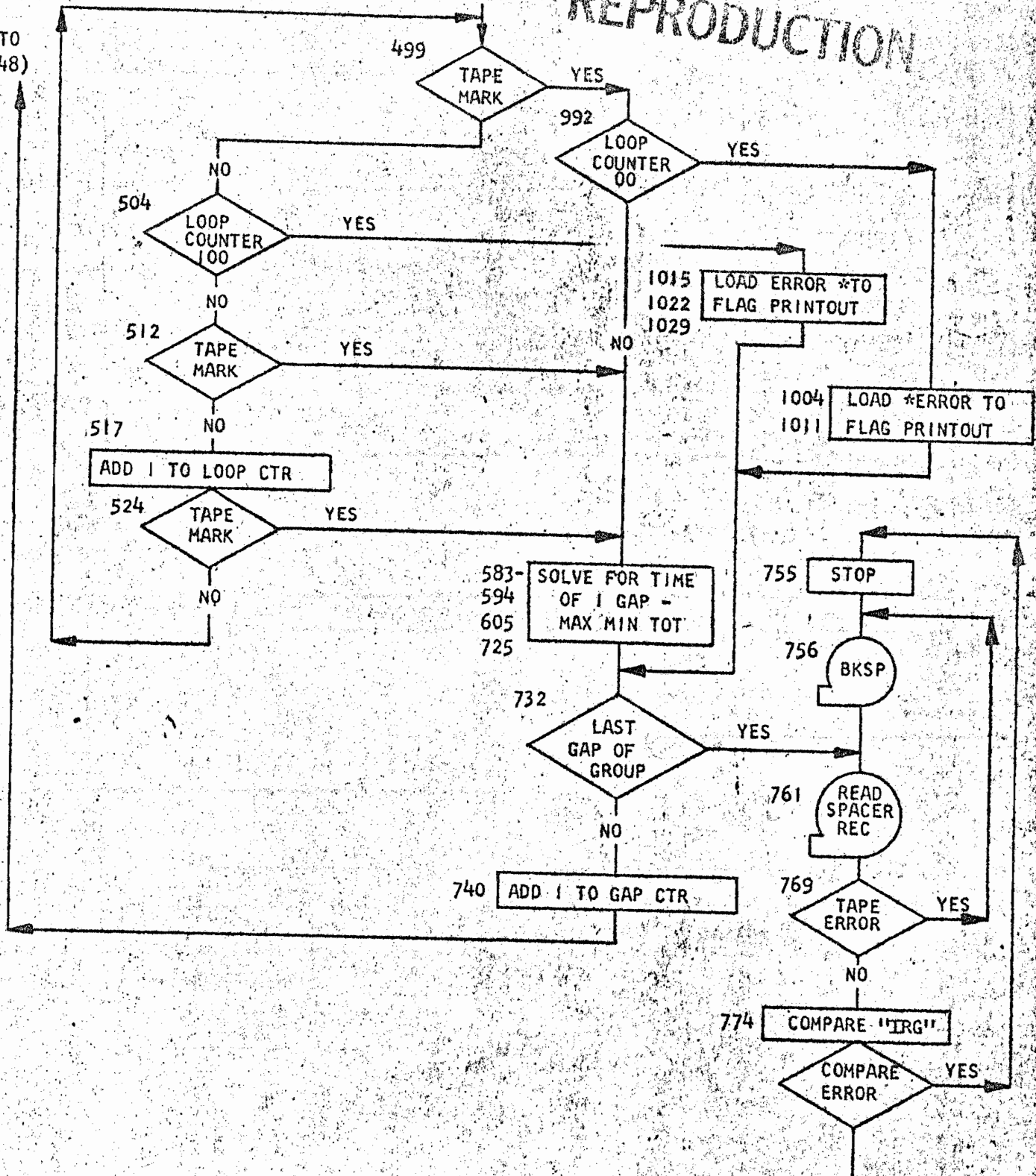
DATE	2-5-62	3-17-63	4-25-63	7-1-63	17.10.63		
ENG. CHG. NO.	110378G	116745	116745A	117628	TA 1976		

