

2  
3  
4 \*\*\* TEST - FLOPPY DISK DIAGNOSTIC.  
5 \*  
6 \* J.G. LETWIN, 11/11/77  
7 \*  
8 \* FOR HEATH COMPANY  
9 \* COPYRIGHT HEATH COMPANY, 1977, 1979  
10 \*  
11 \* G. Chandler, 78/09 Maintenance release  
12 \* 79/04 Renamed \*TEST\* from \*TEST17\*  
13 \*

15 \*\*\* TEST - FLOPPY DISK DIAGNOSTIC.  
16 \*  
17 \* THIS DIAGNOSTIC RUNS STAND ALONE, AFTER BEING LOADED VIA  
18 \* HOS. NO HOS OVERLAY ROUTINES ARE USED, AND TEST EXITS TO  
19 \* THE ROM BOOT.  
20 \*  
21 \* THE USER IS GIVEN THREE OPTIONS:  
22 \*  
23 \* D - PERFORM GENERAL DRIVE DIAGNOSTIC  
24 \* M - PERFORM MEDIA CHECK  
25 \* S - PERFORM SEEK TIME CHECK  
26 \* R - RE-BOOT THE OPERATING SYSTEM  
27 \*  
28 \* ANY DIAGNOSTIC CAN BE ABORTED PREMATURELY VIA A CTL-C.  
29  
30  
31

000.001 32 .DEBUG, EQU 1 NOT IN DEBUG MODE

TEST - NEW FLOPPY DIAGNOSTIC:

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000.000

34  
35

XTEXT MTR

TEST - NEW FLOPPY DIAGNOSTIC.  
PAM/8 EQUIVALENCES.

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38X \*\* MTR - PAM/8 EQUIVALENCES.

39X \*  
40X \* THIS DECK CONTAINS SYMBOLIC DEFINITIONS USED TO  
41X \* MAKE USE OF THE PAM/8 CODE AND CONTROL BYTES.

43X \*\* IO PORTS

44X

000.360	45X IP.FAD	EQU	360Q	FAD INPUT PORT
000.360	46X OP.CTL	EQU	360Q	CONTROL OUTPUT PORT
000.360	47X OP.DIG	EQU	360Q	DIGIT SELECT OUTPUT PORT
000.361	48X OP.SEG	EQU	361Q	SEGMENT SELECT OUTPUT PORT

50X \*\* FRONT PANEL CONTROL BITS.

51X

000.020	52X CB.SSI	EQU	00010000B	SINGLE STEP INTERRUPT
000.040	53X CB.MTL	EQU	00100000B	MONITOR LIGHT
000.100	54X CB.CLI	EQU	01000000B	CLOCK INTERRUPT ENABLE
000.200	55X CB.SPK	EQU	10000000B	SPEAKER ENABLE

57X \*\* MONITOR MODE FLAGS.

58X

000.000	59X IM.MR	EQU	0	MEMORY READ
000.001	60X IM.MW	EQU	1	MEMORY WRITE
000.002	61X IM.RR	EQU	2	REGISTER READ
000.003	62X IM.RW	EQU	3	REGISTER WRITE

64X \*\* USER OPTION BITS.

65X \*

66X \* THESE BITS ARE SET IN CELL .MFLAG.

67X

000.200	68X UO.HLT	EQU	10000000B	DISABLE HALT PROCESSING
000.100	69X UO.NFR	EQU	CB.CLI	NO REFRESH OF FRONT PANEL
000.002	70X UO.DDU	EQU	00000010B	DISABLE DISPLAY UPDATE
000.001	71X UO.CLK	EQU	00000001B	ALLOW PRIVATE INTERRUPT PROCESSING

73X \*\* MONITOR IDENTIFICATION FLAGS

74X \*

75X \* THESE BYTES IDENTIFY THE ROM MONITOR.

76X \* THEY ARE THE VARIOUS VALUES OF LOCATION .IDENT

77X

000.021	78X M.PAMB	EQU	021Q	'LXI' INSTRUCTION AT 000.000 IN PAM-8
000.303	79X M.FOX	EQU	303Q	'JMP' INSTRUCTION AT 000.000 IN FOX ROM

## 81X \*\* ROUTINE ENTRY POINTS.

82X \*  
83X

000.000	84X	.IDENT	EQU	0000A	IDENTIFICATION LOCATION
000.053	85X	.DLY	EQU	0053A	DELAY
001.267	86X	.LOAD	EQU	1267A	TAPE LOAD
001.374	87X	.DUMP	EQU	1374A	TAPE DUMP
002.136	88X	.ALARM	EQU	2136A	ALARM ROUTINE
002.140	89X	.HORN	EQU	2140A	HORN
002.172	90X	.CTC	EQU	2172A	CHECK TAPE CHECKSUM
002.205	91X	.TPERR	EQU	2205A	TAPE ERROR ROUTINE
002.264	92X	.PCHL	EQU	2264A	PCHL INSTRUCTION
002.265	93X	.SRS	EQU	2265A	SCAN RECORD START
002.325	94X	.RNP	EQU	2325A	READ NEXT PAIR
002.331	95X	.RNB	EQU	2331A	READ NEXT BYTE
002.347	96X	.CRC	EQU	2347A	CRC-16 CALCULATOR
003.017	97X	.WNF	EQU	3017A	WRITE NEXT PAIR
003.024	98X	.WNB	EQU	3024A	WRITE NEXT BYTE
003.122	99X	.DOD	EQU	3122A	DECODE FOR OCTAL DISPLAY
003.260	100X	.RCK	EQU	3260A	READ CONSOLE KEYSET
003.356	101X	.DODA	EQU	3356A	SEGMENT CODE TABLE

## 103X \*\* RAM CELLS USED BY H8MTR.

104X \*  
105X

040.000	106X	.START	EQU	40000A	START DUMP ADDRESS
040.002	107X	.IOWRN	EQU	40002A	IN OR OUT INSTRUCTION
040.005	108X	.REGI	EQU	40005A	DISPLAYED REGISTER INDEX
040.006	109X	.DISPROT	EQU	40006A	PERIOD FLAG BYTE
040.007	110X	.DISPMOD	EQU	40007A	DISPLAY MODE
040.010	111X	.MFLAG	EQU	40010A	USER OPTION BYTE
040.011	112X	.CTLFLG	EQU	40011A	PANEL CONTROL BYTE
040.013	113X	.ALEDS	EQU	40013A	ABUSS LEIDS
040.021	114X	.DLEDS	EQU	40021A	DBUSS LEIDS
040.024	115X	.ABUSS	EQU	40024A	ABUSS REGISTER
040.027	116X	.CRCSUM	EQU	40027A	CRCSUM WORD
040.031	117X	.TPERRX	EQU	40031A	TAPE ERROR EXIT VECTOR
040.033	118X	.TICCNT	EQU	40033A	CLOCK TICK COUNTER
040.035	119X	.REGPTR	EQU	40035A	REGISTER POINTER
040.037	120X	.UIVEC	EQU	40037A	USER INTERRUPT VECTORS
000.000	121	XTEXT		ASCII	

## 123X \*\* ASCII CHARACTER EQUIVALENCES.

124X

000.015	125X	CR	EQU	13	CARRIAGE RETURN
000.012	126X	LF	EQU	10	LINE FEED
000.200	127X	NULL	EQU	2000	PAD CHARACTER
000.000	128X	NUL2	EQU	0	
000.007	129X	BELL	EQU	7	BELL CHARACTER
000.177	130X	RUBOUT	EQU	1770	
000.010	131X	BKSP	EQU	100	CTL-H
000.026	132X	C.SYN	EQU	260	SYNC
000.002	133X	C.STX	EQU	2	STX

000.047	134X QUOTE	EQU	47Q	
000.011	135X TAB	EQU	11Q	
000.033	136X ESC	EQU	33Q	
000.012	137X NL	EQU	120	NEW LINE (HDOS SYSTEMS)
000.212	138X ENL	EQU	NL+200Q	NL + END-OF-LINE-FLAG
000.014	139X FF	EQU	14Q	FORM FEED
000.001	140X CTLA	EQU	01Q	CTL-A
000.002	141X CTLB	EQU	02Q	CTL-B
000.003	142X CTLC	EQU	03Q	CTL-C
000.004	143X CTLD	EQU	04Q	CTL-D
000.017	144X CTL0	EQU	17Q	CTL-O
000.020	145X CTLF	EQU	20Q	CTL-P
000.021	146X CTLR	EQU	21Q	CTL-Q
000.023	147X CTL.S	EQU	23Q	CTL-S
000.032	148X CTLZ	EQU	32Q	CTL-Z
000.000	149	XTEXT	H17DEF	

## 151X \*\* H17 CONTROL INFORMATION:

152X				
000.177	153X DF.DC	EQU	07FH	DISK CONTROL PORT
154X				
000.001	155X DF.HD	EQU	00000001B	HOLE DETECT
000.002	156X DF.T0	EQU	00000010B	TRACK 0 DETECT
000.004	157X DF.WP	EQU	00000100B	WRITE PROTECT
000.010	158X DF.SD	EQU	00001000B	SYNC DETECT
159X				
000.001	160X DF.WG	EQU	00000001B	WRITE GATE ENABLE
000.002	161X DF.DS0	EQU	00000010B	DRIVE SELECT 0
000.004	162X DF.DS1	EQU	00000100B	DRIVE SELECT 1
000.010	163X DF.DS2	EQU	00001000B	DRIVE SELECT 2
000.020	164X DF.MO	EQU	00100000B	MOTOR ON (BOTH DRIVES)
000.040	165X DF.DI	EQU	00100000B	DIRECTION (0=OUT)
000.100	166X DF.ST	EQU	01000000B	STEP COMMAND (ACTIVE HIGH)
000.200	167X DF.WR	EQU	10000000B	WRITE ENABLE RAM
168X				
169X				
170X				
171X ** DISK UART PORTS AND CONTROL FLAGS:				

172X				
000.174	173X UP.DF	EQU	07CH	DATA PORT
000.175	174X UP.FC	EQU	07DH	FILL CHARACTER
000.175	175X UP.ST	EQU	07IH	STATUS FLAGS
000.176	176X UP.SC	EQU	07EH	SYN CHARACTER (OUTPUT)
000.176	177X UP.SR	EQU	07EH	SYNC RESET (INPUT)
178X				
000.001	179X UF.RDA	EQU	00000001B	RECEIVE DATA AVAILABLE
000.002	180X UF.ROR	EQU	00000010B	RECEIVER OVERRUN
000.004	181X UF.RPE	EQU	00000100B	RECEIVER PARITY ERROR
000.100	182X UF.FCT	EQU	01000000B	FILL CHAR TRANSMITTED
000.200	183X UF.TBM	EQU	10000000B	TRANSMITTER BUFFER EMPTY
184X				
185X				
186X				
187X **	CHARACTER DEFINITIONS.			

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000.375	188X	189X C.DSYN EQU	0FDH	PREFIX SYNC CHARACTER
000.000		190 XTEXT	U8250	

## 192X \*\* 8250 UART CONTROL AND BIT DEFINITIONS.

000.350	193X	194X SC.ACE EQU	350Q	SYSTEM CONSOLE PORT IF 8250 ACE
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000.156		195X AC.DLY EQU	110	220 MIL. SEC. DELAY FOR 8250
---------	--	-----------------	-----	------------------------------

000.000	196X	197X UR.RBR EQU	0	RECEIVER BUFFER REGISTER (READ ONLY)
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000.000	198X	199X UR.THR EQU	0	TRANSMITTER HOLDING REGISTER (WRITE ONLY)
---------	------	-----------------	---	---

000.000	200X	201X UR.DLL EQU	0	DIVISOR LATCH (LEAST SIGNIFICANT)
---------	------	-----------------	---	-----------------------------------

000.001	202X	203X UR.DLM EQU	1	DIVISOR LATCH (MOST SIGNIFICANT)
---------	------	-----------------	---	----------------------------------

000.001	204X	205X UR.IER EQU	1	INTERRUPT ENABLE REGISTER
---------	------	-----------------	---	---------------------------

000.001		206X UC.EIA EQU	00000001B	ENABLE RECEIVED DATA AVAILABLE INTERRUPT
---------	--	-----------------	-----------	--

000.002		207X UC.TRE EQU	00000010B	ENABLE TRANSMIT HOLD REGISTER EMPTY INTERRUPT
---------	--	-----------------	-----------	---

000.004		208X UC.RSI EQU	00000100B	ENABLE RECEIVE STATUS INTERRUPT
---------	--	-----------------	-----------	---------------------------------

000.010		209X UC.MSI EQU	00001000B	ENABLE MODEM STATUS INTERRUPT
---------	--	-----------------	-----------	-------------------------------

000.002	210X	211X UR.IIR EQU	2	INTERRUPT IDENTIFICATION REGISTER
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000.001		212X UC.IIP EQU	00000001B	INVERTED INTERRUPT PENDING (0 MEANS PENDING)
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000.006		213X UC.IID EQU	00000110B	INTERRUPT ID
---------	--	-----------------	-----------	--------------

000.003	214X	215X UR.LCR EQU	3	LINE CONTROL REGISTER
---------	------	-----------------	---	-----------------------

000.000		216X UC.5BW EQU	00000000B	5 BIT WORDS
---------	--	-----------------	-----------	-------------

000.001		217X UC.6BW EQU	00000001B	6 BIT WORDS
---------	--	-----------------	-----------	-------------

000.002		218X UC.7BW EQU	00000010B	7 BIT WORDS
---------	--	-----------------	-----------	-------------

000.003		219X UC.8BW EQU	00000011B	8 BIT WORDS
---------	--	-----------------	-----------	-------------

000.004		220X UC.2SB EQU	00000100B	TWO STOP BITS SELECTED
---------	--	-----------------	-----------	------------------------

000.010		221X UC.PEN EQU	00001000B	PARITY COMPUTATION ENABLED
---------	--	-----------------	-----------	----------------------------

000.020		222X UC.EPS EQU	00010000B	EVEN PARITY SELECT
---------	--	-----------------	-----------	--------------------

000.040		223X UC.SKP EQU	00100000B	STICK PARITY
---------	--	-----------------	-----------	--------------

000.100		224X UC.SB EQU	01000000B	SET BREAK
---------	--	----------------	-----------	-----------

000.200		225X UC.DLA EQU	10000000B	DIVISOR LATCH ACCESS
---------	--	-----------------	-----------	----------------------

000.004	226X			
---------	------	--	--	--

000.001		227X UR.MCR EQU	4	MODEM CONTROL REGISTER
---------	--	-----------------	---	------------------------

000.001		228X UC.DTR EQU	00000001B	DATA TERMINAL READY
---------	--	-----------------	-----------	---------------------

000.002		229X UC.RTS EQU	00000010B	REQUEST TO SEND
---------	--	-----------------	-----------	-----------------

000.004		230X UC.0U1 EQU	00000100B	OUT 1
---------	--	-----------------	-----------	-------

000.010		231X UC.0U2 EQU	00001000B	OUT 2
---------	--	-----------------	-----------	-------

000.020		232X UC.L00 EQU	00010000B	LOOP
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000.005	233X			
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000.001		234X UR.LSR EQU	5	LINE STATUS REGISTER
---------	--	-----------------	---	----------------------

000.001		235X UC.DR EQU	00000001B	DATA READY
---------	--	----------------	-----------	------------

000.002		236X UC.OR EQU	00000010B	OVERRUN
---------	--	----------------	-----------	---------

000.004		237X UC.FE EQU	00000100B	PARITY ERROR
---------	--	----------------	-----------	--------------

000.010		238X UC.FE EQU	00001000B	FRAMING ERROR
---------	--	----------------	-----------	---------------

000.020		239X UC.BI EQU	00010000B	BREAK INTERRUPT
---------	--	----------------	-----------	-----------------

000.040		240X UC.THE EQU	00100000B	TRANSMITTER HOLDING REGISTER EMPTY
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TEST - NEW FLOPPY DIAGNOSTIC.  
PAM/8 EQUIVALENCES.

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000.100	241X UC.TSE EQU	01000000B	TRANSMITTER SHIFT REGISTER EMPTY
	242X		
000.006	243X UR.MSR EQU	6	MODEM STATUS REGISTER
000.001	244X UC.DCS EQU	00000001B	DELTA CLEAR TO SEND
000.002	245X UC.DDR EQU	00000010B	DELTA DATA SET READY
000.004	246X UC.TER EQU	00000100B	TRAILING EDGE OF RING
000.010	247X UC.DRL EQU	00001000B	DELTA RECEIVE LINE SIGNAL DETECT
000.020	248X UC.CTS EQU	00010000B	CLEAR TO SEND
000.040	249X UC.ISR EQU	00100000B	DATA SET READY
000.100	250X UC.RI EQU	01000000B	RING INDICATOR
000.200	251X UC.RLS EQU	10000000B	RECEIVED LINE SIGNAL DETECT
000.000	252 XTEXT U8251		

255X \*\* 8251 USART BIT DEFINITIONS.

