digital

RX01

Engineering Drawings

Digital Equipment Corporation

DRAWING DIRECTORY

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

CUSTOMER PRINT SET INDEX

THIS IS PRINT SET

	SEQUENCE
RXØ1 FLOPPY DISK DRIVE	B-DD-RXØ1-Ø
FLOPPY DISK CONTROL BOARD	D-CS-M7726-Ø-1
RXØ1 FIRMWARE LISTING	K-SP-RXØ1-0-2
READ/WRITE CONTROL BOARD	D-CS-M7727-Ø-1
H771 POWER SUPPLY	B-DD-H771-Ø
PLENUM/FAN ASSY. (OLD STYLE)	B-DD-7Ø135Ø3-Ø
PLENUM/FAN ASSY. (NEW STYLE)	B-DD-7015622-Ø

UNIT VARIATIONS

VAR	TITLE	PRINT SET 1			
RXØ1-AA	SINGLE FLOPPY DISK, 115V,6Ø HZ	X			
RXØ1-AC	SINGLE FLOPPY DISK, LOW V, 5ØHZ	X			
RXØ1-AD	SINGLE FLOPPY DISK, HIGH V, 5ØHZ	X			
RXØ1-BA	DUAL FLOPPY DISK, 115V, 6Ø HZ	X			
RXØ1-BC	DUAL FLOPPY DISK, LOW V, 5ØHZ	X			
RXØ1-BD	DUAL FLOPPY DISK, HIGH V, 5ØHZ	X			
RXØ1-CA	ONE REPLACE DRIVE, 6Ø HZ	X			
RXØ1-CC	ONE REPLACE DRIVE, 5Ø HZ	X			
RXØ1-DA	RXØ1-BA W/O BEZEL ASSY	X			
RXØ1-DC	RXØ1-BC W/O BEZEL ASSY	X			
RXØ1-DD	RXØ1-BD W/O BEZEL ASSY	X			
RXØ1-FA	RXØ1-AA W/O PLENUM ASSY	X			
RXØ1-FC	RXØ1-AC W/O PLENUM ASSY	X			
RXØ1-FD	RXØ1-AD W/O PLENUM ASSY	X			
RXØ1-HA	RXØ1-BA W/O PLENUM ASSY	X			
RXØ1-HC	RXØ1-BC W/O PLENUM ASSY	X			
RXØ1-HD	RXØ1-BD W/O PLENUM ASSY	X			
RXØ1-JA	RXØ1-DA W/O PLENUM ASSY	X			
RXØ1-JC	RXØ1-DC W/O PLENUM ASSY	X			
RXØ1-JD	RXØ1-DD W/O PLENUM ASSY	X			
RX01-LA	RX01-BA FOR VX78(BC80D)	X			
RX01-LC	RX01-BC FOR VX78(BC80D)	X			
RX01-LD	RX01-BD FOR VX78(BC80D)	X			

REVISIONS

REV	CHG. NO.	DATE
A	RXØ1-2	6-76
B	RXØ1-3	7-76
C	RXØ1-6	12-76
D	RXØ1-8	5-77
E	RXØ1-12	12-77
F	RX01-13	6-78

USED ON OPTION/MODEL	
RX8	
RX11	

SHEET 1 OF 3

		DATE
DRN.	W. McCarthy	2/3/75
CHK'D.	McCarthy	5/29/75
PROJ ENG.	[signature]	
PROD.	[signature]	6/13/75
FIELD SERV.	[signature]	

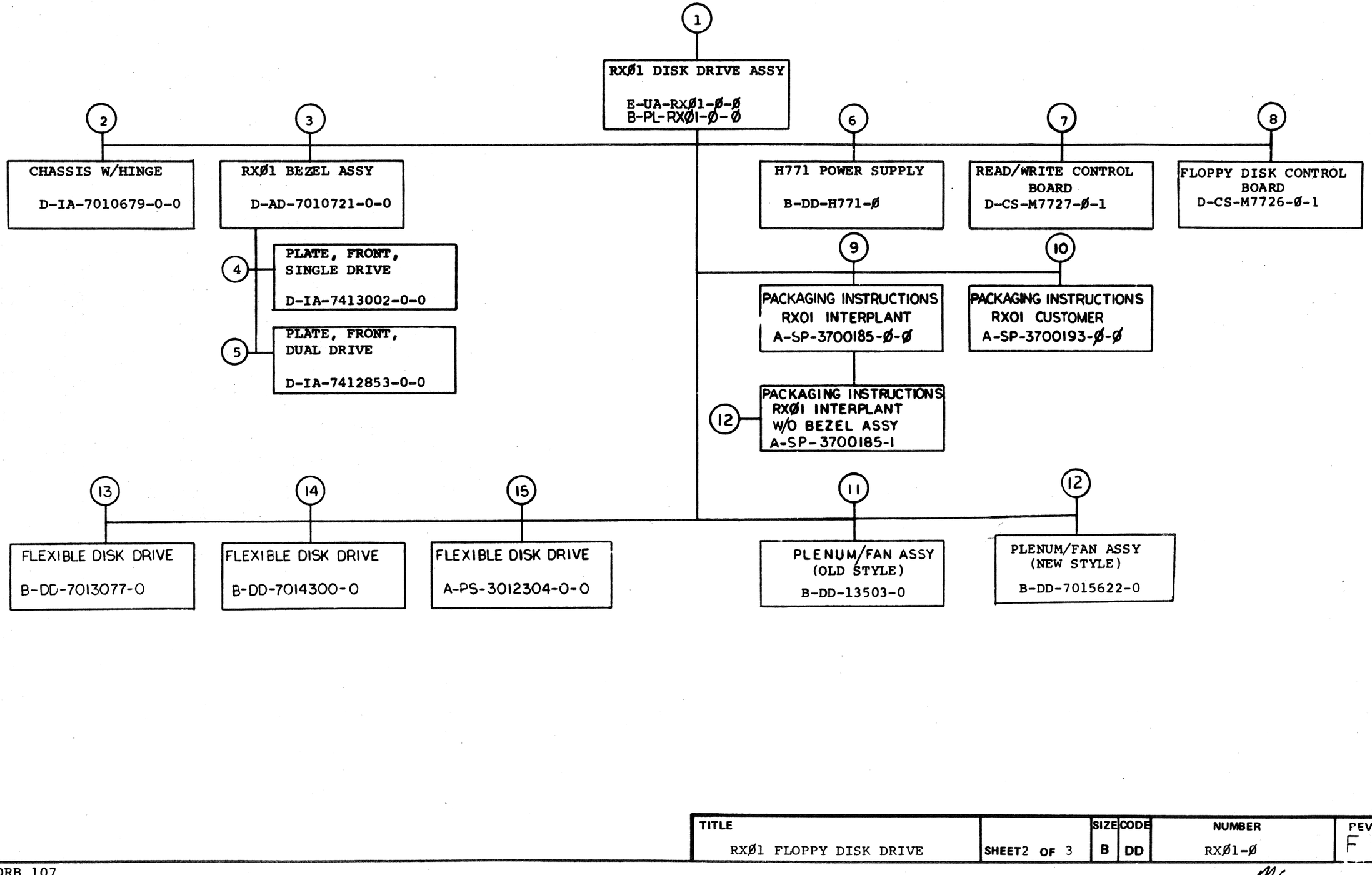
TITLE: RXØ1 FLOPPY DISK DRIVE

SIZE	CODE	NUMBER	REV
B	DD	RXØ1-Ø	F

DIST

DRB 106

DEC 16-(325)-1062-1A-N972



TITLE		SIZE	CODE	NUMBER	REV
RXØ1 FLOPPY DISK DRIVE	SHEET 2 OF 3	B	DD	RXØ1-Ø	F

MC

MECHANICAL

CUSTOMER PRINT SET					MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO./FILE DATE
				—		1	E-UA-RXØ1-Ø-Ø	A	5	RXØ1 FLOPPY DISK DRIVE ASSY	
							E-PL-RXØ1-Ø-Ø			RXØ1 FLOPPY DISK DRIVE ASSY(PL)	
							E-IA-7412666-0-0		1	COVER, TOP	
							D-IA-7010646-0-0		1	CABLE, EXTENSION, RXØ1	
							C-IA-7008612-0-0		1	CABLE, KEYCARD	
							D-UA-BC05L-Ø-Ø		1	CABLE, JUMPER	
							D-IA-7010696-0-0		1	HARNESS, VOLTAGE VARIATION	
									1	BRACKET, SHIPPING, RXØ1	
							C-MD-7409479-0-0		1	PLATE, PRESSURE	
							C-MD-5509001-0-0		1	PANEL, LIGHT (RXØ1)	
						2	D-IA-7010679-0-0		1	CHASSIS W/HINGE	
							E-IA-7412665-0-0		1	CHASSIS, FLEXIBLE DISK DRIVE	
							C-MD-7413236-0-0		1	HINGE, LOGIC	
						3	D-AD-7010721-0-0		1	RXØ1 BEZEL ASSY	
							E-MD-7412664-0-0		1	BEZEL, RXØ1	
							A-PS-3612317-0-0		1	DECO, RXØ1	
						4	D-IA-7413002-0-0		1	PLATE, FRONT, SINGLE DRIVE	
							C-SS-7413002-0-1		1	SILK SCREEN, SINGLE DRIVE	
						5	D-IA-7412853-0-0		1	PLATE, FRONT, DUAL DRIVES	
							C-SS-7412853-0-1		1	SILK SCREEN, DUAL DRIVE	
C						6	B-DD-H771-Ø	#	3	H771 POWER SUPPLY	
							C-MD-7413350-0-0				
X						11	B-DD-7013503-0-0		3	PLENUM/FAN ASSY (OLD STYLE)	
						13	B-DD-7013077-0		3	FLEXIBLE DISK DRIVE	
						14	B DD 7014300-0		3	FLEXIBLE DISK DRIVE	
						15	A-PS-3012204-0-0		14	FLEXIBLE DISK DRIVE	
						16	B-DD-7015622-0-0		2	PLENUM/FAN ASSY NEW STYLE	

ELECTRICAL

CUSTOMER PRINT SET					MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO./FILE DATE
				X		1	E-DD-RXØ1-Ø	#	3	RXØ1 FLOPPY DISK DRIVE	
							A SP-RXØ1-Ø-1		34	RXØ1 ENGINEERING SPECIFICATION	
				C			A SP-RXØ1-Ø-2			RXØ1 FIRMWARE LISTING	
						12	A SP-3700185-1			PACK INSTR W/O BEZEL	
							A-PS-9905183			LAMINATED BUILDUP	
							A-PS-9905710-0-0			REGULAR SLOTTED CARTON	
							A-PS-9905712-0-0			PLYWOOD SUPPORT FIXTURE	
							A-PS-9905713-0-0			SCORED SHEET	
							A-PS 9905729-0-0			CARTON SEALING TAPE	
				X		7	D-CS-M7727-Ø-1	#	6	READ/WRITE CONTROL BOARD	
							D-1A-5011370-0-0		1	ETCHED CIRCUIT BOARD (M7727)	
				X		8	D-CS-M7726-Ø-1	#	9	FLOPPY DISK CONTROL BOARD	
							A-SP-M7726-Ø-7		3	ACCEPTANCE TEST PROCEDURE	
						9	A-SP-3700185-0-0			PACKAGING INST. INTERPLANT	
							A-PS-9905710-0-0			REGULAR SLOTTED CARTON	
							A-PS-9905711-0-0			ONE PIECE FOLDER	
							A-PS-9905712-0-0			PLYWOOD SUPPORT FIXTURE	
							A-PS-9905713-0-0			SCORED SHEET	
							A-PS-9905729-0-0			CARTON SEALING TAPE	
						10	A-SP-3700193-0-0			PACKAGING INST. CUSTOMER	
							A-PS-9905741-0-0			FULL TELESCOPE CAP	
							A-PS-9905740-0-0			FOAM PAD	
							A-PS-9905739-0-0			LAMINATED BUILDUP	
							A-PS-9905734-0-0			PLASTIC STRAPPING	

CUSTOMER PRINT SET CODES
X = PRINT OF DOCUMENT INCLUDED IN PRINT SET
C = INCLUDES ALL PRINTS INDICATED ON DOCUMENT
S = CONFIDENTIAL AUTHORIZED SIGNATURE REQUIRED

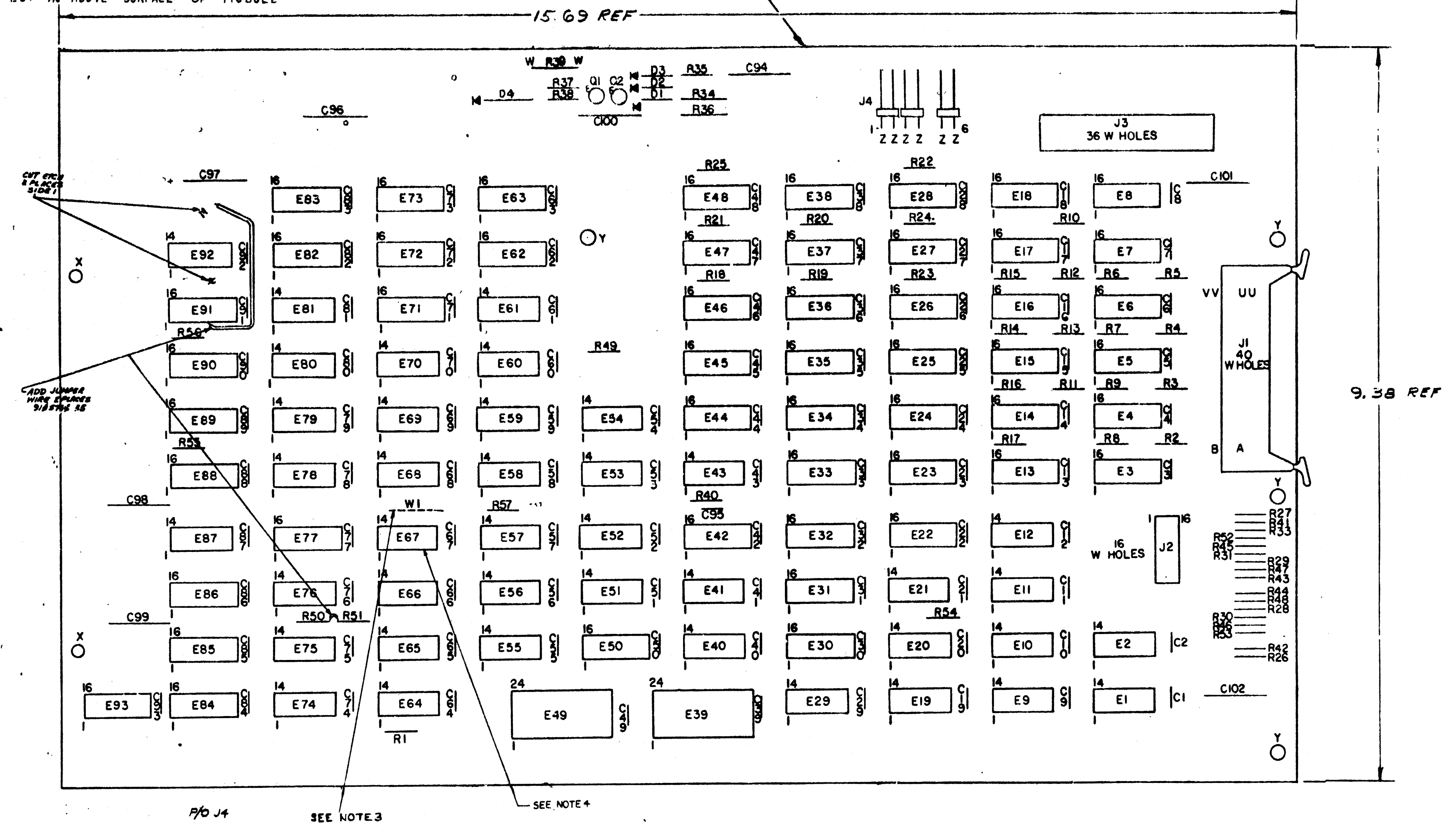
TITLE	SHEET	SIZE	CODE	NUMBER	REV
RXØ1 FLOPPY DISK DRIVE	3 OF 3	B	DD	RXØ1-Ø	F

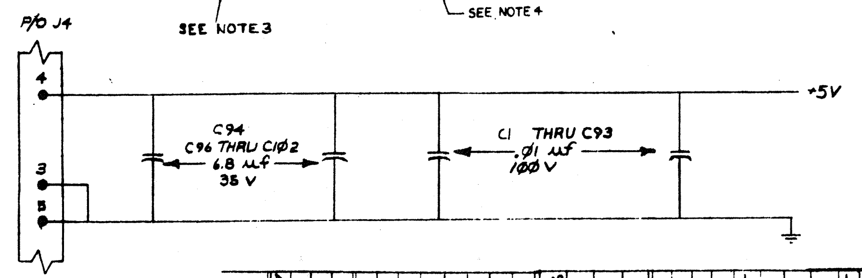
DRB 108
DEC 16-(325)-1062-28-R072

5

NOTES:

1. ◉ REPRESENTS A 1/8 DIA PAD LOCATED ON SIDE 2
2. UNLESS OTHERWISE SPECIFIED
   A. ALL RESISTORS ARE 1/4 W, ± 5%
   B. ALL UNUSED PINS FOR J1 ARE TIED TO GND
3. INSTALL JUMPER W1 AFTER MODULE TEST
4. MOUNT E67 1/16" ABOVE SURFACE OF MODULE





23-XXXA2	8	16
2102	9	10
8640	1	8
74175	8	16
74174	8	16
74161	8	16
74194	8	16
74123	8	16
74H103	11	4
74H106	13	5
7489	8	16
74150	12	24
7442	8	16
8266	8	16
74193	8	16
74154	12	24
IC TYPE	GND	+5V

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

REV.	CHANGE NO.	
J	M7726-00007	H. DRAB
H	M7726-00006	H. DRAB 29 MAR 77
F	M7726-00005	C. YOUSE
E	M7726-00004	CHARLES YOUSE 12-15-75
D	M7726-00003	C. YOUSE
C	M7726-00002	P. KOTSCHENTHER 6/24/75
B	M7726-00001	P. KOTSCHENTHER

REVISIONS

FIRST USED ON OPTION MODEL: M7726

ETCH BOARD REV. B

QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.

PARTS LIST

DEC NO. | EIA NO. | DEC NO. | EIA NO.

SEMICONDUCTOR CONVERSION CHART

DRN. DATE 11/12/74
CHK'D. DATE 1/9/75
ENG. DATE
PROJ. ENG. DATE 1/8/75
PROD. DATE
NEXT HIGHER ASSY

digital

TITLE FLOPPY DISK CONTROLLER

SIZE D | CODE CS | NUMBER M7726-Ø-1 | REV. J

SCALE

SHEET OF 9

DIST.

PARTS LIST

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM
REF		X-Y COORDINATE HOLE LOCATION	K-CO-M7726-Ø-4	1
REF		ASSY/DRILLING HOLE LAYOUT	D-AH-M7726-Ø-5	2
REF		MODULE ECO HISTORY	B-MH-M7726-Ø-6	3
1		ETCHED CIRCUIT BOARD	5011390	4
1	J3	RECEP 36 PIN (REWORK)	8-MD-5509 071-1	5
1	J2,	I.C SOCKET, 16 PIN GOLD, LOW PROFILE	12118/3-02	6
1	R37	RES 10K 1/4W 5% CC	1300479-00	7
8	C 94, C96 – C102	CAP 6.8 µf 35V 16% S.TANT	1005306-00	8
93	C1 - C93	CAP .01 µf 50V AXIAL CER	1001610-00	9
1	C95	CAP 12PF 100V 5%	1002087-00	10
3	D1 - D3	DIODE IN4004	1105796-00	11
1	D4	DIODE IN746A 3.3V 5%	1104860-00	12
1	E 39	RES 100 1/2W 5% C.C	1300228-00	13
3	J4	HEADER, 2PIN (MALE)	12/2804-00	14
8	R2, R4, R6, R8, R10 R12, R14, R16	RES 47Ø 1/4W 5% CC	1300316-00	15
8	R27, R29, R31, R97, R52 R43, R41, R45	RES 390 1/4W 5% CC	1300309-00	16
5	R1, R49 - R51, R57	RES 3K 1/4W 5% CC	1300432-00	17
9	R26, R28, R30, R38 R42, R44, R46, R48, R53	RES 180 1/4W 5% CC	1301322-00	18
8	R3, R5, R7, R9, R11 R13, R15, R17	RES 82Ø 1/4W 5% CC	1301775-00	19
1	R35	RES 300 1/4W 5% CC	1301425-00	20
8	R18 – R25	RES 2K 1/4W 5% CC	1302388-00	21
1	R34	RES 261 1/4W 1% MF	1302873-00	22
1	R36	RES 287 1/4W 1% MF	1305124-00	23
1	R42	RES 8.2K 1/4W 5% CC	1303179-00	24
3	R54 – R56	RES 1K 1/4W 5% CC	1300365-00	25
1	Q2	TRANS MX AA05	1510705-00	26
1	Q1	TRANS MX AA55	1510706-00	27
5	E19, E20 E21, E29 E90	I.C 7474	1905547-00	28
5	E9, E57, E59	I.C. 7400	1905575-00	29
2	E93, E60	I.C 7410	1905576-00	30
1	E75	I.C. 7450	1905580-00	31
1	E55	I.C. 74H20	1905635-00	32
1	E54	I.C 7402	1909004-00	33
2	E65, E72	I.C. 74H00	1909056-00	34
2	E52 E70	I.C. 74H11	1909267-00	35
5	E58, E67, E78, E79, E82	I.C 74H74	1909667-00	36
2	E69, E76	I.C. 7404	1909686-00	37
1	E39	I.C. 74154	1909701-00	38
2	E1, E7	I.C. 8881	1909705-00	39
1	E6	I.C. 74H04	1909931-00	40
5	E74, E92	I.C. 7486	1910011-00	41
4	E88, E89, E90 E9	I.C 74193	1910018-00	42
2	E27, E37	I.C 8266	1909934-00	43
1	E22	I.C 7442	1910046-00	44
1	E65	I.C 7437	1910091-00	45
1	E49	I.C 74152	1910153-00	46
2	E11, E12	I.C 7423	1910155-00	47
2	E97, E98	I.C. 74S89	1910396-00	48
1	E50	I.C 74H106	1910408-00	49
3	E84, E21 E97	I.C 74H103	1910409-00	50
1	E42	I.C. 74123	1910436-00	51

PARTS LIST

	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM
2	E45, E46	I.C 74194	1910623-00	52
8	E23, E24, E25, E26 E30, E31, E32, E36	IC. 74161	1910650-01	53
3	E84, E85, E86	I.C. 74174	1910652-00	54
1	E53	I.C 7427	1910878-00	55
3	E28, E38, E44	I.C. 74175	1910651-00	56
2	E10, E66	I.C. 8640	1911469-00	57
1	E33	I.C 2102 650 NS	2111318-02	58
				59
6	E35, E34, E62, E63 E73, E83	SPARE IC SPACES		60
1	E67	CRYSTAL OSCILLATOR 20MHZ	1811660-00	61
4	E41, E71, E93, E52	IC. 74S74	1910544-00	62
1	S1	I.C. 74H10	1909057-00	63
1	E77	I.C. 74H40	1905586-00	64
				65
A/R		#30 AWG SOLID WIRE (YEL)	9105740-55	66
1	J1	CONN 40 PIN RT ANG HDR	1209941-02	67
1	(J1)	LATCH, LEFT FOR RT ANG HDR	1209941-03	68
1	(J1)	LATCH, RIGHT FOR RT ANG HDR	1209941-04	69
1	E13	I.C 256 X 4 ROM FLD0L	23111A2	70
1	E3	I.C 256 X 4 ROM FLD0H	2342IA2	71
1	E14	I.C 256 X 4 ROM FLD1L	23257A2	72
1	E4	I.C 256 X 4 ROM FLD1H	23258A2	73
1	E15	I.C. 256 X 4 ROM FLD2L	23115A2	74
1	E5	I.C. 256 X 4 ROM FLD2H	23116A2	75
1	E16	I.C 256 X 4 ROM FLD3L	23117A2	76
1	E6	I.C. 256 X 4 ROM FLD3H	23118A2	77
1	E17	I.C. 256 X 4 ROM FLD4L	23259A2	78
1	E7	I.C. 256 X 4 ROM FLD4H	23260A2	79
1	E18	I.C. 256 X 4 ROM FLD 5L	23121A2	80
1	E8	I.C. 256 X 4 ROM FLD 5H	23122A2	81
1	R33	RES 150 1/4W 5% CC	1300250-00	82

SPARE I.C. GATES

TYPE	LOCATION	PINS	DESCRIPTION
74H04	E61	1,2	INVERTER
7404	E64	12, 13	INVERTER
7404	E76	12, 13	INVERTER
7408	E11	1,2,3 8,9,10	2 INPUT AND
74H00	E72	1,2,3 4,5,6 8,9,10	2 INPUT NAND
7437	E65	8, 9, 10	2 INPUT NAND BUFFER
8881	E2	8, 9, 10	2 INPUT NAND OC.
74H10	E51	3,4,5, 6	3 INPUT NAND
74H40	E77	1, 2, 4, 5, 6	4 INPUT NAND BUFFER
7402	E64	4,5, 6	2 INPUT NOR
8640	E66	2, 6, 7 11, 12, 13 3,4,5	2 INPUT NOR RCVR
7427	E53	1, 2, 12, 13	3 INPUT NOR
7486	E82	4,5,6	2 INPUT XOR
7486	E74	1, 2, 3, 4,5,6	2 INPUT XOR
74S74	E93	1, 2, 3, 4, 5, 6	DTYPE FLIP FLOP
74H106	E50	1, 2, 3, 4, 14, 15, 16	J K FLIP FLOP
74123	E42	1, 2, 3, 4, 13, 14, 15	ONE SHOT

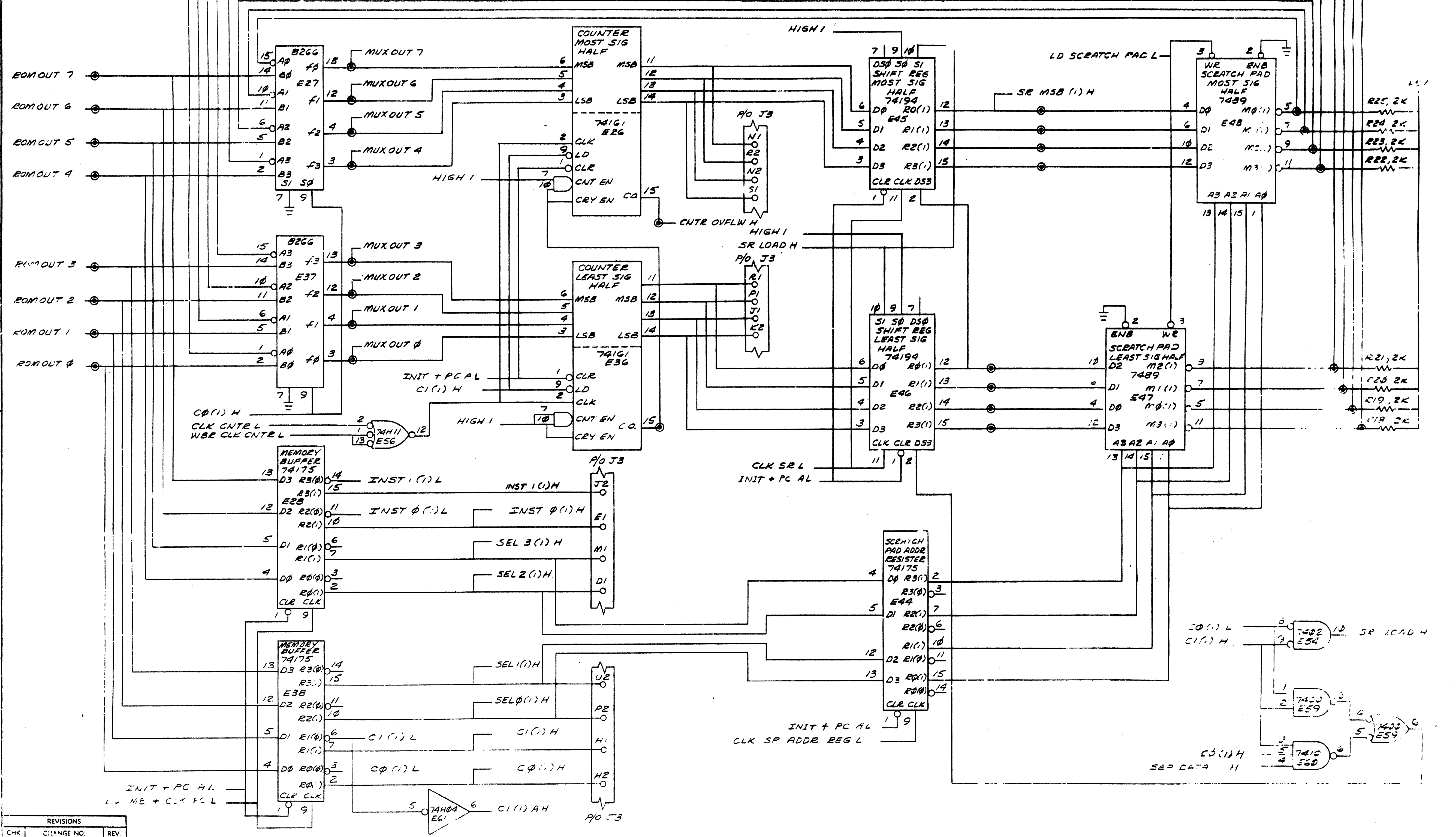
ALLOWABLE SUBSTITUTIONS

PREFERRED			REPLACEMENT	
TYPE	ITEM #	P.N.	TYPE	P.N.
7489	48	1910396-00	8265	1911156-00
7489	48	1910396-00	8265	1911156-00

REVISIONS

CHK	CHANGE NO	REV

TITLE: FLOPPY DISK CONTROLLER
SIZE D | CODE CS | NUMBER M7726-Ø-1 | RF
SCALE: — | SHEET 2 OF 3 | DIST.