# DIAGNOSTIC FUNCTION TEST

REPRODUCTION

(TO 429)

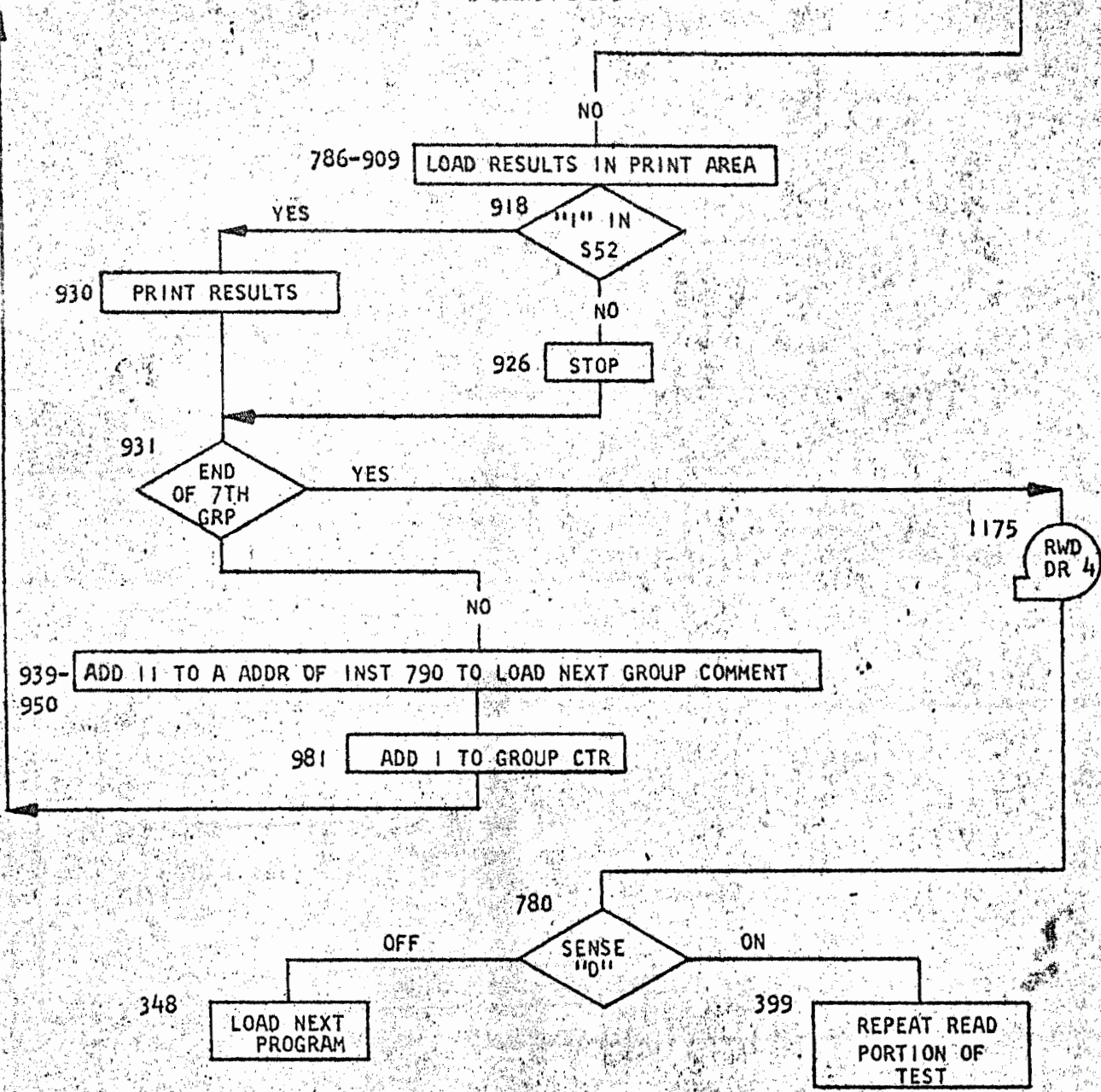
(TO 448)