256X \*

257X

258X \*\* PORT ADDRESSES

259X

000.000 260X UDR EQU 0 DATA REGISTER IS EVEN  
000.001 261X USR EQU 1 STATUS REGISTER IS NEXT

262X

000.372 263X SC.UART EQU 372Q CONSOLE USART ADDRESS (IFF 8251)

264X

265X

266X \*\* MODE INSTRUCTION CONTROL BITS.

267X

000.100 268X UMI.1B EQU 01000000B 1 STOP BIT  
000.200 269X UMI.HB EQU 10000000B 1 1/2 STOP BITS  
000.300 270X UMI.2B EQU 11000000B 2 STOP BITS  
000.040 271X UMI.PE EQU 00100000B EVEN PARITY  
000.020 272X UMI.PA EQU 00010000B USE PARITY  
000.000 273X UMI.L5 EQU 00000000B 5 BIT CHARACTERS  
000.004 274X UMI.L6 EQU 00000100B 6 BIT CHARACTERS  
000.010 275X UMI.L7 EQU 00001000B 7 BIT CHARACTERS  
000.014 276X UMI.L8 EQU 00001100B 8 BIT CHARACTERS  
000.001 277X UMI.1X EQU 00000001B CLOCK X 1  
000.002 278X UMI.16X EQU 00000010B CLOCK X 16  
000.003 279X UMI.64X EQU 00000011B CLOCK X 64

280X

281X \*\* COMMAND INSTRUCTION BITS.

282X

000.100 283X UCI.IR EQU 01000000B INTERNAL RESET  
000.040 284X UCI.R0 EQU 00100000B READER-ON CONTROL FLAG  
000.020 285X UCI.ER EQU 00010000B ERROR RESET  
000.004 286X UCI.RE EQU 00000100B RECEIVE ENABLE  
000.002 287X UCI.IE EQU 00000010B ENABLE INTERRUPTS FLAG  
000.001 288X UCI.TE EQU 00000001B TRANSMIT ENABLE

289X

290X \*\* STATUS READ COMMAND BITS.

291X

000.040 292X USR.FE EQU 00100000B FRAMING ERROR  
000.020 293X USR.OE EQU 00010000B OVERRUN ERROR  
000.010 294X USR.PE EQU 00001000B PARITY ERROR  
000.004 295X USR.TXE EQU 00000100B TRANSMITTER EMPTY  
000.002 296X USR.RXR EQU 00000010B RECEIVER READY  
000.001 297X USR.TXR EQU 00000001B TRANSMITTER READY

000.000 298 XTEXT DIRDEF

300X \*\* DIRECTORY ENTRY FORMAT.

301X

000.000 302X ORG 0

303X

304X

000.377 305X DF.EMP EQU 377Q FLAGS ENTRY EMPTY  
000.376 306X DF.CLR EQU 376Q FLAGS ENTRY EMPTY, REST OF DIR ALSO CLEAR

307X

000.000 308X DIR.NAM DS 8 NAME

TEST - NEW FLOPPY DIAGNOSTIC,  
8251 USART BIT DEFINITIONS..... HEATH H8ASM V1.4 01/20/78 PAGE 9  
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000.010	309X DIR.EXT DS	3	EXTENSION
000.013	310X DIR.PRO DS	1	PROJECT
000.014	311X DIR.VER DS	1	VERSION
000.015	312X DIRIDL EQU	*	FILE IDENTIFICATION LENGTH
	313X		
000.015	314X DIR.CLU DS	1	CLUSTER FACTOR
000.016	315X DIR.FLG DS	1	FLAGS
000.017	316X DS	1	RESERVED
000.020	317X DIR.FGN DS	1	FIRST GROUP NUMBER
000.021	318X DIR.LGN DS	1	LAST GROUP NUMBER
000.022	319X DIR.LSI DS	1	LAST SECTOR INDEX (IN LAST GROUP)
000.023	320X DIR.CRD DS	2	CREATION DATE
000.025	321X DIR.ALD DS	2	LAST ALTERATION DATE
	322X		
000.027	323X DIRELEN EQU	*	DIRECTORY ENTRY LENGTH
000.027	324 XTEXT	DDFDEF	

326X \*\* DIRECTORY DEVICE FORMAT DEFINITION.

327X *			
328X			
329X			
000.002	330X HOS.SPG EQU	2	2 SECTORS PER GROUP REQUIRED FOR NOW
	331X		
000.000	332X ORG	0	
000.000	333X DDF.BOO DS	9	2K BOOT PROGRAM
000.011	334X DDF.BOL EQU	*	LENGTH OF BOOT
000.011	335X DDF.LAB DS	1	LABEL SECTOR
000.012	336X DDF.RGT DS	2	RESERVED GROUP TABLE
000.014	337X DDF.USR DS	0	BEGINNING OF OPEN SPACE
000.014	338 XTEXT	LABDEF	

340X \*\* DISK LABEL SECTOR FORMATS.

341X			
000.000	342X ORG	0	
000.000	343X LAB.SER DS	1	SERIAL NUMBER OF VOLUME
000.001	344X LAB.IND DS	2	INITIALIZATION DATE
000.003	345X LAB.DIS DS	2	SECTOR NUMBER OF 1ST DIRECTORY SECTOR
000.005	346X LAB.GRT DS	2	INDEX OF GRT SECTOR
000.007	347X LAB.SPG DS	1	SECTORS PER GROUP
	348X		
000.000	349X LAB.DAT EQU	0	DATA VOLUME ONLY
000.001	350X LAB.SYS EQU	1	SYSTEM VOLUME
000.002	351X LAB.NOD EQU	2	=> LAB.NOD MEANS VOLUME HAS NO DIRECTORY
	352X		
000.010	353X LAB.VLT DS	1	VOLUME TYPE
000.011	354X LAB.VER DS	1	VERSION OF INIT17 THAT INITED DISK
000.012	355X DS	7	UNUSED
000.021	356X LAB.LAB DS	60	LABEL
000.074	357X LABLBL EQU	*-LAB.LAB	LABEL LENGTH
000.115	358 XTEXT	OVLDEF	

## 360X \*\* OVERLAY TABLE ENTRYS.

000.000	361X			
	362X	ORG	0	
	363X			
000.000	364X OVL.COD DS	2		FIRST SECTOR OF OVERLAY CODE
000.002	365X OVL.SIZ DS	2		OVERLAY SIZE
000.004	366X OVL.ENT DS	2		OVERLAY ENTRY POINT
000.006	367X OVL.FLB DS	1		OVERLAY FLAG BYTE
000.007	368X DS	1		DUMMY BYTE TO ROUND TABLE SIZE UP TO 8
000.010	369X OVL.ENS EQU *			OVERLAY ENTRY SIZE

## 370X

## 371X \* OVERLAY INDICES

## 372X

000.000	373X	ORG	0	
	374X			
000.000	375X OVL0 DS	1		
000.001	376X OVL1 DS	1		
000.002	377 XTEXT	DDDEF		

## 379X \*\* DEVICE DRIVER COMMUNICATION FLAGS.

## 380X \*

## 381X

000.000	382X	ORG	0	
	383X			
000.000	384X DC.REA DS	1		READ
000.001	385X DC.WRI DS	1		WRITE
000.002	386X DC.RER DS	1		READ REGARDLESS
000.003	387X DC.OPR DS	1		OPEN FOR READ
000.004	388X DC.OPW DS	1		OPEN FOR WRITE
000.005	389X DC.OPU DS	1		OPEN FOR UPDATE
000.006	390X DC.CLO DS	1		CLOSE
000.007	391X DC.ABT DS	1		ABORT
000.010	392X DC.MOU DS	1		MOUNT DEVICE
000.011	393X DC.LOD DS	1		LOAD DEVICE DRIVER
000.012	394X DC.MAX DS	1		MAXIMUM ENTRY INDEX
000.013	395 XTEXT	HOSEQU		

## 397X \*\* HDOS SYSTEM EQUIVALENCES.

## 398X \*

## 399X

024.000	400X S.GRT0 EQU	24000A		SYSTEM AREA FOR GRT0
025.000	401X S.GRT1 EQU	25000A		SYSTEM AREA FOR GRT1
026.000	402X S.GRT2 EQU	26000A		SYSTEM AREA FOR GRT2
	403X			
030.000	404X ROMBOOT EQU	30000A		ROM BOOT ENTRY
	405X			
040.100	406X ORG	40100A		FREE SPACE FROM PAM-8
	407X			
040.100	408X DS	8		JUMP TO SYSTEM EXIT
040.110	409X D.CON DS	16		DISK CONSTANTS
040.130	410X SYDD EQU *			SYSTEM DISK ENTRY POINT

HOSEQU 14:15:00 14-MAY-80

040.130	411X	D.VEC	DS	24*3	SYSTEM ROM ENTRY VECTORS
040.240	412X	D.RAM	DS	31	SYSTEM ROM WORK AREA
040.277	413X	S.VAL	DS	36	SYSTEM VALUES
040.343	414X	S.INT	DS	115	SYSTEM INTERNAL WORK AREAS
041.126	415X		DS	16	
041.146	416X	S.SOVR	DS	2	STACK OVERFLOW WARNING
041.150	417X		DS	42200A-*	SYSTEM STACK
001.032	418X	STACKL	EQU	*-S.SOVR	STACK SIZE
	419X				
042.200	420X	STACK	EQU	*	LWA+1 SYSTEM STACK
042.200	421X	USERFWA	EQU	*	USER FWA
042.200	422	XTEXT	EICON		

424X \*\* D.CON DETAILED EQUIVALENCES.

425X \*

426X \* HOSEQU MUST BE MODIFIED WHEN THIS TABLE IS MODIFIED.

427X

040.110 428X ORG D.CON

429X

040.110 430X D.XITA DS 2 SEE SYSTEM ROM FOR DESCRIPTION

040.112 431X D.WRITA DS 1

040.113 432X D.WRITE DS 1

040.114 433X D.WRITC DS 1

040.115 434X D.MAIA DS 1

040.116 435X D.LPSA DS 1

040.117 436X D.SDPA DS 1

040.120 437X D.SDPB DS 1

040.121 438X D.STSA DS 1

040.122 439X D.STSR DS 1

040.123 440X D.WHDA DS 1

040.124 441X D.WNHA DS 1

040.125 442X D.WSCA DS 1

443X

040.126 444X D.ERTS DS 2 TRACK AND SECTOR OF LAST DISK ERRORS

040.130 445 XTEXT EIVEC

447X \*\* JMP VECTORS FOR ROM CODE

448X \*

449X \* SEE DISK ROM FOR ADDRESSES

450X \*

451X \* HOSEQU MUST BE ALTERED WHEN THIS TABLE IS ALTERED.

452X

040.130 453X ORG D.VEC

454X

040.130 455X D.SYDD DS 3 JMP R.SYDD (MUST BE FIRST)

040.133 456X D.MOUNT DS 3 JMP R.MOUNT

040.136 457X D.XOK DS 3 JMP R.XOK

040.141 458X D.ABORT DS 3 JMP R.ABORT

040.144 459X D.XIT DS 3 JMP R.XIT

040.147 460X D.READ DS 3 JMP R.READ

040.152	461X	D.READR	DS	3	JMP R.READR
040.155	462X	D.WRITE	DS	3	JMP R.WRITE
040.160	463X	D.CDE	DS	3	JMP R.CDE
040.163	464X	D.DTS	DS	3	JMP R.DTS
040.166	465X	D.SDT	DS	3	JMP R.SDT
040.171	466X	D.MAI	DS	3	JMP R.MAI
040.174	467X	D.MAO	DS	3	JMP R.MAO
040.177	468X	D.LPS	DS	3	JMP R.LPS
040.202	469X	D.RIB	DS	3	JMP R.RIB
040.205	470X	D.SIP	DS	3	JMP R.SIP
040.210	471X	D.STS	DS	3	JMP R.STS
040.213	472X	D.STZ	DS	3	JMP R.STZ
040.216	473X	D.UILY	DS	3	JMP R.UILY
040.221	474X	D.WSC	DS	3	JMP R.WSC
040.224	475X	D.WSF	DS	3	JMP R.WSF
040.227	476X	D.WNB	DS	3	JMP R.WNB
040.232	477X	D.ERRT	DS	3	JMP R.ERRT
040.235	478X	D.ILY	DS	3	JMP R.ILY
040.240	479	XTEXT	EDRAM		

481X \*\* EDRAM - DISK RAM WORKAREA DEFINITION,

482X \* ZEROED UPON BOOTING UP.

483X \* HOSEQU MUST BE CHANGED WHEN THIS DECK IS CHANGED.

484X

485X

486X

487X

040.240 488X ORG D.RAM

489X

040.240 490X D.TI DS 1 TARGET TRACK (CURRENT OPERATION)

040.241 491X D.TS DS 1 TARGET SECTOR (CURRENT OPERATION)

492X

040.242 493X D.DVCTL DS 1 DEVICE CONTROL BYTE

494X

040.243 495X D.DLYMO DS 1 MOTOR ON DELAY COUNT

040.244 496X D.DLYHS DS 1 HEAD SETTLE DELAY COUNTER

497X

040.245 498X D.TRKPT DS 2 ADDRESS IN D.DRVTB FOR TRACK NUMBER

040.247 499X D.VOLPT DS 2 ADDRESS IN D.DRVTB FOR VOLUME NUMBER

500X

040.251 501X D.DRVTB DS 2\*4 TRACK NUMBER AND VOLUME NUMBER FOR 4 DRIVES

502X

040.261 503X D.HECNT DS 1 HARD ERROR COUNT

040.262 504X D.SECNT DS 2 SOFT ERROR COUNT

040.264 505X D.OECNT DS 1 OPERATION ERROR COUNT

506X

507X \* GLOBAL DISK ERROR COUNTERS

508X

040.265 509X D.ERR DS 0 BEGINNING OF ERROR BLOCK

040.265 510X D.E.MDS DS 1 MISSING DATA SYNC

040.266 511X D.E.HSY DS 1 MISSING HEADER SYNC

040.267 512X D.E.CHK DS 1 DATA CHECKSUM

040.270 513X D.E.HCK DS 1 HEADER CHECKSUM

040.271	514X D.E.VOL	DS	1	WRONG VOLUME NUMBER
040.272	515X D.E.TRK	DS	1	BAD TRACK SEEK
040.273	516X D.ERRL	DS	0	LIMIT OF ERROR COUNTERS
	517X			
	518X *	I/O OPERATION COUNTS		
	519X			
040.273	520X D.OPR	DS	2	
040.275	521X D.OPW	DS	2	
	522X			
000.037	523X D.RAML	EQU	*-D.RAM	
040.277	524	XTEXT	ESVAL	

526X \*\* S.VAL - SYSTEM VALUE DEFINITIONS.

527X \*

528X \* THESE VALUES ARE SET AND MAINTAINED BY THE SYSTEM.

529X \*

530X \* THE DECK HOSEQU MUST BE MODIFIED WHEN THIS IS MODIFIED.

531X

532X

040.277 533X ORG S.VAL

534X

040.277 535X S.DATE DS 9 SYSTEM DATE (IN ASCII)

040.310 536X S.DATC DS 2 CODED DATE

040.312 537X S.TIME DS 4 TIME FROM MIDNIGHT (IN TICS)

040.316 538X S:HIMEM DS 2 HARDWARE HIGH MEMORY ADDRESS+1

539X

040.320 540X S.SYSM DS 2 FWA RESIDENT SYSTEM

541X

040.322 542X S.USRM DS 2 LWA USER MEMORY

543X

040.324 544X S.OMAX DS 2 MAX OVERLAY SIZE FOR SYSTEM

545X

546X

547X \*\* THE FOLLOWING FIVE CELLS SHOULD BE MODIFIED/READ ONLY VIA THE .CONSL SYSCALL

548X

000.200 549X CSL.ECH EQU 1000000B SUPPRESS ECHO

000.002 550X CSL.WRF EQU 00000010B WRAP LINES AT WIDTH

000.001 551X CSL.CHR EQU 00000001B OPERATE IN CHARACTER MODE

552X

000.000 553X I.CSLMD EQU 0 S.CSLMD IS FIRST BYTE

040.326 554X S.CSLMD DS 1 CONSOLE MODE

555X

000.200 556X CTP.BKS EQU 1000000B TERMINAL PROCESSES BACKSPACES

000.040 557X CTP.MLI EQU 0010000B MAP LOWER CASE TO UPPER ON INPUT

000.020 558X CTP.MLO EQU 0001000B MAP LOWER CASE TO UPPER ON OUTPUT

000.010 559X CTP.2SB EQU 00001000B TERMINAL NEEDS TWO STOP BITS

000.002 560X CTP.BKM EQU 00000010B MAP BKSP (UPON INPUT) TO RUROUT

000.001 561X CTP.TAB EQU 00000001B TERMINAL SUPPORTS TAB CHARACTERS

562X

000.001 563X I.CONTY EQU 1 S.CONTY IS 2ND BYTE

000.000 564X ERRNZ \*-S.CSLMD-I.CONTY

040.327 565X S.CONTY DS 1 CONSOLE TYPE FLAGS

000.002 566X I.CUSOR EQU 2 S.CUSOR IS 3RD BYTE

000.000	567X	ERRNZ	*-S.CSLMD-I.CUSOR
040.330	568X	S.CUSOR DS	1 CURRENT CURSOR POSITION
000.003	569X	I.CONWI EQU	3 S.CONWI IS 4TH BYTE
000.000	570X	ERRNZ	*-S.CSLMD-I.CONWI
040.331	571X	S.CONWI DS	1 CONSOLE WIDTH
	572X		
000.001	573X	CO.FLG EQU	00000001B CTL-U FLAG
000.200	574X	CS.FLG EQU	10000000B CTL-S FLAG
	575X		
000.004	576X	I.CONFL EQU	4 S.CONFL IS 5TH BYTE
000.000	577X	ERRNZ	*-S.CSLMD-I.CONFL
040.332	578X	S.CONFL DS	1 CONSOLE FLAGS
	579X		
040.333	580X	S.CAADR DS	2 ADDRESS FOR ABORT PROCESSING (>256 IF VALID)
040.335	581X	S.CCTAB DS	6 ADDR FOR CTL-A, CTL-B, CTL-C PROCESSING
040.343	582	XTEXT ABSDEF	

584X \*\* ABS FORMAT EQUIVALENCES.