REVISIONS		
CHK	CHANGE NO.	REV

TITLE: FLOPPY DISK CONTROLLER (3)

SIZE: D | CODE: CS | NUMBER: M7726 | SHEET 3 OF 9

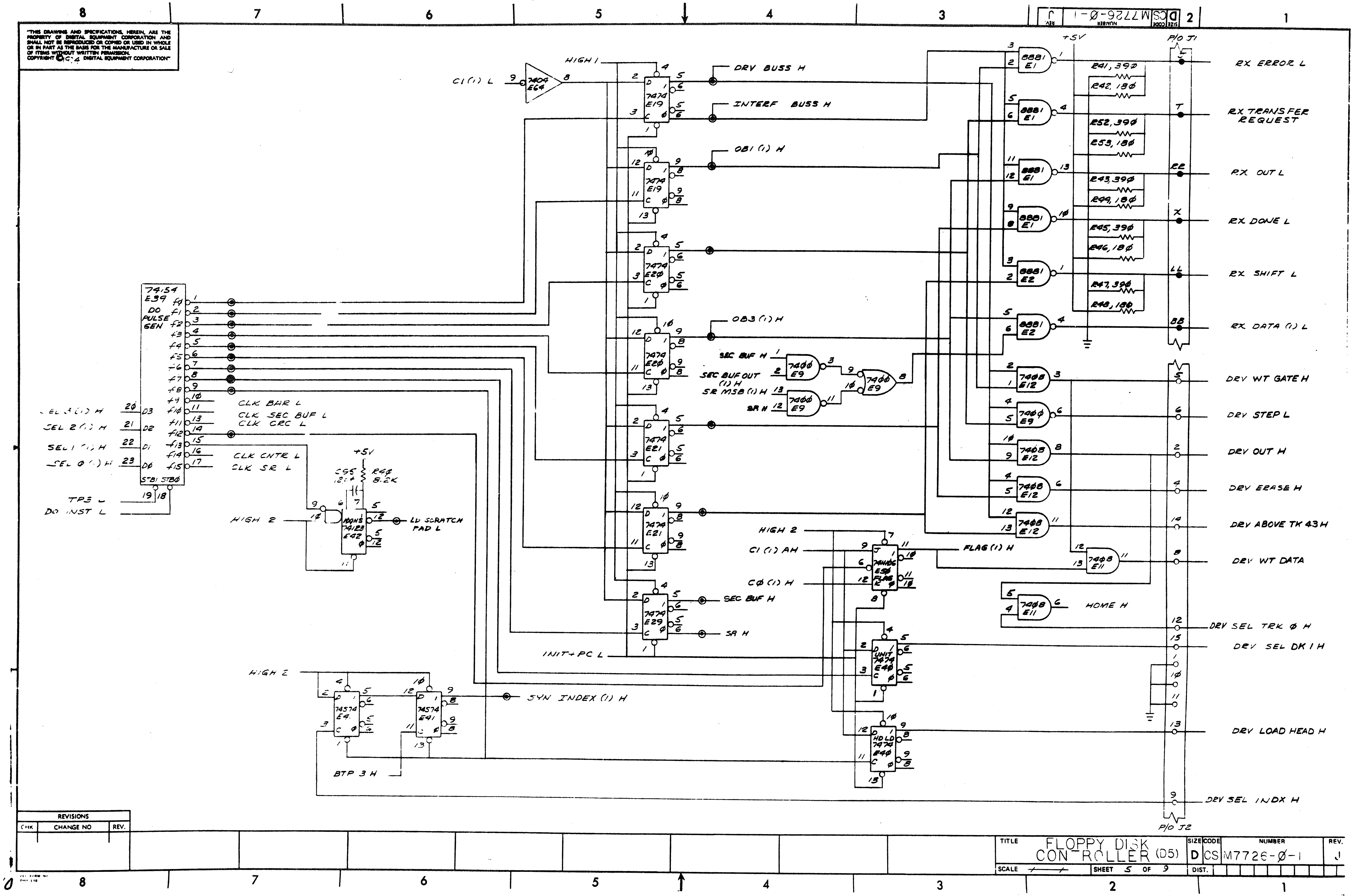
SIZE D CODE CS NUMBER M7726-Ø-1 REV J

HIGH 3
20 MHZ CLK
74H74 E82
HIGH 3
74H103 E87
END WIND L
HIGH 3
74S74 E71
74S74 E71
20 MHZ CLK
74H74 E82
74HØØ E72
HIGH 3
BRW CRY
74193 E89
BRW CRY
74193 E88
END WIND L
INIT + PC H
BRW CRY
74193 E9Ø
BRW CRY
74193 E91
INIT + PC H
74H11 E7Ø
74H103 E81
MIS CLK (1) L
INIT + PC AL
74H103 EBØ
74H103 EBØ
INIT + PC AL
7402 E54
74H103 E81
SEP DATA (1) H
SEP DATA (1) L
74H11 E7Ø
INIT + PC AL
F/S J2
DRV RAW DATA L
7404 E64
7437 E65
74H103 E87
74S74 E93
SEP CLK (1) H
BTP 3 H
HIGH 2
LSB LSB BUFFER ADDR REG LS THIRD MSB MSB
74161 E3Ø
CLR
LD
CLK
CNT EN
CRY EN CO.
EN
2IØ2 E33
LSB LSB BUFFER ADDR REG MSB MSB
74161 E31
CLR
LD
CLK
CNT EN
CRY EN C.O
SECTOR DATA BUFFER 1K RAM
SEC BUF OUT (1) H
DATA WRT IN
HIGH 1
CØ (1) H
7476 E29
CLK SEC BUF L
LSB LSB BUFFER ADDR REG MS THIRD MSB MSB
CØ (1) L
74161 E32
INIT + PC L
C1 (1) A H
CLK BAR L
HIGH 1
CNT EN
CRY EN C.Ø
SEC BUF OVFLW H
DRV BUSS H
7404 E76
DATA I L
SEP DATA (1) L
7450 E75

REVISIONS

CHK	CHANGE NO	REV.

TITLE FLOPPY DISK CONTROLLER (D4)
SIZE D CODE CS NUMBER M7726-Ø- REV. J
SCALE SHEET 4 OF 9 DIST.



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C1 (1) L
7404 E64
HIGH 1
DRV BUSS H
INTERF BUSS H
OB1 (1) H
OB3 (1) H
7474 E19
7474 E20
7474 E21
7474 E29
74154 E39 DO PULSE GEN
SEL 3 (1) H
SEL 2 (1) H
SEL 1 (1) H
SEL Ø (1) H
TP3 L
DO INST L
CLK BHR L
CLK SEC BUF L
CLK CRC L
CLK CNTR L
CLK SR L
+5V
C55
R4Ø 8.2K
HIGH 2
74123 E42
LD SCRATCH PAD L
SEC BUF H
SEC BUF OUT (1) H
SR MSB (1) H
SR H
7400 E9
INIT + PC L
HIGH 2
C1 (1) AH
CØ (1) H
74H106 E50 FLAG
FLAG (1) H
UNIT 7474 E40
HD LD 7474 E40
74S74 E4
74S74 E41
SYN INDEX (1) H
BTP 3 H
8881 E1
8881 E2
7408 E12
7408 E11
HOME H
R41, 39Ø
R42, 18Ø
R52, 39Ø
R53, 18Ø
R43, 39Ø
R44, 18Ø
R45, 39Ø
R46, 18Ø
R47, 39Ø
R48, 18Ø
P/O J1
P/O J2
RX ERROR L
RX TRANSFER REQUEST
RX OUT L
RX DONE L
RX SHIFT L
RX DATA (1) L
DRV WT GATE H
DRV STEP L
DRV OUT H
DRV ERASE H
DRV ABOVE TK 43 H
DRV WT DATA
DRV SEL TRK Ø H
DRV SEL DK 1 H
DRV LOAD HEAD H
DRV SEL INDX H
REVISIONS
CHK
CHANGE NO
REV.
TITLE FLOPPY DISK CONTROLLER (D5)
SIZE D
CODE CS
NUMBER M7726-Ø-1
REV. J
SCALE
SHEET 5 OF 9
DIST.

SIZE D | CODE CS | NUMBER M7726-Y-1 | REV J

+5V
R1 3K
DISABLE ROMS L
7404 E64
7442 E22 FIELD DECODER
FLD 5 L
FLD 4 L
FLD 3 L
FLD 2 L
FLD 1 L
FLD Ø L
SEL 3(1) H
SEL 2(1) H
SEL 1(1) H
SEL Ø(1) H
FIELD COUNTER
MSB LSB
74161 E23
JUMP L
LD CLR CLK CNT EN CRY EN C.O.
P/O J3
MUX OUT 7
MUX OUT 6
MUX OUT 5
MUX OUT 4
PROGRAM COUNTER MS HALF
INIT + PC A L
74161 E25
MUX OUT 3
MUX OUT 2
MUX OUT 1
MUX OUT Ø
PROGRAM COUNTER LS HALF
INIT + PC L
PC LOAD EN L
LD MB + CLK PC L
HIGH 1
74161 E24
R2 470
R3, 820
R4, 470
R5, 820
R6, 470
R7, 820
R8, 470
R9, 820
R10, 470
R11, 820
R12, 470
R13, 820
R14, 470
R15, 820
R16, 470
R17, 820
FLD 4 HI E7
FLD 3 HI E6
FLD 4 LO E17
FLD 3 LO E16
FLD 2 HI E5
FLD 1 HI E4
FLD Ø HI E3
FLD 2 LO E15
FLD 1 LO E14
FLD Ø LO E13
ENB1 ENBØ
ROM OUT 7
ROM OUT 6
ROM OUT 5
ROM OUT 4
ROM OUT 3
ROM OUT 2
ROM OUT 1
ROM OUT Ø
P/O J3
PC7(1) H
PC6(1) H
PC5(1) H
PC4(1) H
PC3(1) H
PC2(1) H
PC1(1) H
PCØ(1) H

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FLOPPY DISK CONTROLLER (D6)	D	CS	M7726-Y-1	J
SCALE	SHEET 5 OF 9	DIST.		

DEC FORM NO D60 138

+5V
20 MHZ OSCILLATOR EG7
W1 NOTE 3
74H00 E77
2Ø MHZ CLK
INIT + PC H
HIGH 2
TP1 H
TP3 H
TP3 L
TP4 L
TP4 H
BTP 3 H
INIT + PC AL
74H11 E78
74H04 EG1
74H00 EG8
P/O J3
HALT H
CONTINL
HALT L
ERROR HALT ENABLE L
R49 3K
R50 3K
R51 3K
7404 E76
7400 E59
74H00 EG8
7410 EG2
INTERF BUSS H
OB 1 (1) H
CØ (1) H
C1 (1) H
7410 EGØ
PRESET CRC L
CLK CRC L
74H04 EG1
74H00 EG8
SHIFT CRC L
CØ (1) L
C1 (1) L
SEP DATA (1) L
CRC 16 (1) L
7450 E75
7486 E92
74174 E84
74174 E85
74174 E86
CRC 1 … CRC 16
CRC 16 (1) H
CRC 16 (1) L
R54 1K — HIGH 1 (21 LOADS)
R55 1K — HIGH 2 (21 LOADS)
R56 1K — HIGH 3 (2Ø LOADS)

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	FLOPPY DISK CONTROLLER (D7)	SIZE D	CODE CS	NUMBER M7726-Ø-1 REV. J
SCALE	SHEET 7 OF 9	DIST.		

+5V
P/O J1
RX RUN L
RX 12 BIT L
RX DATA (1) L
SEP DATA (1) L
SR MSB (1) H
MIS CLK (1) L
P/O J2
DRV SEL
WT PROT L
P/O J1
RX INIT L
R33 150Ω
P/O J4
+10 V
D1 IN4004
D2 IN4004
D3 IN4004
R34 261 1%
R35 300
R36 287 1%
R37 10K
R38 180
R39 100 1/2W
Q1 A55
Q2 A05
D4 IN746A 3.3V
P/O J3
B1 +7V
A2 +5V
C2 GND
E31 390
E30 180
E29 390
E28 180
E27 390
E26 180
8640 E10
8640 E10
8640 E10
7486 E74
7486 E74
.1 SEMSB EQ SEP DATA H
8 MIS CLK EQ SEMSB H
BTP 3 H
7474 E52
HIGH 2
7404 E64
DATA I L
STB
7415 E49
CONDITION SELECTOR
D0
D10
D2
D11
D13
D3
D4
D5
D6
D7
D8
D9
D12
D14
D15
D1
S3 S2 S1 S0
SYN INDEX (1) H
SR MSB (1) H
CNTR OVFLW H
CRC 16 (1) H
HOME H
SEP CLK (1) H
SEC BUF OVFLW H
SEC BUF OUT (1) H
FLAG (1) H
OB3 (1) H
SEL 3 (1) H
SEL 2 (1) H
SEL 1 (1) H
SEL 0 (1) H
8640 E10
8881 E2
DRV INIT + PC
P/O J2
8640 E66
INIT + PC H
7437 E65
INIT + PC L
7437 E65
INIT + PC A L
HIGH 2
C1 (1) A H
C1 (1) L
7474 E52
TP3 H
CNTR OVFLW H
7404 E64
7400 E51
7400 E51
INST DIS H
INST 0 (1) L
7402 E54
INST DIS L
INST 1 (1) L
7410 E53
DO INST L
INST 0 (1) H
7427 E53
C1 (1) L
TP3 H
7410 E53
CLK SP ADDR REG L
7427 E53
WBR H
7400 E57
CNTR OVFLW H
CBR L
7410 E53
7400 E57
C1 (1) A H
7400 E57
7411 E56
PC LOAD EN L
7420 E55
7400 E57
LDMB +CLK PC L
TP4 H
7400 E57
WBR CLK CNTR L
JUMP L
7430 E55
TP4 L
7474 E58
INST DIS H
INST DIS L
+5V
R57 3K
YDA CT DISABLE L
HIGH 2
C0 (1) L
7474 E58
CLK CNTR L
7404 E61
INIT + PC H

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	FLOPPY DISK CONTROLLER (D8)	SIZE	CODE	NUMBER	REV.
		D	CS	M7726-0-1	J
SCALE		SHEET 8 OF 9		DIST	

THIS LIST GIVES THE SOURCE AND DESTINATIONS OF SIGNAL NAMES WITHIN THE M7726 PRINT SET. SIGNAL NAMES THAT DO NOT APPEAR ON THIS LIST ARE PRESENT FOR INFORMATION ONLY. THEY DO NOT INDICATE CONNECTIONS TO OTHER POINTS IN THE PRINT SET.

INTERFACE	REFERS TO SIGNALS ON THE INTERFACE BUSS
DRIVE	REFERS TO SIGNALS ON THE DRIVE BUSS
POWER SUPPLY	REFERS TO VOLTAGES FROM THE POWER SUPPLY
KM11	REFERS TO SIGNALS ON J3 THE MAINTANENCE CONNECTOR

SIGNAL NAME	ORIGIN	DESTINATION
BIP 3 H	D7-C1	D4-A5,D5-A6,D8-D6
CLK BAR L	D5-C7	D4-A3
CLK CNTR L	D5-B7	D3-B7,D8-A4
CLK CRC L	D5-C7	D7-B7
CNTR OVFLW H	D3-C5	D8-D4,D8-C5,D8-B4
CLK SEC BUF L	D5-C7	D4-B2
CLK SP ADDR REG L	D8-B3	D3-A4
CLK SR L	D5-B7	D3-B4
CONTIN L	KM11	D7-C7
CRC16 (1) H	D7-B1	D8-C6
CRC16 (1) L	D7-A1	D7-B7
C1 (1) AH	D3-A6	D4-B3,D5-B4,D8-D4,D8-C4
C1 (1) H	D3-A6	D3-C6,D3-B2,D7-B8
C1 (1) L	D3-A6	D5-D6,D7-B8,D8-D4,D8-B4
C0 (1) H	D3-A6	D3-C7,D3-A2,D4-B1,D5-B4,D7-B8
C0 (1) L	D3-A6	D3-B2,D4-B3,D7-B8,D8-B3
DATA I L	D8-D5	D4-A2
DISABLE ROMS L	TEST PAD	D4-D8
DO INST L	D8-B4	D5-H8
DRV BUSS H	D5-D4	D4-A4
DRV ERASE H	D5-B1	DRIVE
DRV OUT H	D5-C1	DRIVE
DRV LOAD HEAD H	D5-A1	DRIVE
DRV STEP	D5-C1	DRIVE
DRV INIT + PC	D8-H6	DRIVE
DRV ABOVE TK 43 H	D5-B1	DRIVE
DRV RAW DATA L	DRIVE	D4-A8
DRV SEL DK 1 H	D5-B1	DRIVE
DRV SEL INDX H	DRIVE	D5-A1
DRV SEL TRK 0 H	DRIVE	D5-B1
DRV WT DATA	D5-B1	DRIVE
DRV WT GATE H	D5-C1	DRIVE
DRV SEL WT PROT L	DRIVE	D8-C6
END WIND L	D4-D3	D4-D8
ERROR HLT ENABLE L	KM11	D7-C7
FLAG (1) H	D5-B3	D8-B6
FLD 0 L	D6-D6	D6-A3,D6-A2
FLD 1 L	D6-D6	D6-B3,D6-B2
FLD 2 L	D6-D6	D6-C3,D6-C2
FLD 3 L	D6-D6	D6-A6,D6-A4
FLD 4 L	D6-D6	D6-B6,D6-B4
FLD 5 L	D6-D6	D6-C6,D6-C4
HALT H	D7-C3	KM11
HALT L	KM11	D7-C7
HIGH 1	D7-C4	D3-D6,D3-D4,D3-C6,D3-C4,D4-A3 D4-B1,D5-D5,D6-A8
HIGH 2	D7-B4	D4-A5,D5-B7,D5-A7,D5-B4,D7-D5 D7-D4,D7-C4,D7-C5,D8-D5,D8-B3 DR-A5
HIGH 3	D7-B4	D4-D8,D4-C8,D4-D7,D4-D5,
HOME H	D5-A2	D8-C6
INIT +PC A L	D8-A4	D3-C6,D3-A6,D3-A4,D3-A7,D4-B6 D4-B5,D6-A8,D7-C5,D8-B2
INIT + PC H	D8-A4	D4-D5,D4-C5,D7-D4
INIT + PC L	D8-A4	D4-B3,D5-A5,D6-A8
INST 0 (1) H	D3-A6	KM11,D8-A5
INST 0 (1) L	D3-A6	D8-C5
INST 1 (1) H	D3-A6	KM11
INST 1 (1) L	D3-B6	D8-A5
INST DIS H	D8-B1	D8-C5
INST DIS L	D8-B1	D8-A5
INTERF BUSS H	D5-D4	D7-A8
JUMP L	D8-C3	D6-C8
LD MB + CLK PC L	D8-C1	D6-A8,D3-A8
LD SCRATCH PAD L	D5-B6	D7-B3
MAINT DIS L	TEST PAD	D8-A1
MIS CLK (1) L	D4-C4	D8-C8
MUX OUT 0	D3-C7	D6-A8
MUX OUT 1	D3-C7	D6-A8
MUX OUT 2	D3-C7	D6-A8
MUX OUT 3	D3-C7	D6-B8
MUX OUT 4	D3-C7	D6-B8
MUX OUT 5	D3-D7	D6-B8
MUX OUT 6	D3-D7	D6-B8
MUX OUT 7	D3-D7	D6-B8
OB1 (1) H	D5-D4	D7-B8
OB3 (1) H	D5-C4	D8-B6
PC 0 (1) H	D6-A1	KM11
PC 1 (1) H	D6-A1	KM11
PC 2 (1) H	D6-A1	KM11
PC 3 (1) H	D6-A1	KM11
PC 4 (1) H	D6-A1	KM11
PC 5 (1) H	D6-A1	KM11
PC 6 (1) H	D6-A1	KM11
PC 7 (1) H	D6-A1	KM11
PC LOAD EN L	D8-D1	D6-A8
ROM OUT 0	D6-D1	D3-C8
ROM OUT 1	D6-D1	D3-C8
ROM OUT 2	D6-D1	D3-C8
ROM OUT 3	D6-D1	D3-C8
ROM OUT 4	D6-D1	D3-C8
ROM OUT 5	D6-D1	D3-D8
ROM OUT 6	D6-D1	D3-D8
ROM OUT 7	D6-D1	D3-D8
RX DATA (1) L	D5-C1,INTERFACE	INTERFACE,D8-D8
RX DONE L	D5-D1	INTERFACE
RX ERROR L	D5-D1	INTERFACE
RX INIT L	INTERFACE	D8-B8
RX OUT L	D5-D1	INTERFACE
RX RUN L	INTERFACE	D8-D8
RX SHIFT L	D5-C1	INTERFACE
RX TRANSFER REQUEST	D5-D1	INTERFACE
RX 12 BIT L	INTERFACE	D8-D8
SEC BUF OVFLW H	D4-A1	D8-C6
SEC BUF OUT (1) H	D4-C1	D5-C4,D8-A6
SEC BUF H	D5-H4	D5-C4
SEL 0 (1) H	D3-A6	D5-C8,D6-C8,D8-B6,KM11
SEL 1 (1) H	D3-A6	D5-C8,D6-C8,D8-B6,KM11
SEL 2 (1) H	D3-B6	D5-C8,D6-C8,D8-B6,KM11
SEL 3 (1) H	D3-B6	D5-C8,D6-C8,D8-B6,KM11
SEP CLK (1) H	D4-B4	D8-C6
SEP DATA (1) H	D4-A5	D3-A2
SEP DATA (1) L	D4-B5	D4-A2,D7-A8,D4-C8
SH H	D5-B4	D5-C4
SR LOAD H	D3-B1	D3-C4
SR MSB (1) H	D3-D3	D5-C4,D8-C8,D8-C6
SYN INDEX (1) H	D5-A5	D8-C6
TP3 H	D7-D3	D7-C6,D8-B4,D8-C5
TP3 L	D7-D3	D5-H8
TP4 H	D7-D2	D8-C3
TP4 L	D7-D3	D8-H2
WAR CLK CNTR L	D8-C2	D3-B7
20 MHZ CLK	D7-C5	D4-C8,D4-D7
GND	POWER SUPPLY	D1-A4
+5V	POWER SUPPLY	D1-A4,D8-A7
+7V	D8-A7	KM11
+10V	POWER SUPPLY	DR-H8

REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
FLOPPY DISK CONTROLLER	D	CS	M7726-0-1	J
SCALE —	SHEET 9 OF 9	DIST.		

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REV.	NUMBER	SIZE	CODE
	RXØ1-Ø-2	K	SP

FIRST USED ON OPTION MODEL	QTY.	DESCRIPTION	PART NO.	ITEM NO.
RXØ1		PARTS LIST		

DRN	DATE 19 FEB. 76	digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS
CHK'D	DATE 19 FEB. 76	
ENG	DATE 2/19/76	TITLE: FLOPPY CONTROLLER FIRMWARE
PROJ. ENG.	DATE 2/23/76	
PROD.	DATE 2/23/76	
NEXT HIGHER ASSEMBLY		SIZE K · CODE SP · NUMBER RXØ1-Ø-2 · REV.
SCALE		
SHEET 1 OF 1		DIST.

REVISIONS	REV.	CHANGE NO.	CHK

DEC FORM NO. DRB 109

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```
                        /RX01 FLOPPY CONTROLLER FIRMWARE


                        /THIS SYMBOL TABLE REPLACES THE NORMAL PAL SYMBOL TABLE AND DEFINES
                        /THE INSTRUCTIONS POSSIBLE BY THE RX01 CONTROLLER



                        /DO INSTRUCTIONS


            0002        SET=2
            0000        CLR=0
            0002        ONE=2
            0000        ZERO=0

            0000        IO80=0              /INTERFACE-DISK BUSS OUTPUT BUFFER
            0004        IO81=4
            0010        IO82=10
            0014        IO83=14
            0020        IO84=20
            0024        IO85=24
            0030        IO86=30

            0000        INTERF=CLR IO80     /IO80 SELECTS EITHER INTERFACE OR DISK BUSS.  CLR= INTERFACE
            0002        DISK=SET IO80       /SET=DISK

                                            /INTERFACE BUFFER DEFINITIONS
            0004        ERR=IO81            /SET TO INDICATE THAT AN RX01 ERROR HAS OCCURED
            0010        XREQ=IO82           /SET TO REQUEST AN RX01 WORD TRANSFER
            0014        IOOUT=IO83          /DIRECTION FOR DATA LINE.  SET=TO INTERFACE
            0020        DONE=IO84           /SET TO INDICATE RX01 READYNESS TO ACCEPT A COMMAND
            0024        SHIFT=IO85          /SHIFT FOR DATA LINE
            0030        SECDAT=IO86         /SELECTS SOURCE FOR DATA OUT OF CONTROLLER ON DATA LINE
                                            /SET=SECTOR BUFFER   CLR=SHIFT REGISTER MOST SIG BIT

                                            /DISK BUFFER DEFINITIONS
            0004        WGATE=IO81          /WRITE CURRET ENABLE WHEN SET
            0010        STPHD=IO82          /HEAD STEP.  TWO PULSES REQUIRED FOR EACH TRACK
            0014        HDOUT=IO83          /DIRECTION OF HEAD MOTION
            0020        EGATE=IO84          /ERASE CURRENT ENABLE
            0024        LOWCUR=IO85         /SPECIFIES WRITE CURRENT LEVEL

            0034        UNIT=34             /SELECTS ONE OF TWO DRIVES.  UNIT (ZERO)(ONE)

            0040        UNHD=40             /DEACTIVATES HEAD LOAD SOLONOID OF SELECTED DRIVE
            0042        LDHD=42             /ACTIVATES HEAD LOAD SOLONOID OF SELECTED DRIVE

            0044        BAR=44              /SECTOR BUFFER ADDRESS REGISTER CONTROL
            0001        LONG=1              /FORMAT:  CLR BAR (SHORT)(LONG)
            0000        SHORT=0             /SHORT PRESETS FOR COUNT OF 1024
            0002        INCR=2              /LONG PRESETS FOR COUNT OF 4096
                                            /FORMAT:  INCR BAR    INCREMENT THE BUFFER ADDRESS REG.
```



```
            0050        WRTBUF=50           /SECTOR BUFFER WRITE CLOCK
            0003        START=3             /FORMAT:  (STRAT)(FIN) WRTBUF
            0000        FIN=0               /A 750NS MINIMUM PULSE IS REQUIRED

                                            /CRC REGISTER CONTROL
            0054        CRC=54              /FORMAT:  CRC (ONE)(ZERO)   SPECIFIES DATA TO
                                            /BE JAMMED INTO CRC GENERATOR/CHECKER
            0057        PRECRC=57           /PRESETS CRC REG TO ALL ONES
            0055        DATCRC=55           /SHIFTS SEPERATED DATA INTO CRC CIRCUIT

                                            /GENERAL PURPOSE FLAG CONTROL
            0060        FLAG=60             /FORMAT:  FLAG (ON)(OFF)(TOG)
            0002        ON=2                /SET FLAG
            0001        OFF=1               /CLR FLAG
            0003        TOG=3               /TOGGLE FLAG

            0064        LSP=64              /LOAD OPEN SCRATCHPAD REG WITH CONTENTS OF SHIFT REG

            0070        LCT=70              /LOAD COUNTER WITH CONTENTS OF NEXT ROM LOCATION
            0071        ESP=71              /LOAD COUNTER WITH CONTENTS OF OPEN SCRATCHPAD
            0073        ICT=73              /INCREMENT COUNTER

                                            /SHIFT REGISTER CONTROL
            0074        ROTATE=74           /FORMAT: ROTATE(ONE)(ZERO)
                                            /SHIFTS SHIFT REG TOWARDS MOST SIGNIFICANT BIT
                                            /WHILE INSERTING A ONE OR ZERO INTO THE LEAST
                                            /SIGNIFICANT BIT
            0075        LSR=75              /LOAD SHIFT REGISTER WITH CONTENTS OF COUNTER
            0077        DATSR=77            /SHIFT REG TOWARDS MSB WHILE INSERTING SEPERATED
                                            /DATA INTO LSB
```

```
                        /BRANCH INSTRUCTIONS AND CONDITIONS

0100    BR=100          /FORMAT: BR COND (T)(F)(ONE)(ZERO)
                        /IF CONDITION IS MET,  A BRANCH IS MADE WITHIN
                        /THE CURRENT FIELD USING THE CONTENTS OF THE
                        /NEXT ROM LOCATION AS THE BRANCH ADDRESS
                        /IF THE CONDITION IS NOT MET,  THE NEXT ROM LOCATION
                        /IS IGNORED AND THE FOLLOWING INSTRUCTION IS EXECUTED
0300    WBR=300         /FORMAT:  WBR COND (T)(ONE)
                        /THE COUNTER IS INCREMENTED WITH EVERY EXECUTION OF
                        /THIS INSTRUCTION.  THE WBR IS REPEATEDLY
                        /EXECUTED UNTILL EITHER THE COUNTER OVERFLOWS OR
                        /THE CONDITION IS MET.  IF THE CONDITION IS MET
                        /THE BRANCH IS MADE.  IF THE COUNTER OVERFLOWS
                        /THE BRANCH ADDRESS IS IGNORED AND THE NEXT INSTRUCTION
                        /IS EXECUTED
0000    F=ZERO          /REQUIRES THE CONDITION TO BE FALSE
0002    T=ONE           /REQUIRES THE CONDITION TO BE TRUE
0001    IND=1           /IF APPENDED TO THE JUMP, BR OR WBR INSTRUCTION,
                        /CAUSES THE BRANCH ADDRESS TO BE TAKEN FROM THE
                        /OPEN SCRATCHPAD RATHER THAN FROM THE NEXT ROM LOCATION

0000    RUN=0           /WHEN ASSERTED INDICATES THAT THE INTERFACE HAS
                        /SERVICED A TRANSFER REQUEST, OR THAT A COMMAND
                        /IS PENDING
0004    IOB3OT=4        /INTERF/DISK OUTPUT BUFFER BIT 3
0010    DATAIN=10       /BIDIRECTIONAL DATA LINE BETWEEN INTERFACE AND CONTROLLER
0014    INDX=14         /DRIVE INDEX LATCH
0020    SR7=20          /SHIFT REGISTER MOST SIGNIFICANT BIT
0024    COFL=24         /OVERFLOW (ALL ONES) OF THE COUNTER
0030    CRC16=30        /BIT 16 OF CRC GENERATOR/CHECKER
0034    HOME=34         /TRACK ZERO OF SELECTED DRIVE ANDED WITH HEAD
                        /DIRECTION BEING OUT
0040    WRTEN=40        /WRITE ENABLED STATUS OF THE SELECTED DRIVE
0044    SEPCLK=44       /SEPERATED CLOCK FROM DISK DATA
0050    XIIBIT=50       /ASSERTED IF INTERFACE TRANSFERS ARE TO BE AS
                        /12 BIT WORDS RATHER THAN 8 BIT BYTES
0054    DEQSR7=54       /SEPERATED DATA EQUAL TO SHIFT REG BIT 7
0060    BAROFL=60       /OVERFLOW CONDITION (ALL ONES) OF THE SECTOR BUFFER
                        /ADDRESS REGISTER
0064    MCEQSR=64       /MISSING CLOCK EQUAL TO SHIFT REG BIT 7
0070    BDATAO=70       /OUTPUT OF SECTOR BUFFER
0074    FLAGO=74        /STATE OF GENERAL PURPOSE FLAG
```