DATE	2-5-62	3-17-63	4-25-63	7-1-63	17. 10. 63			
ENG. CHG. NO.	110378G	116745	116745A	117628	JA 1976			

REPRODUCTION

(TO 429)



DATE	2-5-62	3-17-63	4-25-63	7-1-63	17. 10. 63		
ENG. CHG. NO.	110378G	116745	116745A	117628	TA 1976		



REPRODUCTION

PROGRAM LISTING FOR USE WITH FLOW CHART

7330 IRG MEAS. - WRITE

55308

INSTRUCTION ADDRESS	OP	A	B	REMARKS
082	082	1	001	CONSTANT
086	086	X	XX	GAP COUNTER
089	089	/	00	CONSTANT - B ADDR OF FIRST TAPE WR INST
092	092	1	90	CONSTANT TO SUBTRACT 10
098	098	S	000 005	CONSTANTS
105	105	X	XXX X	..
110	110	1	-	..
115	115	B	523 1051	CONSTANTS TO MODIFY DELAY INSTR
123	123	U	804 B	..
128	128	B	468	..
133	133	B	489	..
138	138	/	489 200	..
145	145	/	489 279	..
152	152	Z	199 200	..
159	159	N	082 467	..
166	166	N	000 000	..
173	173	N	000 0	..
178	178	M	111 106	..
185	185	A	083 106	..
192	192	B	489	..
377	377	B	399 5531	USE WHEN PROGRAM IS LOADED FROM TAPE
385	385	B	588	..
399	399	.	.	STOP TO SET UP DR 4
400	400	/	332	START TEST
404	404	/	.	..
405	405	B	500 5521	BR TO TITLE PRINT ROUTINE IF 1 IN 552
413	413	U	804 R	REWIND DRIVE 4
418	418	.	199	SET WM TO LIMIT DELAY INSTR
422	422	B	850	BR TO SET INSTR FOR MINIMUM DELAY
426	426	M	091 454	SET TAPE WRITE B ADDR TO /00
433	433	M	085 088	SET GAP COUNTER TO 001
440	440	/	299	CLEAR PRINT AREA
444	444	□	452	CLEAR WM FROM B ADDR OF TAPE WRITE INST.
448	448	L	804 /00W	WRITE FIRST RECORD OF A PAIR
456	456	B	489	VARIABLE DELAY
461	461	/	489 200	..
468	468	/	489 279	..
475	475	Z	199 200	..
482	482	Z	199 200	..
489	489	L	804 /19W	WRITE SECOND RECORD OF A PAIR
497	497	B	550 L	BRANCH IF WRITE ERROR

DATE	2-5-62	3-17-63	4-25-63	7-1-63	17-10-63		
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DIAGNOSTIC FUNCTION TEST  
REPRODUCTION