585X			
000.000	586X	ORG 0	
	587X		
000.000	588X	ABS.ID DS	1 377Q = BINARY FILE FLAG
000.001	589X	DS	1 FILE TYPE (FT.ABS)
000.002	590X	ABS.LDA DS	2 LOAD ADDRESS
000.004	591X	ABS.LEN DS	2 LENGTH OF ENTIRE RECORD
000.006	592X	ABS.ENT DS	2 ENTRY POINT
	593X		
000.010	594X	ABS.COD DS	0 CODE STARTS HERE
000.010	595	XTEXT FILDEF	

597X \*\* FILDEF - FILE TYPE DEFINITIONS.

598X *			
599X *	DB	377Q,FT,XXX	
600X			
601X			
000.000	602X	FT.ABS EQU 0	ABSOLUTE BINARY
000.001	603X	FT.PIC EQU 1	POSITION INDEPENDANT CODE
000.002	604X	FT.REL EQU 2	RELOCATABLE CODE
000.003	605X	FT.BAC EQU 3	COMPILED BASIC CODE
000.010	606	XTEXT DEVDEF	

608X \*\* DEVICE TABLE ENTRYS.

609X			
000.000	610X	ORG 0	
	611X		
000.000	612X	DEV.NAM DS	2 DEVICE NAME
000.000	613X	DV.EL EQU 0000000B	END OF DEVICE LIST FLAG
000.001	614X	DV.NU EQU 00000001B	DEVICE ENTRY NOT IN USE

000.002	615X		
000.001	616X DEV,RES DS	1	DRIVER RESIDENCE CODE
000.002	617X DR,IM EQU	00000001B	DRIVER IN MEMORY
	618X DR,PR EQU	00000010B	DRIVER PERMINANTLY RESIDENT
	619X		
000.003	620X DEV,JMP DS	1	JMP TO PROCESSOR
000.004	621X DEV,DDA DS	2	DRIVER ADDRESS
000.006	622X DEV,FLG DS	1	FLAG BYTE
000.001	623X DT,DD EQU	00000001B	DIRECTORY DEVICE
000.002	624X DT,CR EQU	00000010B	CAPABLE OF READ OPERATION
000.004	625X DT,CW EQU	00000100B	CAPABLE OF WRITE OPERATION
	626X		
000.007	627X DEV,SPG DS	1	SECTORS PER GROUP THIS DEVICE
000.010	628X DEV,MUM DS	1	MOUNTED UNIT MASK
000.011	629X DEV,MNU DS	1	MAXIMUM NUMBER OF UNITS
000.012	630X DEV,UNT DS	2	ADDRESS OF UNIT SPECIFIC DATA TABLE
	631X		
000.014	632X DEV,AVL DS	2	DRIVER BYTE LENGTH
000.016	633X DEV,IVG DS	1	DRIVER ROUTINE GROUP ADDRESS
	634X		
000.017	635X DEVELEN EQU	*	DEVICE TABLE ENTRY LENGTH

	637X **	UNIT SPECIFIC DEVICE DATA TABLE ENTRIES	
	638X		
000.000	639X	ORG 0	
	640X		
000.000	641X UNT,FLG DS	1	UNIT SPECIFIC *DEV,FLG*
000.001	642X UNT,GRT DS	2	ADDRESS OF GROUP RESERVATION TABLE (IF DT,DD)
000.003	643X UNT,GTS DS	2	GRT SECTOR NUMBER
000.005	644X UNT,DIS DS	2	DIRECTORY FIRST SECTOR NUMBER
	645X		
000.007	646X UNT,SIZ EQU	*	SIZE OF UNIT SPECIFIC DATA TABLE PER UNIT
000.007	647	XTEXT ESINT	

	649X **	S.INT - SYSTEM INTERNAL WORKAREA DEFINITIONS.	
	650X *		
	651X *	THESE CELLS ARE REFERENCED BY OVERLAYS AND MAIN CODE, AND	
	652X *	MUST THEREFORE RESIDE IN FIXED LOW MEMORY.	
	653X		
	654X		
040.343	655X	ORG S.INT	
	656X		
	657X **	CONSOLE STATUS FLAGS	
	658X		
040.343	659X S,CDB DS	1	CONSOLE DESCRIPTOR BYTE
000.000	660X CDB,H85 EQU	00000000B	=0 IF H8-5, =1 IF H8-4
000.001	661X CDB,H84 EQU	00000001B	=0:14J..H8-4 BAUD RATE, =0:15J..H8-5
040.344	662X S,BAUD DS	2	[15] =1 IF BAUD RATE => 2 STOP BITS
	663X *		
	664X		

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## 665X \*\* TABLE ADDRESS WORDS

666X			
040.346	S.DLINK DS	2	ADDRESS OF DATA IN HDOS CODE
040.350	S.OFWA DS	2	FWA OVERLAY TABLE
040.352	S.CFWA DS	2	FWA CHANNEL TABLE
040.354	S.DFWA DS	2	FWA DEVICE TABLE
040.356	S.RFWA DS	2	FWA RESIDENT HDOS CODE

## 672X

## 673X \*\* DEVICE DRIVER DELAYED LOAD FLAGS

## 674X

040.360	S.IDDIA DS	2	DRIVER LOAD ADDRESS (HIGH BYTE=0 IF NO LOAD PENDING)
040.362	S.IDDLEN DS	2	CODE LENGTH IN BYTES
040.364	S.IDDGRP DS	1	GROUP NUMBER FOR DRIVER
040.365	DS	1	HOLD PLACE
040.366	S.IDDSEC DS	2	SECTOR NUMBER FOR DRIVER (* OBSOLETE ! *)
040.370	S.IDDTA DS	2	DEVICE'S ADDRESS IN DEVLIST +DEV.RES
	S.IDDOPC DS	1	OPEN OPCODE PENDING

## 682X

## 683X \*\* OVERLAY MANAGEMENT FLAGS

## 684X

000.001	S.OVL.IN EQU	00000001B	IN MEMORY
000.002	S.OVL.RES EQU	00000010B	PERMINANTLY RESIDENT
000.014	S.OVL.NUM EQU	00001100B	OVERLAY NUMBER MASK
000.200	S.OVL.UCS EQU	10000000B	USER CODE SWAPPED FOR OVERLAY

## 689X

040.371	S.OVLFL DS	1	OVERLAY FLAG
040.372	S.UCSF DS	2	FWA SWAPPED USER CODE
040.374	S.UCSL DS	2	LENGTH SWAPPED USER CODE
040.376	S.OVLS DS	2	SIZE OF OVERLAY CODE
041.000	S.OVLE DS	2	ENTRY POINT OF OVERLAY CODE

## 695X

041.002	S.SSN DS	2	SWAP AREA SECTOR NUMBER
041.004	S.OSN DS	2	OVERLAY SECTOR NUMBER

## 698X

## 699X \* SYSCALL PROCESSING WORK AREAS

## 700X

041.006	S.CACC DS	1	(ACC) UPON SYSCALL
041.007	S.CODE DS	1	SYSCALL INDEX IN PROGRESS

## 703X

## 704X \*

## JUMPS TO ROUTINES IN RESIDENT HDOS CODE

## 705X

041.010	S.JUMPS DS	0	START OF DUMP VECTORS
041.010	S.SID DS	3	JUMP TO STAND-IN DEVICE DRIVER
041.013	S.FASER DS	3	JUMP TO FASERR (FATAL SYSTEM ERROR)
041.016	S.DIREA DS	3	JUMP TO DIREAD (DISK FILE READ)
041.021	S.FCI DS	3	JUMP TO FCI (FETCH CHANNEL INFO)
041.024	S.SCI DS	3	JUMP TO SCI (STORE CHANNEL INFO)
041.027	S.GUP DS	3	JUMP TO GUP (GET UNIT POINTER)

## 713X

041.032	S.MOUNT DS	1	<>0 IF THE SYSTEM DISK IS MOUNTED
041.033	S.DCS DS	1	DEFAULT CLUSTER SIZE-1

## 716X

041.034	S.BOOTF DS	1	BOOT FLAGS
000.001	S.BOOT.P EQU	00000001B	EXECUTE PROLOGUE UPON BOOTUP

## 719X

## 720X \*

## STACK VALUE SAVED FOR OVERLAY SYSCALLS

041.035..... 721X S.OVSTK DS 2..... VALUE OF SP UPON SYSCALLS USING OVERLAY  
041.037..... 724X DS 1..... RESERVED

726X \*\* ACTIVE I/O AREA.  
727X \*  
728X \* THE AIO.XXX AREA CONTAINS INFORMATION ABOUT THE I/O OPERATION  
729X \* CURRENTLY BEING PERFORMED. THE INFORMATION IS OBTAINED FROM  
730X \* THE CHANNEL TABLE, AND WILL BE RESTORED THERE WHEN DONE.  
731X \*  
732X \* NORMALLY, THE AIO.XXX INFORMATION WOULD BE OBTAINED DIRECTLY  
733X \* FROM VARIOUS SYSTEM TABLES VIA POINTER REGISTERS. SINCE THE  
734X \* 8080 HAS NO GOOD INDEXED ADDRESSING, THE DATA IS MANUALLY  
735X \* COPIED INTO THE AIO.XXX CELLS BEFORE PROCESSING, AND  
736X \* BACKDATED AFTER PROCESSING.  
737X

041.040..... 738X AIO.VEC DS 3..... JUMP INSTRUCTION  
041.041..... 739X AIO.IDA EQU \*-2..... DEVICE DRIVER ADDRESS  
041.043..... 740X AIO.FLG DS 1..... FLAG BYTE  
041.044..... 741X AIO.GRT DS 2..... ADDRESS OF GROUP RESERV TABLE  
041.046..... 742X AIO.SFG DS 1..... SECTORS PER GROUP  
041.047..... 743X AIO.CGN DS 1..... CURRENT GROUP NUMBER  
041.050..... 744X AIO.CSI DS 1..... CURRENT SECTOR INDEX  
041.051..... 745X AIO.LGN DS 1..... LAST GROUP NUMBER  
041.052..... 746X AIO.LSI DS 1..... LAST SECTOR INDEX  
041.053..... 747X AIO.ITA DS 2..... DEVICE TABLE ADDRESS  
041.055..... 748X AIO.DES DS 2..... DIRECTORY SECTOR  
041.057..... 749X AIO.DEV DS 2..... DEVICE CODE  
041.061..... 750X AIO.UNI DS 1..... UNIT NUMBER (0-9)  
751X  
041.062..... 752X AIO.DIR DS DIRELEN..... DIRECTORY ENTRY  
753X  
041.111..... 754X AIO.CNT DS 1..... SECTOR COUNT  
041.112..... 755X AIO.EOM DS 1..... END OF MEDIA FLAG  
041.113..... 756X AIO.EOF DS 1..... END OF FILE FLAG  
041.114..... 757X AIO.TFP DS 2..... TEMP FILE POINTERS  
041.116..... 758X AIO.CHA DS 2..... ADDRESS OF CHANNEL BLOCK (IOC.IDA)

041.120..... 760X S.SCR DS 2..... SYSTEM SCRATCH AREA ADDRESS  
041.122..... 761 XTEXT ECDEF

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## 763X \*\* ERROR CODE DEFINITIONS.

000.000	764X	ORG	0	
000.000	765X	DS	1	NO ERROR #0
000.001	767X	EC.EOF	DS	1 END OF FILE
000.002	768X	EC.EOM	DS	1 END OF MEDIA
000.003	769X	EC.ILC	DS	1 ILLEGAL 'SYSCALL' CODE
000.004	770X	EC.CNA	DS	1 CHANNEL NOT AVAILABLE
000.005	771X	EC.DNS	DS	1 DEVICE NOT SUITABLE
000.006	772X	EC.IIN	DS	1 ILLEGAL DEVICE NAME
000.007	773X	EC.IFN	DS	1 ILLEGAL FILE NAME
000.010	774X	EC.NRD	DS	1 NO ROOM FOR DEVICE DRIVER
000.011	775X	EC.FNO	DS	1 CHANNEL NOT OPEN
000.012	776X	EC.ILR	DS	1 ILLEGAL REQUEST
000.013	777X	EC.FUC	DS	1 FILE USAGE CONFLICT
000.014	778X	EC.FNF	DS	1 FILE NAME NOT FOUND
000.015	779X	EC.UND	DS	1 UNKNOWN DEVICE
000.016	780X	EC.ICN	DS	1 ILLEGAL CHANNEL NUMBER
000.017	781X	EC.DIF	DS	1 DIRECTORY FULL
000.020	782X	EC.IFC	DS	1 ILLEGAL FILE CONTENTS
000.021	783X	EC.NEM	DS	1 NOT ENOUGH MEMORY
000.022	784X	EC.RF	DS	1 READ FAILURE
000.023	785X	EC.WF	DS	1 WRITE FAILURE
000.024	786X	EC.WPV	DS	1 WRITE PROTECTION VIOLATION
000.025	787X	EC.WP	DS	1 DISK WRITE PROTECTED
000.026	788X	EC.FAP	DS	1 FILE ALREADY PRESENT
000.027	789X	EC.DDA	DS	1 DEVICE DRIVER ABORT
000.030	790X	EC.FL	DS	1 FILE LOCKED
000.031	791X	EC.FAO	DS	1 FILE ALREADY OPEN
000.032	792X	EC.IS	DS	1 ILLEGAL SWITCH
000.033	793X	EC.UUN	DS	1 UNKNOWN UNIT NUMBER
000.034	794X	EC.FNR	DS	1 FILE NAME REQUIRED
000.035	795X	EC.BIW	DS	1 DEVICE IS NOT WRITABLE (OR WRITE LOCKED)
000.036	796X	EC.UNA	DS	1 UNIT NOT AVAILABLE
000.037	797X	EC.ILU	DS	1 ILLEGAL VALUE
000.040	798X	EC.ILO	DS	1 ILLEGAL OPTION
000.041	799X	EC.VPM	DS	1 VOLUME PRESENTLY MOUNTED ON DEVICE
000.042	800X	EC.NVM	DS	1 NO VOLUME PRESENTLY MOUNTED
000.043	801X	EC.FOD	DS	1 FILE OPEN ON DEVICE
000.044	802X	EC.NPM	DS	1 NO PROVISIONS MADE FOR REMOUNTING MORE DISKS
000.045	803X	EC.DNI	DS	1 DISK NOT INITIALIZED
000.046	804X	EC.DNR	DS	1 DISK IS NOT READABLE
000.047	805X	EC.DSC	DS	1 DISK STRUCTURE IS CORRUPT
000.050	806X	EC.NCV	DS	1 NOT CORRECT VERSION OF HDOS
000.051	807X	EC.NDS	DS	1 NO OPERATING SYSTEM MOUNTED
000.052	808X	EC.IOI	DS	1 ILLEGAL OVERLAY INDEX
000.053	809X	EC.OTL	DS	1 OVERLAY TO LARGE
000.054	810	XTEXT	HOSDEF	

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## 812X \*\* HOSDEF - DEFINE HOS PARAMETER.