```
                        /SCRATCHPAD REGISTER SELECTION

0200    OPEN=200        /FORMAT: OPEN X  WHERE X IS ONE OF THE SCRATCHPAD REG
                        /THIS INSTRUCTION MAKES THE NAMED SCRATCHPAD
                        /ACCESSABLE VIA THE LSP AND ESP COMMANDS

0000    R0=0            /DEFINITIONS OF SCRATCHPADS BY R#
0004    R1=4
0010    R2=10
0014    R3=14
0020    R4=20
0024    R5=24
0030    R6=30
0034    R7=34
0040    R8=40
0044    R9=44
0050    R10=50
0054    R11=54
0060    R12=60
0064    R13=64
0070    R14=70
0074    R15=74

                        /DEFINITION OF SCRATCHPADS BY MNEUMONICS
0000    CURTK0=R0       /CURRENT TRACK ADDRESS OF DRIVE 0
0004    CURTK1=R1       /CURRENT TRACK ADDRESS OF DRIVE 1
0010    ERREG=R2        /DEFINITIVE ERROR CODE IF ANY
0014    STAT=R3         /STATUS WORD OF RX01
0020    TARTRK=R4       /TARGET TRACK OF CURRENT DISK ACCESS
0024    TARSEC=R5       /TARGET SECTOR OF CURRENT DISK ACCESS
0030    TEMPA=R6        /TEMPORARY STORAGE
0034    TEMPB=R7        /TEMPORARY STORAGE
0040    TEMPC=R8        /TEMPORARY STORAGE
0044    TEMPD=R9        /BIT 7 IS UNIT SELECT BIT.  0 MEANS UNIT 1
0050    TEMPE=R10       /BIT 7 IS HEAD LOADED BIT.  1 MEANS HEAD LOADED
0054    TEMPF=R11       /TEMPORARY STORAGE
0060    TEMPG=R12       /TEMPORARY STORAGE
0064    RTNB=R13        /RETURN ADDRESS FOR 3RD LEVEL NESTED SUBROUTINES
0070    RTNA=R14        /RETURN ADDRESS FOR 2ND LEVEL NESTED SUBROUTINES
0074    RTN=R15         /RETURN ADDRESS FOR 1ST LEVEL SUBROUTINES
```

```
                        /JUMP INSTRUCTION AND JUMP FIELD DEFINITIONS
                        
0222            JUMP=222        /FORMAT:  JUMP FX (IND)
                                /CAUSES A BRANCH TO ONE OF SIX ROM FIELDS (0-5)
                                /SPECIFIED BY X.  THE BRANCH ADDRESS IS TAKEN FROM
                                /THE ROM LOCATION FOLLOWING THE JUMP INSTRUCTION.
                                /IF IND IS APPENDED, THE BRANCH ADDRESS
                                /IS TAKEN FROM THE OPEN SCRATCH PAD
                        
0000            F0=0
0004            F1=4
0010            F2=10
0014            F3=14
0020            F4=20
0024            F5=24
```



```
                        
                        
                        
                        
                        
                        
                        
                        
                        /TABLE OF DEFINITIVE ERROR CODES
                        
0010            KNXDV0=10       /DRIVE 0 FAILED TO SEE HOME ON INITIALIZE
0020            KNXDV1=20       /DRIVE 1 FAILED TO SEE HOME ON INITIALIZE,  DOES NOT CAUSE ERROR
0030            KWRONG=30       /FOUND HOME WHEN STEPPING IN 10 TRACKS FOR INIT
0040            KERTRK=40       /TRIED TO ACCESS A TRACK GREATER THAN 76
0050            KHOMERR=50      /HOME WAS FOUND BEFORE DESIRED TRACK WAS REACHED
0060            KSELFER=60      /SELF DIAGNOSTIC ERR
0070            KNXHDR=70       /DESIRED SECTOR COULD NOT BE FOUND AFTER LOOKING
                                /AT 52 HEADERS
0100            KWPROT=100      /WRITE FUNCTION ATTEMPTED ON A WRITE PROTECTED DISK
0110            KTIMERR=110     /MORE THAN 40 MICROSECONDS AND NO SEPCLOCK SEEN
0120            KNXPRAM=120     /A PREAMBLE COULD NOT BE FOUND
0130            KNXIDAM=130     /PREAMBLE FOUND BUT NO ID MARK FOUND WITHIN ALLOWABLE TIME
0140            KHCRCER=140     /CRC ERROR ON WHAT APPEARED TO BE A HEADER,  ERROR IS NOT ASSERTED
0150            KTKSMER=150     /THE TRACK ADDRESS OF A GOOD HEADER DOES NOT COMPARE
                                /WITH THE DESIRED TRACK
0160            KXSTRYS=160     /TOO MANY TRIES FOR AN IDAM
0170            KNODAM=170      /DATA AM NOT FOUND IN ALLOTTED TIME
0200            KDCRCER=200     /CRC ERROR ON READING THE SECTOR FROM THE DISK
0210            KPARER=210      /PARITY ERROR ON SOME WORD FROM THE INTERFACE
                        
```

```
                        /[ROUTINE: INITIALIZE]  IF A HOST PROCESSOR INITIALIZE OR AN
                        /RX01 POWER LOW IS DETECTED, THE PC IS CLEARED AND THE RX01 TIMING
                        /STOPS.  UPON THE NEGATION OF INITIALIZE, TIMING RESUMES AND A SELF TEST OF
                        /INTERNAL DATA PATHS IS MADE.  IF AN ERROR OCCURS HERE,  ERROR AND
                        /DONE ARE SET, BUT ERREG IS NOT ALTERED.  THEN IF NO ERROR HAS OCCURRED AN ATTEMPT
                        /IS MADE TO RECALABRATE DRIVE 1 THEN DRIVE 0.  IF DRIVE 0 FAILS TO RECALIBRATE,
                        /THE ERROR CODE IS LOADED INTO ERREG AND ERROR IS SET.  IF DRIVE
                        /0 RECALIBRATES AND IS READY (DISK LOADED) SECTOR ONE OF TRACK ONE
                        /IS READ INTO THE SECTOR BUFFER.  IT IS POSSIBLE FOR A READ ERROR
                        /TO OCCUR WHILE READING THIS SECTOR.

0000            *2000
                        DECIMAL

0000  0210              OPEN ERREG        /CLEAR ERROR REGISTER
0001  0064              LSP

0002  0222              JUMP F4           /GO DO THE INITIALIZE DIAGNOSTIC ROUTINE
0003  2352              TEST

0004  0070  TSTRTN,     LCT               /RETURN FROM SUCCESSFUL DIAGNOSTIC ROUTINE
                        OCTAL
0005  0004              4
                        DECIMAL
0006  0075              LSR               /SET THE INIT DONE BIT OF STAT
0007  0214              OPEN STAT
0010  0064              LSP

0011  0070              LCT               /SET UP SOME SCRATCHPAD REGISTERS
0012  0377              -1
0013  0075              LSR
0014  0244              OPEN TEMPD        /UNIT 0 TO SOFT UNIT BIT
0015  0064              LSP
0016  0200              OPEN CURTK0       /NEG ZERO TO BOTH CURRENT TRACK ADDRESSES
0017  0064              LSP
0020  0204              OPEN CURTK1
0021  0064              LSP

0022  0074              ROTATE ZERO       /NEG ONE TO TARGET SECTOR
0023  0224              OPEN TARSEC
0024  0064              LSP
0025  0220              OPEN TARTRK       /NEG ONE TO TARGET TRACK FOR INITIALIZE BOOTSTRAP
0026  0064              LSP

0027  0062              DISK              /SELECT DISK BUSS

0030  0070              LCT               /CALL SUBROUTINE TO LOAD HEAD AND WAIT 25 MS
0031  0034              RECAL1            /TO ALLOW POWER UP DRIVE SETTLE TIME
0032  0222              JUMP F4
0033  2145              DLY25

0034  2436  RECAL1,     UNIT ONE          /SELECT UNIT ONE FOR RECALIBRATE

0035  0414  RECAL0,     CLR HDOUT         /STEP HEAD IN 12 TRACKS TO ASSURE IT IS NOT BEHIND TRACK 0
```



```
0036  0070              LCT
0037  0365              -10-1
0040  0075              LSR
0041  0070              LCT
0042  0245              IN10
0043  0222              JUMP F4
0044  2100              STEPHD

0045  0226  IN10,       JUMP F5           /ERROR.  HOME WAS SEEN WHILE STEPPING IN.
0046  2621              WRONG

0047  2015              SET HDOUT         /STEP OUT AS MANY AS 80 TRACKS IN SEARCH OF HOME
0050  2070              LCT
0051  0257              -80-1
0052  0075              LSR
0053  0070              LCT
0054  0260              RCALOK
0055  0040              UNHD
0056  0222              JUMP F4
0057  2100              STEPHD

0060  0202  RCALOK,     JUMP F0           /HOME WAS FOUND OK
0061  0075              WHCHDR

0062  0174              BR FLAGO F        /IF FLAG=0 RECALIBRATE WAS ON DRIVE 1
0063  0070              NXDRV1

0064  0270  NXDRV0,     LCT               /RECALABRATE FAILURE WAS ON DRV 0
0065  0010              KNXDV0
0066  0226              JUMP F5
0067  2610              GOERDN

0070  0070  NXDRV1,     LCT               /RECAL FAILURE WAS ON DRV 1, LOG ERROR
0071  0020              KNXDV1            /AND CONTINUE RECALIBRATION
0072  0075              LSR
0073  0210              OPEN ERREG
0074  0064              LSP

0075  0176  WHCHDR,     BR FLAGO T        /IF FLAG=1 BOTH DRIVES HAVE BEEN RECALIBRATED
0076  0372              RUNRCL

0077  0062              FLAG ON           /SET FLAG TO INDICATE DRV 0 IS BEING RECALIBRATED

0100  0034              UNIT ZERO

0101  0202              JUMP F0           /GO BACK AND RECALIBRATE DRV0
0102  0035              RECAL0
```

```
                        /[SUBROUTINE: FINDTRACK]
                        /THIS SUBROUTINE IS USED TO LOCATE A SPECIFIED SECTOR, IT PICKS
                        /UP THE TRACK AND SECTOR ADDRESS FROM THE INTERFACE, CHECKS THAT
                        /THE TRACK ADDRESS IS LEGAL (NOT GREATER THAN 114 OCTAL.), MOVES THE
                        /HEAD OF THE SELECTED DRIVE TO THE SPECIFIED TRACK, VERIFIES
                        /TRACK POSITION, AND LOCATES THE CORRECT SECTOR. EXIT FROM
                        /THIS SUBROUTINE OCCURS AT WRITE TURN ON TIME OF THE SELECTED,
                        /SECTOR. ENTRANCE IS MADE WITH THE RETURN ADDRESS IN THE COUNTER


0103  0075    FINDTR, LSR             /SAVE THE RETURN ADDRESS
0104  0274            OPEN RTN
0105  0064            LSP

0106  0070            LCT             /CLEAR THE ERROR REGISTER
0107  0000            0
0110  0075            LSR
0111  0210            OPEN ERREG
0112  0064            LSP

0113  0244            OPEN TEMPD      /SOFT UNIT BIT TO SR
0114  0071            ESP
0115  0075            LSR

0116  0122            BR SR7 ONE      /IF SR=1  DRIVE 0 IS CURRENTLY SELECTED
0117  0127            UZERO

0120  0174    UONE,   BR FLAGO ZERO   /IF FLAG=0 DRIVE 1 IS DESIRED AND ALREADY SELECTED
0121  0141            USAME

0122  0034            UNIT ZERO       /DRIVE 0 IS DESIRED AND DRIVE1 WAS SELECTED,  SELECT 0

0123  0070            LCT             /SET UP SOFT UNIT SELECT AS DRIVE 0
                      OCTAL
0124  0200            200
                      DECIMAL

0125  0202            JUMP F0         /GO STORE SOFT UNIT BIT
0126  0134            UDIF

0127  0176    UZERO,  BR FLAGO ONE    /IF FLAG=1 DRIVE 0 IS DESIRED AND ALREADY SELECTED
0130  0141            USAME

0131  0036            UNIT ONE        /DRIVE 1 IS DESIRED BUT DRIVE0 IS SELECTED, SELECT DRIVE 1
0132  0070            LCT             /SET UP SOFT UNIT SELECT BIT AS DRIVE 1
0133  0001            1

0134  0075    UDIF,   LSR             /STORE SOFT UNIT SELECT BIT
0135  0064            LSP

0136  0074            ROTATE ZERO     /CLR SOFT HD LOAD BIT BECAUSE UNITS CHANGED
```



```
0137  0250            OPEN TEMPE
0140  0064            LSP

0141  0070    USAME,  LCT             /CALL GETWRD SUBROUTINE FOR THE SECTOR ADDRESS
0142  0145            PUTSEC
0143  0222            JUMP F4
0144  2000            GETWRD

0145  0070    PUTSEC, LCT             /MAKE FIRST BIT OF COMPLIMENTED SECTOR ADDRESS A 1 REGARDLESS OF DATA
0146  0377            -7-1
0147  0076            ROTATE ONE
0150  0126            BR COFL T
0151  0160            .+7
0152  0073            ICT
0153  0122            BR SR7 T
0154  0147            .-5
0155  0074            ROTATE ZERO
0156  0202            JUMP F0
0157  0150            .-7

0160  0224            OPEN TARSEC     /PUT THE TARGET SECTOR AWAY
0161  0064            LSP

0162  0070            LCT             /CALL GETWRD SUBROUTINE FOR TRACK ADDRESS
0163  0166            PUTTRK
0164  0222            JUMP F4
0165  2000            GETWRD

0166  0220    PUTTRK, OPEN TARTRK     /STASH THE TRACK ADDRESS
0167  0064            LSP

0170  0254            OPEN TEMPF      /START SETUP FOR COMPARING THE
0171  0064            LSP             /TARGET TRACK AND TRACK 76
0172  0260            OPEN TEMPG      /F= TARGET TRACK
0173  0070            LCT             /G= 77
0174  0262            -77-1
0175  0075            LSR
0176  0064            LSP

0177  0070            LCT             /CALL SUBR MAGCOM TO SEE IF TARGET TRACK
0200  0206            ILTRK           /IS GREATER THAN 114 OCTAL,  76 DECIMAL.
0201  0075            LSR
0202  0270            OPEN RTNA
0203  0064            LSP
0204  0226            JUMP F5
0205  2400            MAGCOM

0206  0202    ILTRK,  JUMP F0         /TARGET TRACK IS 77, ILLEGAL ADDRESS
0207  0242            ERTRK           /GO, REPORT THE ERROR
0210  0202            JUMP F0         /TARGET TRACK IS GREATER THAN 77
0211  0242            ERTRK           /GO, REPORT THE ERROR
```

```
 432   0212  0244          OPEN TEMPD      /TARGET TRACK IS OK, GET THE DRIVE
 433   0213  0071          ESP             /SELECT FROM TEMPD
 434   0214  0075          LSR
 435
 436   0215  0200          OPEN CURTK0     /PRESELECT UNIT 0
 437
 438   0216  0002          DISK            /SELECT DISK RQST
 439
 440   0217  0122          BR SR7 ONE      /WHICH UNIT SELECTED? BIT7=0 MEANS UNIT ONE
 441   0220  0222          .+2             /ZERO, SKIP UNIT 1 SETUP
 442   0221  0204          OPEN CURTK1
 443
 444   0222  0071          ESP             /PASS SELECTED CURRENT TRACK TO MAGCOM SUBR
 445   0223  0075          LSR
 446   0224  0260          OPEN TEMPG
 447   0225  0064          LSP
 448
 449   0226  0220          OPEN TARTRK     /PASS TARGET TRACK TO MAGCOM SUBROUTINE
 450   0227  0071          ESP
 451   0230  0075          LSR
 452   0231  0254          OPEN TEMPF
 453   0232  0064          LSP
 454   0233  0070          LCT             /CALL SUBROUTINE MAGCOM TO SEE IF TARGET
 455   0234  0246          TRKEQ           /IS SAME AS CURRENT TRACK,  F=TARGET,  G=CURRENT
 456   0235  0075          LSR
 457   0236  0270          OPEN RTNA
 458   0237  0064          LSP
 459   0240  0226          JUMP F5
 460   0241  2400          MAGCOM
 461
 462
 463   0242  0070  ERTRK,  LCT
 464   0243  0040          KERTRK          /TRIED TO ACCESS A TRACK GREATER THAN 76 DECIMAL
 465   0244  0226          JUMP F5
 466   0245  2610          GOERDN
 467
 468
 469   0246  0202  TRKEQ,  JUMP F0         /TARGET EQUALS THE CURRENT TRACK, NO
 470   0247  0357          NOSTPS          /STEPS ARE REQUIRED
 471   0250  0270          OPEN RTNA       /NOOP;  TARGET > ACTUAL RETURN
 472   0251  0270          OPEN RTNA       /NOOP
 473
 474   0252  0270  BOOT,   OPEN RTNA       /TARGET IS LESS THAN ACTUAL, STEPS NEEDED ALSO START OF
 475   0253  0070          LCT             /OF BOOT SUBROUTINE.  SET UP RETURN FROM DIF SUBR
 476   0254  0275          STPOUT
 477   0255  0075          LSR
 478   0256  0064          LSP
 479
 480   0257  0244          OPEN TEMPD      /SOFT UNIT SELECT BIT TO SR7
 481   0260  0071          ESP
 482   0261  0075          LSR
 483
 484   0262  0204          OPEN CURTK1     /PRESELECT UNIT 1
 485
 486   0263  0126          BR SR7 ZERO     /SR7=0 MEANS UNIT ONE
```



```
 487   0264  0266          .+2
 488   0265  0200          OPEN CURTK0
 489
 490   0266  0071          ESP             /PASS SELECTED CURRENT TRACK TO DIFF SUBR VIA SR
 491   0267  0075          LSR
 492
 493   0270  0220          OPEN TARTRK     /PASS TARGET TRACK TO DIF VIA CNTR
 494   0271  0071          ESP
 495
 496   0272  0016          SET MDOUT       /ASSUME A STEP OUT
 497
 498   0273  0226          JUMP F5         /GO TO THE SUBROUTINE DIF TO CALCULATE THE STEPS NEEDED
 499   0274  2462          DIF
 500
 501
 502   0275  0202  STPOUT, JUMP F0         /TARGET TRACK IS LESS THAN
 503   0276  0300          .+2             /THE ACTUAL,  MOVE OUT IS NECESSARY
 504
 505   0277  0014          CLR MDOUT       /TARGET IS GREATER THAN ACTUAL.  STEPS IN NEEDED
 506
 507   0300  0070          LCT             /COMPLEMENT OF STEPS REQUIRED IS IN THE
 508   0301  0305          DUNSTP          /SHIFT REG.  SET UP RETURN FROM STPMD SUBR
 509
 510   0302  0040          UNMD            /UNLOAD HEAD BEFORE MOVING
 511
 512   0303  0222          JUMP F4         /CALL SUBROUTINE STEPMD
 513   0304  2100          STEPMD
 514
 515
 516   0305  0226  DUNSTP, JUMP F5         /HOME FOUND BEFORE LAST STEP TAKEN
 517   0306  2456          HOMERR
 518
 519   0307  0244          OPEN TEMPD      /SOFT UNIT BIT TO SR7
 520   0310  0071          ESP
 521   0311  0075          LSR
 522   0312  0220          OPEN TARTRK     /GET READY TO PASS TARGET TRK TO PROPER
 523   0313  0071          ESP             /CURRENT TRACK
 524
 525   0314  0200          OPEN CURTK0     /OPEN PROPER CURRENT TRACK REGISTER
 526   0315  0122          BR SR7 ONE      /BIT7=0 MEANS UNIT ONE
 527   0316  0320          .+2
 528   0317  0204          OPEN CURTK1
 529
 530   0320  0075          LSR             /UPDATE THE CURRENT TRACK ADDRESS
 531   0321  0064          LSP
 532
 533
 534   0322  0220  HDSETL, OPEN TARTRK     /HEAD IS SETTLED DETERMINE IF ABOVE TRACK 43 DECIMAL
 535   0323  0071          ESP             /PASS TARGET TO MAGCOM VIA TEMPF
 536   0324  0075          LSR
 537   0325  0254          OPEN TEMPF
 538   0326  0064          LSP
 539
 540   0327  0070          LCT             /PASS 44 TO MAGCOM VIA TEMPG
 541   0330  0323          -44-1
```

```
 542  0331  0075          LSR
 543  0332  0260          OPEN TEMPG
 544  0333  0064          LSP
 545
 546  0334  0026          SET LOWCUR      /ASSUME TARGET GREATER THAN 43
 547
 548  0335  0070          LCT             /CALL MAGCOM SUBROUTINE
 549  0336  0344          ABV43           /RETURN ADDRESS
 550  0337  0075          LSR
 551  0340  0270          OPEN RTNA
 552  0341  0064          LSP
 553  0342  0226          JUMP F5
 554  0343  2400          MAGCOM
 555
 556
 557  0344  0202  ABV43,  JUMP F0         /NOOP F=G RETURN, ABOVE TRK 43
 558  0345  0346          .+1             /NOOP
 559
 560  0346  0202          JUMP F0         /F<G; ABOVE TRACK 43
 561  0347  0351          .+2
 562
 563  0350  0024          CLR LOWCUR      /F>G;  BELOW TRACK 43,  WRITE WITH HIGH CURRENT
 564
 565  0351  0070  CFINSE, LCT             /CALL FINDSEC SUBROUTINE TO LOCATE THE DESIRED SECTOR
 566  0352  0355          RFINTR
 567  0353  0206          JUMP F1
 568  0354  0714          FINDSE
 569
 570  0355  0274  RFINTR, OPEN RTN        /RETURN FROM FINDTR SUBROUTINE
 571  0356  0207          JUMP F1  IND
 572
 573
 574  0357  0250  NOSTPS, OPEN TEMPE      /NO STEPS REQUIRED
 575  0360  0071          ESP             /SOFT HEAD LOAD BIT TO SR7
 576  0361  0075          LSR
 577
 578  0362  0122          BR SR7 ONE      /IS HEAD LOADED?
 579  0363  0322          HDSETL          /YES, GO UPDATE CURRENT CONTROL
 580
 581  0364  0070          LCT             /NO, GO LOAD HEAD AND WAIT FOR 20MS SETTLE TIME
 582  0365  2322          HDSETL          /RETURN ADDR FROM DLY25 SUBROUTINE
 583  0366  0222          JUMP F4
 584  0367  2145          DLY25
 585
 586
 587  0370  0212  FUNCT,  JUMP F2         /POINTER FROM GETWORD SUBROUTINE TO
 588  0371  1236          FUNCT           /FUNCTION DECODE
 589
 590  0372  0226  RDERCL, JUMP F5         /POINTER TO DRVA CHECK DONE AFTER RECALABRATE
 591  0373  2625          DARCAL
 592
 593  0374  0000          0               /SPARE LOCATIONS
 594  0375  0000          0               /OPEN
 595  0376  0000          0               /OPEN
 596  0377  0000          0               /OPEN
```



```
 597                  /(ROUTINE: WRITE SECTOR)
 598                  /THIS ROUTINE TURNS ON WRITE GATE AT WRITE TURN ON TIME,
 599                  /WRITES A PREAMBLE OF 6 BYTES OF ZEROES, A DATA OR DELETED DATA MARK,
 600                  /THEN TURNS ON ERASE GATE.  ENTER WITH CNTR=100 IF
 601                  /DELETED DATA, CNTR=0 IF NORMAL DATA MARK.  THE DATA MARK, DATA FIELD,  CRC
 602                  /AND ONE BYTE POSTAMBLE ARE WRITTEN.  WRITE CURRENT IS TURNED OFF.
 603                  /511 MICRO SECONDS LATER ERASE CURRENT IS TURNED OFF.  A HEADER MUST
 604                  /THEN BE READ TO INSURE DISK IS STILL UP TO SPEED BEFORE  THE WRITE
 605                  /SECTOR FUNCTION IS COMPLETE.
 606
 607
 608
 609
 610  0400  0214  WRTSEC, OPEN STAT       /DEL DATA BIT TO STAT6
 611  0401  0075          LSR
 612  0402  2264          LSP
 613
 614  0403  0270          LCT             /CALL SUBROUTINE TO FIND DESIRED TRACK AND SECTOR
 615  0404  0407          S.GATE
 616  0405  0202          JUMP F0
 617  0406  0103          FINDTR
 618
 619  0407  2061  S.GATE, FLAG OFF        /ALWAYS START WAITING WITH WRITE FLOP CLEARED
 620
 621  0410  0140          BR WRTEN F      /GO REPORT ERROR IF NO WRITE ENABLE
 622  0411  0503          PRTERR
 623
 624  0412  0214          OPEN STAT       /DEL DATA BIT TO SR7 AND ENABLE WRT CURRENT
 625  0413  0071          ESP
 626  0414  0406          SET WGATE
 627  0415  0075          LSR
 628  0416  0074          ROTATE ZERO
 629
 630  0417  0234          OPEN TEMPB      /USE TEMPB FOR SECOND HALF DATA AM PATTERN
 631
 632  0420  0057          PRECRC          /JAM THE CRC GENERATOR WITH FIRST 6 BITS OF DATA AM
 633  0421  0056          CRC ONE
 634  0422  0056          CRC ONE
 635  0423  0056          CRC ONE
 636  0424  0056          CRC ONE
 637  0425  0056          CRC ONE
 638  0426  0054          CRC ZERO
 639
 640  0427  0120          BR SR7 ZERO     /DELETED DATA?
 641  0430  0460          DAMSUP          /NO, REGULAR DATA MARK
 642
 643  0431  0070          LCT             /YES, SECOND HALF OF DELETED DATA MARK TO CNTR
 644                      OCTAL
 645  0432  0325          325             /FLUX PATTERN
 646                      DECIMAL
 647
 648  0433  0054          CRC ZERO        /JAM LAST 2 BITS OF DELETED DATA MARK TO CRC GEN.
 649  0434  0054          CRC ZERO
 650  0435  0002          DISK            /NOOP
 651  0436  0002          DISK            /NOOP
```

```
                                
0437  0063  STASH,  TOG FLAG        /END OF THE FIRST 0 BIT
                                
0440  0075          LSR             /PUT SECOND HALF OF THE DESIRED MARK IN THE TEMPB
0441  0064          LSP
                                
0442  0070          LCT             /SET UP RETURN FROM WRITE ZEROS SUBROUTINE
0443  0466          HLFDLY
0444  0075          LSR
                                
0445  0070          LCT             /STALL 1.8 MICRO SECONDS
0446  0374          -3-1
0447  0073          ICT
0450  0124          BR COFL F
0451  0447          .-2
0452  0002          DISK            /NOOP
                                
0453  0070          LCT             /SPECIFY 22 ZEROS TO BE WRITTEN BY WRT0S SUBROUTINE
0454  0351          -22-1
                                
0455  0063          TOG FLAG        /WRITE SECOND CLOCK TRANSITION
                                
0456  0212          JUMP F2         /CALL WRITE ZEROS SUBROUTINE
0457  1322          WRT0S
                                
0460  0070  DAMSUP, LCT             /LOAD SECOND HALF OF NORMAL DATA MARK
                      OCTAL
0461  0337          337
                      DECIMAL
                                
0462  0056          CRC ONE         /JAM LAST 2 BITS OF DATA MARK TO CRC GENERATOR
0463  0056          CRC ONE
                                
0464  0206          JUMP F1         /GO PUT AWAY THE SECOND HALF OF THE DATA MARK
0465  0437          STASH
                                
0466  0002  HLFDLY, DISK            /NOOP
                                
0467  0070          LCT
0470  0514          WRTDAM          /SET UP RETURN FROM WRITE ZEROS SUBROUTINE
0471  0075          LSR
                                
0472  0070          LCT             /NOOP WASTE 2.0 MICRO SECONDS
0473  0351          -22-1           /NOOP
0474  0070          LCT             /NOOP
0475  0351          -22-1           /NOOP
                                
0476  0070          LCT             /SPECIFY 22 BITS TO BE WRITTEN BY WRT0S SUBROUTINE
0477  0351          -22-1
                                
0500  0063          TOG FLAG        /WRITE THE 25TH CLOCK TRANSITION
                                
0501  0212          JUMP F2         /CALL WRT0S SUBROUTINE
0502  1322          WRT0S
                                
```



```
0503  0270  PRTERR, LCT             /SET WRITE PROTECT BIT OF STAT BECAUSE A WRITE FUNCTION WAS ATTEMPTED ON
                                    /ON A WRITE PROTECTED DISKETTE
                      OCTAL
0504  0010          10
                      DECIMAL
0505  0075          LSR
0506  0214          OPEN STAT
0507  0064          LSP
                                
0510  0070          LCT             /ERROR CODE FOR WRT PROTECT ERROR
0511  0100          KWPROT
0512  0226          JUMP F5
0513  2610          GOERDN
                                
                                
                                
                      /THIS ROUTINE WILL WRITE EITHER A DATA MARK OR A
                      /DELETED DATA MARK. THE FIRST HALF OF BOTH MARKS ARE
                      /IDENTICAL. THE SECOND HALF IS SPECIFIED BEFORE ENTRY BY
                      /PUTTING THE SECOND HALF BIT PATTERN IN TEMPB
                                
0514  0070  WRTDAM, LCT             /WASTE 2.0 MICRO SECONDS
0515  0375          -2-1
0516  0073          ICT
0517  0075          LSR
0520  0124          BR COFL F
0521  0516          .-3
                                
0522  0063          TOG FLAG        /WRITE A CLOCK BIT AS END OF 48TH ZERO
                                
0523  0070          LCT             /FIRST HALF OF DATA MARK PATTERN TO SR
                      OCTAL
0524  0352          352
                      DECIMAL
0525  0075          LSR
                                
0526  0070          LCT             /SET TRANSITION LOOP COUNTER FOR 8 LOOPS
0527  0370          -7-1
0530  0002          DISK            /NOOP
                                
0531  0120  AGAIN,  BR SR7 ZERO     /WHATS THE BIT?
0532  0562          A               /ZERO, NO TRANSITION
                                
0533  0044          CLR BAR         /ONE, RESET THE BUFFER ADDR REG TO 0
                                
0534  0063          TOG FLAG        /WRITE FLUX TRANSITION
                                
0535  0126  ABACK,  BR COFL T       /CHECK TRANSITION LOOP COUNT
0536  0543          SECHLF          /GO GET SECOND HALF
                                
0537  0074          ROTATE          /SHIFT NEXT TRANSITION TO SR7
                                
0540  0073          ICT             /BUMP TRANSITION LOOP COUNTER
                                
```

```
                                JUMP F1          /DO ANOTHER LOOP
                                AGAIN
                        SECHLF, OPEN TEMPB       /SECOND HALF OF DATA MARK TO SR
                                ESP
                                LSR
                                LCT              /SET TRANSITION LOOP COUNTER FOR 8 LOOPS
                                -7-1
                        AGAIN1, BR SR7 ZERO      /SHALL WE WRITE A TRANSITION?
                                B                /NO
                                TOG FLAG         /YES
                                DISK             /NOOP
                        BBACK,  BR COFL T        /DONE DATA MARK?
                                WRTDAT           /YES, GO WRITE DATA
                                ICT              /NO, BUMP THE LOOP COUNTER
                                ROTATE           /BRING UP NEXT HALF BIT TO SR7
                                JUMP F1          /DO ANOTHER LOOP
                                AGAIN1
                        A,      JUMP F1          /WASTE 2 CYCLES TO SKIP FLUX TRANSITION
                                ABACK
                        B,      JUMP F1          /WASTE 2 CYCLES TO SKIP FLUX TRANSITION
                                BBACK


                /THIS ROUTINE WRITES THE CONTENTS OF THE SECTOR BUFFER.