502	502	N 082	467	INSTR USED TO INCREASE DELAY FOR
509	509	N 000	000	GROUPS 2, 3, AND 4
516	516	N 000	000	..
523	523	B 595	0861	BR TO WR SPACER REC IF LAST GAP OF GROUP
531	531	A 082	088	ADD 1 TO GAP COUNTER
538	538	B 570	B	ON TO VARY LNTH OF FIRST REC OF PAIR SS
543	543	B 444		BRANCH TO WRITE NEXT PAIR OF RECORDS
550	550	U 804	B	BACKSPACE
555	555	U 804	B	BACKSPACE
560	560	U 804	E	SKIP
565	565	B 444		BRANCH TO WRITE NEXT PAIR OF RECORDS
570	570	452		SUBTR 10 FROM B ADDR OF TAPE WRITE TO
574	574	A 094	454	INCREASE LENGTH OF FIRST REC OF PAIR
581	581	B 444		BRANCH TO WRITE NEXT PAIR OF RECORDS
585	585	U 804	B	BACKSPACE
590	590	U 804	E	SKIP
595	595	L 804	/16W	WRITE SPACER RECORD
603	603	B 585	L	BRANCH IF WRITE ERROR
608	608	B 620		BRANCH TO LOAD NEXT TYPE OF DELAY INSTR
620	620	L /24	460	SET UP DELAY INSTR FOR 0 TO 1 MS DLY
627	627	M 533	502	..
634	634	M 491	611	..
641	641	B 426		BRANCH TO WRITE WITH 0 TO 1 MS DLY
650	650	L /31	467	SET UP DELAY INSTR FOR 1 TO 3 MS DLY
657	657	D 498	505	..
664	664	M 495	611	..
671	671	B 426		BRANCH TO WRITE WITH 1 TO 3 MS DLY
680	680	L /45	474	SET UP DELAY INSTR FOR 3 TO 11 MS DLY
687	687	L		..
688	688	L /66	522	..
695	695	L		..
696	696	L		..
697	697	M 499	611	..
704	704	B 426		BRANCH TO WRITE WITH 3 TO 11 MS DLY
720	720	M /71	506	SET UP DELAY INSTR FOR 11 MS FIXED DLY
727	727	M /03	611	..
734	734	B 426		BRANCH TO WRITE WITH 11 MS FIXED DLY
740	740	M 166	915	SET UP DELAY INSTR FOR 10-400 MS DLY
747	747	B 768		..
768	768	M /07	611	..
775	775	B 426		BRANCH TO WRITE WITH 10-400 MS DLY
791	791	L 196	479	SET UP INSTR TO BKSP REWRITE
798	798	L		..
799	799	L		..
800	800	L		..
801	801	L 132	519	..
808	808	L		..
809	809	L		..
810	810	M /11	611	..
817	817	B 426		BR TO BKSP-REWR SECOND RECORD OF PAIR

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DIAGNOSTIC FUNCTION TEST

REPRODUCTION

830	830	U	204	M	WRITE TAPE MARK
835	835	U	204	R	REWIND
840	840	B	399	D	D ON TO REPEAT WRITE PORTION OF TEST SS
845	845	B	348		BRANCH TO LOAD READ PORTION OF TEST
850	850	L	158	488	SET UP INSTRUCTIONS FOR MINIMUM DELAY
857	857	L	158		••
861	861	L			••
862	862	L			••
863	863	L			••
864	864	L	172	522	••
871	871	L	172		••
875	875	L			••
876	876	M	876	926	••
883	883	M	898	915	••
890	890	M	487	611	••
897	897	B	426		BRANCH TO BEGIN WRITING WITH MINIMUM DLY
901	901	Z	331	332	INSTRUC USED DURING VARIABLE DELAYS
908	908	Z	260	332	••
915	915	B	461		••
919	919	M	467	463	••
926	926	M	475	471	••
933	933	M	166	926	••
940	940	A	400	463	••
947	947	C	471	463	••
954	954	B	940	/	••
959	959	A	970	471	••
966	966	B	461		••
970	970	B			••
1080	460	X	XXX	0000	••
1068	468	X	XXX	0001	••
1084	484	B	620	865086808720	UNCONDITIONAL BRANCH INSTRUCTIONS
1100	700	B	740	87918830	FOR GROUPS 2 TO 7
1116	716	I	RG		SPACER RECORD TM IN /19
1120	720	B	901		CONSTANTS TO MODIFY DELAY INSTA
1125	725	C	199	199	••
1132	732	Z	274	275	••
1139	739	/	475	200	••
1146	746	A	082	474	••
1153	753	A	085	481	••
1160	760	A	085	488	••
1167	767	B	523		••
1246	846				••
1250	850				GM-WM IN 1250

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ENG. CHG. NO.	110378G	116745	116745A	117628	TA 1976		



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PROGRAM LISTING FOR USE WITH FLOW CHART