813X \*

814X

815X

000.026 816X VERS EQU 1\*16+6 VERSION 1.6

817X

000.377 818X SYSCALL EQU 377Q SYSCALL INSTRUCTION

819X

820X

000.000 821X ORG 0

822X

## 823X \* RESIDENT FUNCTIONS

824X

000.000 825X .EXIT DS 1 EXIT (MUST BE FIRST)

000.001 826X .SCIN DS 1 SCIN

000.002 827X .SCOUT DS 1 SCOUT

000.003 828X .PRINT DS 1 PRINT

000.004 829X .READ DS 1 READ

000.005 830X .WRITE DS 1 WRITE

000.006 831X .CONSL DS 1 SET/CLEAR CONSOLE OPTIONS

000.007 832X .CLRCONL DS 1 CLEAR CONSOLE BUFFER

000.010 833X .LOADO DS 1 LOAD AN OVERLAY

000.011 834X .VERS DS 1 RETURN HDOS VERSION NUMBER

000.012 835X .SYSRES DS 1 PRECEDING FUNCTIONS ARE RESIDENT

836X

837X

## 838X \* \*HDOSOVL0.SYS\* FUNCTIONS

839X

000.040 840X ORG 40A

841X

000.040 842X .LINK DS 1 LINK (MUST BE FIRST)

000.041 843X .CTL-C DS 1 CTL-C

000.042 844X .OPENR DS 1 OPENR

000.043 845X .OPENW DS 1 OPENW

000.044 846X .OPENU DS 1 OPENU

000.045 847X .OPENC DS 1 OPENC

000.046 848X .CLOSE DS 1 CLOSE

000.047 849X .POSIT DS 1 POSITION

000.050 850X .DELET DS 1 DELETE

000.051 851X .RENAM DS 1 RENAME

000.052 852X .SETTP DS 1 SETTOP

000.053 853X .DECODE DS 1 NAME DECODE

000.054 854X .NAME DS 1 GET FILE NAME FROM CHANNEL

000.055 855X .CLEAR DS 1 CLEAR CHAN

000.056 856X .CLEARA DS 1 CLEAR ALL CHANS

000.057 857X .ERROR DS 1 LOOKUP ERROR

000.060 858X .CHFLG DS 1 CHANGE FLAGS

000.061 859X .DISMT DS 1 FLAG SYSTEM DISK DISMOUNTED

000.062 860X .LOADD DS 1 LOAD DEVICE DRIVER

861X

862X

## 863X \* \*HDOSOVL1.SYS\* FUNCTIONS

864X

000.200 865X ORG 2000

866X

000.200 867X .MOUNT DS 1 MOUNT (MUST BE FIRST)

TEST - NEW FLOPPY DIAGNOSTIC.  
8251 USART BIT DEFINITIONS.

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000.201	868X	.DMOUN	DS	i	DISMOUNT
000.202	869X	.MONMS	DS	i	MOUNT/NO MESSAGE
000.203	870X	.DMNMS	DS	i	DISMOUNT/NO MESSAGE
000.204	871X	.RESET	DS	i	RESET = DISMOUNT/MOUNT OF UNIT
	872				
	873				
042.170	874	ORG	USERFWA-ABS.COD		
042.170 377.000	875	DB	3770,FT.ABS		
042.172 200 042	876	DW	USERFWA	LOAD ADDR	
042.174 167 024	877	DW	MEML-USERFWA	SIZE	
042.176 200 042	878	DW	TEST	ENTRY	
	879				

882 \*\* TEST - DETECT DISK PROBLEMS.  
883 \*  
884 \* TEST RUNS AN EXTENSIVE TEST ON A HDOS MINI-FLOPPY DISK.  
885 \*  
886 \* THE FOLLOWING PROCEDURE IS PERFORMED FOR EACH PASS:  
887 \*  
888 \* 3. WRITE DISK TO ALL ZEROS  
889 \* 4. CHECK ZEROS  
890 \* 5. WRITE DISK TO ALL ONES  
891 \* 6. CHECK ONES  
892 \* 7. WRITE ID AND BIT PATTERNS  
893 \* 8. CHECK SECTOR ID AND PATTERNS  
894 \* 9. RANDOMLY SELECT AND READ/WRITE SECTORS  
895 \* 10. CHECK ARM SEEKS  
896  
897  
042.200 377.011 898 TEST EQU \*  
042.200 377.011 899 DB SYSCALL,.VERS  
042.202 332.212 042 900 JC TEST1 NO VERSION SYSTEM CALL  
042.205 376.026 901 CPI VERS  
042.207 312.220 042 902 JZ TEST2 IS CORRECT VERSION OF HDOS  
042.212 076.050 903 TEST1 MVI A:EC.NCV NOT CORRECT VERSION OF HDOS  
042.214 067 904 STC  
042.215 303.005 045 905 JMP ERROR  
906  
042.220 076.377 907 TEST2 MVI A:3770  
042.222 377.055 908 DB SYSCALL,.CLEAR CLEAR THE CHANNEL THAT WE CAME IN ON  
042.224 257 909 XRA A  
042.225 062.326 040 910 STA S:CSLMID SET CONSOLE MODE  
042.230 062.007.040 911 STA .DSPMOD DISPLAY MEMORY  
042.233 363 912 DI  
042.234 072.010.040 913 LIA .MFLAG  
042.237 346.275 914 ANI 3770-U0.DIU-U0.NFR  
042.241 062.010.040 915 STA .MFLAG ALLOW DISPLAY  
042.244 373 916 EI  
042.245 072.115.040 917 LIA D:MAIA  
042.250 062.041.067 918 STA MAIA  
919  
920 \* DISMOUNT SYSTEM DISKS  
921  
042.253 315.150.066 922 CALL \$DOS DISMOUNT OPERATING SYSTEM  
042.256 332.005.045 923 JC ERROR  
042.261 924 MOUNT EQU \* ENTRY HERE TO MOUNT NEW DISK  
042.261 041.261.042 925 LXI H:Mount  
042.264 076.003 926 MVI A:CTL.C  
042.266 377.041 927 DB SYSCALL,.CTL.C SETUP CTL-C PROCESSING  
042.270 315.257.055 928 CALL IUN DETERMINE UNIT NUMBER TO WORK OVER  
042.273 315.213.057 929 CALL RZL READ AND ZAP DISK LABEL  
042.276 322.126.043 930 JNC DIAG1 OK  
931  
932 \* CANT EVEN READ LABEL. GOT SERIOUS PROBLEMS  
933  
042.301 315.136.031 934 CALL \$TYPTX  
042.304 012.007.111 935 DB NL,BELL,'I Can't read this disk at all. Remember that.'  
042.363 164.150.145 936 DB '/the disks must be',NL  
043.005.151.156.151 937 DB '/initialized by the "INIT" program before they can be used by '

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043.102 164 150 151 938 DB 'this diagnostic.',ENL  
043.123 303 261 042 939 JMP MOUNT RESTART  
940  
941 \* MOUNT DISK VOLUME  
942  
043.126 072 102 067 943 DIAG1 LIA BUFF+LAB.SER  
043.131 157 944 MOV L,A  
043.132 076 010 945 MVI A,DC.MOU  
043.134 315 307 063 946 CALL SYDD. MOUNT DISK  
947  
948 \* SETUP USE OF READ ROUTINE  
949  
043.137 052 033 040 950 LHLD .TICCNT  
043.142 042 364 066 951 SHLD RSEED  
043.145 041 000 000 952 LXI H,0  
043.150 042 037 067 953 SHLD PASS SET PASS NUMBER  
954  
955 \* ZERO ERROR COUNTERS  
956  
043.153 041 000 000 957 LXI H,0  
043.156 042 265 040 958 SHLD D.ERR  
043.161 042 267 040 959 SHLD D.ERR+2  
043.164 042 271 040 960 SHLD D.ERR+4  
961  
962 \* START TESTS  
963  
043.167 041 176 043 964 LXI H,RESTART  
043.172 076 003 965 MVI A,CTL.C  
043.174 377 041 966 DB SYSCALL,.CTL.C SET CTL-C PROCESSING  
043.176 061 200 042 967 RESTART LXI SP,STACK RESET STACK  
043.201 041 176 043 968 LXI H,RESTART  
043.204 345 969 PUSH H SET \*RETURN ADDRESS\*  
043.205 072 041 067 970 LIA MAIA  
043.210 062 115 040 971 STA D,MAIA RESET SEEK TIME  
043.213 076 377 972 MVI A,377Q  
043.215 062 006 040 973 STA .DSPROT OFF FP PERIODS  
043.220 076 201 974 MVI A,U0.CLK+U0.HLT  
043.222 062 010 040 975 STA .MFLAG ENABLE CLOCK INTERRUPTS  
043.225 076 007 976 MVI A,DC.ABT  
043.227 315 130 040 977 CALL SYDD ABORT DISK  
043.232 377 007 978 DB SYSCALL,.CLRCON CLEAR CONSOLE  
043.234 315 136 031 979 CALL \$TYPTX  
043.237 012 106 165 980 DB NL,'Functions Available:',NL  
043.265 012 124 040 981 DB NL,'T - Display Drive Rotational Speed',NL  
043.331 104 040 055 982 DB 'D - Perform General Drive Checkout',NL  
043.374 115 040 055 983 DB 'M - Perform Media Check (Sector Validity)',NL  
044.046 123 040 055 984 DB 'S - Perform Seek Time Checkout',NL  
044.105 125 040 055 985 DB 'U - Select Another Drive Unit',NL  
044.143 105 040 055 986 DB 'E - Exit to Boot Program',NL  
044.174 012 103 124 987 DB NL,'CTRL-C Cancels the Test in Progress.',ENL  
044.242 315 016 065 988 CALL \$CCO CLEAR CTL-D  
044.245 315 136 031 989 CALL \$TYPTX  
044.250 040 117 160 990 DB 'Option:', '+'200Q  
044.261 041 042 067 991 LXI H,LINE  
044.264 315 172 065 992 CALL \$RTL READ LINE IN UPPER CASE  
044.267 176 993 MOV A,M

044.270	247	994	ANA	A	
044.271	312 176 043	995	JZ	RESTART	NO GOOD REPLY.
044.274	041 370 044	996	LXI	H,DIAGA	
044.277	315 237 065	997	CALL	\$TBLS	FIND IN TABLE.
044.302	312 342 044	998	JE	DIAG2	
044.305	315 136 031	999	CALL	\$TYPTX	
044.310	007 111 114	1000	DB	BELL, ILLEGAL OPTION: ',', '+2000	
044.331	072 042 067	1001	LDA	LINE	
044.334	315 276 065	1002	CALL	\$WCHAR	
044.337	303 176 043	1003	JMP	RESTART	
		1004			
		1005	*	PERFORM DIAGNOSTIC	
		1006			
044.342	072 366 066	1007	DIAG2	LDA	UNIT
044.345	062 061 041	1008	STA	AIO.UNI	SET UNIT NUMBER
044.350	176	1009	MOV	A,M	(A) = INDEX
044.351	315 061 031	1010	CALL	\$TJMP	
044.354	343 046	1011	DW	DRIVE	DRIVE DIAGNOSTIC.
044.356	242 047	1012	DW	MEDIA	MEDIA CHECK
044.360	351 050	1013	DW	SEEK	SEEK TEST
044.362	036 045	1014	DW	EXIT	EXIT DIAGNOSTIC
044.364	041 045	1015	DW	TIME	TIMING TEST
044.366	261 042	1016	DW	MOUNT	SELECT NEW DRIVE
		1017			
		1018			
044.370	104 000	1019	DIAGA	DB	'D',0
044.372	115 001	1020		DB	'M',1
044.374	123 002	1021		DB	'S',2
044.376	105 003	1022		DB	'E',3
045.000	124 004	1023		DB	'T',4
045.002	125 005	1024		DB	'U',5
045.004	000	1025		DB	0

1027 \*\* ERROR - DISK ERROR OCCURRED BEFORE DISKS DISMOUNTED.

1028 \*

1029

045.005	365	1030	ERROR	PUSH	PSW	SAVE CODE
045.006	315 016 065	1031		CALL	\$CC0	
045.011	315 136 031	1032		CALL	\$TYPTX	
045.014	012 007 105	1033		DB	NL,BELL,'ERROR - ',' '+2000	
045.026	046 007	1034		MVI	H,BELL	
045.030	361	1035		POP	PSW	
045.031	377 057	1036		DB	SYS CALL, .ERROR	
045.033	303 036 045	1037		JMP	EXIT	
		1038				

TEST - NEW FLOPPY DIAGNOSTIC.  
DIAGNOSTIC MAIN ROUTINE

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EXIT  
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1040 \*\* EXIT - EXIT DIAGNOSTIC.  
1041 \*  
1042 \* GIVE HIM TIME TO INSERT A DISK, THEN BOOT.  
1043  
1044  
045.036 257 1045 EXIT XRA A  
045.037 377 000 1046 DB SYSCALL; EXIT LET \*HDOS\* TAKE CARE OF THE ERROR STUFF

TEST - NEW FLOPPY DIAGNOSTIC.  
TIME - SHOW DRIVE TIMING.

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1049 \*\*\* TIME - SHOW DRIVE TIMING.  
1050 \*  
1051 \* TIME  
1052  
1053  
1054  
036.271 1055 R.WNH EQU 36271A  
036.235 1056 R.WHD EQU 36235A  
1057  
045.041 1058 TIME EQU \*  
045.041 076 007 1059 MVI A,DC.ABT  
045.043 315 130 040 1060 CALL SYDD START DRIVE  
045.046 072 366 066 1061 LDA UNIT (A) = UNIT NUMBER  
045.051 107 1062 MOV B,A /79.11.GC/  
045.052 004 1063 INR B /79.11.GC/  
045.053 257 1064 XRA A /79.11.GC/  
045.054 315 377 064 1065 CALL BITS  
000.000 1066 ERRNZ DF.DS0-2  
000.000 1067 ERRNZ DF.DS1-4  
000.000 1068 ERRNZ DF.DS2-8 /79.11.GC/  
045.057 366 020 1069 ORI DF.MO  
045.061 062 242 040 1070 STA D,DVCTL SELECT UNIT  
045.064 323 177 1071 OUT DF.DC SELECT UNIT  
1072  
045.066 363 1073 TIME0 DI  
1074  
1075 \* WAIT FOR TRAILING EDGE OF HOLE  
1076  
045.067 315 235 036 1077 CALL R.WHD  
045.072 315 271 036 1078 CALL R.WNH WAIT FOR NO HOLE  
1079  
045.075 001 000 000 1080 LXI B,0  
045.100 026 013 1081 MVI D,11  
045.102 003 1082 TIME1 INX B  
045.103 034 1083 INR E DUMMY STATEMENT FOR Z-80/8080 COMPATABILITY  
045.104 034 1084 INR E SAME AS ABOVE  
045.105 333 177 1085 IN DF,DC  
000.000 1086 ERRNZ DF,HD-1  
045.107 037 1087 RAR  
045.110 322 102 045 1088 JNC TIME1  
045.113 003 1089 TIME2 INX B  
045.114 034 1090 INR E DUMMY STATEMENT FOR Z-80/8080 COMPATABILITY  
045.115 034 1091 INR E SAME AS ABOVE  
045.116 333 177 1092 IN DF,DC  
000.000 1093 ERRNZ DF,HD-1  
045.120 037 1094 RAR  
045.121 332 113 045 1095 JC TIME2  
045.124 025 1096 DCR D  
045.125 302 102 045 1097 JNZ TIME1  
045.130 373 1098 EI  
1099  
1100  
1101 \* COMPUTE DISPLAY FOR TIME  
1102  
045.131 076 002 1103 MVI A,U0,DDU  
045.133 062 010 040 1104 STA .MFLAG

TEST - NEW FLOPPY DIAGNOSTIC.  
TIME - SHOW DRIVE TIMING

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045.136 041 233 045 1105 LXI H,TIMEA-2  
045.141 043 1106 TIME3 INX H  
045.142 043 1107 INX H  
045.143 136 1108 MOV E,M  
045.144 043 1109 INX H  
045.145 126 1110 MOV D,M  
045.146 043 1111 INX H (DEY) = TEST VALUE  
045.147 173 1112 MOV A,E  
045.150 221 1113 SUB C  
045.151 172 1114 MOV A,D  
045.152 230 1115 SBB B  
045.153 322 141 045 1116 JNC TIME3 NOT THERE YET  
1117  
1118 \* DISPLAY ON FRONT PANEL  
1119  
045.156 345 1120 PUSH H SAVE TABLE POINTER  
045.157 176 1121 MOV A,M  
045.160 021 013 040 1122 LXI D,.ALEDS  
045.163 345 1123 PUSH H  
045.164 315 235 046 1124 CALL D2H DECODE 2 HEX DIGITS  
045.167 341 1125 POP H  
045.170 043 1126 INX H  
045.171 176 1127 MOV A,M  
045.172 315 235 046 1128 CALL D2H DECODE 2 HEX DIGITS  
045.175 076 377 1129 MOVI A,3770  
045.177 022 1130 STAX D  
045.200 023 1131 INX D  
045.201 022 1132 STAX D  
045.202 023 1133 INX D  
045.203 022 1134 STAX D  
045.204 023 1135 INX D  
045.205 022 1136 STAX D  
045.206 023 1137 INX D  
045.207 022 1138 STAX D  
045.210 023 1139 INX D  
045.211 072 013 040 1140 LDA .ALEDS  
045.214 346 177 1141 ANI 1770 REMOVE DP  
045.216 062 013 040 1142 STA .ALEDS  
045.221 341 1143 POP H  
1144  
1145 \* DISPLAY ON CONSOLE  
1146  
045.222 315 264 046 1147 CALL THD TYPE HEX DIGITS  
1148  
045.225 076 377 1149 MOVI A,255  
045.227 315 053 000 1150 CALL .ILY WAIT WITH DISPLAY  
045.232 303 066 045 1151 JMP TIMEO TRY AGAIN