                WRTDAT, SET EGATE        /TURN ON ERASE CURRENT AT START OF DATA FIELD
                        ICT              /NOOP; WASTE 2 CYCLES
                        ICT              /NOOP
                DATAA,  BR BDATAO ZERO   /WHATS THE DATA BIT?
                        C                /ZERO, GO WRITE NOTHING
                        CRC ONE          /ONE, UPDATE THE CRC WITH 1
                        TOG FLAG         /WRITE A DATA TRANSITION
                        ICT              /NOOP FOR BIT CELL TIMING
                CBACK,  BR BAROFL T      /DONE ENTIRE SECTOR?
                        WRTCRC           /YES, GO WRITE THE CRC
                        INCR BAR         /NO, BRING UP NEXT DATA BIT FROM SEC BUFFER
```



```
                                LCT              /NOOP = WASTE 5 CYCLES WITH
                                -2               /NOOP = A SELF TEST OF THE COUNTER
                                ICT              /NOOP
                                BR COFL F        /NOOP
                                SELFER           /NOOP

                                TOG FLAG         /WRITE A CLOCK TRANSITION

                                LCT              /NOOP = WASTE 4 CYCLES WITH
                                -1               /NOOP = A SELF TEST OF THE COUNTER
                                BR COFL F        /NOOP
                                SELFER           /NOOP

                                JUMP F1          /GO WRITE ANOTHER DATA BIT
                                DATAA

                        C,      CRC ZERO         /UPDATE CRC WITH 0 AND SKIP DATA TRANSITION
                                JUMP F1
                                CBACK


                        SELFER, LCT              /A SELF DIAGNOSTIC HAS FAILED
                                #SELFER
                                JUMP F5
                                GOERDN


                /THIS ROUTINE WRITES THE 16 BIT CRC GENERATED FOR THE
                /PRECEEDING DATA FIELD.


                WRTCRC, LCT              /PRESET BIT COUNTER FOR 16 BITS
                                -16-1

                                LSR              /NOOP WASTE 4 CYCLES AND SELF TEST THE SR
                        E,      DISK             /NOOP
                                BR SR7 ZERO      /NOOP
                                SELFER           /NOOP

                                TOG FLAG         /WRITE A CLOCK TRANSITION

                                ROTATE ONE       /NOOP WASTE 6 CYCLES WITH MORE SELFTEST
                                ROTATE ONE       /NOOP
                                ROTATE ONE       /NOOP
                                ROTATE ONE       /NOOP
                                BR SR7 ZERO      /NOOP
                                SELFER           /NOOP

                                BR CRC16 ZERO    /WHAT IS THE CRC BIT
                                D                /ZERO, DO NOT WRITE ANYTHING

                                CRC ONE          /ONE, BRING UP THE NEXT BIT

                                TOG FLAG         /WRITE A DATA TRANSITION
```

```
 872   0645  0076          ROTATE ONE      /NOOP
 873
 874   0646  0273  DBACK,  ICT             /BUMP THE BIT COUNTER
 875
 876   0647  0126          BR COFL T       /DONE CRC YET?
 877   0650  0656          WRTPST          /YES, GO WRITE A POSTAMBLE
 878
 879   0651  0206          JUMP F1         /NO, GO WRITE ANOTHER CRC BIT
 880   0652  0627          E
 881
 882   0653  0054  D,      CRC ZERO        /BRING UP NEXT CRC BIT AND SKIP DATA TRANSITION
 883   0654  0206          JUMP F1
 884   0655  0646          DBACK
 885
 886
 887                       /THIS ROUTINE WRITES THE ONE BYTE POSTAMBLE, TURNS OFF
 888                       /WRITE CURRENT, DELAYS 511 MICRO SEC AND TURNS OFF ERASE
 889                       /CURRENT. IT UTILIZES THE WRITE ZEROES SUBROUTINE.
 890
 891
 892
 893   0656  0070  WRTPST, LCT             /SETUP TO CALL WRT0S TO WRITE 8 BITS OF ZEROES
 894   0657  0666          CWGATE
 895   0660  0075          LSR
 896   0661  0070          LCT
 897   0662  0367          -8-1
 898
 899   0663  0063          TOG FLAG        /WRITE LAST CLOCK TRANSITION OF THE CRC FIELD
 900
 901   0664  0212          JUMP F2         /CALL THE SUBROUTINE WRITE ZEROES
 902   0665  1322          WRT0S
 903
 904
 905   0666  0004  CWGATE, CLR WGATE       /DISABLE WRITE CURRENT
 906
 907   0667  0070          LCT             /CALL WRT0S FOR 127 BITS (511.2 MICRO SEC)
 908   0670  0676          CEGATE          /DELAY TO ERASE TURN OFF
 909   0671  0075          LSR
 910   0672  0070          LCT
 911   0673  0200          -127-1
 912   0674  0212          JUMP F2
 913   0675  1322          WRT0S
 914
 915
 916   0676  0020  CEGATE, CLR EGATE       /DISABLE ERASE CURRENT
 917
 918   0677  0070          LCT             /CALL WRT0S FOR 25 BIT (101 MICRO SEC) DELAY
 919   0700  0706          READOK          /BEFORE TRYING TO READ
 920   0701  0075          LSR
 921   0702  0070          LCT
 922   0703  0346          -25-1
 923   0704  0212          JUMP F2
 924   0705  1322          WRT0S
 925
 926   0706  0070  READOK, LCT             /CALL FIND HEADER ROUTINE TO INSURE
```



```
 927   0707  0712          GODONE          /THAT THE DISK IS STILL MOVING
 928   0710  0216          JUMP F3
 929   0711  1400          FINDHD
 930
 931   0712  2212  GODONE, JUMP F2         /WRITE SECTOR FUNCTION IS COMPLETE
 932   0713  1006          OKDONE
 933
 934
 935                       /[SUBROUTINE: FINDSECTOR]
 936                       /SUBROUTINE TO FIND A SPECIFIC SECTOR.  ENTER WITH RETURN ADDRESS
 937                       /IN CNTR,  DESIRED TRACK ADDRESS IN TARTRK AND DESIRED SECTOR ADDRESS
 938                       /IN TARSEC.  THIS SUBROUTINE ASSUMES THAT THE TARGET TRACK HAS ALREADY
 939                       /BEEN REACHED.
 940
 941
 942   0714  0270  FINDSE, OPEN RTNA       /SAVE RETURN ADDRESS
 943   0715  0075          LSR
 944   0716  0064          LSP
 945
 946   0717  0260          OPEN TEMPG      /PRESET SECTOR TRY COUNT TO 52 TRIES
 947   0720  0070          LCT
 948   0721  0313          -52-1
 949
 950   0722  0075  AGAIN2, LSR             /STORE SECTOR TRY COUNT
 951   0723  0064          LSP
 952
 953   0724  0070          LCT             /CALL SUBROUTINE TO FIND A HEADER
 954   0725  0730          CHKSEC
 955   0726  0216          JUMP F3
 956   0727  1400          FINDHD
 957
 958   0730  0174  CHKSEC, BR FLAGO ZERO   /CORRECT SECTOR? FLAG=1 IF NO
 959   0731  0743          WAIT            /YES, GO WAIT FOR PREAMBLE
 960
 961   0732  0260          OPEN TEMPG      /NO, RECALL SECTOR TRY COUNT AND INCREMENT IT
 962   0733  0071          ESP
 963   0734  0073          ICT
 964
 965   0735  0124          BR COFL F       /52 TRIES MADE FOR SECTOR YET?
 966   0736  0722          AGAIN2          /NO, TRY ANOTHER SECTOR
 967
 968   0737  0270  NXHDR,  LCT             /YES, CANNOT FIND THE SECTOR
 969   0740  0070          KNXHDR
 970   0741  0226          JUMP F5
 971   0742  2610          GOERDN
 972
 973   0743  0070  WAIT,   LCT             /STALL 323.2 MICRO SECONDS TO WAIT FOR DATA PREAMBLE
 974   0744  0345          -26-1
 975   0745  0073          ICT
 976   0746  0124          BR COFL F
 977   0747  0745          .-2
 978   0750  0073          ICT
 979   0751  0124          BR COFL F
 980   0752  0750          .-2
 981   0753  0073          ICT
```

```
 982   0754  0124          BR COFL F
 983   0755  0753          .-2
 984
 985   0756  0270          OPEN RTNA       /RETURN FROM THIS SUBROUTINE AT WRITE TURN ON TIME
 986   0757  0203          JUMP F0 IND     /OF THE DESIRED SECTOR
 987
 988
 989
 990                 /[ROUTINE: READ SECTOR]
 991
 992   0760  0074    RDSEC,  ROTATE ZERO    /ZERO THE STAT
 993   0761  0074            ROTATE ZERO
 994   0762  0214            OPEN STAT
 995   0763  0064            LSP
 996
 997   0764  0070            LCT             /CALL THE FIND TRACK SUBROUTINE TO LOCATE DESIRED SECTOR
 998   0765  0770            GOREAD
 999   0766  0202            JUMP F0
1000   0767  0103            FINDTR
1001
1002   0770  0222    GOREAD, JUMP F4         /GO READ THE DATA FIELD
1003   0771  2167            READ
1004
1005
1006   0772  0000            0               /OPEN  FREE LOCATIONS
1007   0773  0000            0               /OPEN
1008   0774  0000            0               /OPEN
1009   0775  0000            0               /OPEN
1010   0776  0000            0               /OPEN
1011   0777  0000            0               /OPEN
```



```
1012                /[ROUTINE: DONE AND ERROR DONE]
1013
1014
1015   1000  0020    ERDONE, CLR DONE
1016   1001  7010            CLR XREG
1017
1018   1002  0002            INTERF          /SELECT INTERFACE BUSS
1019
1020   1003  0006            SET ERR         /ASSERT ERROR LINE
1021
1022   1004  0212            JUMP F2         /SKIP NEXT INSTRUCTION
1023   1005  1007            .+2
1024
1025   1006  0004    OKDONE, CLR ERR         /NEGATE ERROR LINE
1026
1027   1007  0214            OPEN STAT       /OPEN STAT TO MOVE TO INTERFACE
1028
1029   1010  0271            ESP             /STAT OR ERREG TO SR
1030   1011  0275            LSR
1031
1032   1012  0024            CLR SHIFT       /CLEAR INTERFACE OUTPUT BUFFER
1033   1013  0020            CLR DONE
1034   1014  0010            CLR XREG
1035
1036   1015  0002            INTERF          /SELECT INTERFACE OUTPUT BUSS
1037
1038   1016  0230            CLR SECDAT      /SELECT SR AS DATA LINE SOURCE
1039
1040   1017  0016            SET IOOUT       /DEFINE DATA DIRECTION AS OUT (TO INTERFACE)
1041
1042   1020  0070            LCT             /MOVE SR TO INTERFACE SERIALLY
1043   1021  0367            -8-1
1044   1022  0026            SET SHIFT
1045   1023  0024            CLR SHIFT
1046   1024  0073            ICT
1047   1025  0074            ROTATE ZERO
1048   1026  0124            BR COFL F
1049   1027  1022            .-5
1050
1051   1030  0014            CLR IOOUT       /NEXT TRANSFER WILL BE FROM INTERFACE
1052
1053   1031  0022    STDONE, SET DONE        /FUNCTION IS DONE
1054   1032  0070            LCT             /CALL GET COMMAND SUBROUTINE TO GET NEXT FUNCTION
1055   1033  0370            PFUNCT
1056   1034  0222            JUMP F4
1057   1035  2001            GETCMD
1058
1059   1036  0074    FUNCT,  ROTATE          /MOVE UNIT SELECT BIT TO SR7
1060   1037  0074            ROTATE
1061   1040  0074            ROTATE
1062   1041  0122            BR SR7 ONE      /FLAG IS ALREADY SET,  SAVE UNIT IN FLAG, ON=UNIT 0
1063   1042  1044            .+2
1064   1043  0061            FLAG OFF
1065
1066   1044  0074            ROTATE          /GET FIRST FUNCTION BIT TO SR7
```

```
1067
1068    1045  0120          BR SR7 ZERO
1069    1046  1066          FUNCT4          /FUNCTION 4 OR GREATER
1070
1071    1047  0074          ROTATE          /GET 2ND FUNCTION BIT
1072
1073    1050  0120          BR SR7 ZERO
1074    1051  1057          FUNCT2          /FUNCTION CODE IS 2 OR 3
1075
1076
1077    1052  0074          ROTATE          /GET LAST FUNCTION BIT
1078
1079    1053  0120          BR SR7 ZERO
1080    1054  1107          EMPTYBUF        /FUNCTION CODE 1
1081
1082    1055  0212          JUMP F2         /FUNCTION CODE 0
1083    1056  1110          FILLBUF
1084
1085    1057  0074  FUNCT2,  ROTATE         /GET LAST FUNCTION BIT
1086
1087    1060  0120          BR SR7 ZERO
1088    1061  1105          PRDSEC          /FUNCTION CODE 3
1089
1090    1062  0070          LCT             /CLR CNTR BIT6 TO INDICATE NORMAL DATA
1091    1063  0000          0
1092    1064  2206          JUMP F1         /FUNCTION 2
1093    1065  0400          WRTSEC
1094
1095    1066  0074  FUNCT4,  ROTATE         /GET 2ND FUNCTION BIT
1096
1097    1067  0120          BR SR7 ZERO
1098    1070  1276          FUNCT6          /FUNCTION CODE IS 6 OR GREATER
1099
1100    1071  0074          ROTATE          /GET LAST FUNCTION BIT
1101
1102    1072  0120          BR SR7 ZERO
1103    1073  1224          RDSTAT          /FUNCTION 5
1104
1105    1074  0212          JUMP F2
1106    1075  1243          CLRID           /FUNCTION 4=UNUSED
1107
1108    1076  0074  FUNCT6,  ROTATE         /GET LAST FUNCTION BIT
1109
1110    1077  0120          BR SR7 ZERO
1111    1100  1275          RDEREG          /FUNCTION 7
1112
1113    1101  0070          LCT             /SET CNTR6 TO INDICATE DELETED DATA
1114                        OCTAL
1115    1102  0177          100
1116                        DECIMAL
1117    1103  2206          JUMP F1
1118    1104  0400          WRTSEC          /FUNCTION 6
1119
1120    1105  0206  PRDSEC,  JUMP F1         /POINTER TO READ SECTOR FUNCTION
1121    1106  0760          RDSEC
```



```
1122
1123
1124
1125
1126
1127
1128
1129                /[ROUTINE: FILL AND EMPTY BUFFER]
1130
1131
1132    1107  0216  EMPTYBUF, SET IOOUT     /IOOUT IS CLEARED,  SET IT TO INDICATE DATA IS
1133                                          /MOVING TO THE INTERFACE
1134
1135    1110  0074  FILLBUF, ROTATE ZERO    /CLEAR STAT
1136    1111  0374          ROTATE ZERO
1137    1112  0214          OPEN STAT
1138    1113  0064          LSP
1139
1140    1114  0210          OPEN ERREG      /CLEAR ERREG
1141    1115  0064          LSP
1142
1143    1116  0261          FLAG OFF        /NOOP
1144
1145    1117  0044          CLR BAR SHORT   /ADDRESS THE 1ST BIT OF SECTOR BUFFER
1146
1147    1120  0070          LCT             /SET UP BYTE COUNT TO 128 (8 BIT) OR 64 (12 BIT)
1148    1121  0177          -128-1
1149    1122  0150          BR XIIBIT F
1150    1123  1126          .+3
1151    1124  0070          LCT
1152    1125  0277          -64-1
1153    1126  0230          OPEN TEMPA
1154
1155    1127  0106          BR IOBSET T     /WHICH FUNCTION IS THIS?
1156    1130  1210          EMPTY1          /EMPTYBUF
1157
1158    1131  0012  XFER,    SET XREQ        /REQUEST DATA TRANSFER
1159
1160    1132  0073          ICT             /INCREMENT BYTE COUNT AND RESTORE
1161    1133  0075          LSR
1162    1134  0064          LSP
1163
1164    1135  0070          LCT             /CALL WAITRUN SUBR TO WAIT FOR DATA TRANSFER
1165    1136  1141          NEWORD
1166    1137  2222          JUMP F4
1167    1140  2312          WAITRN
1168
1169    1141  0230  NEWORD,  OPEN TEMPA     /REOPEN THE BYTE COUNT REGISTER BECAUSE WAITRUN CLOSED IT
1170    1142  0070          LCT             /SET UP BIT COUNT IN CNTR TO 8 BITS OR 12 BITS
1171    1143  0367          -8-1
1172    1144  0150          BR XIIBIT F
1173    1145  1150          .+3
1174    1146  0070          LCT
1175    1147  0363          -12-1
1176
```

```
1177    1150  0104            BR IOB3OT F     /WHICH FUNCTION IS THIS?
1178    1151  1175            FILL1           /FILLBUF
1179
1180
1181    1152  0026    BYTEOUT,SET SHIFT       /EMPTYBUF,  MOVE A BYTE FROM SECTOR BUFFER
1182    1153  0046            INCR BAR        /TO INTERFACE SERIALLY
1183    1154  0024            CLR SHIFT
1184    1155  0073            ICT
1185    1156  0124            BR COFL F
1186    1157  1152            BYTEOUT
1187
1188    1160  0071            ESP             /CHECK BYTE COUNT
1189    1161  0124            BR COFL F
1190    1162  1131            XFRQ            /NOT DONE, GO REQUEST A DATA TRANSFER
1191
1192    1163  0012            SET XREQ        /DONE, REQUEST TRANSFER OF LAST BYTE
1193
1194    1164  0102            BR RUN F        /WAIT FOR TRANSFER COMPLETION
1195    1165  1164            .-1
1196
1197    1166  0310            CLR XREQ
1198
1199    1167  0212            JUMP F2         /EMPTYBUF FUNCTION IS COMPLETE
1200    1170  1006            OKDONE
1201
1202    1171  0050            FIN WRTBUF      /END SECTOR BUFR WRT PULSE (800 NS)
1203
1204    1172  0046            INCR BAR        /ADDRESS NEXT CELL OF SECTOR BUFFER
1205
1206    1173  0026            SET SHIFT       /SHIFT NEXT BIT FROM INTERFACE
1207    1174  0024            CLR SHIFT
1208
1209    1175  0053    FILL1,  START WRTBUF    /START SECTOR BUFR WRT PULSE
1210
1211    1176  0073            ICT             /LAST BIT OF BYTE?
1212    1177  0124            BR COFL F
1213    1200  1171            .-7             /NO, DO ANOTHER BIT
1214
1215    1201  0050            FIN WRTBUF      /LAST BIT, END SECTOR BUFR WRT PULSE
1216
1217    1202  0046            INCR BAR        /ADDRESS NEXT CELL OF SECTOR BUFFER
1218
1219    1203  0071            ESP             /CHECK BYTE COUNT
1220    1204  0124            BR COFL F
1221    1205  1131            XFRQ            /NOT DONE, GO GET ANOTHER BYTE
1222
1223    1206  0212            JUMP F2         /DONE FILLBUF FUNCTION
1224    1207  1006            OKDONE
1225
1226    1210  0032    EMPTY1, SET SECDAT      /SELECT SECTOR BUFR AS DATA LINE SOURCE
1227
1228    1211  0073            ICT             /INCREMENT AND SAVE THE BYTE COUNT
1229    1212  0075            LSR
1230    1213  0064            LSP
1231
```



```
1232    1214  0074            LCT             /SET UP THE BIT COUNT TO 8 BITS OR 12 BITS
1233    1215  0367            -8-1
1234    1216  0153            BR KIIBIT F
1235    1217  1152            BYTEOUT
1236    1220  0070            LCT
1237    1221  0365            -12-1
1238
1239    1222  0212            JUMP F2         /GO MOVE A BYTE TO INTERFACE
1240    1223  1152            BYTEOUT
1241
1242
1243
1244                    /[ROUTINE: READ STATUS]
1245
1246
1247    1224  0244    RDSTAT, OPEN TEMPD      /SELECT THE SOFT UNIT SCRATCH PAD
1248
1249    1225  0036            UNIT ONE        /PRESELECT UNIT ONE
1250    1226  0072            LCT
1251    1227  0000            2
1252
1253    1230  0174            BR FLAGO ZERO   /WHICH UNIT?  FLAG=0=UNIT 1
1254    1231  1235            .+4             /UNIT 1,  SKIP UNIT 0 SETUP
1255
1256    1232  0034            UNIT ZERO       /SELECT UNIT ZERO
1257    1233  0070            LCT
1258                            OCTAL
1259    1234  0200            200
1260                            DECIMAL
1261
1262    1235  0075            LSR             /STORE SOFT UNIT BIT
1263    1236  0064            LSP
1264
1265    1237  0077            LCT             /CALL CHECKRDY SUBROUTINE, RETURN TO CLRID
1266    1240  1765            PNTRDY
1267    1241  0226            JUMP F5
1268    1242  2640            CHKRDY
1269
1270
1271
1272    1243  0214    CLRID,  OPEN STAT       /CLEAR INIT DONE BIT OF STAT
1273    1244  0071            ESP             /STATUS TO SHIFT REG
1274    1245  0075            LSR
1275
1276    1246  0061            FLAG OFF
1277    1247  0070            LCT             /END AROUND SHIFT OF FIRST 5 BITS
1278    1250  0372            -5-1
1279    1251  0122    ROT,    BR SR7 T
1280    1252  1256            .+4
1281    1253  0074            ROTATE ZERO
1282    1254  0212            JUMP F2
1283    1255  1257            .+2
1284    1256  0076            ROTATE ONE
1285    1257  0073            ICT
1286    1260  0124            BR COFL F
```

```
 1287    1261  1251          .=8
 1288
 1289    1262  0176          BR FLAGO T      /IF FLAG IS SET THEN ROTATE IS DONE
 1290    1263  1272          GODUN
 1291
 1292    1264  0062          FLAG ON         /IF NOT, CLEAR INIT DONE AND FINISH ROTATE
 1293    1265  0074          ROTATE ZERO
 1294    1266  0070          LCT
 1295    1267  0375          -2-1
 1296    1270  0212          JUMP F2
 1297    1271  1251          ROT
 1298
 1299
 1300    1272  0064  GODUN,  LSP             /RESTORE STAT AND GO DONE
 1301    1273  0212          JUMP F2
 1302    1274  1006          OKDONE
 1303
 1304                /[ROUTINE: READ ERROR REGISTER]
 1305
 1306
 1307
 1308    1275  0210  RDEREG, OPEN ERREG
 1309    1276  0212          JUMP F2
 1310    1277  1010          OKDONE+2
 1311
 1312
 1313                /[SUBROUTINE: DELAY]. THIS SUBROUTINE PROVIDES DELAYS IN MULTIPLES
 1314                /OF .1MS. ENTER WITH RETURN ADDRESS IN THE SHIFT REG,
 1315                /AND MULTIPLIER IN THE COUNTER
 1316
 1317
 1318    1300  0264  DELAY,  OPEN RTNB        /SAVE THE RETURN ADDRESS
 1319    1301  0064          LSP
 1320
 1321    1302  0075          LSR             /MULTPLIER TO SHIFT REGISTER
 1322
 1323    1303  0070          LCT             /DELAY 490 CYCLES (98 MICRO SECONDS)
 1324    1304  0205          -122-1
 1325    1305  0073          ICT
 1326    1306  0264          OPEN RTNB
 1327    1307  0124          BR COFL F
 1328    1310  1305          .-3
 1329
 1330    1311  0071          ESP             /MOVE MULTIPLIER TO CNTR VIA RTNB
 1331    1312  0064          LSP
 1332    1313  0075          LSR
 1333    1314  0071          ESP
 1334    1315  0064          LSP
 1335
 1336    1316  0073          ICT             /INCREMENT THE MULTIPLIER
 1337
 1338    1317  0124          BR COFL F       /ANY MORE .1MS LOOPS?
 1339    1320  1301          DELAY+1         /YES, GO TO IT
 1340
 1341    1321  0223          JUMP F4 IND     /NO, RETURN FROM SUBROUTINE
```



```
 1342
 1343                /[SUBROUTINE: WRITE ZEROES]
 1344                /THIS SUBROUTINE WRITES A SPECIFIED NUMBER OF ZEROS IF
 1345                /WRITE GATE IS ON, IF WRITE GATE IS OFF IT ACTS AS A
 1346                /DELAY OF N.5 BITS. ENTRANCE IS MADE WITH RETURN ADDRESS
 1347                /IN THE SR, NUMBER OF BITS IN THE CNTR, AND A CLOCK
 1348                /TRANSITION OCCURRING IMMEDIATLY PRIOR TO THE JUMP INTO
 1349                /THIS SUBROUTINE.
 1350
 1351
 1352    1322  0274  WRTZS,  OPEN RTN        /SAVE RETURN ADDRESS
 1353    1323  0064          LSP
 1354
 1355    1324  0075          LSR             /PUT BIT COUNTER IN SR
 1356
 1357    1325  0230          OPEN TEMPA      /TEMPA IS THE PATH THROUGH THE SP
 1358
 1359    1326  0070  LOOP,   LCT             /STALL 2.6 MICRO SECONDS
 1360    1327  0374          -3-1
 1361    1330  0073          ICT
 1362    1331  0124          BR COFL F
 1363    1332  1330          .-2
 1364    1333  0064          LSP             /NOOP
 1365    1334  0071          ESP             /NOOP
 1366
 1367    1335  0063          TOG FLAG        /WRITE A CLOCK TRANSITION IF WRT GATE IS SET
 1368
 1369    1336  0064          LSP             /PUT BIT COUNT IN THE COUNTER
 1370    1337  0071          ESP
 1371
 1372    1340  0073          ICT             /INCREMENT BIT COUNT
 1373
 1374    1341  0075          LSR             /PUT UPDATED BIT COUNT BACK IN SR
 1375
 1376    1342  0124          BR COFL F       /DONE ALL BITS?
 1377    1343  1326          LOOP            /NO
 1378
 1379    1344  0274          OPEN RTN        /YES, RETURN FROM SUBROUTINE
 1380    1345  0207          JUMP IND F1
 1381
 1382
 1383    1346  0222  PGOTIT, JUMP F4         /POINTER TO GETWORD FROM WAITRUN
 1384    1347  2010          GOTIT
 1385
 1386
 1387                /[ROUTINE: INITIALIZE CONT.]
 1388
 1389    1350  0061  TEST2,  FLAG OFF        /CLEAR FLAG TO INDICATE R10 IS BEING TESTED
 1390
 1391    1351  0070  TEST1,  LCT             /LOOP TO TEST THAT SR IS 252 AND THAT
 1392    1352  0372          -5-1            /IT CAN BE SHIFTED,
 1393    1353  0120  TSTAGN, BR SR7 ZERO
 1394    1354  1374          INTER1          /TEST FAILURE
 1395    1355  0076          ROTATE ONE
 1396    1356  0122          BR SR7 ONE
```

```
1397    1357  1374          INTER1          /TEST FAILURE
1398    1360  0074          ROTATE ZERO
1399    1361  0073          ICT
1400    1362  0124          BR COFL F
1401    1363  1353          TSTAGN
1402
1403    1364  0250          OPEN R10        /CONTENTS OF R10 TO SR, SHOULD BE 125
1404    1365  0071          ESP
1405    1366  0075          LSR
1406
1407    1367  0074          ROTATE ZERO     /SHIFT SR ONCE TO CHANGE 125 TO 252
1408
1409    1370  0176          BR FLAGO ONE    /HAS R10 BEEN TESTED ALREADY?
1410    1371  1350          TEST2           /NO
1411
1412    1372  0202    TESTDN, JUMP F0       /YES, RETURN TO REMAINING INITIALIZE ROUTINE
1413    1373  0004          TSTRTN
1414
1415    1374  0006    INTER1, SET FRR       /SELF TEST ERROR, SET ERROR AND GO SET DONE
1416    1375  0212          JUMP F2
1417    1376  1031          STDONE
1418
1419    1377  0000          0               /OPEN
```