7330 IRG MEAS. - READ

55308

INSTRUCTION ADDRESS	OP	A	B	REMARKS
082	082	1	000 00001	CONSTANTS
091	091	1	014 4	::
097	097	2	07	::
100	100	4	08	::
106	106	X		GROUP COUNTER
107	107	5	29	TIME FOR 1 DELAY LOOP IN MSEC
110	110	X	X	DELAY LOOP COUNTER
112	112	X	XXX XXX	CTR FOR TOTAL USEC OF GAPS IN A GROUP
119	119	0	000 0	MAX GAP IN A GROUP
124	124	9	999 9	MIN GAP IN A GROUP
129	129	X	XX	GAP COUNTER
132	132	X	XXX X	COUNTER FOR USEC OF 1 GAP
137	137	X	X	COUNTER USED IN MULTIPLE ADDITION
139	139	X	XXX X	COUNTER USED IN SOLVING FOR MAX + MIN
144	144	.	0.	CONTROL WORD FOR EDIT
148	148	*		CONSTANT
149	149	I	RG	CONSTANT COMPARED TO SPACER RECORD
152	152	9	999 9	CONSTANTS
157	157	5	295 41	::
163	163	I	9	::
181	181	M	332 /98	RESET INSTRUCTIONS FOR GROUP 1
188	188	M	*35 793	::
195	195	B	422	BRANCH TO SET CTRS TO INITIAL COND
377	377	B	400 5531	USE WHEN PROGRAM IS LOADED FROM TAPE
385	385	B	588	::
399	399	.		STOP TO SET UP DRIVE 4
400	400	/	332	START TEST
404	404	/		
405	405	B	500 5521	BR TO TITLE PRINT ROUTINE IF 1 IN 552
413	413	U	204 R	REWIND DRIVE 4
418	418	B	181	BRANCH TO SET INSTR FOR GROUP 1
422	422	M	090 106	SET GROUP COUNTER TO 1
429	429	M	090 131	SET GAP COUNTER TO 001
436	436	M	156	SET MIN GAP TO NINES
440	440	M	089	SET MAX GAP TO ZEROS
444	444	M	089	SET TIME FOR A GROUP OF GAPS TO ZEROS
448	448	M	089 111	SET DELAY LOOP COUNTER TO ZEROS
455	455	M	159	SET TIME FOR 1 LOOP TO 529
459	459	B	534 G	G ON IF INDEXING IN THIS SYSTEM SS
464	464	B	469 K	TURN OFF EOR INDICATOR
469	469	B	486	

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DIAGNOSTIC FUNCTION TEST

REPRODUCTION

486 486 L 204 S47R  
 494 494 U 204 A  
 499 499 B 992 K  
 504 504 V 415 110S  
 512 512 B 594 K  
 517 517 A 082 111  
 524 524 B 606 K  
 529 529 B 499  
 534 534 M 162 109  
 541 541 B 464  
 583 583 + 158 136  
 590 590 B 619  
 594 594 + 099 136  
 601 601 B 619  
 605 605 + 102 136  
 612 612 A 164 111  
 619 619 A 095 136  
 626 626 M 089 138  
 633 633 A 109 136  
 640 640 A 082 138  
 647 647 C 138 111  
 654 654 B 633 /  
 659 659 A 136 118  
 666 666 L 123 143  
 673 673 S 136 143  
 680 680 V 692 143K  
 688 688 B 699  
 692 692 L 136 123  
 699 699 L 128 143  
 706 706 S 136 143  
 713 713 V 725 143B  
 721 721 B 732  
 725 725 L 136 128  
 732 732 B 761 1291  
 740 740 A 082 131  
 747 747 B 448  
 755 755 -  
 756 756 U 204 B  
 761 761 L 204 S47R  
 769 769 B 756 L  
 774 774 C 540 151  
 781 781 B 755 /  
 786 786 / 299  
 790 790 L 453 212  
 797 797 L 123 136  
 804 804 S 128 136  
 811 811 A 152 135  
 818 818 L 147 242  
 825 825 E 136 242  
 832 832 A 157 122