1153 \*\* TIMEA - TIME TABLE  
1154 \*  
1155 \* THIS IS A TABLE OF TIMES AND THEIR ASSOCIATED DRIVE TOLERANCES.  
1156 \* THE LOOP IS KLUGED SO AS TO BE THE SAME TIME FOR BOTH Z-80'S AND  
1157 \* 8080'S, HENCE IT WORKS ON H89'S AS WELL AS H8'S. THE DATA FOR THE  
1158 \* TABLE IS COMPUTED BY THE PROGRAM SPITAB.BAS. THE TIMING FOR THE  
1159 \* LOOP IS AS FOLLOWS:  
1160 \*  
1161 \* CODE 8080 Z-80  
1162 \* ---- ----  
1163 \*  
1164 \* 1. INX B 5 6  
1165 \* INR E 5 4  
1166 \* INR E 5 4  
1167 \* IN DP,DC 10 11  
1168 \* RAR 4 4  
1169 \* JNC 1 10 10  
1170 \*  
1171 \* 39 39  
1172 \*  
1173 \* THIS LOOP IS ESSENTIALLY REPEATED TWICE, THUS ONE ARRIVES AT THE  
1174 \* FOLLOWING COMPUTATIONS:  
1175 \*  
1176 \* INDEX... =...(200\*2048\*1000)/(I\*39),  
1177 \*  
1178 \* WHERE I=0982 FOR .982, I=1000 FOR 1.000, ETC.  
1179 \*  
1180 \*  
045.235 1181 TIMEA EQU \*  
045.235..377.377 1182 DW 377377A  
045.237 011 150 1183 DB 09H,68H CATCH HIGH END OF SCALE  
1184  
045.241 126 052 1185 DW 10838  
045.243..011.151 1186 DB 09H,69H 0.969  
1187  
045.245..113.052 1188 DW 10827  
045.247 011 160 1189 DB 09H,70H 0.970  
1190  
045.251 100 052 1191 DW 10816  
045.253..011.161 1192 DB 09H,71H 0.971  
1193  
045.255..065.052 1194 DW 10805  
045.257 011 162 1195 DB 09H,72H 0.972  
1196  
045.261 052 052 1197 DW 10794  
045.263..011.163 1198 DB 09H,73H 0.973  
1199  
045.265..036.052 1200 DW 10782  
045.267 011 164 1201 DB 09H,74H 0.974  
1202  
045.271 023 052 1203 DW 10771  
045.273..011.165 1204 DB 09H,75H 0.975

TEST - NEW FLOPPY DIAGNOSTIC.  
TIME - SHOW DRIVE TIMING

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045.275	010 052	1206	DW	10760	
045.277	011 166	1207	DB	09H,76H	0.976
		1208			
045.301	375 051	1209	DW	10749	
045.303	011 167	1210	DB	09H,77H	0.977
		1211			
045.305	362 051	1212	DW	10738	
045.307	011 170	1213	DB	09H,78H	0.978
		1214			
045.311	347 051	1215	DW	10727	
045.313	011 171	1216	DB	09H,79H	0.979
		1217			
045.315	334 051	1218	DW	10716	
045.317	011 200	1219	DB	09H,80H	0.980
		1220			
045.321	321 051	1221	DW	10705	
045.323	011 201	1222	DB	09H,81H	0.981
		1223			
045.325	307 051	1224	DW	10695	
045.327	011 202	1225	DB	09H,82H	0.982
		1226			
045.331	274 051	1227	DW	10684	
045.333	011 203	1228	DB	09H,83H	0.983
		1229			
045.335	261 051	1230	DW	10673	
045.337	011 204	1231	DB	09H,84H	0.984
		1232			
045.341	246 051	1233	DW	10662	
045.343	011 205	1234	DB	09H,85H	0.985
		1235			
045.345	233 051	1236	DW	10651	
045.347	011 206	1237	DB	09H,86H	0.986
		1238			
045.351	220 051	1239	DW	10640	
045.353	011 207	1240	DB	09H,87H	0.987
		1241			
045.355	206 051	1242	DW	10630	
045.357	011 210	1243	DB	09H,88H	0.988
		1244			
045.361	173 051	1245	DW	10619	
045.363	011 211	1246	DB	09H,89H	0.989
		1247			
045.365	160 051	1248	DW	10608	
045.367	011 220	1249	DB	09H,90H	0.990

TEST - NEW FLOPPY DIAGNOSTIC.  
TIME - SHOW DRIVE TIMING.

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045.371	145 051	1251	DW	10597	
045.373	011 221	1252	DB	09H,91H	0.991
		1253			
045.375	133 051	1254	DW	10587	
045.377	011 222	1255	DB	09H,92H	0.992
		1256			
046.001	120 051	1257	DW	10576	
046.003	011 223	1258	DB	09H,93H	0.993
		1259			
046.005	105 051	1260	DW	10565	
046.007	011 224	1261	DB	09H,94H	0.994
		1262			
046.011	073 051	1263	DW	10555	
046.013	011 225	1264	DB	09H,95H	0.995
		1265			
046.015	060 051	1266	DW	10544	
046.017	011 226	1267	DB	09H,96H	0.996
		1268			
046.021	046 051	1269	DW	10534	
046.023	011 227	1270	DB	09H,97H	0.997
		1271			
046.025	033 051	1272	DW	10523	
046.027	011 230	1273	DB	09H,98H	0.998
		1274			
046.031	021 051	1275	DW	10513	
046.033	011 231	1276	DB	09H,99H	0.999
		1277			
046.035	006 051	1278	DW	10502	
046.037	020 000	1279	DB	10H,00H	1.000
		1280			
046.041	374 050	1281	DW	10492	
046.043	020.001	1282	DB	10H,01H	1.001
		1283			
046.045	361 050	1284	DW	10481	
046.047	020 002	1285	DB	10H,02H	1.002
		1286			
046.051	347 050	1287	DW	10471	
046.053	020.003	1288	DB	10H,03H	1.003
		1289			
046.055	334 050	1290	DW	10460	
046.057	020 004	1291	DB	10H,04H	1.004
		1292			
046.061	322 050	1293	DW	10450	
046.063	020.005	1294	DB	10H,05H	1.005
		1295			
046.065	307 050	1296	DW	10439	
046.067	020 006	1297	DB	10H,06H	1.006
		1298			
046.071	275 050	1299	DW	10429	
046.073	020 007	1300	DB	10H,07H	1.007
		1301			
046.075	263 050	1302	DW	10419	
046.077	020 010	1303	DB	10H,08H	1.008
		1304			
046.101	250 050	1305	DW	10408	
046.103	020 011	1306	DB	10H,09H	1.009

TEST - NEW FLOPPY DIAGNOSTIC.  
TIME - SHOW DRIVE TIMING

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1307  
046.105 236 050 1308 DW 10398  
046.107 020 020 1309 DB 10H,10H 1.010

TEST - NEW FLOPPY DIAGNOSTIC.  
TIME - SHOW DRIVE TIMING

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046.111	224 050	1311	DW	10388	
046.113	020 021	1312	DB	10H,11H	1.011
		1313			
046.115	212 050	1314	DW	10378	
046.117	020 022	1315	DB	10H,12H	1.012
		1316			
046.121	177 050	1317	DW	10367	
046.123	020 023	1318	DB	10H,13H	1.013
		1319			
046.125	165 050	1320	DW	10357	
046.127	020 024	1321	DB	10H,14H	1.014
		1322			
046.131	153 050	1323	DW	10347	
046.133	020 025	1324	DB	10H,15H	1.015
		1325			
046.135	141 050	1326	DW	10337	
046.137	020 026	1327	DB	10H,16H	1.016
		1328			
046.141	127 050	1329	DW	10327	
046.143	020 027	1330	DB	10H,17H	1.017
		1331			
046.145	114 050	1332	DW	10316	
046.147	020 030	1333	DB	10H,18H	1.018
		1334			
046.151	102 050	1335	DW	10306	
046.153	020 031	1336	DB	10H,19H	1.019
		1337			
046.155	070 050	1338	DW	10296	
046.157	020 040	1339	DB	10H,20H	1.020
		1340			
046.161	056 050	1341	DW	10286	
046.163	020 041	1342	DB	10H,21H	1.021
		1343			
046.165	044 050	1344	DW	10276	
046.167	020 042	1345	DB	10H,22H	1.022
		1346			
046.171	032 050	1347	DW	10266	
046.173	020 043	1348	DB	10H,23H	1.023
		1349			
046.175	020 050	1350	DW	10256	
046.177	020 044	1351	DB	10H,24H	1.024
		1352			
046.201	006 050	1353	DW	10246	
046.203	020 045	1354	DB	10H,25H	1.025
		1355			
046.205	374 047	1356	DW	10236	
046.207	020 046	1357	DB	10H,26H	1.026
		1358			
046.211	362 047	1359	DW	10226	
046.213	020 047	1360	DB	10H,27H	1.027
		1361			
046.215	350 047	1362	DW	10216	
046.217	020 050	1363	DB	10H,28H	1.028
		1364			
046.221	336 047	1365	DW	10206	
046.223	020 051	1366	DB	10H,29H	1.029

TEST - NEW FLOPPY DIAGNOSTIC.  
TIME - SHOW DRIVE TIMING

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1367  
046.225 324 047 1368 DW 10196  
046.227 020 060 1369 DB 10H,30H 1.030  
1370  
046.231 000 000 1371 DW 000000A  
046.233 020 062 1372 DB 10H,32H CATCH LOW END OF SCALE

1374 \*\* D2H - DECODE 2 HEX DIGITS  
1375 \*  
1376 \* ENTRY (A) = 2 HEX DIGITS  
1377 \* (DE) = ADDRESS FOR DISPLAY PATTERN  
1378 \* EXIT (DE) = (DE)+2  
1379 \* USES NONE

1380  
1381

046.235 365 1382 D2H PUSH PSW  
046.236 037 1383 RAR  
046.237 037 1384 RAR  
046.240 037 1385 RAR  
046.241 037 1386 RAR  
046.242 315 246 046 1387 CALL D2H1  
046.245 361 1388 POP PSW  
046.246 346 017 1389 D2H1 ANI 17Q  
046.250 041 356 003 1390 LXI H,.DODA  
046.253 315 101 030 1391 CALL \$DODA.  
046.256 176 1392 MOV A,M  
046.257 366 200 1393 ORI 200Q  
046.261 022 1394 STAX D  
046.262 023 1395 INX D  
046.263 311 1396 RET

1398 \*\* THD - TYPE HEX DIGITS  
1399 \*  
1400 \* TYPE THE DRIVE SPEED ON THE CONSOLE  
1401 \*  
1402 \* ENTRY (HL) = POINTER TO TABLE ENTRY  
1403 \*  
1404

046.264 176 1405 THD MOV A,M  
046.265 346 360 1406 ANI 11110000B MASK OUT HIGH ORDER NIBBLE  
046.267 017 1407 RRC  
046.270 017 1408 RRC  
046.271 017 1409 RRC  
046.272 017 1410 RRC  
046.273 315 336 046 1411 CALL THD. OUTPUT HIGH ORDER DIGIT  
1412  
046.276 076 056 1413 MVI A,'.'  
046.300 377 002 1414 DB SYSCALL,.SCOUT OUTPUT DECIMAL POINT  
1415  
046.302 176 1416 MOV A,M  
046.303 346 017 1417 ANI 00001111B MASK OUT LOW ORDER NIBBLE

TEST - NEW FLOPPY DIAGNOSTIC.  
TIME - SHOW DRIVE TIMING

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THD 16:15:42 16-MAY-80

046.305	315 336 046	1418	CALL	THD.
		1419		
046.310	043	1420	INX	H
046.311	176	1421	MOV	A,M
046.312	346 360	1422	ANI	11110000B MASK OUT HIGH ORDER NIBBLE
046.314	017	1423	RRC	
046.315	017	1424	RRC	
046.316	017	1425	RRC	
046.317	017	1426	RRC	
046.320	315 336 046	1427	CALL	THD.
046.323	176	1428	MOV	A,M
046.324	346 017	1429	ANI	00001111B MASK OUT LOW ORDER NIBBLE
046.326	315 336 046	1430	CALL	THD.
		1431		
046.331	076 012	1432	MVI	A,NL
046.333	377 002	1433	DB	SYS CALL,.SCOUT OUTPUT NEW LINE
046.335	311	1434	RET	
		1435		
046.336	306 060	1436	ADI	'0'
046.340	377 002	1437	DB	SYS CALL,.SCOUT OUTPUT THE CHARACTER TO THE CONSOLE
046.342	311	1438	RET	

TEST - NEW FLOPPY DIAGNOSTIC.  
DRIVE - PERFORM GENERAL DRIVE TESTS

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DRIVE 16:15:42 16-MAY-80

1442 \*\*\* DRIVE - PERFORM GENERAL DRIVE TESTS  
1443 \*  
1444 \* DRIVE PERFORMS A GENERAL DRIVE DIAGNOSTIC BY  
1445 \* A SERIES OF 7 TESTS:  
1446 \*  
1447 \* A) WRITE ALL ZEROS  
1448 \* B) READ ALL ZEROS  
1449 \* C) WRITE ALL ONES  
1450 \* D) READ ALL ONES  
1451 \* E) WRITE ID PATTERN  
1452 \* F) READ ID PATTERN  
1453 \* G) RANDOM READ/WRITE TEST  
1454 \*  
1455 \* BEFORE EACH TEST IS STARTED, ITS LETTER IS TYPED. IF A SIGNIFICANT  
1456 \* NUMBER OF ERRORS OCCURS DURING THAT PASS, THE NUMBER IS TYPED AS  
1457 \* HHH/SSS, WHERE HHH = HARD ERROR COUNT, AND SSS = SOFT ERROR  
1458 \* COUNT.