```
1420                  /[SUBROUTINES FINDHEADER AND FIND DATA ADDRESS MARK]
1421                  /SUBROUTINE TO LOCATE A LEGAL HEADER (CORRECT CRC AND TRACK 0)
1422                  /ENTER WITH THE RETURN ADDRESS IN CNTR.  ALSO ROUTINE TO FIND A DATA MARK
1423                  /OR DELETED DATA MARK.
1424
1425                                        /THIS ROUTINE LOCATES A SIX BYTE PREAMBLE OF ZEROES.
1426
1427
1428    1400  0264    FINDHD, OPEN RTNB     /STORE RETURN ADDRESS
1429    1401  0075          LSR
1430    1402  0064          LSP
1431
1432    1403  0230          OPEN TEMPA      /256 TO BAD START INNER COUNT
1433    1404  0072          LCT
1434    1405  0377          -1
1435    1406  0075          LSR
1436    1407  0064          LSP
1437
1438    1410  0234          OPEN TEMPB      /3 TO CNTR FOR BAD START OUTER COUNT.  768 BAD STARTS ALLOWED
1439    1411  0072          LCT
1440    1412  0374          -3-1
1441
1442    1413  0075    TRYAGN, LSR           /RESTORE BAD START COUNT
1443    1414  0064          LSP
1444
1445    1415  0045          CLR BAR LONG    /RESET FOR A COUNT OF 4096 AS PREAMBLE FAILURE COUNT
1446
1447    1416  0240          OPEN TEMPC      /24 TO CNTR AS ZERO BIT COUNT
1448    1417  0072          LCT
1449    1420  0347          -24-1
1450    1421  0075    MOREBS, LSR           /RESTORE ZERO BIT COUNT
1451    1422  0064          LSP
1452
1453    1423  0070          LCT             /PUT 0 IN SR7 FOR DATA COMPARISONS, ALSO CONSTANT FOR 40 MICRO SEC WAIT BRANCH
1454    1424  0067          -200-1
1455    1425  0075          LSR
1456
1457    1426  0346          -BR SEPCLK T    /WAIT 40 MICRO SECONDS FOR SEP CLK
1458    1427  1432          .+3
1459
1460    1430  0216          JUMP F3         /ERROR,NO SEP CLK
1461    1431  1667          TIMERR
1462
1463    1432  0154          BR DEQSR7 F     /WHAT IS SEP DATA?
1464    1433  1746          NOZERO          /ONE, GO CHECK PREAMBLE FAILURES
1465
1466    1434  0071          ESP             /ZERO FOUND, CHECK ZERO COUNT
1467    1435  0073          ICT
1468    1436  0124          BR COFL F
1469    1437  1421          MOREBS          /NEED MORE ZEROES FOR PREAMBLE
1470    1440  0061          FLAG OFF        /FOUND PREAMBLE, CLR FLAG TO INDICATE SEARCH FOR IDAM
1471
1472    1441  0045    GETDAM, CLR BAR LONG  /START SEARCH FOR IDAM OR DATA AM, BAR IS NOSTART COUNTER
1473
1474    1442  0070          LCT             /WAIT 40 MICRO SEC FOR SEP CLK
```

```
 1475   1443  0067          =200-1
 1476   1444  0346          WBR SEPCLK T
 1477   1445  1450          .+3
 1478   1446  0216          JUMP F3         /TIMING ERROR
 1479   1447  1667          TIMERR
 1480
 1481   1450  0156          BR DEQSR7 T     /WHAT IS SEP DATA?
 1482   1451  1755          NOTYET          /ZERO, GO DETERMINE IF TO MANY STARTS
 1483
 1484   1452  0164          BR MCEQSR F     /ONE, MISSING CLOCK?
 1485   1453  1673          BADSRT          /YES, SHOULDN'T HAVE BEEN
 1486
 1487   1454  0057          PRECRC          /JAM 1ST TWO BITS OF CRC
 1488   1455  0056          CRC ONE
 1489   1456  0056          CRC ONE
 1490
 1491   1457  0070          LCT             /WAIT 40 MICRO SECONDS FOR SECOND CELL
 1492   1460  0067          =200-1
 1493   1461  0346          WBR SEPCLK T
 1494   1462  1465          .+3
 1495   1463  0216          JUMP F3
 1496   1464  1667          TIMERR
 1497
 1498   1465  0156          BR DEQSR7 T     /DATA SHOULD BE 1, MISSING CLK SHOULD BE T
 1499   1466  1673          BADSRT
 1500   1467  0166          BR MCEQSR T
 1501   1470  1673          BADSRT
 1502
 1503   1471  0056          CRC ONE         /JAM 3 MORE CRC BITS
 1504   1472  0056          CRC ONE
 1505   1473  0056          CRC ONE
 1506
 1507   1474  0070          LCT             /WAIT FOR THIRD BIT CELL
 1508   1475  0067          =200-1
 1509   1476  0346          WBR SEPCLK T
 1510   1477  1502          .+3
 1511   1500  0216          JUMP F3
 1512   1501  1667          TIMERR
 1513
 1514   1502  0154          BR DEQSR7 F     /DATA SHOULD BE 0, MISSING CLK SHOULD BE F
 1515   1503  1673          BADSRT
 1516   1504  0164          BR MCEQSR F
 1517   1505  1673          BADSRT
 1518
 1519   1506  0070          LCT             /CLEAR SR
 1520   1507  0000          0
 1521   1510  0075          LSR
 1522
 1523   1511  0070          LCT             /WAIT FOR 4TH BIT CELL
 1524   1512  0067          =200-1
 1525   1513  0346          WBR SEPCLK T
 1526   1514  1517          .+3
 1527   1515  0216          JUMP F3
 1528   1516  1667          TIMERR
 1529
```



```
 1530   1517  0154          BR DEQSR7 F     /DATA SHOULD BE 0, MISSING CLK SHOULD BE F
 1531   1520  1673          BADSRT
 1532   1521  0042          LDMD            /NOOP FOR LONG SEP CLOCK
 1533   1522  0042          LDMD            /NOOP FOR LONG SEP CLOCK
 1534   1523  0164          BR MCEQSR F
 1535   1524  1673          BADSRT
 1536
 1537   1525  0070          LCT             /WAIT FOR FIFTH BIT CELL
 1538   1526  0067          =200-1
 1539   1527  0346          WBR SEPCLK T
 1540   1532  1533          .+3
 1541   1531  0216          JUMP F3
 1542   1532  1667          TIMERR
 1543
 1544   1533  0156          BR DEQSR7 T     /DATA SHOULD BE 1
 1545   1534  1673          BADSRT
 1546
 1547   1535  0176          BR FLAGO T      /IF FLAG SET FINISH LOOKING FOR DATA AM
 1548   1536  1675          DAM
 1549
 1550   1537  0164          BR MCEQSR F     /FINISH IDAM, MISSING CLK SHOULD BE F
 1551   1540  1673          BADSRT
 1552
 1553   1541  0056          CRC ONE         /JAM 6TH CRC BIT OF IDAM
 1554
 1555   1542  0070          LCT             /WAIT FOR SIXTH BIT CELL
 1556   1543  0067          =200-1
 1557   1544  0346          WBR SEPCLK T
 1558   1545  1550          .+3
 1559   1546  0216          JUMP F3
 1560   1547  1667          TIMERR
 1561
 1562   1550  0156          BR DEQSR7 T     /DATA SHOULD BE 1, MISSING CLK SHOULD BE F
 1563   1551  1673          BADSRT
 1564   1552  0164          BR MCEQSR F
 1565   1553  1673          BADSRT
 1566
 1567   1554  0042          LDMD            /NOOP FOR LONG SEP CLOCK
 1568
 1569   1555  0056          CRC ONE         /JAM 7TH CRC BIT OF IDAM
 1570
 1571   1556  0070          LCT             /WAIT FOR SEVENTH BIT CELL
 1572   1557  0067          =200-1
 1573   1560  0346          WBR SEPCLK T
 1574   1561  1564          .+3
 1575   1562  0216          JUMP F3
 1576   1563  1667          TIMERR
 1577
 1578   1564  0156          BR DEQSR7 T     /DATA SHOULD BE 1, MISSING CLK SHOULD BE T
 1579   1565  1673          BADSRT
 1580   1566  0166          BR MCEQSR T
 1581   1567  1673          BADSRT
 1582
 1583   1570  0054          CRC ZERO        /IDAM FOUND, JAM LAST CRC BIT
 1584
```

```
1585
1586
1587
1588
1589                    /THIS ROUTINE COMPARES THE HEADER TRACK ADDRESS TO THE
1590                    /DESIRED TRACK ADDRESS ON THE FLY.  IT IS ENTERED AFTER
1591                    /FINDING THE IDAM. ERREG BIT 0 IS SET IF AN ERROR IS DETECTED.
1592
1593
1594  1571  0220  HDRCOM, OPEN TARTRK     /TARGET TRACK ADDRESS TO SR
1595  1572  0071        ESP
1596  1573  0075        LSR
1597
1598  1574  0070        LCT              /SET BIT COUNTER TO 8
1599  1575  0367        -8-1
1600
1601  1576  0144  AGAIN3, BR SEPCLK F     /WAIT FOR BIT CELL
1602  1577  1576        .-1
1603
1604  1600  0156        BR DEGSR7 T      /SEP DATA EQUAL TO SR7?
1605  1601  1605        .+4              /NO, TRACK COMPARE ERROR
1606
1607  1602  0074        ROTATE ZERO      /YES, GET NEXT TRACK ADRESS BIT
1608  1603  0216        JUMP F3
1609  1604  1610        .+4
1610
1611  1605  0210        OPEN ERREG       /SET ERREG BIT 0 TO INDICATE TRACK ERROR
1612  1606  0076        ROTATE ONE
1613  1607  0064        LSP
1614
1615  1610  0055        DATCRC           /UPDATE THE CRC
1616
1617  1611  0073        ICT              /INCREMENT AND TEST THE BIT COUNTER
1618  1612  0124        BR COFL F
1619  1613  1576        AGAIN3           /GO DO NEXT BIT
1620
1621  1614  0070        LCT              /TRACK COMPARED, SET UP BIT COUNTER FOR  8 BYTE
1622  1615  0367        -8-1
1623
1624  1616  0144  AGAIN4, BR SEPCLK F     /WAIT FOR BIT
1625  1617  1616        .-1
1626
1627  1620  0061        FLAG OFF         /CLEAR FLAG FOR NEXT ROUTINE
1628  1621  0061        FLAG OFF         /NOOP FOR LONG SEP CLK
1629  1622  0061        FLAG OFF         /NOOP FOR LONG SEP CLK
1630  1623  0061        FLAG OFF         /NOOP FOR LONG SEP CLK
1631
1632  1624  0055        DATCRC           /UPDATE CRC
1633
1634  1625  0073        ICT              /INCREMENT AND TEST BIT COUNT
1635  1626  0124        BR COFL F
1636  1627  1616        AGAIN4           /GO DO ANOTHER BIT
1637                                     /CONTINUE
1638
1639
```



```
1640                    /THIS ROUTINE COMPARES THE HEADER SECTOR ADDRESS WITH THE
1641                    /TARGET SECTOR ADDRESS ON THE FLY.  IT IS ENTERED FROM
1642                    /THE TRACK COMPARE ROUTINE.  A MISMATCH WILL SET THE FLAG.
1643
1644
1645  1630  0224        OPEN TARSEC      /TARGET SECTOR ADDRESS TO SR
1646  1631  0071        ESP
1647  1632  0075        LSR
1648
1649  1633  0070        LCT              /SET UP BIT COUNTER FOR 8 BITS
1650  1634  0367        -8-1
1651
1652  1635  0144  AGAIN5, BR SEPCLK F     /WAIT FOR A BIT
1653  1636  1635        .-1
1654
1655  1637  0156        BR DEGSR7 T      /HOW DO THEY COMPARE?
1656  1640  1643        .+3              /BAD, GO SET THE FLAG
1657
1658  1641  0216        JUMP F3          /GOOD, SKIP THE ERROR FLAG.
1659  1642  1644        .+2
1660
1661  1643  0262        FLAG ON          /SET FLAG TO INDICATE MISMATCH
1662
1663  1644  0074        ROTATE ZERO      /BRING UP NEXT BIT
1664
1665  1645  0055        DATCRC           /UPDATE THE CRC
1666  1646  0073        ICT              /BUMP THE BIT COUNTER
1667  1647  0124        BR COFL F        /ALL BITS COMPARED?
1668  1650  1635        AGAIN5           /NO, LOOP BACK
1669
1670  1651  0070        LCT              /YES, SETUP TO WAIT FOR END OF
1671  1652  0347        -24-1            /CRC
1672
1673  1653  0144  AGAIN6, BR SEPCLK F     /WAIT FOR BIT
1674  1654  1653        .-1
1675
1676  1655  0074        ROTATE ZERO      /NOOP FOR LONG SEP CLK
1677  1656  0074        ROTATE ZERO      /NOOP FOR LONG SEP CLK
1678  1657  0074        ROTATE ZERO      /NOOP FOR LONG SEP CLK
1679  1660  0074        ROTATE ZERO      /NOOP FOR LONG SEP CLK
1680
1681  1661  0055        DATCRC           /UPDATE CRC
1682
1683  1662  0073        ICT              /BUMP THE BIT COUNTER
1684  1663  0124        BR COFL F        /ALL DONE?
1685  1664  1653        AGAIN6           /NO, LOOP BACK
1686
1687  1665  0226        JUMP F5          /YES, GO CHECK IF CRC IS ALL ZEROES
1688  1666  2515        CKHCRC
1689
1690
1691  1667  0070  TIMERR, LCT             /40 MICROSEC PASSED AND NO SEP CLOCK WAS SEEN
1692  1670  0110        KTIMERR
1693  1671  0226        JUMP F5
1694  1672  2612        GOERDN
```

```
1695
1696
1697    1673  0226    BADSRT, JUMP F5          /POINTER TO BADSTART ON IDAM OR DATA AM
1698    1674  2555            BDSRT
1699
1700
1701
1702
1703
1704
1705
1706
1707
1708    1675  0166    DAM,    BR MCEQSR T      /MISSING CLK SHOULD BE T
1709    1676  1673            BADSRT
1710
1711    1677  0054            CRC ZERO         /JAM 6TH CRC BIT OF DATA AM
1712
1713    1700  0070            LCT              /WAIT FOR SIXTH BIT CELL
1714    1701  0067            -200-1
1715    1702  0346            WBR SEPCLK T
1716    1703  1706            .+3
1717    1704  0216            JUMP F3
1718    1705  1667            TIMERR
1719
1720    1706  0164            BR MCEQSR F      /MISSING CLK SHOULD BE F
1721    1707  1673            BADSRT
1722    1710  0042            LDMD             /NOOP FOR LONG SEP CLK
1723
1724    1711  0156            BR DEQSR7 T      /IF DATA=0 THEN LOOK FOR DELETED DATA AM
1725    1712  1727            DELDAT
1726
1727    1713  0056            CRC ONE          /JAM 7TH BIT OF DATA AM
1728
1729    1714  0070            LCT              /WAIT FOR SEVENTH BIT OF DATA AM
1730    1715  0067            -200-1
1731    1716  0346            WBR SEPCLK T
1732    1717  1722            .+3
1733    1720  0216            JUMP F3
1734    1721  1667            TIMERR
1735
1736    1722  0056            CRC ONE          /JAM LAST BIT OF DATA AM
1737
1738    1723  0154            BR DEQSR7 F      /DATA SHOULD BE 1
1739    1724  1742            ENDDAM           /FLAG IS SET TO INDICATE NORMAL DATA MARK
1740
1741    1725  0216            JUMP F3          /LAST DATA BIT WAS BAD
1742    1726  1673            BADSRT
1743
1744
1745    1727  0054    DELDAT, CRC ZERO         /JAM 7TH CRC BIT OF DEL DATA AM
1746
1747    1730  0070            LCT              /WAIT FOR 7TH CELL OF DEL DATA AM
1748    1731  0067            -200-1
1749    1732  0346            WBR SEPCLK T
```



```
1750    1733  1736            .+3
1751    1734  0216            JUMP F3
1752    1735  1667            TIMERR
1753
1754    1736  0061            FLAG OFF         /CLR FLAG TO INDICATE DELETED DATA MARK
1755
1756    1737  0054            CRC ZERO         /JAM LAST CRC BIT OF DEL DATA AM
1757
1758    1740  0154            BR DEQSR7 F      /DATA SHOULD BE 0
1759    1741  1673            BADSRT
1760
1761    1742  0164    ENDDAM, BR MCEQSR F      /MISSING CLK SHOULD BE F FOR BOTH DATA AMS
1762    1743  1673            BADSRT
1763
1764    1744  0222            JUMP F4          /GO PICK UP DATA FIELD
1765    1745  2276            DATA
1766
1767
1768    1746  0046    NOZERO, INCR BAR         /INCREMENT AND TEST PREAMBLE FAILURE COUNT
1769    1747  0160            BR BAROFL F
1770    1750  1416            TRYAGN+3         /OK, TRY AGAIN FOR A PREAMBLE
1771
1772    1751  0070    NXPRAM, LCT              /TOO MANY BITS WITH NO ZEROES
1773    1752  0126            KNXPRAM
1774    1753  0226            JUMP F5
1775    1754  2610            GOERDN
1776
1777
1778    1755  0046    NOTYET, INCR BAR         /INCR AND TEST IDAM OR DATA AM START FAILURE COUNT
1779    1756  0042            LDMD                    /NOOP FOR LONG SEP CLK
1780    1757  0160            BR BAROFL F
1781    1760  1442            GETDAM+1         /OK, TRY AGAIN
1782
1783    1761  0070    NXIDAM, LCT              /TOO MANY ZEROES WHILE LOOKING FOR START OF
1784    1762  0130            KNXIDAM          /IDAM OR DATA AM
1785    1763  0226            JUMP F5
1786    1764  2610            GOERDN
1787
1788
1789    1765  0212    PNTRDY, JUMP F2          /POINTERS FROM CHECKRDY SUBROUTINE TO RDSTAT ROUTINE
1790    1766  1243            CLRID
1791    1767  0212    PYSRDY, JUMP F2
1792    1770  1243            CLRID
1793
1794    1771  0212    PNORDY, JUMP F2          /POINTERS FROM CHECK RDY TO INITIALIZE ROUTINE
1795    1772  1006            OKDONE
1796    1773  0226            JUMP F5
1797    1774  2631            INTRDY
1798
1799    1775  0000            0                /OPEN
1800    1776  0000            0                /OPEN
1801    1777  0000            0                /OPEN
1802
```

```
                        /[SUBROUTINES: GETWORD AND GETCOMMAND]
                        /SUBROUTINE TO GET AN EIGHT BIT WORD FROM THE INTERFACE.
                        /IF TALKING TO A PDP8 INTERFACE IN 12 BIT MODE, THERE
                        /WILL BE FOUR MEANINGLESS BITS PRECEDING THE DESIRED EIGHT
                        /BIT WORD, ENTER THIS SUBROUTINE WITH THE RETURN ADDRESS
                        /IN THE COUNTER, EXIT WITH THE ONES COMPLIMENT OF THE
                        /DESIRED WORD IN THE SHIFT REGISTER. PARITY IS COMPUTED AND
                        /CHECKED ON ALL WORDS.


2000  0012  GETWRD, SET XREQ          /REQUEST A WORD FROM INTERFACE

2001  0075  GETCMD, LSR               /STASH THE RETURN ADDRESS
2002  0270          OPEN RTNA
2003  0064          LSP

2004  2070          LCT               /CALL SUBR WAITRN TO WAIT FOR A WORD
2005  1346          PGOTIT
2006  0222          JUMP F4
2007  2312          WAITRN

2010  0061  GOTIT,  OFF FLAG          /CLEAR FLAG FOR PARITY CHECK

2011  0004          CLR ERR           /IN CASE RUN WAS A RESPONSE TO DONE
2012  0020          CLR DONE

2013  0070          LCT               /SET UP BIT COUNT IN CNTR,  8 BIT OR 12 BIT
2014  0367          -8-1
2015  0150          BR XIIBIT  F
2016  2021          .+3
2017  0070          LCT
2020  0363          -12-1

2021  0112  WATDAT, BR DATAIN ONE     /WHAT IS THE DATA BIT?
2022  2030          GOTONE            /ITS A ONE, GO SAVE IT

2023  0126          BR COFL T         /ITS A ZERO, WAS IT THE PARITY BIT (9TH BIT)?
2024  2041          CHKPAR            /YES, GO CHECK PARITY

2025  0076          ROTATE ONE        /NO SAVE THE DATA BIT COMPLIMENTED IN SR

2026  0222          JUMP F4           /GO SHIFT UP ANOTHER BIT.
2027  2034          NUTHER


2030  2063  GOTONE, TOG FLAG          /COMPLIMENT THE PARITY GENERATOR

2031  0126          BR COFL T         /WAS IT THE PARITY BIT?
2032  2041          CHKPAR            /YES, GO CHECK PARITY

2033  0074          ROTATE ZERO       /NO, SAVE THE COMPLIMENTED DATA BIT IN SR

2034  0026  NUTHER, SET SHIFT         /SHIFT PULSE AND INCREMENT BIT COUNT
```



```
2035  0073          ICT
2036  0024          CLR SHIFT

2037  0222          JUMP F4           /GO TEST THIS BIT.
2040  2021          WATDAT


2041  0176  CHKPAR, BR  FLAGO ONE     /WHERE THERE AN ODD NO. OF ONES?
2042  2076          GOTWRD            /YES, PARITY WAS GOOD

2043  0214          OPEN STAT         /NO, STAT TO SR
2044  0071          ESP
2045  0075          LSR

2046  0070          LCT               /END AROUND SHIFT OF UPPER 5 BITS OF STAT IN SR
2047  2372          -5-1
2050  0122          BR SR7 T
2051  2055          .+4
2052  0074          ROTATE ZERO
2053  0222          JUMP F4
2054  2056          .+2
2055  0076          ROTATE ONE
2056  0073          ICT
2057  0124          BR COFL F
2060  2050          .-8

2061  0074          ROTATE ZERO       /CLEAR INIT DONE
2062  0076          ROTATE ONE        /SET PARITY ERROR

2063  0122          BR SR7 T          /END AROUND SHIFT OF CRC ERROR BIT OF STAT IN SR
2064  2070          .+4
2065  0074          ROTATE ZERO
2066  0222          JUMP F4
2067  2071          .+2
2070  0076          ROTATE ONE

2071  0064          LSP               /RESTORE STAT TO SCRATCH PAD

2072  0070          LCT               /ERRCODE FOR PARITY ERROR
2073  0210          KPARER
2074  0226          JUMP F5
2075  2610          GOERDN


2076  0270  GOTWRD, OPEN RTNA         /WORD WAS GOOD, EXIT FROM GETWRD, GETCMD
2077  0203          JUMP F0 IND
```

```
1903
1904                    /[SUBROUTINE: STEPHEAD]
1905                    /THIS SUBROUTINE WILL STEP THE SPECIFIED NUMBER OF TRACKS IN THE
1906                    /SPECIFIED DIRECTION.  DIRECTION IS DETERMINED BY THE HD DIR FLOP
1907
1908                    /THE NUMBER OF STEPS IS IN THE SR.  RETURN ADDRESS IS IN THE CNTR.
1909                    /EXIT IS TO THE RETURN ADDRESS IF HOME IS DETECTED.  EXIT IS TO RETURN
1910                    /PLUS 2 IF THE LAST STEP HAS BEEN TAKEN.  AFTER THE LAST STEP IS TAKEN,
1911                    /THE HEAD IS LOADED AND A 25MS DELAY IS EXECUTED FOR HEAD SETTLE TIME
1912
1913
1914
1915
1916    2100  0270    STEPHD, OPEN RTNA       /STORE RETURN ADDR AND MOVE STEP COUNT TO CNTR
1917    2101  0064            LSP
1918    2102  0075            LSR
1919    2103  0071            ESP
1920    2104  0064            LSP
1921
1922    2105  0136    CKHOME, BR HOME T       /IS THE HEAD HOME?
1923    2106  2150            OUT             /YES, GO EXIT
1924
1925    2107  0073            ICT             /NO, INCREMENT STEP COUNT AND STORE IN TEMPA
1926    2110  0075            LSR
1927    2111  0230            OPEN TEMPA
1928    2112  0064            LSP
1929
1930    2113  0070            LCT             /PASS 30 TO DELAY SUBR FOR 3MS DELAY
1931    2114  2124            SECPLS
1932    2115  0075            LSR
1933    2116  0070            LCT
1934    2117  0341            -30-1
1935
1936    2120  0012            SET STPHD       /ISSUE STEP PULSE
1937    2121  0010            CLR STPHD
1938
1939    2122  0212            JUMP F2         /CALL DELAY SUBR
1940    2123  1300            DELAY
1941
1942    2124  0012    SECPLS, SET STPHD       /ISSUE SECOND STEP PULSE
1943    2125  0010            CLR STPHD
1944
1945    2126  0070            LCT             /CALL DELAY FOR 3MS DELAY
1946    2127  2135            DONSTP
1947    2130  0075            LSR
1948    2131  0070            LCT
1949    2132  0341            -30-1
1950    2133  0212            JUMP F2
1951    2134  1300            DELAY
1952
1953    2135  0230    DONSTP, OPEN TEMPA      /CHECK STEP COUNT
1954    2136  0071            ESP
1955    2137  2124            BR COFL F
1956    2140  2125            CKHOME          /NOT DONE, GO CHECK IF HOME
1957
```



```
1958    2141  0270            OPEN RTNA       /DONE STEPPING, INCREMENT RETURN ADDRESS BY 2
1959    2142  0071            ESP
1960    2143  0073            ICT
1961    2144  0073            ICT
1962
1963    2145  0270    DLY25,  OPEN RTNA       /STORE RETURN ADDRESS ALSO START OF 25MS DELAY SUBROUTINE
1964    2146  0075            LSR
1965    2147  0064            LSP
1966
1967    2150  0042    OUT,    LDHD            /LOAD HEAD
1968    2151  0250            OPEN TEMPE      /SET SOFT HD LOAD BIT
1969    2152  0070            LCT
1970                          OCTAL
1971    2153  0200            200
1972                          DECIMAL
1973    2154  0075            LSR
1974    2155  0064            LSP
1975
1976    2156  0270            LCT             /CALL DELAY SUBR FOR 25MS DELAY
1977    2157  2165            DONDLY
1978    2160  0075            LSR
1979    2161  0270            LCT
1980    2162  0000            -255-1
1981    2163  0212            JUMP F2
1982    2164  1300            DELAY
1983
1984    2165  0270    DONDLY, OPEN RTNA       /RETURN FROM STEP HEAD OR DELAY 25MS SUBROUTINE
1985    2166  0203            JUMP F0 IND
1986
1987
1988
1989
1990
1991
1992
1993                    /[ROUTINE: READ SECTOR CONT.]
1994
1995    2167  0070    READ,   LCT             /3 TO DATA MARK TRY COUNTER
1996    2170  0374            -3-1
1997    2171  0234            OPEN TEMPB
1998    2172  0075            LSR
1999    2173  0064            LSP
2000
2001    2174  0070            LCT             /STALL FOR 96 MICRO SEC (3 BYTES) TO AVOID WRT TURN ON SPLASH
2002    2175  0207            -120-1
2003    2176  0073            ICT
2004    2177  0062            FLAG ON         /SET THE FLAG TO SPECIFY DATA AM IN FIND AM ROUTINE
2005    2200  0124            BR COFL F
2006    2201  2176            .-3
2007
2008    2202  0073            ICT             /CLR COUNTER AND SR
2009    2203  0075            LSR
2010
2011    2204  0216            JUMP F3         /GO TRY FIND THE ADDRESS MARK
2012    2205  1441            GETDAM
```

```
2013
2014
2015                    /THIS ROUTINE FOLLOWS THE DISCOVERY OF A DATA MARK OR
2016                    /A DELETED DATA MARK.  IT MOVES THE NEXT 1024 BITS
2017                    /INTO THE SECTOR BUFFER, THEN PICKS UP AND CHECKS THE CRC.
2018
2019    2206  0044      DATA,   CLR BAR           /CLEAR THE BUFFER ADDRESS REGISTER
2020
2021    2207  0144              BR SEPCLK F       /WAIT FOR CLOCK
2022    2210  2207              .-1
2023
2024    2211  0053              START WRTBUF      /START THE WRITE PULSE FOR THIS BIT
2025
2026    2212  0055              DATCRC            /UPDATE THE CRC WITH SEP DATA
2027
2028    2213  0162              BR BAROFL T       /IS BUFFER FULL YET?
2029    2214  2221              GETCRC            /YES, GO GET THE CRC
2030
2031    2215  0050              FIN WRTBUF        /NO, END THE WRITE PULSE
2032
2033    2216  0046              INCR BAR          /ADDRESS NEXT SECTOR BUFFER CELL
2034
2035    2217  0222              JUMP F4           /LOOP BACK FOR NEXT BIT
2036    2220  2207              DATA+1
2037
2038    2221  0050    GETCRC,   FIN WRTBUF        /END THE WRITE PULSE FOR THE LAST BIT
2039
2040    2222  0070              LCT               /SET BIT COUNT TO 16 FOR 2 BYTE CRC
2041    2223  0357              -16-1
2042
2043    2224  0144              BR SEPCLK F       /WAIT FOR NEXT BIT
2044    2225  2224              .-1
2045
2046    2226  0042              LDMD              /4 NOOPS FOR LONG SEP CLOCK
2047    2227  0042              LDMD
2048    2230  0042              LDMD
2049    2231  0042              LDMD
2050
2051    2232  0055              DATCRC            /PUT CRC BIT IN THE CRC GENERATOR
2052    2233  0073              ICT               /INCREMENT AND TEST BIT COUNT
2053    2234  0124              BR COFL F
2054    2235  2224              .-9               /NOT DONE, GET ANOTHER
2055
2056    2236  0214              OPEN STAT         /STATUS TO SHIFT REG
2057    2237  0071              ESP
2058    2240  0075              LSR
2059
2060    2241  0122              BR SF7 T          /END AROUND SHIFT OF DRV RDY BIT OF STAT IN SR
2061    2242  2246              .+4
2062    2243  0074              ROTATE ZERO
2063    2244  0222              JUMP F4
2064    2245  2247              .+2
2065    2246  0076              ROTATE ONE
2066
2067    2247  0176              BR FLAGO T        /SET DEL DATA BIT OF STAT IF FLAG=0
```