READ FIRST RECORD OF A PAIR  
 DIAGNOSTIC READ  
 BRANCH IF TAPE MARK IS SENSED  
 BRANCH IF NO TM SENSED AFTER 50 MS  
 BRANCH IF TAPE MARK IS SENSED  
 ADD 1 TO LOOP COUNTER  
 BRANCH IF TAPE MARK IS SENSED  
 BRANCH TO REPEAT LOOP  
 SET LOOP TIME TO 541 USEC IF INDEXING  
 ..  
 SOLVE FOR TIME OF 1 GAP  
 ..  
 ..  
 ..  
 ..  
 ..  
 MULTIPLY DELAY LOOP COUNTER BY TIME FOR  
 1 LOOP USING MULTIPLE ADDITION  
 ..  
 ..  
 ..  
 ADD USEC FOR 1 GAP TO USEC FOR A GRP  
 FIND MAX GAP  
 ..  
 ..  
 ..  
 FIND MIN GAP  
 ..  
 ..  
 ..  
 BRANCH IF LAST GAP OF THIS GROUP  
 ADD 1 TO GAP COUNTER  
 BRANCH TO READ NEXT GAP  
 STOP IF ERROR IN READING SPACER RECORD  
 BACKSPACE  
 READ SPACER RECORD  
 BRANCH IF READ ERROR  
 COMPARE READ AREA TO CONSTANT -1RG-  
 BRANCH IF UNEQUAL  
 CLEAR PRINT AREA  
 LOAD GROUP COMMENT IN PRINT AREA  
 SOLVE FOR + LOAD RANGE IN PRINT AREA  
 ..  
 ..  
 ..  
 ..  
 SOLVE FOR + LOAD MAX IN PRINT AREA

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1401 DATA PROCESSING SYSTEM  
DIAGNOSTIC FUNCTION TEST

PART NO. 451639  
SHEET 20 OF 22  
BLOCK NO. 5530

```

839 839 L 147 224
846 846 E 121 224
853 853 A 157 127
860 860 L 147 230
867 867 E 126 230
874 874 A 157 115
881 881 L 147 236
888 888 E 114 236
895 895 L /98 254
902 902 M 332 /98
909 909 B 918
918 918 B 930 5521
926 926 . 931
930 930 2
931 931 B /76 1067
939 939 . 791
943 943 A 876 793
950 950 . 791
954 954 B 981
981 981 A 082 106
988 988 B 429
992 992 C 089 111
999 999 B 583 /
1004 1004 M 148 /90
1011 1011 B 422
1015 1015 M 148 /98
1022 1022 M 440 /96
1029 1029 B 732
1033 1033 4 53
1036 1036 E RRO R
1043 1043 M INI MUM DLY
1054 1054 0-1 MS DLY
1065 1065 1-3 MS DLY
1076 1076 3 -11 MS DLY
1087 1087 12 MS DLY
1098 1098 10 -400 MS
1109 1109 M IN + CREEP
1120 1120 W RIT E CONDITION
1140 1140 M AX MIN AVG RA
1160 1160 N GE IN MS
1175 1175 U 204 R
1180 1180 B 399 D
1185 1185 B 348
1190 1190
1247 1247 X XX
1250 1250 350
    
```

REPRODUCTION

```

SOLVE FOR + LOAD MIN IN PRINT AREA
SOLVE FOR + LOAD AVG IN PRINT AREA
LOAD WORD ERROR IN PRINT AREA
IF ANY ERRORS IN SENSING TAPE MARK
BRANCH TO PRINT RESULTS
PRINT RESULTS IF 1 IN S52
STOP TO CHECK RESULTS IF NO PRINTER
PRINT
BRANCH TO REWIND IF END OF TEST
ADD 11 TO A FIELD OF INSTR IN 790
TO LOAD NEXT GROUP COMMENT

ADD 1 TO GROUP COUNTER
BRANCH TO MEAS NEXT GROUP OF GAPS
TEST FOR ZEROS IN LOOP COUNTER
BR TO SOLVE FOR GAP TIME IF NO ZEROS
FLAG PRINTOUT WITH * ERROR IF TM
WAS SENSED BEFORE ANY DELAY LOOPING
FLAG PRINTOUT WITH ERROR * IF NO TM
WAS SENSED AFTER 50 MS DELAY LOOPING

CONSTANTS
COMMENT FOR GROUP 1
COMMENT FOR GROUP 2
COMMENT FOR GROUP 3
COMMENT FOR GROUP 4
COMMENT FOR GROUP 5
COMMENT FOR GROUP 6
COMMENT FOR GROUP 7
CONSTANTS FOR HEADINGS

REWIND
DON TO REPEAT READ PORTION OF TEST SS
BRANCH TO LOAD NEXT PROGRAM
BLANKS
TAPE READ-IN AREA
GM-WM IN 1250
    
```