1459 \*  
1460 \* ENTRY NONE  
1461 \* EXIT TO RESTART VIA CTL-C  
1462 \* USES ALL  
1463

1464

046.343 315.136.031 1465 DRIVE CALL \$TYPTX  
046.346 012 107 145 1466 DB NL,'General Drive Test for 3 Passes:',ENL  
047.010 .257 1467 XRA A  
047.011 062 037 067 1468 STA PASS CLEAR PASS NUMBER  
047.014 315.045.063 1469 DRIVE1 CALL CEC CLEAR ERROR COUNTS  
047.017 041 240 040 1470 LXI H,D,TT  
047.022 .042.024.040 1471 SHLD ABUSS SET TRACK ON DISPLAY  
047.025 315 150 047 1472 CALL TESTA WRITE A'S  
047.030 315.114.063 1473 CALL PSE PRINT SIGNIFICAT ERRORS  
047.033 315 160 047 1474 CALL TESTB  
047.036 315.114.063 1475 CALL PSE  
047.041 315 172 047 1476 CALL TESTC  
047.044 315.114.063 1477 CALL PSE  
047.047 315 203 047 1478 CALL TESTD  
047.052 315.114.063 1479 CALL PSE  
047.055 315 215 047 1480 CALL TESTE  
047.060 315.114.063 1481 CALL PSE  
047.063 315 224 047 1482 CALL TESTF  
047.066 315.114.063 1483 CALL PSE  
047.071 315 233 047 1484 CALL TESTG  
047.074 315.114.063 1485 CALL PSE  
047.077 041 037 067 1486 LXI H,PASS  
047.102 .064 1487 INR M  
047.103 176 1488 MOV A,M  
047.104 .376.004 1489 CPI 4  
047.106 306 060 1490 ADI '0'  
047.110 .365 1491 PUSH FSW SAVE CODE  
047.111 315 136 031 1492 CALL \$TYPTX  
047.114 .040.195.156 1493 DR '/End.of.Pass/:/+2000  
047.131 361 1494 POP FSW  
047.132 315.276.065 1495 CALL \$WCHAR  
047.135 365 1496 PUSH FSW  
047.136 315.033.065 1497 CALL \$CRLF

TEST - NEW FLOPPY DIAGNOSTIC:  
DRIVE - PERFORM GENERAL DRIVE TESTS

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DRIVE 16:15:44 16-MAY-80

047.141 361 1498 POP PSW  
047.142 376 063 1499 CPI '3'  
047.144 302 014 047 1500 JNE DRIVE1  
047.147 311 1501 RET

1503 \*\* TESTA - WRITE ALL ZEROS  
1504 \*  
1505  
047.150 315 136 031 1506 TESTA CALL \$TYPTX  
047.153 301 1507 DB 'A'+2000  
047.154 257 1508 XRA A  
047.155 303 143 060 1509 JMP WCP WRITE CONSTANT PATTERN

1511 \*\* TESTB - READ ALL ZEROS  
1512  
047.160 315 136 031 1513 TESTB CALL \$TYPTX  
047.163 302 1514 DB 'B'+2000  
047.164 041 000 000 1515 LXI H,0  
047.167 303 347 057 1516 JMP CCP CHECK FOR CONSTANT PATTERN

1518 \*\* TESTC - WRITE ALL ONES  
1519  
047.172 315 136 031 1520 TESTC CALL \$TYPTX  
047.175 303 1521 DB 'C'+2000  
047.176 076 377 1522 MVI A,377Q  
047.200 303 143 060 1523 JMP WCP WRITE CONSTANT PATTERN

1525 \*\* TESTD - READ ALL ONES  
1526  
047.203 315 136 031 1527 TESTD CALL \$TYPTX  
047.206 304 1528 DB 'D'+2000  
047.207 041 377 377 1529 LXI H,377377A  
047.212 303 347 057 1530 JMP CCP CHECK FOR CONSTANT PATTERN

1532 \*\* TESTE - WRITE ID PATTERN  
1533  
047.215 315 136 031 1534 TESTE CALL \$TYPTX  
047.220 305 1535 DB 'E'+2000  
047.221 303 223 062 1536 JMP WIP WRITE ID PATTERN

1538 \*\* TESTF - READ ID PATTERN  
1539  
047.224 315 136 031 1540 TESTF CALL \$TYPTX  
047.227 306 1541 DB 'F'+2000  
047.230 303 263 062 1542 JMP CIF CHECK ID PATTERN

TEST - NEW FLOPPY DIAGNOSTIC.  
DRIVE - PERFORM GENERAL DRIVE TESTS

TESTG  
16:15:45 16-MAY-80

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1544 \*\* TESTG - RANDOM SEEK TEST  
1545  
1546  
047.233..315.136.031.1547 TESTG CALL \$TYPTX  
047.236 307 1548 DB 'G'+200Q  
047.237..303.221.060..1549 JMP RRT RANDOM READ/WRITE TEST

TEST - NEW FLOPPY DIAGNOSTIC.  
MEDIA - CHECK MEDIA SECTOR VALIDITY

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MEDIA 16:15:45 16-MAY-80

1553 \*\* MEDIA - CHECK SECTOR VALIDITY.  
1554 \*  
1555 \* MEDIA CHECKS ALL SECTORS ON TRACKS 1 THROUGH 39  
1556 \* (TRACK 0 IS OMITTED).  
1557 \*  
1558 \* EACH TRACK IS WRITTEN WITH ALL ZEROS, ALL ONES, THEN A FENCE PATTERN.  
1559 \*  
1560 \* FOR EACH WRITE AND READ OPERATION, THE SOFT AND HARD ERROR COUNT  
1561 \* IS ACCUMULATED FOR THAT SECTOR. AT THE END OF THE PASS, ANY SECTORS  
1562 \* WITH HARD ERRORS, OR ANY SECTORS WITH TOO MANY SOFT ERRORS  
1563 \* ARE REPORTED BAD.

1564 \*  
1565 \* ENTRY NONE  
1566 \* EXIT NONE  
1567 \* USES ALL  
1568  
1569

047.242 001 014 003 1570 MEDIA LXI B,390\*2  
047.245 041 102 067 1571 LXI H,SECERR  
047.250 257 1572 XRA A  
047.251 062 075 050 1573 STA MEDIAAA CLEAR BAD SECTOR COUNT  
047.254 066 000 1574 MEDIA1 MVI M,O  
047.256 043 1575 INX H  
047.257 013 1576 DCX B  
047.260 170 1577 MOV A,B  
047.261 261 1578 ORA C  
047.262 302 254 047 1579 JNZ MEDIA1 CLEAR ERROR TABLE  
047.265 076 001 1580 MVI A,1  
047.267 062 025 040 1581 STA ABUSS+1 SET PASS  
047.272 257 1582 XRA A  
047.273 315 076 050 1583 CALL CSV CHECK SECTOR VALIDITY WITH 0'S  
047.276 041 025 040 1584 LXI H,,ABUSS+1  
047.301 064 1585 INR M  
047.302 076 377 1586 MVI A,377Q  
047.304 315 076 050 1587 CALL CSV CHECK SECTOR VALIDITY WITH 1'S  
047.307 041 025 040 1588 LXI H,,ABUSS+1  
047.312 064 1589 INR M  
047.313 076 125 1590 MVI A,125Q  
047.315 315 076 050 1591 CALL CSV CHECK VALIDITY WITH 01010101B  
1592  
1593 \* REPORT BADDIES  
1594  
047.320 001 012 000 1595 LXI B,10  
047.323 021 102 067 1596 LXI D,SECERR  
047.326 041 206 001 1597 LXI H,390 (HL) = SECTOR COUNT  
047.331 032 1598 MEDIA2 LDAX D SEE IF HARD ERRORS  
047.332 023 1599 INX D  
047.333 247 1600 ANA A  
047.334 302 342 047 1601 JNZ MEDIA3 MUST REPORT  
047.337 032 1602 LDAX D  
047.340 376 012 1603 CPI 10  
047.342 324 026 050 1604 MEDIA3 CNC MEDIA10 REPORT ERROR IF TOO MANY, OR HARD ERRORS  
047.345 023 1605 INX D POINT TO NEXT SECTOR'S BYTES  
047.346 003 1606 INX B INCREMENT SECTOR NUMBER  
047.347 053 1607 DCX H DECREMENT COUNT LEFT  
047.350 174 1608 MOV A,H

MEDIA 16:15:46 16-MAY-80

047.351 265 1609 ORA L  
047.352 302.331.047 1610 JNZ MEDIA2 MORE TO REPORT  
1611  
1612 \* SUMMARY MESSAGE  
1613  
047.355 315.033.065 1614 CALL \$CRLF  
047.360 072 075 050 1615 LDIA MEDIAAA  
047.363 137 1616 MOV E,A  
047.364 026 000 1617 MVI D,0  
047.366 074.093 1618 MVI A,3  
047.370 315 312 065 1619 CALL \$TDD TYPE DECIMAL DIGITS  
047.373 315.136.031 1620 CALL \$TYPTX  
047.376 040 102 141 1621 DB 'Bad Sectors Located',ENL  
050.023 303.176.043 1622 JMP RESTART

1624 \*\* REPORT ERROR  
1625 \*  
1626 \* (BC) = SECTOR NUMBER  
1627 \* USES NONE  
1628  
1629  
050.026 315.054.031 1630 MEDIA10 CALL \$SAVALL  
050.031 315 136 031 1631 CALL \$TYPTX  
050.034 123.145.143 1632 DB Sector://./+2000  
050.043 120 1633 MOV D,B  
050.044 131 1634 MOV E,C  
050.045 076 003 1635 MVI A,3  
050.047 315.312.065 1636 CALL \$TDD  
050.052 315 136 031 1637 CALL \$TYPTX  
050.055 040.151.163 1638 DB // is Bad.,ENL  
050.066 041 075 050 1639 LXI H,MEDIAAA  
050.071 064 1640 INR M COUNT BAD SECTOR  
050.072 303 047 031 1641 JMP \$RSTALL RESTORE AND EXIT  
050.075 000 1642  
050.075 MEDIAA DB 0 ERROR COUNT

1645 \*\* CSV - CHECK SECTOR VALIDITY.  
1646 \*  
1647 \* CSV CHECKS A DISK VOLUME FOR VALIDITY OVER THE  
1648 \* PATTERN.  
1649 \*  
1650 \* THE GIVEN BYTE IS WRITTEN TO EACH SECTOR, THEN READ BACK.  
1651 \*  
1652 \* ANY ERRORS ARE RECORDED IN 'SECERR'.  
1653 \*  
1654 \* TO AVOID LOST REVS, THE FOLLOWING SEQUENCE IS USED IN READING  
1655 \* WRITEING SECTORS ON A TRACK.  
1656 \*  
1657 \* 0.3.6.9.2.5.8.1.4.7.  
1658 \*  
1659 \* AFTER EACH ACCESS, THE HARD AND SOFT ERROR COUNTS ARE UPDATED.

TEST - NEW FLOPPY DIAGNOSTIC.  
MEDIA - CHECK MEDIA SECTOR VALIDITY

CSV

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16:15:47 16-MAY-80

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1660 \*  
1661 \* ENTRY (A) = PATTERN  
1662 \* EXIT NONE  
1663 \* USES ALL  
1664  
1665  
050.076 041 116 072 1666 CSV LXI H,SECBUF  
050.101 021 116 073 1667 LXI D,SECBUF2  
050.104 006 000 1668 MVI B,0 (B) = COUNT  
1669  
1670 \* SET PATTERN TO READ/WRITE, AND PATTERN TO CHECK  
1671  
050.106 167 1672 CSV1 MOV M,A  
050.107 022 1673 STAX D TWO COPIES  
050.110 043 1674 INX H  
050.111 023 1675 INX D  
050.112 005 1676 DCR B  
050.113 302 106 050 1677 JNZ CSV1  
1678  
1679 \* TRY WRITE  
1680  
050.116 076 001 1681 MVI A,DC.WRI  
050.120 315 125 050 1682 CALL CSV2 NO IT  
050.123 076 000 1683 MVI A,DC.REA  
1684 \* JMP CSV2 DO READ AND EXIT

1686 \*\* CSV2 - READ/WRITE PASS  
1687 \*  
1688  
1689  
050.125 062 335 050 1690 CSV2 STA CSVA SET CODE  
050.130 346 001 1691 ANI 1 (A) = 1 IFF WRITE  
050.132 057 1692 CMA  
050.133 062 006 040 1693 STA .DISPROT SET ROTATING PERIODS IF WRITTING  
050.136 041 012 000 1694 LXI H,10  
050.141 257 1695 XRA A  
050.142 062 024 040 1696 STA .ABUSS CLEAR TRACK NUMBER  
1697  
1698 \* NEW TRACK  
1699  
050.145 021 024 040 1700 CSV3 LXI D,.ABUSS  
050.150 032 1701 LDAX D  
050.151 074 1702 INR A  
050.152 022 1703 STAX D UPDATE DISPLAY  
050.153 021 336 050 1704 LXI D,CSVB (DE) = POINTER TO SECTOR NUMBER  
1705  
1706 \* READ OR WRITE A SECTOR  
1707  
050.156 315 045 063 1708 CSV4 CALL CEC CLEAR ERROR COUNTS  
050.161 032 1709 LDAX D  
050.162 247 1710 ANA A  
050.163 372 317 050 1711 JM CSV10 NO MORE THIS TRACK  
050.166 345 1712 PUSH H  
050.167 325 1713 PUSH D

TEST - NEW FLOPPY DIAGNOSTIC.  
MEDIA - CHECK MEDIA SECTOR VALIDITY

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CSV2 16:15:48 16-MAY-80

050.170 315 101 030 1714 CALL \$DADA. (HL) = SECTOR NUMBER TO READ/WRITE  
050.173 021 116 072 1715 LXI D,SECBUF  
050.176 001 000 001 1716 LXI B,256  
050.201 072 335 050 1717 LDA CSV4 (A) = COMMAND  
050.204 345 1718 PUSH H SAVE SECTOR NUMBER  
050.205 315.130.040 1719 CALL SYDD DO IO  
050.210 365 1720 PUSH PSW SAVE CODE  
1721  
1722 \* PROPAGATE HARD AND SOFT ERROR COUNTS  
1723  
050.211 072 263 040 1724 CSV5 LDA D,SECNT+1  
050.214 247 1725 ANA A  
050.215 312 223 050 1726 JZ CSV6 LESS THAN 256 SOFT ERRORS  
050.220 062.261.040 1727 STA D,HECNT TREAT AS HARD ERROR  
1728  
1729 \* SEE IF DATA IS OK  
1730  
050.223.016.000 1731 CSV6 MVI C,0  
050.225 021 116 072 1732 LXI D,SECBUF  
050.230..041.116.073 1733 LXI H,SECBUF2  
050.233 361 1734 POP PSW (A) = RESPONSE FROM SYDD  
050.234.332.255.050 1735 JC CSV7 HARD ERROR  
050.237 315 060 030 1736 CALL \$COMP  
050.242.312.255.050. 1737 JE CSV7 IS OK  
050.245 315 106 063 1738 CALL IERR1 GOT FAST INTERNAL CHECKSUM  
050.250..076..001 1739 MVI A,1  
050.252 062 261 040 1740 STA D,HECNT FLAG AS HARD ERROR  
050.255..341.. 1741 CSV7 POP H (HL) = SECTOR NUMBER  
050.256 051 1742 DAD H (HL) = 2\*SECTOR NUMBER  
050.257..021..056..067.. 1743 LXI D,SECERR-20  
050.262 031 1744 DAD D  
050.263..072..261..040.. 1745 LDA D,HECNT  
050.266 206 1746 ADD M ADD HARD ERRORS  
050.267..167.. 1747 MOV M,A REPLACE COUNT  
050.270 322 275 050 1748 JNC CSV8  
050.273..066..001.. 1749 MVI M,1 OVERFLOWED  
050.275 043 1750 CSV8 INX H  
050.276..072..262..040.. 1751 LDA D,SECNT  
050.301 206 1752 ADD M  
050.302..167.. 1753 MOV M,A ADD SOFT ERROR COUNT  
050.303 322 311 050 1754 JNC CSV9  
050.306..053.. 1755 ICX H  
050.307 066 001 1756 MVI M,1 OVERFLOWED, TREAT AS HARD ERROR  
050.311..321.. 1757.. CSV9.. POP D (DE) = SECTOR TABLE POINTER  
050.312 341 1758 POP H (HL) = SECTOR NUMBER FOR THIS TRACK  
050.313..023.. 1759 INX D  
050.314 303 156 050 1760 JMP CSV4 DO ANOTHER  
1761  
1762 \* ALL DONE FOR THIS TRACK. TRY NEXT  
1763  
050.317 001 012 000 1764 CSV10 LXI B,10  
050.322..011.. 1765 DAD B  
050.323 021 220 001 1766 LXI D,400  
050.324..315..216..030.. 1767 CALL \$CNEHL  
050.331 302 145 050 1768 JNE CSV3 NOT DONE YET  
050.334..311.. 1769 RET ALL DONE

TEST - NEW FLOPPY DIAGNOSTIC.  
MEDIA - CHECK MEDIA SECTOR VALIDITY

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CSV2 16:15:51 16-MAY-80

1770  
050.335 000 1771 CSVA DB 0 READ/WRITE CODE  
050.336 000 005 001 1772 CSVB DB 0,5,1,6,2,7,3,8,4,9,200Q SEQUENCE FOR SECTOR READ/WRITE