```
2066    2250  2254              .+4
2069    2251  0276              ROTATE ONE
2070    2252  0222              JUMP F4
2071    2253  2255              .+2
2072    2254  0074              ROTATE ZERO
2073
2074    2255  0370              LCT               /END AROUND SHIFT OF NEXT 5 BITS OF STAT IN SR
2075    2256  0372              -5-1
2076    2257  0122              BR SF7 T
2077    2260  2264              .+4
2078    2261  0074              ROTATE ZERO
2079    2262  0222              JUMP F4
2080    2263  2265              .+2
2081    2264  0076              ROTATE ONE
2082    2265  0073              ICT
2083    2266  0124              BR COFL F
2084    2267  2257              .-8
2085
2086    2270  0070              LCT               /SET BIT COUNTER TO  16 FOR CRC TEST
2087    2271  0357              -16-1
2088
2089    2272  0132              BR CRC16 ONE      /IS THIS CRC BIT OK
2090    2273  2304              DCRCER            /NO, GO REPORT DATA CRC ERROR
2091
2092    2274  0054              CRC ZERO          /YES, BRING UP NEXT CRC BIT
2093
2094    2275  0073              ICT               /INCREMENT AND TEST BIT COUNTER
2095    2276  0124              BR COFL F
2096    2277  2272              .-5               /GO CHECK ANOTHER
2097
2098    2300  0074              ROTATE ZERO       /CRC WAS GOOD, CLR CRC ERR BIT OF STAT IN SR
2099
2100    2301  0064              LSP               /PUT THE STATUS WORD BACK IN SCRATCHPAD
2101
2102    2302  0212              JUMP F2           /EXIT TO DONE
2103    2303  1006              OKDONE
2104
2105    2304  0076    DCRCER,   ROTATE ONE        /INSERT 1 INTO CRC ERROR BIT
2106
2107    2305  0064              LSP               /PUT THE STAT WORD BACK
2108
2109    2306  0070              LCT               /ERROR CODE FOR CRC ERROR
2110    2307  0200              KDCRCER
2111    2310  0226              JUMP F5
2112    2311  2610              GOERDN
```

```
2113                    /[SUBROUTINE: WAIT FOR RUN]
2114                    /THIS SUBROUTINE WILL WAIT FOR RUN.  IF 46MS ELAPSES, THE HEAD IS UNLOADED
2115                    /AND THE ROUTINE CONTINUES WAITING FOR RUN.  RETURN ADDRESS IS PASSED
2116                    /VIA THE COUNTER
2117
2118
2119    2312  0264      WAITRN, OPEN RTNB       /STASH THE RETURN ADDRESS
2120    2313  0075              LSR
2121    2314  0264              LSP
2122
2123    2315  0102              BR RUN T        /GOT RUN?
2124    2316  2347              GOTRUN
2125
2126    2317  0240              OPEN TEMPC      /PRESET LOOP COUNTER TO 0
2127    2320  0070              LCT
2128    2321  0000              0
2129
2130    2322  0075      BACK,   LSR             /RESTORE LOOP COUNT
2131    2323  0064              LSP
2132
2133    2324  0302              WBR RUN T       /TIME WHILE WAITING FOR RUN
2134    2325  2347              GOTRUN
2135    2326  0302              WBR RUN T
2136    2327  2347              GOTRUN
2137    2330  0302              WBR RUN T
2138    2331  2347              GOTRUN
2139    2332  0302              WBR RUN T
2140    2333  2347              GOTRUN
2141
2142    2334  0071              ESP             /INCREMENT AND TEST LOOP COUNT
2143    2335  0073              ICT
2144    2336  0124              BR COPL F
2145    2337  2322              BACK            /46MS NOT ELAPSED YET
2146
2147    2340  0250              OPEN TEMPE      /TIME IS EXPIRED (45.8 MS), CLEAR THE SOFT HDLD BIT AND UNLOAD THE HEAD
2148    2341  0073              ICT
2149    2342  0075              LSR
2150    2343  0064              LSP
2151    2344  0042              UNHD
2152
2153    2345  0100              BR RUN F        /WAIT FOR RUN, FOREVER IF NECESSARY
2154    2346  2345              .-1
2155
2156    2347  0010      GOTRUN, CLR XREQ        /IF RUN WAS RESPONSE TO XFREQ
2157
2158    2350  0264              OPEN RTNB       /RETURN FROM WAITRUN SUBROUTINE
2159    2351  0213              JUMP IND F2
2160
2161
```



```
2162                    /[ROUTINE: INITIALIZE CONT.]
2163                    /CONTINUATION OF THE INITIALIZE SELF TEST
2164
2165    2352  0070      TEST,   LCT             /LOAD R5 WITH TEST PATTERN 252
2166                            OCTAL
2167    2353  0252              252
2168                            DECIMAL
2169    2354  0075              LSR
2170    2355  0224              OPEN R5
2171    2356  0064              LSP
2172
2173    2357  0070              LCT             /LOAD R10 WITH TEST PATTERN 125
2174                            OCTAL
2175    2360  0125              125
2176                            DECIMAL
2177    2361  0075              LSR
2178    2362  0254              OPEN R10
2179    2363  0064              LSP
2180
2181    2364  0062              FLAG ON         /SET FLAG AND TEST IT
2182    2365  0176              BR FLAGO T
2183    2366  2371              .+3
2184    2367  0212              JUMP F2
2185    2370  1374              INTER1          /FLAG FAILURE
2186
2187    2371  0224              OPEN R5         /CONTENTS OF R5 TO SR,  SHOULD BE 252
2188    2372  0071              ESP
2189    2373  0075              LSR
2190
2191    2374  0212              JUMP F2         /GO CONTINUE INIT TEST IN FLD 2
2192    2375  1351              TEST1
2193
2194
2195    2376  0000              0               /OPEN
2196    2377  0000              0               /OPEN
```

```
                        /[SUBROUTINE: MAGNITUDE COMPARISON]
                        /THIS SUBROUTINE COMPARES THE EIGHT BIT NUMBERS IN REGISTERS F AND G
                        / EXIT IS TO THE RETURN ADDRESS IF F=G.  IF F<G, RETURN IS TO RTNA+2,
                        /IF F>G, RETURN IS TO RTNA+4.  CONTENTS OF F AND G ARE UNDEFINED AT
                        /THE END OF THE SUBROUTINE


2400  0230    MAGCOM, OPEN TEMPA      /FOR BIT COUNT
2401  0070            LCT             /BIT COUNT IS 8
2402  0367            -8-1
2403  0075            LSR             /RESTORE BIT COUNT
2404  0064            LSP
2405  0254            OPEN TEMPF      /F TO SR
2406  0071            ESP
2407  0075            LSR
2410  0120            BR SR7 ZERO     /TEST F
2411  2443            TSTG0           /ITS 0
2412  0076            ROTATE ONE      /ITS 1, BRING UP NEXT BIT
2413  0064            LSP             /RESTORE F
2414  0260            OPEN TEMPG      /G TO SR
2415  0071            ESP
2416  0075            LSR
2417  0120            BR SR7 ZERO     /TEST G
2420  2432            GLESSF          /ITS 0, G IS LESS THAN F
2421  0074    NEXTG,  ROTATE ZERO     /ITS 1, BRING UP NEXT G BIT
2422  0064            LSP             /RESTORE G
2423  0230            OPEN TEMPA      /INCREMENT AND TEST BIT COUNT
2424  0071            ESP
2425  0073            ICT
2426  0124            BR COFL F
2427  2403            MAGCOM+3        /GO COMPARE ANOTHER BIT
2430  0270            OPEN RTNA       /ALL BITS COMPARED, NO DIFFERENCE
2431  0203            JUMP FB IND
2432  0270    GLESSF, OPEN RTNA       /G IS LESS THAN F RETURN TO RTNA +0
2433  0271            ESP
2434  0073            ICT
2435  0073            ICT
2436  0273            ICT
2437  0073            ICT
2440  0375            LSR
```



```
2441  0064            LSP
2442  0203            JUMP FB IND
2443  0074    TSTG0,  ROTATE ZERO     /F WAS 0, BRING UP NEXT BIT
2444  0064            LSP             /RESTORE F
2445  0260            OPEN TEMPG      /G TO SR
2446  0071            ESP
2447  0275            LSR
2450  0120            BR SR7 ZERO     /TEST G
2451  2421            NEXTG           /MATCHS F, GO BRING UP NEXT G BIT
2452  0270            OPEN RTNA       /G IS LESS THAN F,  RETURN TO RTNA +2
2453  0271            ESP
2454  0226            JUMP F5
2455  2436            GLESSF+4


                        /[SUBROUTINE: FIND TRACK CONT.]

2456  0270    HOMERR, LCT             /HOME FOUND BEFORE LAST STEP TAKEN
2457  0050            KHOMERR
2460  0226            JUMP F5
2461  2610            GOERDN


                        /[SUBROUTINE: DIFFERENCE]
                        /THIS SUBROUTINE COMPUTES THE DIFFERENCE BETWEEN TWO EIGHT BIT
                        /NUMBERS, ENTER WITH THE RETURN ADDRESS IN RTN, A IN THE
                        /COUNTER AND B IN THE SHIFT REGISTER, EXIT IS MADE WITH THE
                        /COMPLIMENT OF THE DIFFERENCE IN THE SHIFT REGISTER,
                        /EXIT IS TO RTN IF A>=B,  EXIT IS TO RTN+2 IF A<B


2462  0230    DIF,    OPEN TEMPA      /OPEN TEMPORARY PATH THRU THE SP
2463  0126            BR COFL T       /HAS A REACHED ALL ONES YET?
2464  2501            DIFB            /YES, GO GET B FOR THE DIFFERENCE
2465  0064            LSP             /NO, GET B
2466  0075            LSR             /A INTO SHIFT REG
2467  0071            ESP             /B INTO COUNTER
2470  0126            BR COFL T       /HAS B REACHED ALL ONES YET?
2471  2503            DIFA            /YES, GO GET A FOR THE DIFFERENCE
2472  0073            ICT             /INCREMENT B
2473  0064            LSP             /, BRING BACK A
2474  0075            LSR             /B INTO SHIFT REG
2475  0071            ESP             /A INTO COUNTER
```

```
2307    2476  0073          ICT             /INCREMENT A
2308    2477  0226          JUMP FS         /GO BACK TO TEST A AGAIN
2309    2500  2463          DIF+1
2310
2311
2312    2501  0270  DIFB,   OPEN RTNA       /B IS THE COMPLEMENT OF THE DIFFERENCE
2313    2502  0203          JUMP F0 IND     /EXIT A>=B
2314
2315
2316    2503  2270  DIFA,   OPEN RTNA       /A IS THE COMPLTMENT OF THE DIFFERENCE
2317    2504  0071          ESP             /INCREMENT THE RETURN ADDRESS BY 2
2318    2505  0073          ICT
2319    2506  0073          ICT
2320
2321    2507  0064          LSP             /RESTORE RETURN ADDRESS TO SCRATCHPAD AND A TO SR
2322    2510  0075          LSR
2323    2511  0071          ESP
2324    2512  0064          LSP
2325    2513  0075          LSR
2326
2327    2514  0203          JUMP F0  IND    /EXIT A<B
2328
2329
2330                  /[ROUTINE: FIND HEADER CONT.]
2331                  /THIS ROUTINE CHECKS THE CRC, AND THE RESULTS OF THE TRACK
2332
2333                  /AND SECTOR COMPARISONS.
2334
2335
2336
2337
2338    2515  0070  CKHCRC, LCT             /PRESET BIT COUNT TO 16 FOR CRC
2339    2516  0357          -16-1
2340
2341    2517  0132          BR CRC16 ONE    /IS CRC ZERO
2342    2520  2546          HCRCER          /NO, LOG ERROR AND TRY AGAIN
2343
2344    2521  0073          ICT             /YES, CRC GOOD SO FAR, BUMP BIT CNTR
2345
2346    2522  0254          CRC ZERO        /BRING UP NEXT CRC BIT
2347
2348    2523  0124          BR COFL F       /ALL BITS TESTED?
2349    2524  2517          .-5             /NO, BRANCH BACK
2350
2351    2525  0210          OPEN ERREG      /YES, CRC WAS GOOD, CHECK TRK COMP
2352    2526  0271          ESP
2353    2527  0075          LSR
2354
2355    2530  0070          LCT             /ROTATE BIT 0 TO BIT 7
2356    2531  0377          -7-1
2357    2532  0074          ROTATE ZERO
2358    2533  0073          ICT
2359    2534  0124          BR COFL F       /DONE ROTATING?
2360    2535  2532          .-3             /NO
2361
```



```
2362    2536  0122          BR SR7 ONE      /YES, WAS THERE A BAD COMPARE
2363    2537  2542          TKSKER          /YES, GO REPORT A TRACK SEEK ERROR
2364
2365    2540  0264          OPEN RTNB       /CORRECT TRACK, EXIT FROM FIND HDR SUBR
2366    2541  0207          JUMP F1 IND
2367
2368
2369
2370
2371    2542  0070  TKSKER, LCT             /HEADER CRC WAS GOOD BUT TRACK
2372    2543  0150          KTKSKER         /ADDRESS DID NOT COMPARE, MUST
2373    2544  0226          JUMP FS         /EXIT TO ERROR DONE
2374    2545  2610          GOERDN
2375
2376
2377    2546  0070  HCRCER, LCT             /HEADER CRC WAS NOT CORRECT
2378    2547  0140          KHCRCER
2379    2550  0275          LSR
2380    2551  0210          OPEN ERREG      /LOG THE ERROR
2381    2552  0064          LSP
2382
2383    2553  0226          JUMP FS         /GO TRY ANOTHER HEADER
2384    2554  2557          BADHDR
2385
2386
2387
2388
2389    2555  0170  BDSRT,  BR FLAGD T      /BAD START ON DATA AM OR IDAM?
2390    2556  2577          BADDAM
2391
2392    2557  0230  BADHDR, OPEN TEMPA      /IDAM, INCREMENT AND TEST BAD START INNER COUNT
2393    2560  0071          ESP
2394    2561  0073          ICT
2395    2562  0275          LSR
2396    2563  0064          LSP
2397    2564  0124          BR COFL F
2398    2565  2615          PTRYAG          /NO OVERFLOW, GO TRY ANOTHER HEADER
2399    2566  0234          OPEN TEMPB      /INCREMENT AND TEST BAD START OUTER COUNT
2400    2567  0071          ESP
2401    2570  0073          ICT
2402    2571  0124          BR COFL F
2403    2572  2615          PTRYAG          /NO OVERFLOW, GO TRY AGAIN
2404    2573  0070  XSTRYS, LCT             /TOO MANY TRIES FOR A HEADER
2405    2574  0160          KXSTRYS
2406    2575  0226          JUMP FS
2407    2576  2610          GOERDN
2408
2409
2410    2577  0234  BADDAM, OPEN TEMPB      /BAD START ON DATA AM, INCREMENT AND TEST BAD START COUNT
2411    2600  0071          ESP
2412    2601  0073          ICT
2413    2602  0075          LSR
2414    2603  0064          LSP
2415    2604  0124          BR COFL F
2416    2605  2617          PGETDA          /NO OVERFLOW GO TRY FOR DATA AM AGAIN
```

```
2417  2606  0070  NODAM,  LCT             /TRIED 3 IMES FOR DATA AM, GO FLAG THE ERROR
2418  2607  0170          KNODAM
2419  2610  0210  GOERDN, OPEN ERREG
2420  2611  0075          LSR
2421  2612  0064          LSP
2422  2613  0212          JUMP F2
2423  2614  1000          ERDONE
2424
2425  2615  0216  PTRYAG, JUMP F3          /POINTER TO FIND AN IDAM
2426  2616  1413          TRYAGN
2427
2428
2429  2617  0216  PGETDA, JUMP F3          /POINTER TO FIND DATA AM
2430  2620  1441          GETDAM
2431
2432
2433
2434                      /[ROUTINE: INITIALIZE CONT.]
2435  2621  0070  WRONG,  LCT             /HOME WAS FOUND WHILE STEPPING OUT
2436  2622  0030          KWRONG
2437  2623  0226          JUMP F5
2438  2624  2610          GOERDN
2439
2440  2625  0070  DNRCAL,   LCT          /CALL CHECK READY SUBROUTINE
2441  2626  1771          PNORDY
2442  2627  0226          JUMP F5
2443  2630  2640          CHKRDY
2444
2445  2631  0070  INTRDY, LCT             /DRV 0 IS READY CALL BOOT SUBROUTINE TO
2446  2632  0770          GOREAD          /MOVE TO TRACK 1, THEN GO TO READ ROUTINE TO
2447  2633  0274          OPEN RTN        /PICK UP SECTOR 1
2448  2634  0075          LSR
2449  2635  0064          LSP
2450  2636  0202          JUMP F0
2451  2637  0252          BOOT
2452
2453
2454
2455
```



```
2456                  /[SUBROUTINE: CHECKREADY]
2457
2458                  /SUBROUTINE TO CHECK THE SELECTED DRIVE TO SEE IF THE
2459                  /DISK IS INSERTED AND UP TO SPEED.  THIS IS DONE BY CHECKING TO SEE IF
2460                  /THE INTERVAL BETWEEN 2 INDEX PULSES IS BETWEEN 150 MS AND 180 MS.  RETURN
2461                  /ADDRESS IS PLACED IN THE COUNTER BEFORE ENTRY.  NOT READY RETURN IS
2462                  /TO THE RETURN ADDRESS.  READY RETURN IS TO THE RETURN ADDRESS PLUS 2
2463
2464
2465
2466                  /
2467  2640  0274  CHKRDY, OPEN RTN        /SAVE RETURN ADDRESS
2468  2641  0075          LSR
2469  2642  0064          LSP
2470
2471  2643  0070          LCT             /2 TO CNTR FOR INDEX PASS COUNT
2472  2644  0375          =2-1
2473
2474  2645  0230          OPEN TEMPA      /FOR INDEX PASS COUNT
2475
2476  2646  0075  NEWPAS, LSR             /RESTORE INDEX PASS COUNT
2477  2647  0064          LSP
2478
2479  2650  0061          FLAG OFF        /CLOSE INDEX WINDOW
2480
2481  2651  0042          LDMD            /TO CLEAR INDEX FLOP
2482
2483  2652  0070          LCT             /FOR 15 TIMES THROUGH 10MS LOOP
2484  2653  0360          =15-1
2485
2486  2654  0234  STDLY,  OPEN TEMPB      /RESTORE OUTER COUNT
2487  2655  0075          LSR
2488  2656  0064          LSP
2489
2490  2657  0070          LCT             /FOR 40 TIMES THROUGH .25MS LOOP
2491  2660  0327          =40-1
2492
2493  2661  0240          OPEN TEMPC
2494  2662  0075  SPBACK, LSR             /RESTORE INNER COUNT
2495  2663  0064          LSP
2496
2497  2664  0070          LCT             /WAIT .25 MS FOR INDEX
2498  2665  2005          =250-1
2499  2666  0116          BR INDX T
2500  2667  2714          SAWIND          /FOUND INDEX
2501  2670  0073          ICT
2502  2671  0124          BR COFL F
2503  2672  2666          .-4
2504
2505  2673  0240          OPEN TEMPC      /INCREMENT AND TEST  INNER COUNT
2506  2674  0071          ESP
2507  2675  0073          ICT
2508  2676  0124          BR COFL F
2509  2677  2662          SPBACK
2510
```

```
2511    2700  0234          OPEN TEMPB      /INCREMENT AND TEST OUTER COUNT
2512    2701  0071          ESP
2513    2702  0073          ICT
2514    2703  0124          BR COFL F
2515    2704  2655          STDLY+1
2516
2517    2705  0176          BR FLAGO ONE    /WAS INDEX WINDOW OPEN?
2518    2706  2767          UNRDY           /YES, NO INDEX WITHIN 180MS
2519
2520    2707  0062          FLAG ON         /NO, OPEN WINDOW
2521
2522    2710  0070          LCT             /FOR 3 TIMES THROUGH 10 MS LOOP
2523    2711  0374          -3-1            /THE WINDOW IS 30 MS WIDE
2524
2525    2712  0226          JUMP F5         /GO LOOK FOR INDEX
2526    2713  2654          STDLY
2527
2528
2529    2714  0230  SAWIND, OPEN TEMPA      /INCREMENT AND TEST INDEX PASS COUNT
2530    2715  0071          ESP
2531    2716  0073          ICT
2532    2717  0124          BR COFL F
2533    2720  2646          NEWPAS          /THIS WAS 1ST INDEX, GO LOOK FOR SECOND
2534
2535    2721  0174          BR FLAGO ZERO   /THIS WAS 2ND INDEX, WAS THE WINDOW OPEN?
2536    2722  2767          UNRDY           /NO, INDEX OCCURRED TOO SOON
2537
2538    2723  0274          OPEN RTN        /YES, INDEX OCCURRED BETWEEN 150 AND 180 MS, INCREMENT
2539    2724  0071          ESP             /RETURN ADDRESS BY 2
2540    2725  0073          ICT
2541    2726  0073          ICT
2542    2727  0075          LSR
2543    2730  0064          LSP
2544
2545    2731  0214          OPEN STAT       /SET DRV RDY BIT OF STAT IN SR
2546    2732  0071          ESP
2547    2733  0075          LSR
2548
2549    2734  0076          ROTATE ONE
2550
2551    2735  0061          FLAG OFF        /FLAG OFF TO INDICATE FIRST PASS
2552
2553    2736  0070  ROT3,   LCT             /END AROUND SHIFT OF THE NEXT 3 BITS OF STAT IN SR
2554    2737  0374          -3-1
2555    2740  0122          BR SR7 T
2556    2741  2745          .+4
2557    2742  0074          ROTATE ZERO
2558    2743  0226          JUMP F5
2559    2744  2746          .+2
2560    2745  0076          ROTATE ONE
2561    2746  0073          ICT
2562    2747  0124          BR COFL F
2563    2750  2740          .-8
2564
2565    2751  0176          BR FLAGO T      /WAS IT FIRST 3 OR LAST 3
```



```
2566    2752  2764          EXCHRY          /LAST, GO EXIT
2567
2568    2753  0140          BR WRTEN F      /UPDATE WRITE PROTECT BIT OF STAT IN SR
2569    2754  2760          .+4
2570    2755  0074          ROTATE ZERO
2571    2756  0226          JUMP F5
2572    2757  2761          .+2
2573    2760  0076          ROTATE ONE
2574
2575    2761  0062          FLAG ON         /GO SHIFT AROUND LAST 3 BITS
2576    2762  0226          JUMP F5
2577    2763  2736          ROT3
2578
2579    2764  0064  EXCHRY, LSP             /RESTORE THE STAT
2580
2581    2765  0274          OPEN RTN        /RETURN FROM CHKRDY SUBROUTINE
2582    2766  0217          JUMP F3 IND
2583
2584    2767  0214  UNRDY,  OPEN STAT       /CLEAR DRV READY BIT OF STAT IN SR
2585    2770  0071          ESP
2586    2771  0075          LSR
2587    2772  0074          ROTATE ZERO
2588
2589    2773  0226          JUMP F5         /GO UPDATE REST OF STAT IN SR
2590    2774  2735          ROT3-1
2591
2592    2775  0000          0               /OPEN
2593    2776  0000          0               /OPEN
2594    2777  0000          0               /OPEN
2595
2596
2597                  $
```

```
0000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

0200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0300  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

0400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

0600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
0700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111


1000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

1200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1300  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

1400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

1600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
1700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111


2000  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2100  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

2200  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2300  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

2400  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2500  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111

2600  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111
2700  11111111  11111111  11111111  11111111  11111111  11111111  11111111  11111111