DATE	2-5-62	3-17-63	4-25-63	7-1-63	17. 10. 63		
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REPRODUCTION

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	7330 IRG MEAS. - WRITE	5530B 0A
,008015,022029,033033N	1001	SET WORDMARK CARD	5530B 02
L065114,086089,092098,10511010011001XXX/00190		5000005XXXXX1-	5530B 03
L069151,123128,133138,1451451001B5231051U2U4BB468 8489 /489200/489279			5530B 04
L065184,159166,173178,17817810012199200N082467N000000N0000M111106			5530B 05
L047199,192192,192192,1921921001A083106B489			5530B 06
L067367,340344,348349,3573611001,008012,00110011B361060AB348/340080			5530B 07
L069404,377385,399400,4044051001 1 OF 2 5B399S5318S88		. /332/	5530B 08
L071443,413418,422426,4334401001BS00S521U2U4R,199B850M091454M085088/299			5530B 09
L070481,448456,461468,4754821001452L2U4/00WB489 /489200/4892792199200			5530B 10
L066515,489497,502509,5165161001Z199200L2U4/19WB550LN082467N000000			5530B 11
L071554,523531,538543,5505551001N000000B5950861A082088B570BB444 U2U4B			5530B 12
L067589,560565,570574,5815851001U2U4BU2U4EB444 ,452A094454B444U2U4B			5530B 13
L069626,595603,608620,6276271001U2U4EL2U4/16WB585LB620		L/24460	5530B 14
L069663,634641,650657,6646641001M531502M*91611B426		L/31467D498505	5530B 15
L065696,671680,687688,6956961001M*95611B426		L/45474LL/66522LL	5530B 16
L069733,704720,727734,7347341001M*99611B426		M/71506M/03611	5530B 17
L066767,740747,768768,7687681001B426 M166915B768			5530B 18
L072807,775791,798799,8008011001M/07611B426		L196479LLLL1325195530B	5530B 19
L069844,809810,817830,8358401001LLM/11611B426		U2U4MU2U4RB399D	5530B 20
L058870,850857,861862,8638641001B348 L158488L158LLLL172522			5530B 21
L069907,875876,883890,8979011001L172LM876926M897915M*87611B426Z331332			5530B 22
L071946,915919,926933,9409471001Z260332B461M*67*63M*75*71M166926A400*63			5530B 23
L072986,954959,966970,9709701001C*71*63B940/A970*71B461B			5530B 24
L072*99,*68*84,/00/00,/00/001001XXXX0000XXXX0001		B620B650B680B7205530B	5530B 25
L071/38,/16/20,/25/32,/39/391001B740B7918830		IRGTB901 C199199Z274275	5530B 26
		M	
L072/78,/46/53,/60/67,/67/671001/475200A082474A085481A085488B523			5530B 27
L066S12□/79/79,500S01,S05S121001		2,049L0772772	5530B 28
L070S50,S17S21,S46S50,S50S501001/2772413			5530B 29
		G	
		M	
/333080N		CLEAR WORDMARK CARD	5530B 30
,019027,031,038042B031T98GB399L046352BW04BS88		7330 IRG MEAS. - WRITE	5530B 31