TEST - NEW FLOPPY DIAGNOSTIC:  
SEEK - PERFORM SEEK TEST

HEATH H8ASM V1.4 01/20/78  
SEEK.....16:15:51 16-MAY-80

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1776 \*\*\* SEEK - PERFORM SEEK TEST.  
1777 \*  
1778 \* TRY SEEKING AT FASTER AND FASTER SPEEDS LOOKING FOR ERRORS  
1779  
1780  
050.351 1781 SEEK ERU \*  
050.351 315 136 031 1782 CALL \$TYPTX  
050.354 123 145 145 1783 DB 'Seek Timing Test: see the manual before running this test.'  
051.046 012 212 1784 DB NL,ENL  
051.050 315 136 031 1785 CALL \$TYPTX  
051.053 012 012 1786 DB NL,NL  
051.055 011 052 052 1787 DB TAB,'\*\*\*\*\*',NL  
051.144 011 052 052 1788 DB TAB,'\*\*\*\*\*',NL  
051.233 011 052 052 1789 DB TAB, '\*\*',NL  
051.322 011 052 052 1790 DB TAB, '\*\* Note:  
052.011 011 052 052 1791 DB TAB, \*\* The floppy disk drives are specified to step at 30 milliseconds per track by their manufacturer.  
052.100 011 052 052 1792 DB TAB, \*\* ified to step at 30 milliseconds per track by their manufacturer.  
052.167 011 052 052 1793 DB TAB, \*\*  
052.256 011 052 052 1794 DB TAB, \*\*  
052.345 011 052 052 1795 DB TAB, \*\* Occasionally, drives may step faster, and this test determines the minimum step time for your particular drive. However, Heath does not guarantee that any drive will step faster than 30 milliseconds per track.  
053.034 011 052 052 1796 DB TAB, \*\* faster, and this test determines the minimum step time for your particular drive. However, Heath does not guarantee that any drive will step faster than 30 milliseconds per track.  
053.123 011 052 052 1797 DB TAB, \*\*  
053.212 011 052 052 1798 DB TAB, \*\*  
053.301 011 052 052 1799 DB TAB, \*\*  
053.370 011 052 052 1800 DB TAB, \*\*  
054.052 011 052 052 1801 DB TAB, \*\*  
054.146 011 052 052 1802 DB TAB,'\*\*\*\*\*',NL  
054.235 011 052 052 1803 DB TAB,'\*\*\*\*\*',NL  
054.324 012 012 212 1804 DB NL,NL,ENL  
054.327 315 136 031 1805 CALL \$TYPTX  
054.332 120 162 157 1806 DB 'Proceed (Yes/No)?', '+'200Q  
054.354 315 065 063 1807 CALL CYR  
054.357 302 176 043 1808 JNE RESTART  
054.362 076 042 1809 MVI A,34 START WITH .34 MIL. SECS.  
1810  
1811 \* TRY A NEW SPEED.  
1812  
054.364 365 1813 SEEK1 FLUSH PSW SAVE NEW SPEED  
054.365 376 004 1814 CPI 4  
054.367 312 073 055 1815 JE SEEK3 DONT TRY THIS FAST  
054.372 006 000 1816 MVI B,0  
054.374 247 1817 ANA A CLEAR CARRY  
054.375 017 1818 RRC  
054.376 062 115 040 1819 STA D,MAIA SET SEEK TIME  
055.001 041 134 055 1820 LXI H,SEEKB  
055.004 207 1821 ADD A (A) = SEEK TIME  
055.005 306 002 1822 ADI 2 TELL HIM SLOWER THAN WE REALLY TRIED  
055.007 117 1823 MOV C,A (BC) = SPEED  
055.010 076 002 1824 MVI A,2  
055.012 315 373 065 1825 CALL \$UDIN SET SPEED IN MESSAGE  
055.015 041 124 055 1826 LXI H,SEEKA  
055.020 377 003 1827 DB SYSCALL PRINT PRINT ATTEMPTING SPEED  
055.022 041 240 040 1828 LXI H,D,TT  
055.025 042 024 040 1829 SHLD ABUS SET DISPLAY FOR USER  
055.030 315 045 063 1830 CALL CEC CLEAR ERROR COUNTS  
055.033 315 315 062 1831 CALL EAM EXERCISE ARM MOVEMENTS

## SEEK - PERFORM SEEK TEST

SEEK

16:15:52 16-MAY-80

055.036 .072 261 040 1832 LDA D:HECNT  
055.041 247 1833 ANA A  
055.042 .302 073 055 1834 JNZ SEEK3 ERRORS  
055.045 052 262 040 1835 LHLD D:SECCNT  
055.050 .021 370 377 1836 LXI D:8  
055.053 031 1837 DAD D  
055.054 .332 073 055 1838 JC SEEK3 TOO MANY SOFT ERRORS  
1839  
1840 \* GOT THROUGH THIS PASS OK. TRY ANOTHER  
1841  
055.057 315 136 031 1842 CALL \$TYPTX  
055.062 117 153 241 1843 DB 'OK', '!'+200Q  
055.065 361 1844 POP PSW  
055.066 326 002 1845 SUI 2  
055.070 .303 364 054 1846 JMP SEEK1 TRY AGAIN  
1847  
1848 \* DIDNT MAKE IT THIS PASS. GIVE HIM THE FINAL RESULTS  
1849  
055.073 361 1850 SEEK3 POP PSW (A) = SPEED  
055.074 306 004 1851 ADI 4  
055.076 117 1852 MOV C:A  
055.077 006 000 1853 MVI B:0  
055.101 062 115 040 1854 STA D:MAIA SET SPEED  
055.104 041 224 055 1855 LXI H:SEEKI  
055.107 076 002 1856 MVI A:2 2 DIGIT RESULT  
055.111 315 373 065 1857 CALL \$UDDN  
055.114 .041 170 055 1858 LXI H:SEEKC  
055.117 377 003 1859 DB SYSCALL,.PRINT PRINT RESULT  
055.121 .303 176 043 1860 JMP RESTART  
1861  
055.124 .012 124 162 1862 SEEKA DB NL,'Trying'  
055.134 116 116 040 1863 SEEKB DB 'NN milliseconds per track -', '+200Q  
055.170 .012 104 162 1864 SEEKC DB NL,'Drive performs reliably at '  
055.224 116 116 040 1865 SEEKD DB 'NN milliseconds per track.', ENL

DUN - DETERMINE UNIT NUMBER

DUN.....16:15:53...16-MAY-80.

1869 \*\* DUN - DETERMINE UNIT NUMBER.  
 1870 \*  
 1871 \* DUN DISCOVERS THE UNIT NUMBER TO DIAGNOSE, AFTER SUITABLE  
 1872 \* REDUNDANT WARNINGS.

1873 \*  
 1874 \* ENTRY NONE  
 1875 \* EXIT TO CALLER WITH UNIT = NUMBER IF OK  
 1876 \* TO SYSTEM IF USER CHICKENS OUT  
 1877 \* USES ALL  
 1878  
 1879

055.257. 315.136.031 1880. DUN.....CALL. \$TYPTX  
 055.262 012 011 011 1881 DB NL,TAB,TAB,TAB,' ','TEST'  
 055.276 012 011 011 1882 DB NL,TAB,TAB,TAB,'Version: . ,VER\$16+'0', . ,VER\$&OFH+'0'  
 055.317 012 011 011 1883 DB NL,TAB,TAB,' ','Issue #50.05.00',ENL  
 1884.  
 1885 \* WARN HIM ABOUT THE FACTS OF LIFE

1886  
 055.351. 315.136.031 1887. DUN1. CALL. \$TYPTX  
 055.354 007 012 011 1888 DB BELL,NL,TAB,'This program tests your disk system. It'  
 056.030. 040.144.145 1889 DB '/ destroys the'  
 056.045 012 144 141 1890 DB NL,'data on the volume under test. This volume must'  
 056.124. 040.150.141 1891 DB '/ have been int'  
 056.144 012 151 164 1892 DB NL,'ialized at least once, and will have to be'  
 056.225 040 162 145 1893 DB '/ reinitialized'  
 056.243 012 142 145 1894 DB NL,'before being used for anything else.',ENL  
 056.311. 315.016.065 1895 CALL. \$CCO  
 056.314 315 136 031 1896 CALL. \$TYPTX  
 056.317. 012.120.162 1897 DB NL,'Proceed.(Yes/No)?',/ ,/t200Q  
 056.342 315 065 063 1898 CALL CYR CHECK FOR YES REPLY  
 056.345. 302.036.045 1899 JNE EXIT TRY AGAIN

1900  
 1901 \* HE'S BEEN WARNED, FIND OUT WHICH VOLUME HE WANTS.

1902  
 056.350. 315.016.065 1903. DUN2. CALL. \$CCO  
 056.353 315 136 031 1904 CALL. \$TYPTX  
 056.356. 012.127.150 1905 DB NL,'Which Drive (0/1/2)?',/ ,/t200Q  
 057.005 041 042 067 1906 LXI H,LINE  
 057.010. 315.201.065 1907 CALL. \$RTL  
 057.013 176 1908 MOV A,M  
 057.014. 326.060 1909 SUI '0'  
 057.016 332 350 056 1910 JC DUN2  
 057.021. 326.003 1911 CPI 3  
 057.023 322 350 056 1912 JNC DUN2  
 057.026. 062.366.064 1913 STA UNIT  
 1914

1915 \* GIVE HIM ONE LAST CHANCE.

1916  
 057.031. 315.016.065 1917. WARN2. CALL. \$CCO  
 057.034 315 136 031 1918 CALL. \$TYPTX  
 057.037 012 007 111 1919 DB NL,BELL,'Insert the Diskette you wish to use for this test'  
 057.122 012 151 156 1920 DB NL,'into drive S',/Y'+200Q  
 057.140 072 366.064 1921 LDA UNIT  
 057.143 306 060 1922 ADI '0'  
 057.145 315 276 065 1923 CALL \$WCHAR  
 057.150 315 136 031 1924 CALL. \$TYPTX

TEST = NEW FLOPPY DIAGNOSTIC:  
DUN - DETERMINE UNIT NUMBER

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057.153 072 054 040 1925 DB ':',, and hit RETURN.'

057.175 012 040 122 1926 DB NL,' Ready',/?'+2000

057.205 041 042 067 1927 LXI H,LINE

057.210 303 201 065 1928 JMP \$RTL READ LINE AND EXIT.

TEST - NEW FLOPPY DIAGNOSTIC.  
RZL = READ AND ZAP LABEL

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1931 \*\* RZL - READ AND ZAP LABEL SECTOR.  
1932 \*  
1933 \* RZL READS THE DEVICE'S LABEL SECTOR, THEN WRITES  
1934 \* A SPECIAL 'DESTROYED BY "DIAG"' LABEL BACK. THIS LABEL HAS  
1935 \* A ZERO BYTE AS IT'S FIRST CHARACTER, SO THAT THE BOOT  
1936 \* AND MOUNT ROUTINES WILL KNOW ITS A BADDIE.  
1937 \*  
1938 \* ENTRY UNIT = UNIT NUMBER  
1939 \* EXIT NONE  
1940 \* USES ALL  
1941  
1942  
057.213 072 366 066 1943 RZL LDA UNIT  
057.216 062 061 041 1944 STA AIO.UNI  
057.221 076 007 1945 MVI A,DC.ABT  
057.223 315 130 040 1946 CALL SYDD ABORT UNIT  
057.226 056 000 1947 MVI L,0  
057.230 076 010 1948 MVI A,DC.MOU  
057.232 315 130 040 1949 CALL SYDD MOUNT UNIT  
057.235 076 002 1950 MVI A,DC.RER  
057.237 001 000 001 1951 LXI B,256  
057.242 021 102 067 1952 LXI D,LABEL  
057.245 041 011 000 1953 LXI H,DDF.LAB  
057.250 315 130 040 1954 CALL SYDD READ LABEL SECTOR  
057.253 330\* 1955 RC CANT READ IT  
057.254 315 116 065 1956 CALL \$MOVE.L  
057.257 037 000 310 1957 DW RZLAL,RZLA,LABEL+LAB.LAB MOVE IN NEW LABEL  
057.265 076 002 1958 MVI A,LAB.NOD  
057.267 062 112 067 1959 STA LABEL+LAB.VLT SET NO DIRECTORY ON THIS VOLUME  
057.272 076 001 1960 MVI A,DC.WRI  
057.274 001 000 001 1961 LXI B,256  
057.277 021 102 067 1962 LXI D,LABEL  
057.302 041 011 000 1963 LXI H,DDF.LAB  
057.305 303 130 040 1964 JMP SYDD WRITE IT AND EXIT  
1965  
057.310 124 150 151 1966 RZLA DB 'This disk was erased by "TEST"',0  
000.037 1967 RZLAL EQU \*-RZLA

CCP.....16:15:57...16-MAY-80

1971 \*\* CCP - CHECK FOR CONSTANT PATTERN.  
1972 \*  
1973 \* CCP CHECKS FOR A CONSTANT TWO-/BYTE PATTERN OVER THE  
1974 \* ENTIRE CODED DISK SURFACE.  
1975 \*  
1976 \* FOR EACH TRACK, CCP READS THE SECTOR PAIRS.  
1977 \*  
1978 \* 0,1  
1979 \* 4,5  
1980 \* 8,9  
1981 \* 2,3  
1982 \* 6,7  
1983 \*  
1984 \* IN THAT ORDER, TO MINIMIZE MISSED REVS.  
1985 \*  
1986 \* ENTRY (G) = 1ST BYTE IN PAIR  
1987 \* (L) = 2ND BYTE IN PAIR  
1988 \* EXIT NONE  
1989 \* USES ALL  
1990  
1991  
057.347..353 1992 CCP XCHG (DE) = PATTERN  
057.350 041 133 060 1993 LXI H,CCPC  
057.353..042.131.060 1994 SHLD CCPB INITIALIZE SECTOR NUMBER  
057.356 041 012 000 1995 LXI H,10 (H) = SECTOR NUMBER  
1996  
057.361 345 1997 CCP1 PUSH H SAVE SECTOR NUMBER  
057.362..325 1998 PUSH D SAVE PATTERN  
057.363 353 1999 XCHG (DE) = TRACK NUMBER\*10  
057.364..052.131.060 2000 LHLD CCPB (HL) = ADDRESS OF SECTOR NUMBER  
057.367 156 2001 MOV L,M  
057.370..046.000.. 2002 MVI H,Q  
057.372 031 2003 DAD D (HL) = SECTOR ADDRESS  
057.373..042.141.060 2004 SHLD CCPA SET NUMBER  
057.376 001 000 002 2005 CCP1.5 LXI B,512  
060.001..021.102.067.. 2006 LXI B,BUFF  
060.004 052 141 060 2007 LHLD CCPA  
060.007..076.000.. 2008 MVI A,DC,REA  
060.011 315 307 063 2009 CALL SYDD READ DISK  
2010  
2011 \* CHECK FOR PATTERN  
2012  
060.014 321 2013 POP D (DE) = PATTERN  
060.015..332.045.060.. 2014 JC CCP2.5 DONT CHECK IF HARD ERROR  
060.020 041 102 067 2015 LXI H,BUFF  
060.023..096.000.. 2016 MVI B,0 S12 BYTES TO CHECK  
060.025 172 2017 CCP2 MOV A,D  
060.026..274.. 2018 CMP M  
060.027 302 107 060 2019 JNE CCPERR  
060.032..043.. 2020 INX H  
060.033 173 2021 MOV A,E  
060.034..274.. 2022 CMP M  
060.035 302 107 060 2023 JNE CCPERR  
060.040..043.. 2024 INX H  
060.041 005 2025 DCR B  
060.042..302.025.060.. 2026 JNZ CCP2

2027  
2028 \* ALL OK, ADVANCE SECTOR NUMBER  
2029  
060.045 052 131 060 2030 CCP2.5 LHLD CCPB  
060.050 043 2031 INX H  
060.051 176 2032 MOV A,M  
060.052 247 2033 ANA A  
060.053 362 076 060 2034 JP CCP3 NOT TIME FOR NEW TRACK  
2035  
2036 \* DONE WITH THIS TRACK, ADVANCE TRACK NUMBER  
2037  
060.056 001 012 000 2038 LXI B,10  
060.061 341 2039 POP H (HL) = TRACK\*10  
060.062 011 2040 DAD B (HL) = NEW TRACK NUMBER  
060.063 345 2041 PUSH H REPLACE  
060.064 001 160 376 2042 LXI B,-400  
060.067 011 2043 DAD B  
060.070 332 105 060 2044 JC CCP4 ALL DONE  
060.073 041 133 060 2045 LXI H,CCPC  
060.076 042 131 060 2046 CCP3 SHLD CCPB SET NEW SECTOR INDEX  
060.101 341 2047 POP H (HL) = TRACK NUMBER\*10  
060.102 303 361 057 2048 JMP CCP1  
2049  
2050 \* ALL DONE  
2051  
060.105 341 2052 CCP4 POP H DISCARD TRACK NUMBER  
060.106 311 2053 RET  
2054  
2055  
2056 \*\* DATA ERROR UNDETECTED BY CHECKSUM  
2057  
060.107 315 106 063 2058 CCPERR CALL TERR1 COUNT IT  
060.112 041 261 040 2059 LXI H,I,HECNT  
060.115 176 2060 MOV A,M  
060.116 306 001 2061 AII 1  
060.120 322 125 060 2062 JNC CCPERR1 IF NOT >256  
060.123 076 200 2063 MVI A,i128 WE'LL JUST USE 128, ITS BAD ENOUGH!  
060.125 167 2064 CCPERR1 MOV M,A ADVANCE HARD COUNT  
060.126 303 045 060 2065 JMP CCP2.5 TRY AGAIN  
2066  
2067  
060.131 133 060 2068 CCPB DW CCPC SECTOR NUMBER INDEX  
060.133 000 006 002 2069 CCPC DB 0,6,2,8,4  
060.140 377 2070 DB -1 END OF LIST FLAG  
2071  
060.141 000 000 2072 CCPA DW 0 SECTOR NUMBER

2075 \*\* WCP - WRITE CONSTANT PATTERN.

2076 \*  
2077 \* WCP WRITES A CONSTANT ONE BYTE PATTERN TO THE DISK.