3000
3100

3200
3300

3400
3500

3600
3700
```



```
4000
4100

4200
4300

4400
4500

4600
4700


5000
5100

5200
5300

5400
5500

5600
5700


6000
6100

6200
6300

6400
6500

6600
6700


7000
7100

7200
7300

7400
7500

7600
7700
```

ERRORS DETECTED: 0

LINKS GENERATED: 0

RUN-TIME: 18 SECONDS

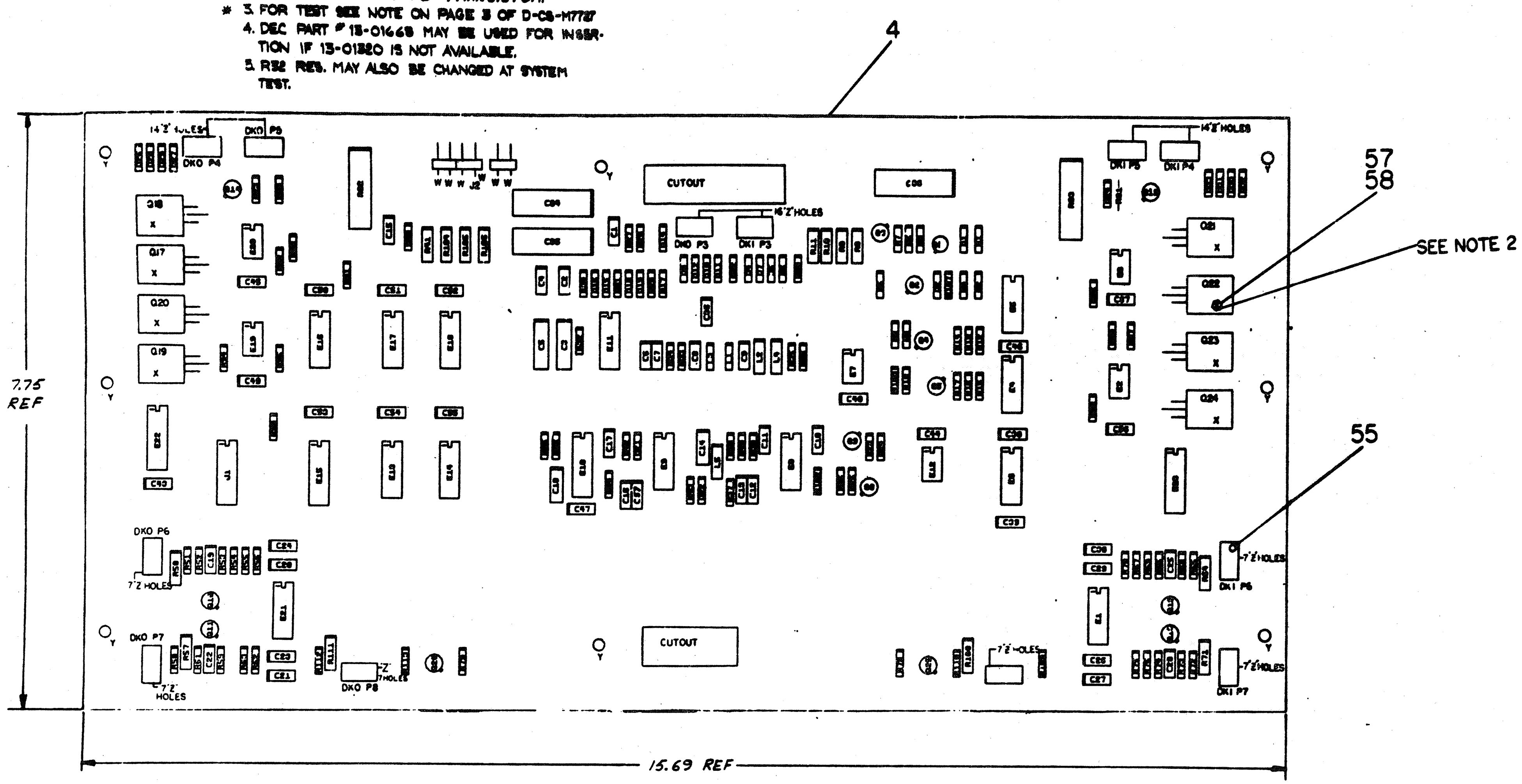
3K CORE USED

NOTES:

1. UNLESS OTHERWISE SPECIFIED:
   - ALL RESISTORS ARE 1/4W, ±5%.
2. WASHER TO BE USED BETWEEN ITEMS 57 AND 58 WILL BE SUPPLIED WITH THE D44C8 TRANSISTOR ONLY BY G.E.. THE WASHER IS ONLY REQUIRED WHEN USING THE G.E. TYPE TRANSISTOR.

* 3. FOR TEST SEE NOTE ON PAGE 3 OF D-CS-M7727

4. DEC PART # 13-01668 MAY BE USED FOR INSERTION IF 13-01320 IS NOT AVAILABLE.
5. R32 RES. MAY ALSO BE CHANGED AT SYSTEM TEST.



IC TYPE	GND	+5V
7473	11	4
75451	4	8
74157	8	16
75450	4	8
74123	8	16

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

REVISIONS: M7727-00004 E; M7727-00003 D; M7727-00002 C; M7727-00001 B

SEMICONDUCTOR CONVERSION CHART (DEC NO. / EIA NO.)

FIRST USED ON OPTION MODEL: M7727

ETCH BOARD REV. B

PARTS LIST (QTY / REF. DESIGNATION / DESCRIPTION / PART NO. / ITEM NO.)

DRN. DATE 12/31/74 — CHKD. DATE 1/24/75 — ENG. DATE 1-24-75 — PROJ. ENG. DATE 1/24/75 — PROD. DATE 1/24/75

NEXT HIGHER ASSY

digital

TITLE: READ/WRITE CONTROL

SIZE D — CODE CS — NUMBER M7727-0-1 — REV. E

SCALE — SHEET 1 OF 6

PARTS LIST

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM
		X-Y COORDINATE HOLE LOCATION	K-CO-M7727-0-4	1
		ASSY/ DRILL HOLE LAYOUT	D-AH-M7727-0-5	2
		MODULE ECO HISTORY	B-MH-M7727-0-6	3
1		ETCHED CIRCUIT BOARD	D-IA-5011370-00	4
2	C17, C18	CAP 100 pf	1000016-00	5
	C9	CAP 180 pf	1000020-00	6
2	C8, C14	CAP 220 pf	1000021-00	7
32	C1, C2, C4, C10, C11, C15 C16, C20, C21, C23, C24 C26, C27, C29, C30, C37, C38, C39, C40 C42 C44, C45, C46, C47 C49 - C57	CAP .01 µf	1001610-00	8
2	C3, C5	CAP 6.8 µf 35V	1005306-00	9
2	C34, C35	CAP 190 µf	1009433-00	10
1	C33	CAP 50 µf	1000080-00	11
9	C7, C6, C12, C13	CAP .047 µf	1010978-32	12
5	C19, C25, C22, C28, C36	CAP .005 µf	1001765-00	13
10	D4, D7, D9, D12, D14 D15, D16, D17, D18, D19	DIODE D671	1103309-00	14
8	D3, D5, D6 D8 D10 D11, D21, D22	DIODE D672	1105275-00	15
10	D23, D24, D26, D27 D28, D29, D30, D31 D32, D33	DIODE 1N4004	1105796-00	16
1	D20	DIODE 1N4742 12V	1109502-00	17
2	D1, D2	DIODE 5.1V	1110713-00	18
9	R90, R92 — R99	RES 150 1/4W 5%	1300250-00	19
4	R91, R104, R105, R106	RES 680 1/2W 5%	1300347-00	20
12	R6, R14, R17, R23, R24, R26, R46 R78, R79, R80, R81 R91,	RES 1K 1/4W 5%	1300365-00	21
4	R8 — R11	RES 1.2K 1/2W 5%	1300385-00	22
6	R50, R57, R64, R71, R105, R111	RES 68 1/2W 5%	1309405-00	23
7	R13, R16, R53, R62 R68, R75, R102	RES 1.5K 1/4W 5%	1300391-00	24
4	R35, R36, R39, R40	RES 511 1/8W 1%	1302411-00	25
1	R5	RES 2.74K 1/8W 1%	1304868-00	26
11	R2, R4, R7, R12, R15 R18, R103, R225, R27 R42, R43	RES 3.3K 1/4W 5%	1300439-00	27
6	R1, R20, R22, R44 R45, R107	RES 10K 1/4W 5%	1300479-00	28
11	R3, R37, R38, R52 R58, R63, R66, R72 R76, R109 R112	RES 1.21K 1/8W 1%	1302871-00	29
1	R32	RES 220Ω ±5%, 1/4W	1300271-00	30 *
2	R33, R34	RES 4K4 1/8W 1%	1303047-00	31
2	R28, R29	RES 34.8K 1/8W 1%	1303156-00	32
4	R51, R61, R65, R73	RES 10K 1/8W 1%	1303312-00	33
2	R82, R83	RES 100 5W 5%	1309094-00	34
2	R30, R31	RES 19.6 K 1/8W 1%	1309419-00	35
6	R55, R59, R67, R74 R110, R113	RES 4.64K 1/4W 1%	1304856-00	36

PARTS LIST

QTY	REF DESIGNATION	DESCRIPTION	PART NO.	ITEM
1	L5	CHOKE 1000 MHY	1602723-00	37
2	L2, L4	CHOKE 33 MHY	1601759-00	38
2	L1, L3	CHOKE 120 MHY	1610663-00	39
1	E17	I.C. 7430	1905580-00	40
2	E16, E18	I.C. 7473	1905587-00	41
1	E14	I.C 7402	1909004-00	42
1	E13	I.C 7404	1909686-00	43
2	E4, E6	I.C 7408	1910155-00	44
5	E1, E9, E21	I.C. 1414	1910337-00	45
5	E2, E3, E12, E19, E20	I.C 75451	1910406-00	46
1	E10	I.C 74123	1910436-00	47
2	E8, E11	I.C. 72733	1910644-00	48
1	E15	I.C. 74157	1910655-00	49
1	E5	I.C. 7406	1910741-00	50
1	J1	I.C SOCKET 16 PIN	1211813-02	51
9	Q9 THRU Q15, Q25Q26	TRANS MXAA05	1510705-00	52
6	Q1 — Q5, Q8	TRANS MXAA55	1510706-00	53
8	Q17 - Q24	TRANS D44C8	1510421-00	54
86	"E" HOLES	WIRE WRAP PIN	1210385-01	55
3	J2	CONN 2 POS	1212204-00	56
8	"X" HOLES	SCREW, PAN HD 4/40 X 5/16	9006010-01	57
8	"X" HOLES	NUT, KEP 4/40 X 1/4 X 3/32	9006557-00	58
1	E7	I.C. 75452	1910695-00	59
4	R54, R56, R69, R70	RES 14.7K 1/4W 1%	1302941-00	60

REVISIONS

CHK	CHANGE NO	REV

TITLE	READ/WRITE CONTROL	SIZE	CODE	NUMBER	REV.
SCALE	SHEET 2 OF 10	D	CS	M7727-0-1	E
		DIST.			

SIZE D | CODE CS | NUMBER M7727-Ø-1 | REV E

+24V

DG WT GATE H
DG ABOVE TK 43 H
DG SEL WT PROT L
DG ERASE H
DG WT DATA H
DG SEL DK Ø H
DG DC LO L
DG SEL DK 1 H

R1 10K
D1 5.1V
R3 1.21K 1%
R107 10K
D2 5.1V
R5 3.74K 1%
R6 1K
Q1 A55
Q2 A55
Q3 A55
R2 3.3K
R4 3.3K
R8 1.2K 1/2W
R9 1.2K 1/2W
R10 1.2K 1/2W
R11 1.2K 1/2W
R7 3.3K
C36 .005µf
D10 672
D5 672
D3 672
D14 671
D15 671
R/W BUS +
D9 671
D4 671
R13 1.5K
Q4 A55
R12 3.3K
R14 1K
R15 3.3K
R17 1K
+5V
+24V
R18 3.3K
R103 3.3K
R16 1.5K
Q5 A55
D11 672
R22 10K
R20 10K
D6 672
R27 3.3K
R28 34.8K 1%
R30 19.6K 1%
D16 671
-5V
C1 .01µf
R29 34.8K 1%
R31 19.6K 1%
D19 671
DK Ø HEAD P3
DK 1 HEAD P3
D8 672
D12 671
D7 671
D17 671
D18 671
R/W BUS -
R23 1K
+5V
Q8 A55
Q9 A05
R24 1K
R25 3.3K
R26 1K
-5V

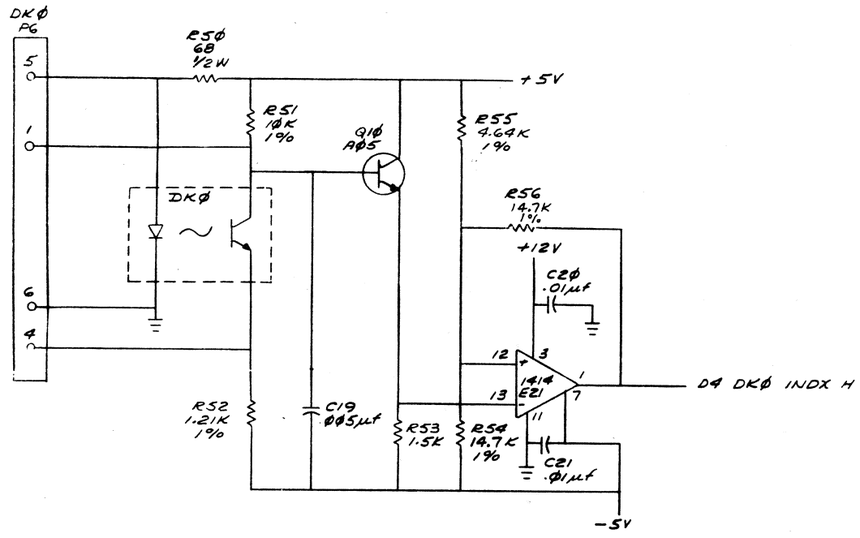
R32, 560Ω: USE IF E11-7 IS < THAN 2.0
R32, 680Ω: USE IF E11-7 IS < THAN 2.0
R32, 820Ω: USE IF E11-7 IS < THAN 2.0 (Vp-H)
R32, 1.0K: USE IF E11-7 IS < THAN 2.0 (Vp-H)
* R32, 220Ω (NOMINAL)
R32, 1.5K: USE IF E11-7 IS > THAN 3.2 (Vp-P)

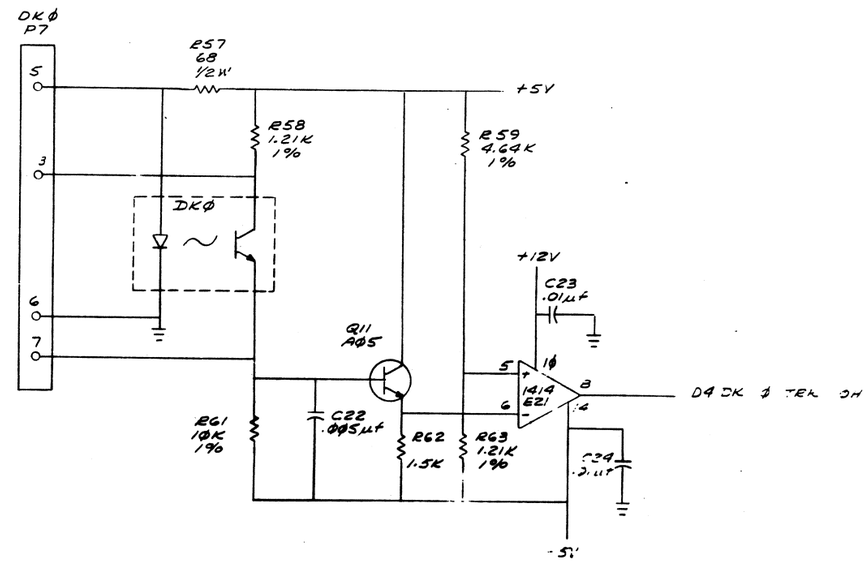
APPLY 2 MX BETWEEN E11-1 AND E11-14. THEN SELECT R32 FOR E11-7, OR E11-8 TO BE 2.0 TO 3.2 (Vp-P)

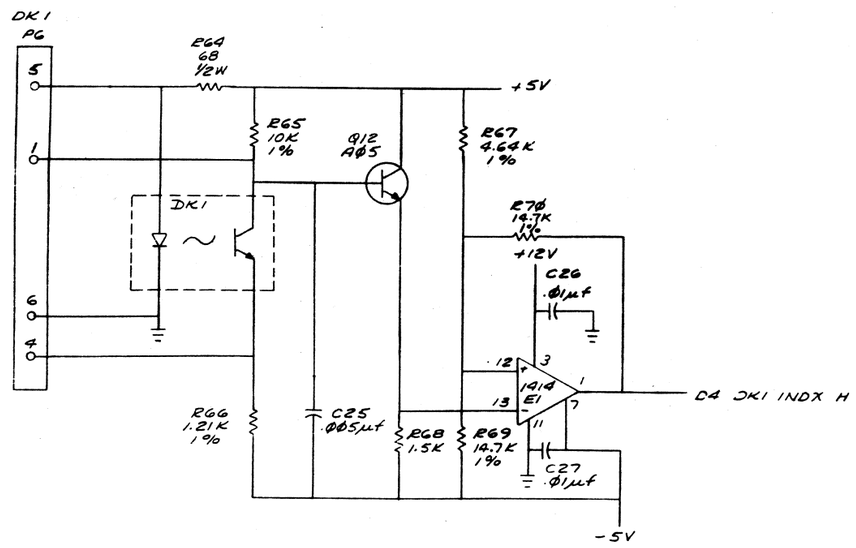
+5V
C2 .01µf
C3 6.8µf
L1 120µhy
L2 33µhy
C6 .047µf
R33 464 1%
C8 220pf
C9 180pf
R35 511 1%
R/W BUS +
R/W BUS -
733 E11
*R32 220Ω (NOMINAL)
C7 .047µf
R34 464, 1%
L3 120µhy
L4 33µhy
R36 511 1%
-5V
C4 .01µf
C5 6.8µf
C10 .01µf
R102 1.5K
733 E8
C12 .047
R39 511, 1%
R37 1.21K 1%
L5 1000 µhy
C14 220pf
C13 .047
R38 1.21K 1%
R40 511 1%
-5V
C11 .1µf
+24V
R104 680 1/2W
R105 680 1/2W
R106 680 1/2W
R41 680 1/2W
+12V
D20 IN4742
C15 .01µf
1014 E9
D21 672
R42 3.3K
D22 672
R43 3.3K
C16 .01µf
-5V
+5V
C17 100 pf
R44 10K
74123 E10
C18 100 pf
R45 10K
74123 E10
R46 1K
+5V
D3 RAW DATA L

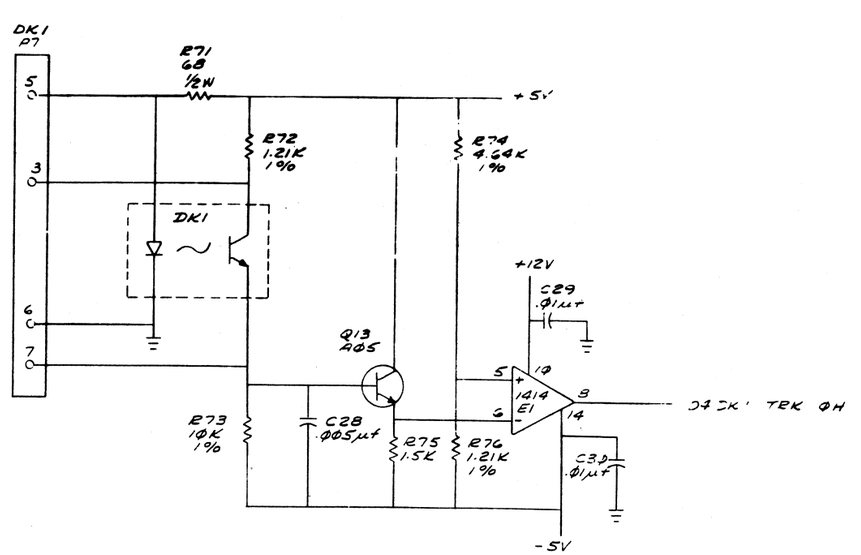
REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
READ / WRITE CONTROL (D3)	D	CS	M7727-Ø-1	E
SCALE	SHEET 3 OF 6	DIST.		





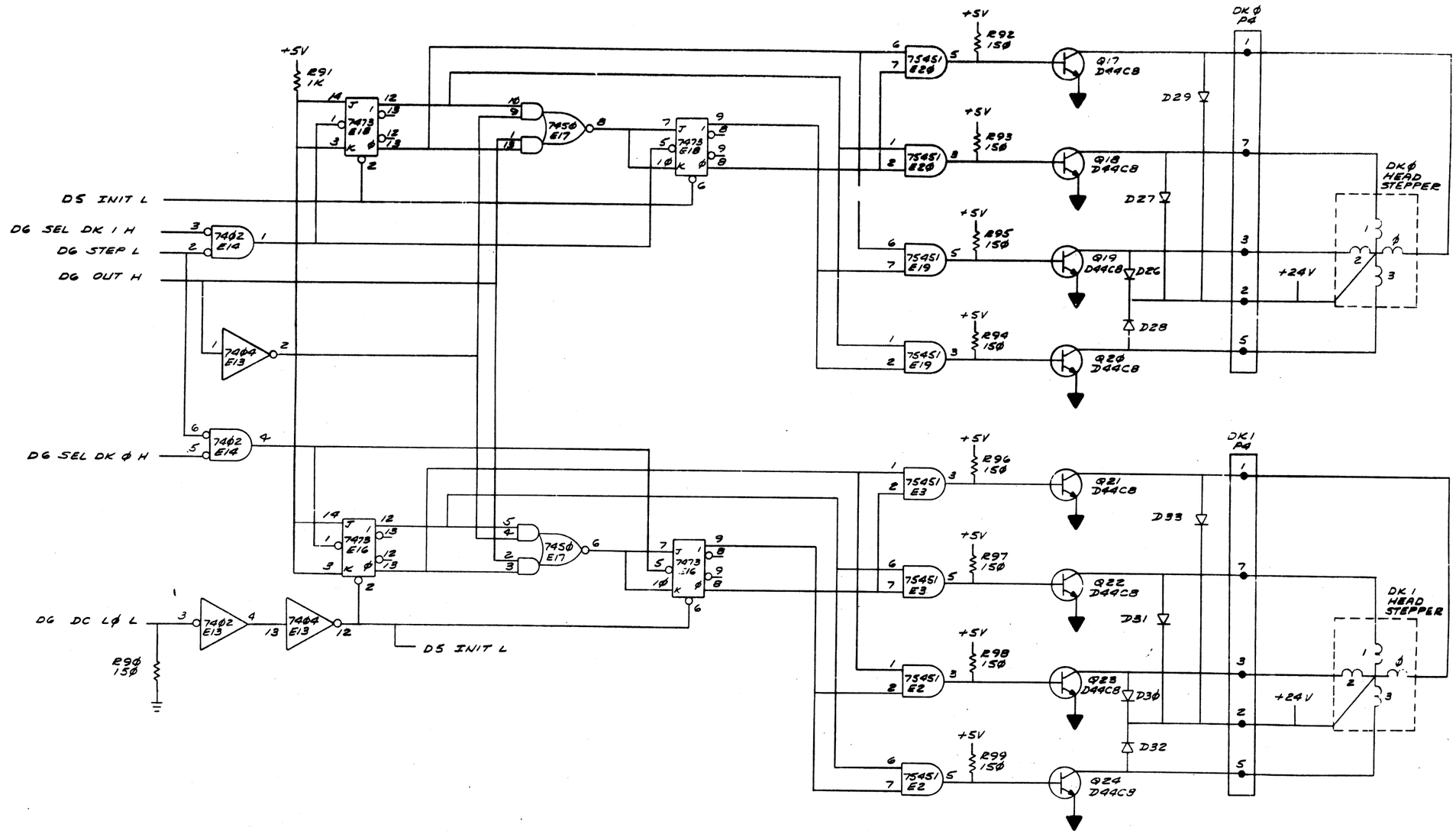




REVISIONS		
CHK	CHANGE NO.	REV.

TITLE	READ / WRITE CONTROL (D4)	SIZE	CODE	NUMBER	REV.
SCALE	SHEET 4 OF 5	D	CS	M7727-Ø-1	E
		DIST.			

REV E | NUMBER M7727-Ø-1 | CODE CS | SIZE D



REVISIONS		
HK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
READ / WRITE CONTROL (D5)	D	CS	M7727-Ø-1	E
SCALE —— SHEET 5 OF 6	DIST.			

DK∅ P8

R111 68 1/2W

+5V

R112 1.21K 1%

R79 1K

R113 4.64K 1%

Q26 A05

DK1 P8

R1∅8 68 1/2W

+5V

R1∅9 1.21K 1%

R78 1K

R11∅ 4.64K 1%

Q25 A05

74157 E15

D4 DK1 TRK ∅ H
D4 DK∅ TRK ∅ H
D4 DK1 INDX H
D4 DK∅ INDX H

DG SEL WT PROT L
DG SEL TRK ∅ H
DG SEL INDX H
DG SEL DK ∅ H

I.C. SOCKET J1

DG OUT H
DG ERASE H
DG WT GATE H
DG STEP L
D8 RAW DATA L
DG WT DATA H

DG DC LO L
DG SEL DK 1 H
DG ABOVE TK 43 H
DG LOAD HEAD H
DG SEL TRK ∅ H
DG SEL INDX H

DG SEL DK 1 H

7404 E13

DG LOAD HEAD H
DS INIT L

7408 E6

75451 E12

R8∅ 1K

R81 1K

+5V

Q14 A05

Q15 A05

DK∅ HEAD LOAD SOLENOID

DK1 HEAD LOAD SOLENOID

DK∅ P5

DK1 P5

D23 1N4004

D24 1N4004

+24V

R82 1∅∅ 5W

R83 1∅∅ 5W

+24V
+5V
-5V

C33 50µF
C34 150µF
C37-C40 C43-C47 C49-C56 .01µF
C35 150µF

J2

N/C
-5V
GND
+5V
+24V RETURN
+24V

REVISIONS		
HK	CHANGE NO	REV.

TITLE	SIZE	CODE	NUMBER	REV.
READ / WRITE CONTROL (D6)	D	CS	M7727-∅-1	E
SCALE —	SHEET 6 OF 6	DIST.		

DRAWING DIRECTORY

digital EQUIPMENT CORPORATION MAYNARD MASSACHUSETTS

CUSTOMER PRINT SET INDEX

THIS IS PRINT SET

SEQUENCE	
H771 POWER SUPPLY	B-DD-H771-Ø
H771-A CIRCUIT SCHEMATIC	D-CS-H771-A-1
H771-C CIRCUIT SCHEMATIC	D-CS-H771-C-1
H771-D CIRCUIT SCHEMATIC	D-CS-H771-D-1
RXØ1 POWER BOARD ASSY	D-AD-7010718-0-0
RXØ1 POWER SUPPLY BOARD	D-CS-5411398-0-1

UNIT VARIATIONS

VAR	TITLE	PRINT SET 1			
H771-A	RXØ1 POWER SUPPLY, 115V, 6ØHZ	X			
H771-C	RXØ1 POWER SUPPLY, LOW VOLT, 5ØHZ	X			
H771-D	RXØ1 POWER SUPPLY, HIGH V, 5ØHZ	X			

REVISIONS

REV	CHG. NO.	DATE
A	H771-1	7-75
B	H771-2	10-75
C	H771-3	11-75
D	H771-4	3-76
E	H771-5	1-78

DEC 16-(325)-1062-1A-N672

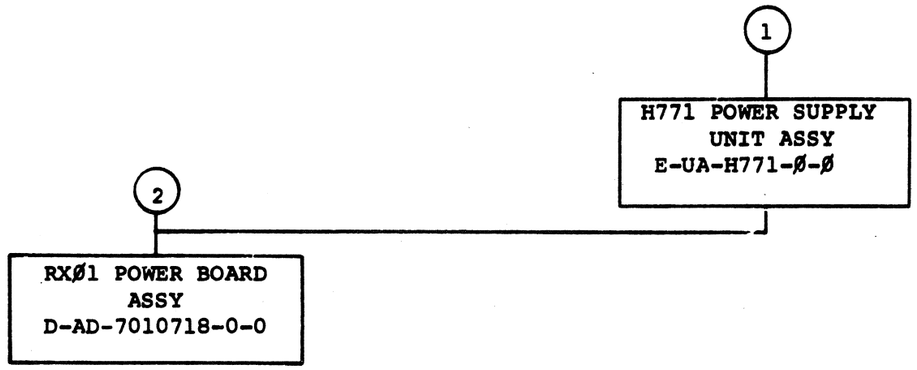
USED ON OPTION/MODEL			
RXØ1		DRN. W. McCarthy	DATE 2/3/75
		CHK'D. W.F. McCarthy	DATE 6/13/75
		PROJ ENG. [signature]	DATE 6/13/75
		PROD. [signature]	DATE 6/13/75
SHEET 1 OF 3		FIELD SERV. [signature]	DATE 6/13/75

TITLE H771 POWER SUPPLY

SIZE	CODE	NUMBER	REV
B	DD	H771-Ø	E

DIST

DRB 106



TITLE		SIZE	CODE	NUMBER	REV
H771 POWER SUPPLY	SHEET 2 OF 3	B	DD	H771-Ø	E

MECHANICAL

CUSTOMER PRINT SET				MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO./FILE DATE
1	-				1	E-UA-H771-Ø-Ø	E	2	H771 POWER SUPPLY ASSY	
						E-MD-7412667-0-0	D	1	CHASSIS, POWER SUPPLY	
						D-AD-7010680-0-0	C	1	TRANSFORMER ASSY, 6Ø HZ	
						D-AD-7010704-0-0	E	1	TRANSFORMER ASSY, 5Ø HZ	
						C-AD-7010697-0-0	B	1	POWER CORD ASSY	
						C-IA-7010972-0-0	C	1	JUMPER	
						C-MD-7413344-0-0		1	BRACKET, FUSE MOUNTING	
						A-DC-7413403-0-0		1	DECAL, H771-A	
						A-DC-7414250-0-0	A	1	DECAL, H771-C	
						A-DC-7414251-0-0	A	1	DECAL, H771-D	
					2	D-AD-7010718-0-0		1	RXØ1 POWER BOARD ASSY	
						D-IA-7010854-0-0	C	1	READ/WRITE BOARD HARNESS	
						D-IA-7010853-0-0	B	1	DISK CONTROL BOARD HARNESS	

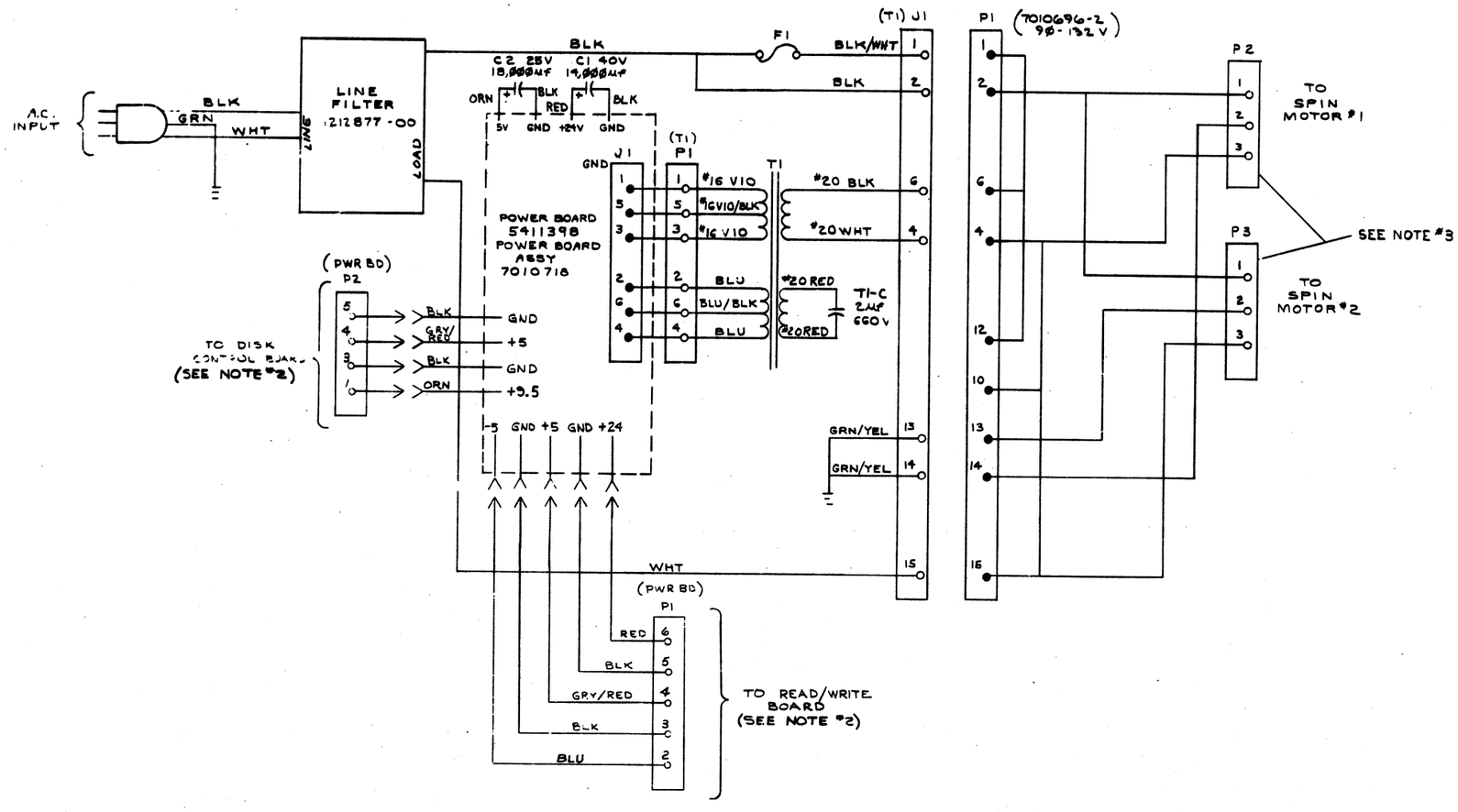
ELECTRICAL

CUSTOMER PRINT SET				MFG. SET	FIND NO.	DRAWING NO.	REV	NO OF SHT	DESCRIPTION	OPTION NO./FILE DATE
X					1	B-DD-H771-Ø	E	3	H771 POWER SUPPLY	
X						D-CS-H771-A-1	B	1	H771-A CIRCUIT SCHEMATIC	
X						D-CS-H771-C-1	C	1	H771-C CIRCUIT SCHEMATIC	
X						D-CS-H771-D-1	C	1	H771-D CIRCUIT SCHEMATIC	
						A-SP-H771-Ø-1			ENGINEERING SPECIFICATION	
					2	D-AD-7010718-0-0	*	1	RXØ1 POWER BOARD ASSY	
X						D-CS-5411398-0-1	*	1	RXØ1 POWER BOARD ASSY	

CUSTOMER PRINT SET CODES	X = PRINT OF DOCUMENT INCLUDED IN PRINT SET C = INCLUDES ALL PRINTS INDICATED ON DOCUMENT S = CONFIDENTIAL AUTHORIZED SIGNATURE REQUIRED	TITLE: H771 POWER SUPPLY	SHEET 3 OF 3	SIZE: B	CODE: DD	NUMBER: H771-Ø	REV: E

DRB 108

NOTES:
1. ALL WIRE TO BE #18 AWG UNLESS OTHERWISE SPECIFIED.
2. SLOT BETWEEN P1-4 + P1-5 CONTAINS A DUMMY PIN. SLOT BETWEEN P2-4 + P2-5 ALSO CONTAINS A DUMMY PIN.
3. NO DOUBLE CRIMPS ARE ALLOWED IN MOLEX CONNECTOR(S) TO MOTOR(S).