DATE	2-5-62	3-17-63	4-25-63	7-1-63	17.10.63		
ENG. CHG. NO.	110378-G	116745	116745-A	117628	TA 1976		

1401 DATA PROCESSING SYSTEM  
DIAGNOSTIC FUNCTION TEST

PART NO. 451639  
SHEET 22 OF 22  
BLOCK NO. 5530B

REPRODUCTION

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	7330 IRG MEAS. - READ	5530B20A
,008015,022029,033033N	1001	SET WORDMARK CARD	5530B20Z
L062111,091097,100106,107110100110000000110144		207408 X529XX	5530B203
L064143,119124,129132,1371391001XXXXXX0000099999XXXXXX			5530B204
L069180,148149,152157,1631631001 0. *IRG9999952954119			5530B205
L051199,188195,195195,1951951001M332/98M+35793B422			5530B206
L067367,340344,348349,3573611001,008012,00110011B361080AB400/34Q080			5530B207
L069404,377385,399400,4044051001	B400S531BS88	./332/	5530B208
L071443,413418,422429,4364401001BS00S521U%U4R8181M090106M090131M156M089			5530B209
L072483,448455,459464,4694691001M089M089111M159B534GB469KB486			5530B210
L0605114484484,486494,4995041001	L%U4S47RU%U4A8992KV#15110S		5530B211
L072551,517524,529534,5415411001B594KA082111B605KB499	M1621098464		5530B212
L0705894552552,583590,5905901001		P158136	5530B213
		Z	
L068625,594601,605612,6196261001B619P099136B619P102136A164111A095136			5530B214
		Z	
L072665,633640,647654,6596661001M089138A109136A082138C138111B633/A1361185530B21			
L072705,673680,688692,6997061001L123143S136143V692143KB699L136123L1281435530B216			
L066739,713721,725732,7407401001S136143V72514388732L136128B7611291			5530B217
L066773,747755,756761,7697741001A082131B448	.U%U48L%U4S47RB756L		5530B218
L069810,781786,790797,8048111001CS49151B755//299L+53212L123136S128136			5530B219
L067845,818825,832839,8468461001A157135L147242E134242A157122L147224			5530B220
L067880,853860,867874,8818811001E121224A157127L147230E126230A157115			5530B221
L069917,888895,902909,9189181001L147236E114236L/98254M332/98B918			5530B222
L068953,926930,931939,9439501001B930S521.9312B/751067,791A8757934791			5530B223
L070991,981988,992992,9929921001B981		A082106B429	5530B224
LD69*28,999*04,+11*15,+22*291001C089111B583/M148/90B+22M148/98M+40/96			5530B225
L068*64,+33*36,+43*54,+65*651001B732*53ERROR	MINIMUM DLY 0-1 MS DLY		5530B226
L065*97,+76*87,+98*98,+98*981001	1-3 MS DLY3-11 MS DLY 11 MS DLY		5530B227
L072/37,/09/20,/20/20,/20/201001	10-400 MS MIN + CREEPWRITE CONDITION		5530B228
L069/744/38/38,/40/60,/75/751001	MAX MIN AVG RANGE IN MS		5530B229
L069S11,/80/85,/90S00,S01S051001U%U4R8399DB348		2,049L077277	5530B230
L057S36,S13S17,S18S25,S29S3610012/27724/40/60N/80L/692502			5530B231
L046S50,S41S45,S47S50,S50S501001/2702413	XXXG		5530B232
		M	
/333080N		CLEAR WORDMARK CARD	5530B233
,019027,031,038042B031T98GB400L046352BW04BS88		7330 IRG MEAS. - READ	5530B234
		M	

DATE	2/5/62	3/17/63	4/25/63	7-1-63	17. 10. 63		
ENG. CHG. NO.	110378-G	116745	116745-A	117628	TA 1976		

NO. C8001  
 SHEET 0  
 OF 18

# DIAGNOSTIC TEST

TITLE 1407 CONSOLE UNIT TEST  
 MACH. TYPE 1407 BY DCM APPR. WDC DATE 8-31-61

## ENGINEERING CHANGE HISTORY

E/C NO.	DATE	SHEETS AFFECTED
405070	9-8-61	0-18
405070A	10-26-61	0-5, 12, 13, 15, 16

E/C NO.	405070	405070A					
DATE	9-8-61	10-26-61					