REVISIONS	REV.	CHANGE NO.	CHK

DRN.		1/22/75
CHK'D	WFM	3/10/75
ENG.		3-10-75
PROJ. ENG.		3-10-75
PROD.		3/11/75
NEXT HIGHER ASSY.		
B-DD--771-0		
SCALE	NONE	
SHEET	1 OF 1	

FIRST USED ON R/01

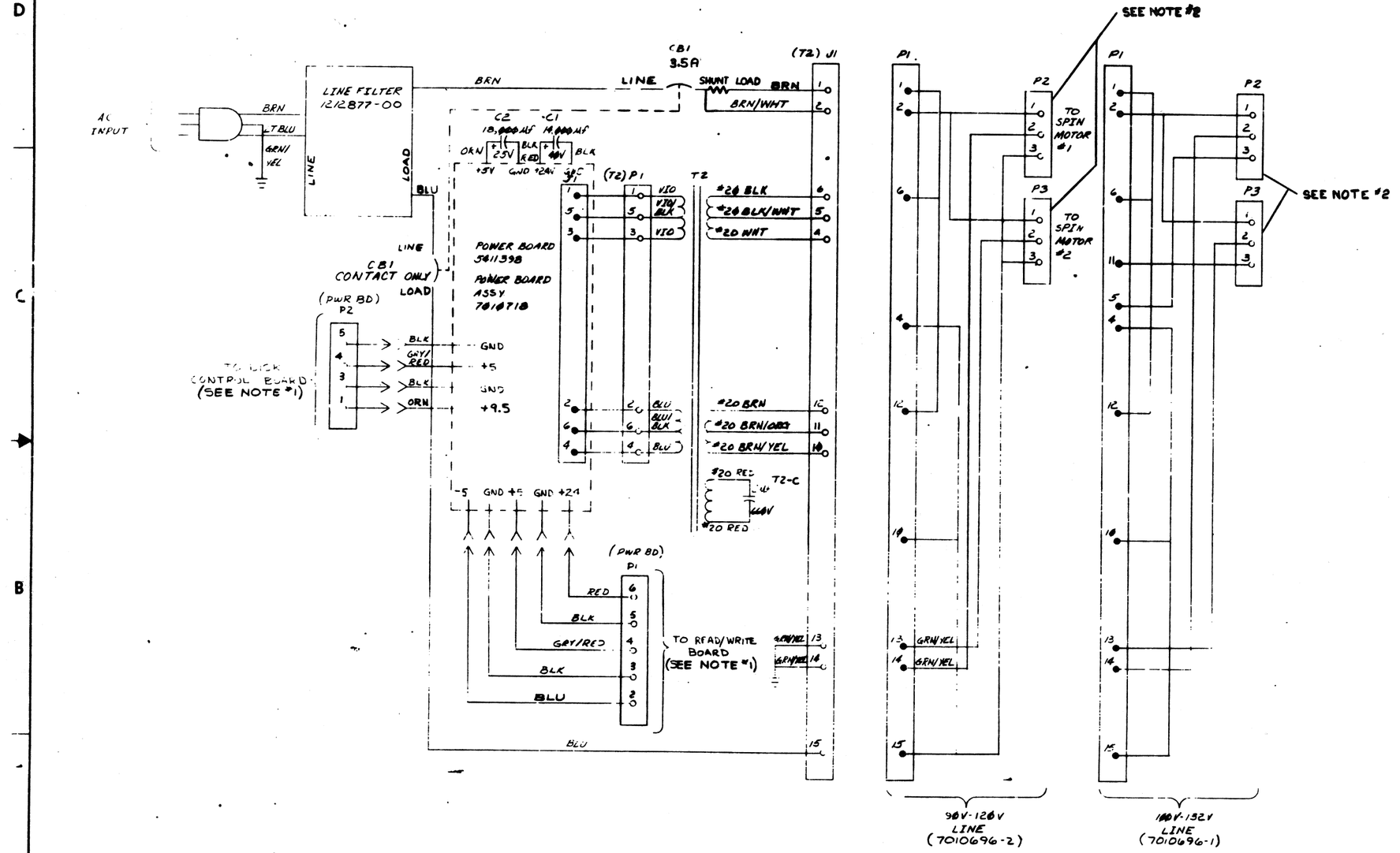
digital

TITLE
H771-A POWER CONNECTIONS

SIZE	CODE	NUMBER	REV.
D	CS	H771-A-1	B

DIST.

NOTES:
1. SLOT BETWEEN P1-4 AND P1-5 CONTAINS A DUMMY PIN. SLOT BETWEEN P2-4 AND P2-5 ALSO CONTAINS A DUMMY PIN.
2. NO DOUBLE CRIMPS ALLOWED IN MOLEX CONNECTOR(S) TO MOTOR(S).
3. ALL WIRES TO BE #18 AWG UNLESS OTHERWISE SPECIFIED.



REVISIONS		
CHK	CHANGE NO.	REV.
—	H771-00001	*
	ORIGINATED	
BM	H771-00002	A
	B. HAZEN	
	H771-00003	B
	B HAZEN	
	H771-00004	C
	B HAZEN	

DRN.	
CHK'E	
ENG.	
PROJ. ENG.	
PROD.	
NEXT HIGHER ASSY.	B-DD-H771-0
SCALE	
SHEET	1 OF 1

FIRST USED ON: RX0

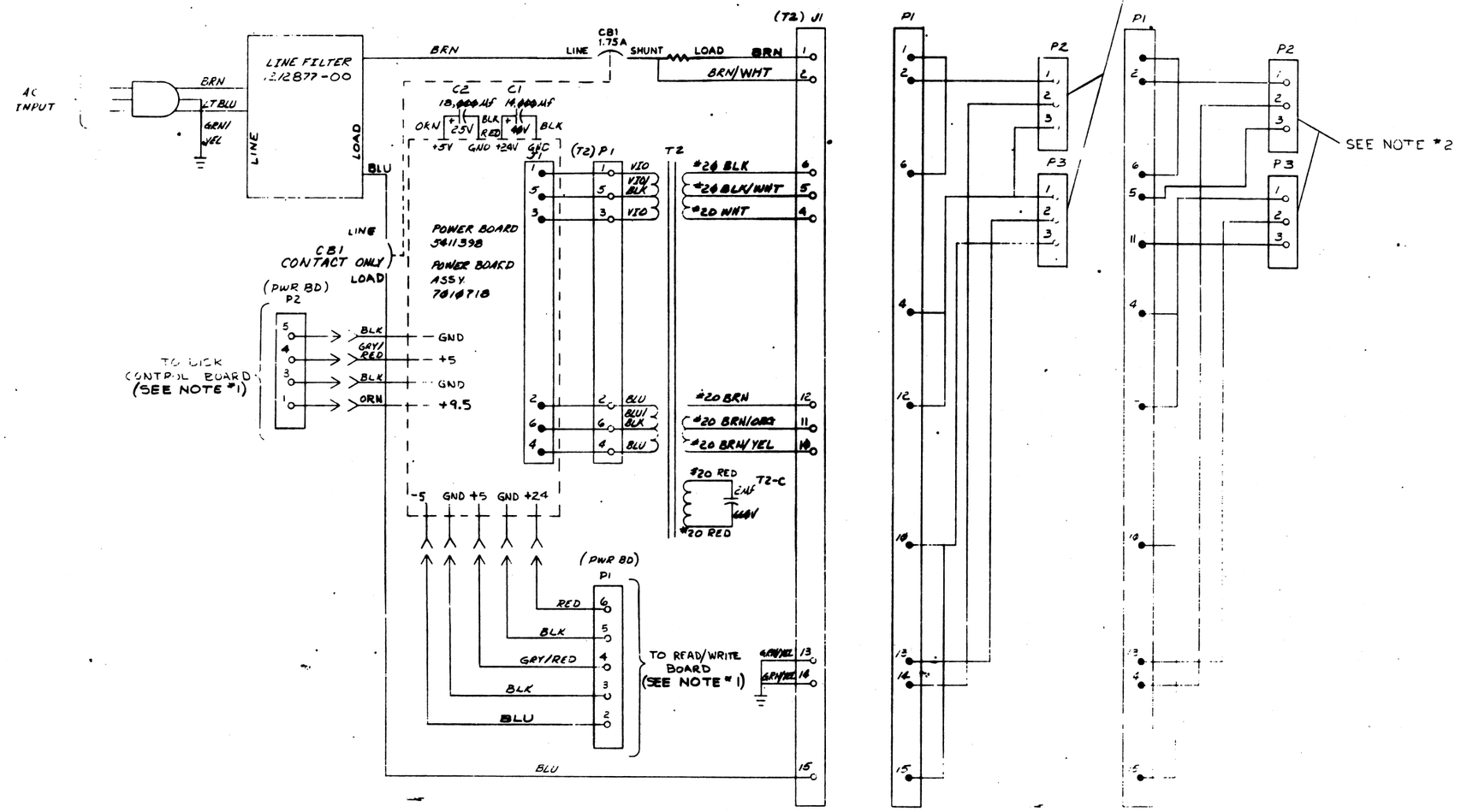
TITLE: H771-C POWER CONNECTIONS

SIZE D | CODE CS | NUMBER H771-C-1 | C

DIST.

DEC FORM NO. CRD 1050

NOTES:
1. SLOT BETWEEN P1-4 AND P1-5 CONTAINS A DUMMY PIN. SLOT BETWEEN P2-4 AND P2-5 ALSO CONTAINS A DUMMY PIN.
2. NO DOUBLE CRIMPS ALLOWED IN MOLEX CONNECTOR(S) TO MOTOR(S).
3. ALL WIRES TO BE #18AWG UNLESS OTHERWISE SPECIFIED.



REVISIONS		
CHK	CHANGE NO.	REV.
—	1277-00 1	+
	ORIGINATED H771-00002	A
	B. HAZEN	
	B. Hazen D.V.	
	H771-00003	B
	B. HAZEN	
	B. Hazen D.V.	
	H771 0004	C
	B. HAZEN	

DRN		
CHK'D		
ENG.		
PROJ. ENG.		
PROD		
NEXT HIGHER ASSY		
B-DD-H771-0		
SCALE		
SHEET	1 OF 1	

FIRST USED ON RX0

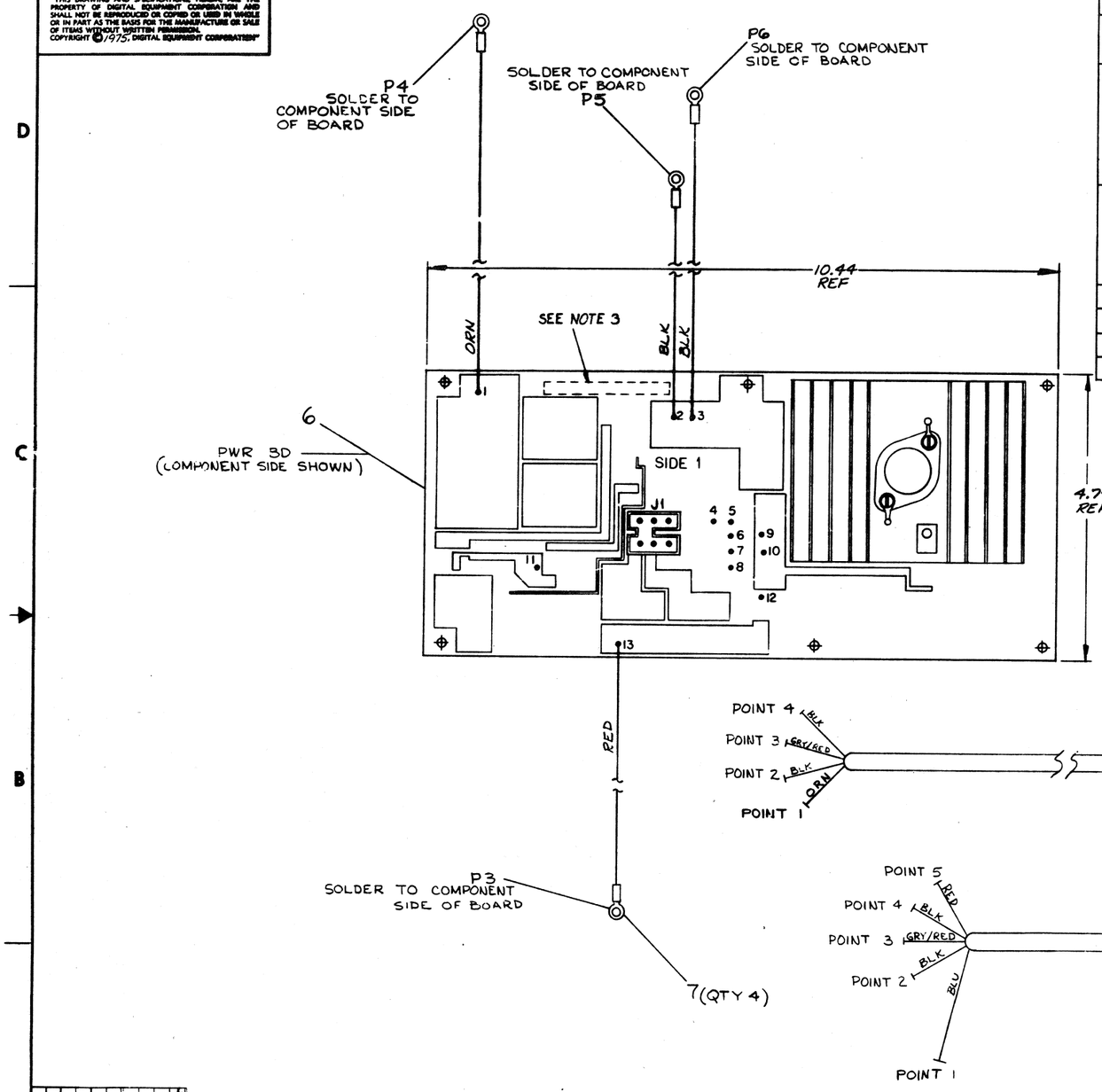
TITLE H771-D POWER CONNECTIONS

SIZE	CODE	NUMBER	REV.
D	CS	H771-B-1	C

DIST.

DEC FORM NO. DRD 100-1

56



WIRE TABLE

ITEM NO.	DESCRIPTION AWG	COLOR	FROM CONN	FROM TERM	TO CONN	TO TERM	LENGTH
1	18	BLU	P1 POINT 1	——	PWR BD #11	SOLDER	——
		BLK	P1 POINT 2	——	PWR BD #6		——
		GR/RED	P1 POINT 3	——	PWR BD #9		——
		BLK	P1 POINT 4	——	PWR BD #5		——
		RED	P1 POINT 5	——	PWR BD #12		——
2		ORN	P2 POINT 1	——	PWR BD #4		——
		BLK	P2 POINT 2	——	PWR BD #7		——
		GRY/RED	P2 POINT 3	——	PWR BD #10		——
	18	BLK	P2 POINT 4	——	PWR BD #8		——
3	14	RED	P3	ITEM 7	PWR BD #13		13 IN ±.25
4	14	BLK	P5	ITEM 7	PWR BD #2		7 IN ±.25
5	14	ORN	P4	ITEM 7	PWR BD #1		11 IN ±.25
4	14	BLK	P6	ITEM 7	PWR BD #3	SOLDER	9 IN ±.25

NOTES:

1. STRIP LENGTH FOR ITEMS 3, 4 & 5 ARE TO BE .16 LONG.
2. THE BLACK WIRES ON P1 & P2 CAN BE INTERCHANGED BETWEEN POINTS 5, 6, 7 & 8 ON THE POWER BOARD.
3. INK STAMP ASS'Y NO. 7010718 IN FIGURES, 13 HIGH WHERE SHOWN.

ITEM	DESCRIPTION	DWG./PART NO.	QTY
4	CONN, SOLDERLESS	9007928-00	7
1	POWER SUPPLY BOARD, RXØ1	L-CS-5411398-0-1	6
A/R	WIRE, #14 AWG, IPVC, ORANGE	9107370-33	5
A/R	WIRE, #14 AWG, IPVC, BLACK	9107370-00	4
A/R	WIRE, #14 AWG, IPVC, RED	9107370-22	3
1	HARNESS, DISK CONTROL BOARD	D-IA-7010853-0-0	2
1	HARNESS, READ/WRITE BOARD	D-IA-7010854-0-0	1

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES

ANGLES ±0° 30'	CLASS OF ACCURACY (CHECK ONE)	NOMINAL DIMENSION RANGE INCHES OVER 0 TO 0.2	OVER 0.2 TO 1.2	OVER 1.2 TO 4.0	OVER 4.0 TO 12.0	OVER 12.0 TO 40.0	OVER 40.0 TO 80.0
SURFACE QUALITY IN ✓ MICROINCHES	MEDIUM ☐	±.004	±.008	±.012	±.016	±.024	±.04
	PREFERRED ☐	±.012	±.016	±.025	±.04	±.063	±0.1

THIRD ANGLE PROJECTION

REMOVE BURRS AND BREAK SHARP CORNERS

DO NOT SCALE DWG

MATERIAL SEE PARTS LIST

FINISH

QUANTITY & VARIATION

DRN. T. Quillen	1-28-75	FIRST USED ON H771
CHK'D McCutcheon	2/5/75	digital
ENG. [illegible]	3-18-75	TITLE RXØ1 POWER BOARD ASS'Y
PROJ. ENG. [illegible]	3-18-75	
PROD. [illegible]	3/18/75	
NEXT HIGHER ASSY.	E-UA-H771-Ø-Ø	SIZE D · CODE AD · NUMBER 7010718-C-0 · REV. B
SCALE 1/1		
SHEET 1 OF 1		DIST.

REVISIONS	CHANGE NO.	REV.
CHK	RXØ1-00001	A
	H771-00001	B

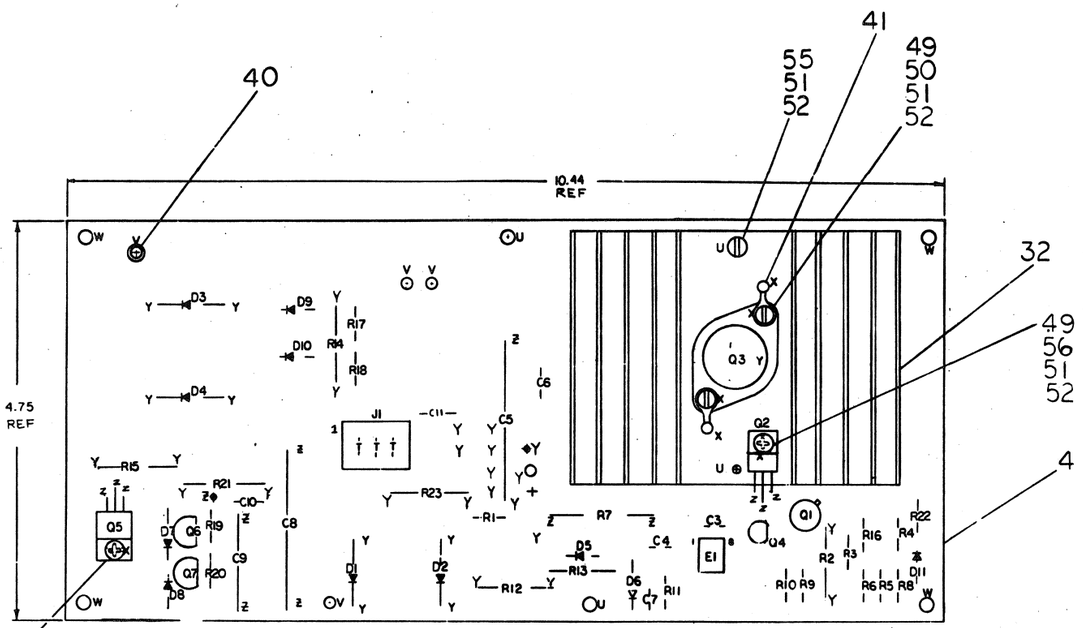
C. YOUSE 7-30-75
B. HAZEN 7-30-75

DEC FORM NO. DRD 100-C

REV. B
DEC CODE D AD 7010718-C-0

NOTES:

1. UNLESS OTHERWISE SPECIFIED
   A. ALL RESISTORS ARE 1/4W, ± 5%
2. DOTTED AREAS COMPONENT NOT ON BOARD.
3. AT TIME OF MODULE ASSY, ITEM 49 SHOULD BE APPLIED BENEATH Q2, Q3 & Q5.
4. AT TIME OF ASSEMBLY, Q2, Q3 AND Q5 MOUNTING HARDWARE MUST BE TORQUED TO 4 TO 6 INCH POUNDS.
5. Q4, Q6 AND Q7 OUTLINES CORRESPOND TO GENERAL ELECTRIC TYPE TRANSISTORS.
6. FLAT RECTANGULAR WASHER SUPPLIED BY VENDOR TO BE MOUNTED UNDER Q2 AND Q5. SCREWHEAD.



QTY	REF. DESIGNATION	DESCRIPTION	PART NO.	ITEM NO.
		X-Y COORDINTE HOLE LOCATION	MCD-5411398-0-4	1
		ASSY/DRILLING HOLE LAYOUT	D-AH-5411398-0-5	2
REF		MODULE ECO HISTORY	D-MH-5411398-0-6	3
1		ETCHED CIRCUIT BOARD	5011397-00	4
3	C3, C4, C7	CAP .01 µf 100V 20% DISC	1001610-01	5
2	C5, C8	CAP 1000 µf 16V ELEC	1011849-02	6
3	C6, C10, C11	CAP .1 µf 100V 20% DISC.	1000030-00	7
1	C9	CAP 190 µf 12V 10% ELEC	1009439-00	8
2	D1, D2	DIODE A198 (IN5624)	1110420-00	9
2	D3, D4	DIODE MR752	1110615-00	10
1	D5	DIODE IN4744 15V 10%	1105648-00	11
				12
2	D7, D6	DIODE S2710910 5.1V 2%	1110713-00	13
1	D8	DIODE D664	1100114-00	14
2	D9, D10	DIODE IN4004	1105796-00	15
1	D11	DIODE IN754A 6.8V 5%	1109991-00	16
2	E5, R17	RES 39 1/4 W 5% CC	1302377-00	17
1	E6	RES 470 1/4 W 5% CC	1300314-00	18
1	E7	RES .08 5W 3%	1311603-00	19
1	E8	RES 47 1/4W 5% CC	1300202-00	20
1	E9	RES 1M 1/4W 5% CC	1309595-00	21
1	E12	RES 270 2W 5% CC	1305380-00	22
1	E13	RES 511 3/4W 1%	1300324-00	23
1	E14	RES 10 2W 10% CC	1300172-00	24
1	E15	RES 180 1W 5% CC	1300262-00	25
1	E16	RES 10 1/4 W 5% CC	1303317-00	26
				27
1	E18	RES 120 1/4W 5% CC	1300247-00	28
2	E19, E20	RES 1K 1/4W 5% CC	1300365-00	29
1	R22	RES 220 1/4W 5%	1300271-00	30
1	E21	RES 120 1W 5%	1301938-00	31
1		HEAT SINK	1212201-00	32
1	Q1	TRANS DEC 2219-2	1101883-00	33
1	Q2	TRANS 2N4C3	5101171-01	34
1	Q3	TRANS DEC3715	5103069-00	35
2	Q4, Q6	TRANS MXAA05	5:0705-00	36
1	Q5	TRANS D45H8	1510709-01	37
1	Q7	TRANS MXAA55	1510705-01	38
1	E1	I.C DEC 301AN	1910292-00	39
4		EYELET	9007836-00	40
2		TERMINAL LUG, SOLDER	9009676-00	41
1	J1	CONNECTOR 6 PIN	1211342-06	42
				43
1	R4	RES 560 1/4W 5% CC	1303330-01	44
1	R23	RES 75 1W 5% CC	1305281-00	45
3	R1, R10, R11	RES 10K 1/4W 5% CC	1300479-00	46
1	R2	RES 390 2W 5% CC	1301864-00	47
1	R3	RES 620 1/4W 5% CC	1303178-00	48
A/R		THERMAL COMPOUND	9008238-00	49
2		SCREW 4-40 X 1/2	9006013-04	50
5		KEPNUT 4-40	9006557-00	51
5		WASHER FLAT 4-40	9006655-00	52
				53
1		SCREW 4-40 X 5/16 (PHILLIPS HD)	9006011-1	54
1		SCREW 4-40 X 7/16	9006012-04	55
1		SCREW 4-40 X 1/2 (PHILLIPS HD)	9006013-1	56

PARTS LIST

ETCH BOARD REV. D

FIRST USED ON OPTION MODEL: PX01

301A	4	7
IC TYPE	GND	+5V

GND AND 5V ARE USUALLY PIN 7 AND 14 RESPECTIVELY EXCEPTIONS ARE STATED ABOVE

IC PIN LOCATIONS

DEC NO.	EIA NO.	DEC NO.	EIA NO.

SEMICONDUCTOR CONVERSION CHART

REV.	CHANGE NO.	CHK
B	5411192-00001	
C	5411192-00001	

REVISIONS

DRN. [illegible] DATE 11/27/74
CHK'D DATE 1/8/75
ENG. DATE
PROJ. ENG. DATE
MGR. DATE 1-24-75
NEXT HIGHER ASSY
SCALE
SHEET 1 OF 2

digital

TITLE
RX01
POWER SUPPLY

SIZE	CODE	NUMBER	REV.
D	CS	5411398-0-1	C

DIST.

DEC FORM NO. BRD 139.0

58

SEE NOTE 2

J1

D1 A15 3
D2 A15B
C1 14000 µf 40V
R1 10K
+24V 2A
D11 1N754A 6.8V, 5%
R22 220
R4 560
D3 ME752
D4 ME752
Q3 DEC3715
R2 390 2W 10%
Q1 DEC 2219-2
Q2 D44C3
R16 10
R5 39
R7 Ø8 5W 3%
R8 47
R6 47Ø
Q4 MXAA05
R9 1M
+15V
C4 .Ø1 UF 100V
DEC 3Ø1AH E1
C3 .Ø1 UF 100V
R10 10K
C5 1000 µf 10V
C6 Ø.1 µf 100V
R23 75 1W
+5V 5A
D10 IN4004
D9 IN4004
R3 62Ø
R12 27Ø 2W
+15V
R13 511 1/2W 1%
R11 10K
C2 10000 µf 25V
C11 0.1UF 100V
D5 IN4744 15V ± 10%
D6 5271Ø91Ø 5.1V ± 2%
C7 .Ø1UF 100
+12V 1A FAN DC
GND
R14 10 2W 10%
Q6 MXAA05
C8 1000 µf 16V
C10 .1 µf
R19 1K
R20 1K
R15 180 1W
R17 39
R18 120
Q5 D45H8
Q7 MXAA55
D7 5271Ø91Ø 5.1V 2%
D8 DG64
R21 120 1W
C9 190 µf 12V
-5V .2A

REVISIONS

CHK	CHANGE NO.	REV.

TITLE	SIZE	CODE	NUMBER	REV.
RX01 POWER SUPPLY	D	CS	5411398-0-1	C
SCALE	SHEET 2 OF 2	DIST.		

DFC FORM NO. DRD 138

digital EQUIPMENT CORPORATION MAYNARD, MASSACHUSETTS

DRAWING DIRECTORY

CUSTOMER PRINT SET INDEX

THIS IS PRINT SET

SEQUENCE SEQUENCE

FOR FIELD MAINTENANCE PRINT SET
REFER TO MP 00284

UNIT VARIATIONS

VAR	TITLE	PRINT SET
7013503-Ø	COOLING UNIT FOR DUAL RXØ1 115V	
7013503-1	COOLING UNIT FOR DUAL RXØ1 230V	
7013503-2	COOLING UNIT FOR SINGLE RXØ1 115V	
7013503-3	COOLING UNIT FOR SINGLE RXØ1 230V	
7013503-4	7013503-0 W/O PACKAGING	
7013503-5	7013503-1 W/O PACKAGING	
7013503-6	7013503-2 W/O PACKAGING	
7013503-7	7013503-3 W/O PACKAGING	

REVISIONS	
REV	
CHG. NO.	
DATE	

USED ON OPTION/MODEL		DRN.	DATE	TITLE
RXØ1		D. [signature]	18-NOV-76	RXØ1 PLENUM/FAN ASSY.
		CHK'D. [signature]	11/23/76	
		PROJ ENG. [signature]	11/23/76	
		PROD. [signature]	11/23/76	SIZE B, CODE DD, NUMBER 7013503-0, REV
SHEET 1 OF 2		FIELD SERV. [signature]	23 Nov 76	DIST

EN-01062-1A-16-R972-(32)

DRB 106

FIND NO.	DRAWING NO.	DESCRIPTION	TYPE
	MP 00284	FIELD MAINTENANCE PRINT SET (MP)	-
	B-TC-7013503-0-1	FIELD MAINTENANCE PRINT SET (TC)	-
1	E-UA-7013503-0-0	PLENUM, FAN ASSY.	E/M
	D-IA-7013474-0-0	CABLE, PLENUM ADAPTOR	E/M
	C-IA-7417817-0-0	BRACKET, LEFT PLENUM MOUNTING	M
	C-IA-7417816-0-0	BRACKET, RIGHT PLENUM MOUNTING	M
	E-MD-7417815-0-0	PLENUM	M
	C-IC-7013503-0-2	PLENUM INTERCONNECTION DIAGRAM	E
	D-MD-7417958-0-0	INSERT, PLENUM	M
	A-SP-3700267-0-0	RXØ1 SUB-ASSY. PACKAGING KIT	M

FIND NO.	DRAWING NO.	DESCRIPTION	TYPE

TYPE: E ELECTRICAL
M MECHANICAL
E/M ELECTRO/MECHANICAL

digital

TITLE		SIZE	CODE	NUMBER	REV
RXØ1 PLENUM/FAN ASSY.	SHEET 2 OF 2	B	DD	7013503-0	

DRAWING DIRECTORY

FOR FIELD MAINTENANCE PRINT SET
REFER TO MP 00656

UNIT VARIATIONS

VAR	TITLE
7015622-Ø	COOLING UNIT FOR DUAL RXØ1 115V
7015622-1	COOLING UNIT FOR DUAL RXØ1 23ØV
7015622-2	COOLING UNIT FOR SINGLE RXØ1 115V
7015622-3	COOLING UNIT FOR SINGLE RXØ1 23ØV
7015622-4	7015622-0 W/O PACKAGING
7015622-5	7015622-1 W/O PACKAGING
7015622-6	7015622-2 W/O PACKAGING
7015622-7	7015622-3 W/O PACKAGING

REVISIONS
REV.
CHANGE NO.
CHK

USED ON OPTION/MODEL
RXØ1

SHEET 1 OF 2

DRN. M. Hamel — DATE 3-JUN-78
CHK'D. E. Remond — DATE 5 JUN 78
PROJ. ENG. H. Drab (DP) — DATE 6-7-78
PROD. W Brown (DP) — DATE 6-7-78

TITLE
digital
RXØ1 PLENUM/FAN ASSY.

SIZE	CODE	NUMBER	REV
B	DD	7015622-0	

DIST.

DRB 106A

FIND NO.	DRAWING NO.	DESCRIPTION	TYPE
	MP 00656	FIELD MAINTENANCE PRINT SET (MP)	-
	B-TC-7015622-0-1	FIELD MAINTENANCE PRINT SET (TC)	-
1	E-UA-7015622-0	PLENUM, FAN ASSY	E/M
	D-IA-7013474-0-0	CABLE, PLENUM ADAPTOR	E/M
	E-MD-7420552-0-0	PLENUM	M
	C-IC-7013503-0-2	PLENUM INTERCONNECTOR DIAGRAM	E
	D-IA-7420846-0-0	INSERT, PLENUM	M
	A-SP-3700867-0-0	RXØ1 SUB-ASSY. PACKAGING KIT	M

FIND NO.	DRAWING NO.	DESCRIPTION	TYPE

TYPE: E ELECTRICAL
M MECHANICAL
E/M ELECTRO/MECHANICAL

digital

TITLE: RXØ1 PLENUM FAN ASSY.

SHEET 2 OF 2 | SIZE B | CODE DD | NUMBER 7015622-0 | REV

DRB 108A