2078 \*  
2079 \* ENTRY (A) = BYTE

2080 \* EXIT NONE

2081 \* USES ALL

2082

2083

060.143. 041 102 067 2084 WCP LXI H,BUFF

060.146. 021 000 012 2085 LXI D,10\*256

060.151. 167 2086 WCP1 MOV M,A

060.152. 043 2087 INX H

060.153. 033 2088 DCX D

060.154. 107 2089 MOV B,A

060.155. 172 2090 MOV A,D

060.156. 263 2091 ORA E

060.157. 170 2092 MOV A,B

060.160. 302 151 060 2093 JNZ WCP1 RESTORE A

MORE TO GO

2094  
2095 \* WRITE A TRACK AT A TIME

2096

060.163. 041 012 000 2097 LXI H,10 (HL) = TRACK POINTER

060.166. 345 2098 WCP2 PUSH H

060.167. 001 000 012 2099 LXI B,10\*256

060.172. 021.102. 067 2100 LXI D,BUFF

060.175. 076 001 2101 MVI A,DC.WRI

060.177. 315.307.063 2102 CALL SYID. WRITE DISK

060.202. 341 2103 POP H (HL) = SECTOR #

060.203. 021.012.000 2104 LXI D,10

060.206. 031 2105 DAD D (HL) = NEW ADDRESS

060.207. 353 2106 XCHG

060.210. 041 160 376 2107 LXI H,-400

060.213. 031 2108 DAD D

060.214. 353 2109 XCHG

060.215. 322.166.060 2110 JNC WCP2 IF MORE TO GO

060.220. 311 2111 RET

2115 \*\* RRT - RANDOM READ/WRITE TEST  
2116 \*  
2117 \* RRY RANDOLY SELCTS A SECTOR, AND READS OR  
2118 \* WRITES IT.  
2119 \*  
2120 \* EVERY 8 TRY'S, RRT PAUSES TO ALLOW THE HEAD TO UNLOAD.  
2121 \*  
2122 \* RRT KEEPS TRACK OF THOSE WHICH HAVE BEEN WRITTEN.  
2123 \* A SECTOR HAS EITHER BEEN WRITTEN WITH A MODIFIED BIT PATTERN,  
2124 \* OR A REGULAR BIT PATTERN.  
2125  
2126  
060.221 041 001 061 2127 RRT LXI H,RRTA  
060.224 021 220 001 2128 LXI D,RRTAL  
060.227 066 000 2129 RRT0 MVI M,0  
060.231 043 2130 INX H  
060.232 033 2131 INCX D  
060.233 172 2132 MOV A,D  
060.234 263 2133 ORA E  
060.235 302 227 060 2134 JNZ RRT0 ZERO TAG TABLE  
060.240 041 350 003 2135 LXI H,1000 TRY 1000 OF EM  
060.243 042 221 062 2136 SHLD RRTB  
2137  
060.246 315 046 066 2138 RRT00 CALL \$RND GET RANDOM NUMBER  
060.251 174 2139 MOV A,H  
060.252 247 2140 ANA A CLEAR CARRY  
060.253 037 2141 RAR  
060.254 147 2142 MOV H,A  
060.255 175 2143 MOV A,L  
060.256 037 2144 RAR  
060.257 157 2145 MOV L,A  
060.260 365 2146 PUSH PSW SAVE R/W FLAG  
060.261 021 160 376 2147 LXI D,-400  
060.264 031 2148 RRT1 DAD D GET SECTOR MODULO 400  
060.265 332 264 060 2149 JC RRT1  
060.270 021 220 001 2150 LXI D,400  
060.273 031 2151 DAD D  
2152  
2153 \* SEE IF IN FIRST TRACK  
2154  
060.274 174 2155 MOV A,H  
060.275 267 2156 ORA A  
060.276 302 313 060 2157 JNZ RRT1.3 NOT  
060.301 076 011 2158 MVI A,9  
060.303 275 2159 CMP L  
060.304 332 313 060 2160 JC RRT1.3  
060.307 361 2161 POP PSW  
060.310 303 246 060 2162 JMP RRT00 RE-TRY  
2163  
060.313 361 2164 RRT1.3 POP PSW 'C' SET IF WRITE  
060.314 315 347 060 2165 CALL RRT1.5  
060.317 052 221 062 2166 LHLD RRTB  
060.322 053 2167 INCX H  
060.323 042 221 062 2168 SHLD RRTB  
060.326 042 024 040 2169 SHLD .ABUSS DISPLAY SECTOR AND TRACK  
060.331 175 2170 MOV A,L

060.332 346 003 2171 ANI 3  
060.334 .076.113 2172 MVI A,150/2 150 MS  
060.336 314 053 000 2173 CZ .DLY WAIT IF TIMEE  
060.341 174 2174 MOV A,H  
060.342 265 2175 ORA L  
060.343 .302.246.060 2176 JNZ RRT00 TRY AGAIN  
060.346 311 2177 RET  
2178  
060.347 322 367 060 2179 RRT1.5 JNC RRT2 IS READ  
2180  
2181 \* IS WRITE  
2182  
060.352 076 001 2183 MVI A,1  
060.354 .315.342.063 2184 CALL WLP WRITE LABEL PATTERN  
060.357 353 2185 XCHG  
060.360 .041.001.061 2186 LXI H,RRTA  
060.363 031 2187 DAD D (HL) = FLAG BYTE  
060.364 .066.001 2188 MVI M,1 FLAG WRITTEN  
060.366 311 2189 RET  
2190  
2191 \* IS READ  
2192  
060.367 353 2193 RRT2 XCHG  
060.370 .041.001.061 2194 LXI H,RRTA  
060.373 031 2195 DAD D  
060.374 176 2196 MOV A,M (A) = 0 IF UNMODDED, 1 IF MODDED  
060.375 353 2197 XCHG  
060.376 .303.212.063 2198 JMP RLF READ LABEL PATTERN  
2199  
061.001 .000.000.000 2200 RRTA DW 0,0  
061.051 000 000 000 2201 DW 0,0  
061.121 .000.000.000 2202 DW 0,0  
061.171 000 000 000 2203 DW 0,0  
061.241 .000.000.000 2204 DW 0,0  
061.311 000 000 000 2205 DW 0,0  
061.341 .000.000.000 2206 DW 0,0  
062.031 000 000 000 2207 DW 0,0  
062.101 .000.000.000 2208 DW 0,0  
062.151 000 000 000 2209 DW 0,0  
001.220 . . . . . 2210 RRTAL EQU \*-RRTA LENGTH  
062.221 000 000 2211 RRTB DW 0 ITTERATION COUNT

2215 \*\* WIP - WRITE ID PATTERN.  
2216 \*  
2217 \* WIP WRITES THE FIXED ID PATTERN TO ALL SECTORS  
2218 \*  
2219 \* TO MINIMIZE LOST REV'S, WIP WRITES EVERY FORTH SECTOR IN ONE  
2220 \* PASS. AFTER 4 PASSES, ALL ARE WRITTEN.  
2221 \*

2222 \* ENTRY NONE  
2223 \* EXIT NONE  
2224 \* USES ALL  
2225  
2226

062.223	041	012	000	2227	WIP	LXI	H,10	(HL) = SECTOR NUMBER
062.226	345			2228		PUSH	H	SAVE SECTOR NUMBER
062.227	257			2229	WIP1	XRA	A	TYPE 0
062.230	315	342	063	2230		CALL	WLP	WRITE LABEL PATTERN
062.233	043			2231		INX	H	
062.234	043			2232		INX	H	
062.235	043			2233		INX	H	
062.236	043			2234		INX	H	
062.237	021	160	376	2235		LXI	D,-400	
062.242	353			2236		XCHG		
062.243	031			2237		DAD	D	
062.244	353			2238		XCHG		
062.245	322	227	062	2239		JNC	WIP1	MORE TO GO
062.250	341			2240		POP	H	(HL) = PREVIOUS STARTING NUMBER
062.251	043			2241		INX	H	
062.252	076	016		2242		MVI	A,14	
062.254	275			2243		CMP	L	
062.255	310			2244		RE		ALL DONE
062.256	345			2245		PUSH	H	SAVE NEW STARTING NUMBER
062.257	303	227	062	2246		JMP	WIP1	
062.262	311			2247		RET		

TEST - NEW FLOPPY DIAGNOSTIC:

CIP - READ ID PATTERN

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CIP

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2251 \*\* CIP - READ ID PATTERN.  
2252 \*  
2253 \* CIP READS THE FIXED ID PATTERN TO ALL SECTORS  
2254 \*  
2255 \* TO MINIMIZE LOST REV'S, CIP READS EVERY FORTH SECTOR IN ONE  
2256 \* PASS. AFTER 4 PASSES, ALL ARE READ.  
2257 \*  
2258 \* ENTRY NONE  
2259 \* EXIT NONE  
2260 \* USES ALL

2261

2262

062.263 041 012 000 2263 CIP LXI H,10 (HL) = SECTOR NUMBER  
062.266 257 2264 CIP1 XRA A TYPE 0  
062.267 345 2265 PUSH H SAVE (HL)  
062.270 052 240 040 2266 LHLD D,TT  
062.273 042 024 040 2267 SHLD .ABUSS DISPLAY TRACK AND SECTOR  
062.276 341 2268 POP H  
062.277 315 212 063 2269 CALL RLF READ LABEL PATTERN  
062.302 043 2270 INX H  
062.303 021 160 376 2271 LXI D,-400  
062.306 353 2272 XCHG  
062.307 031 2273 DAD D  
062.310 353 2274 XCHG  
062.311 322 266 062 2275 JNC CIP1 MORE TO GO  
062.314 311 2276 RET

EAM - EXERCISE ARM MOVEMENTS

EAM

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2280 ** EAM - EXERCISE ARM MOVEMENTS;
2281 *
2282 * EAM PERFORMS ARM EXERCISING BY MOVING THE ARM BETWEEN
2283 * TWO TARGET SECTORS, A AND B. A MOVES FROM 0 TO
2284 * 398, B MOVES FROM 398 TO 0.
2285 *
2286 * ENTRY NONE
2287 * EXIT NONE
2288 * USES ALL
2289
2290
062.315 041 012 000 2291 LXI H,10
062.320 042 041 063 2292 SHLD EAMA SET A
062.323 041 216 001 2293 LXI H,398
062.326 042 043 063 2294 SHLD EAMB
2295
2296 * READ A
2297
062.331 052 041 063 2298 EAM1 LHLD EAMA
062.334 001 000 001 2299 LXI B,256
062.337 021 102 067 2300 LXI D,BUFF
062.342 076 000 2301 MVI A,DC,REA
062.344 315 307 063 2302 CALL SYDD.
062.347 330 2303 RC ERROR
062.350 072 263 040 2304 LDA D,SECNT+1
062.353 247 2305 ANA A
062.354 300 2306 RNZ TOO MANY SOFT ERRORS
062.355 052 043 063 2307 LHLD EAMB
062.360 001 000 001 2308 LXI B,256
062.363 021 102 067 2309 LXI D,BUFF
062.366 076 000 2310 MVI A,DC,REA
062.370 315 307 063 2311 CALL SYDD.
062.373 330 2312 RC ERROR
062.374 072 263 040 2313 LDA D,SECNT+1
062.377 247 2314 ANA A
063.000 300 2315 RNZ TOO MANY SOFT ERRORS
2316
2317 * ADVANCE SECTORS
2318
063.001 052 041 063 2319 LHLD EAMA
063.004 001 012 000 2320 LXI B,10
063.007 011 2321 DAD B
063.010 042 041 063 2322 SHLD EAMA
063.013 052 043 063 2323 LHLD EAMB
063.016 001 366 377 2324 LXI B,-10
063.021 011 2325 DAD B
063.022 042 043 063 2326 SHLD EAMB
063.025 174 2327 MOV A,H
063.026 267 2328 ORA A
063.027 302 331 062 2329 JNZ EAM1 MORE TO GO
063.032 076 012 2330 MVI A,10
063.034 275 2331 CMP L
063.035 332 331 062 2332 JC EAM1 NOT AT END
063.040 311 2333 RET
2334
2335

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TEST - NEW FLOPPY DIAGNOSTIC.  
EAM - EXERCISE ARM MOVEMENTS

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EAM

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063.041 000 000 2336 EAMA DW 0  
063.043 000.000 2337 EAMB DW 0

2341 \*\* CEC - CLEAR ERROR COUNT.  
2342 \*  
2343 \* CEC CLEARS THE DRIVER HARD AND SOFT ERROR COUNTS.

2344 \*  
2345 \* ENTRY NONE  
2346 \* EXIT NONE  
2347 \* USES NONE

2348  
2349

063.045 315 054 031 2350 CEC CALL \$SAVALL SAVE REGS  
063.050 257 2351 XRA A  
063.051 062 261 040 2352 STA D,HECNT CLEAR HARD ERRORS  
063.054 041 000 000 2353 LXI H,0  
063.057 042 262 040 2354 SHLD D,SECNT CLEAR SOFT ERRORS  
063.062 303 047 031 2355 JMP \$RSTALL RESTORE AND EXIT

2357 \*\* CYR - CHECK FOR YES REPLY.

2358 \*  
2359 \* CYR READS A LINE FROM THE CONSOLE, AND CHECKS TO SEE IF IT  
2360 \* STARTED WITH THE CHARACTERS 'YES'

2361 \*  
2362 \* ENTRY NONE  
2363 \* EXIT 'Z' SET IF YES  
2364 \* 'Z' CLEAR IF NOT

2365 \* USES ALL  
2366  
2367

063.065 041 042 067 2368 CYR LXI H,LINE  
063.070 315 172 065 2369 CALL \$RTL, READ LINE  
063.073 021 103 063 2370 LXI I,CYRA  
063.076 016 003 2371 MVI C,3  
063.100 303 060 030 2372 JMP \$COMP COMPARE AND EXIT  
2373  
063.103 131 105 123 2374 CYRA DB 'YES'

2376 \*\* IERR - INTERNAL ERROR

2377 \*  
2378 \* DATA ERROR GOT PAST CHECKSUM

2379  
2380

063.106 315 054 031 2381 IERR1 CALL \$SAVALL  
000.001 IF .DEBUG, PRINT MESSAGE IF DEBUGGING  
2382 CALL \$TYFTX  
2383 DB NL,'INTERNAL ERROR #1. CONTACT TECHNICAL CORRESPONDENCE'  
2384 DB NL,'FOR ASSISTANCE.',ENL  
2385 ENDIF  
063.111 303 047 031 2387 JMP \$RSTALL

2389 \*\* PSE - PRINT SIGNIFICANT ERRORS.  
2390 \*  
2391 \* PSE PRINTS AN ERROR COUNT IFF A SIGNIFICANT NUMBER OF  
2392 \* ERRORS HAS OCCURED.  
2393 \*  
2394 \* IF ANY HARD ERRORS, OR MORE THAN 16 SOFT ERRORS HAVE OCCURRED,  
2395 \* PSE PRINTS A MESSAGE OF THE FORM  
2396 \*  
2397 \* \* HHH/SSS \*  
2398 \*  
2399 \* WHERE HHH = DECIMAL HARD ERROR COUNT, AND  
2400 \* SSS = DECIMAL SOFT ERROR COUNT  
2401 \*  
2402 \* IN ALL CASES, THE ERROR COUNT IS ZEROED WHEN PSE EXITS.  
2403 \*  
2404 \* ENTRY NONE  
2405 \* EXIT NONE  
2406 \* USES ALL  
2407  
2408  
063.114 072 261 040 2409 PSE LIA D,HECNT  
063.117 247 2410 ANA A  
063.120 302 136 063 2411 JNZ PSE1 MUST PRINT COUNTS  
063.123 052.262.040 2412 LHLD D,SECNT  
063.126 353 2413 XCHG (DE) = COUNT  
063.127 041.370.377 2414 LXI H,-8  
063.132 031 2415 DAD D  
063.133 322.045.063 2416 JNC CEC NOT MANY SOFT ERRORS, CLEAR COUNTS AND EXIT  
2417  
2418 \* HE LOOSES, PRINT AN ERROR COUNT  
2419  
063.134 072.261.040 2420 PSE1 LDA D,HECNT  
063.141 117 2421 MOV C,A  
063.142 006.000 2422 MVI B,0  
063.144 041 202 063 2423 LXI H,PSEB  
063.147 076.003 2424 MVI A,3  
063.151 315 373 065 2425 CALL \$UDDN UNPACK HARD COUNT  
063.154 052.262.040 2426 LHLD D,SECNT  
063.157 104 2427 MOV B,H  
063.160 115 2428 MOV C,L  
063.161 076 003 2429 MVI A,3  
063.163 041 206 063 2430 LXI H,PSEC  
063.166 315 373 065 2431 CALL \$UDDN UNPACK HARD COUNT  
063.171 041.201.063 2432 LXI H,PSEA  
063.174 377 003 2433 DB SYSCALL,.PRINT MESSAGE  
063.176 303.045.063 2434 JMP CEC CLEAR ERROR COUNT AND EXIT  
2435  
063.201 040 2436 PSEA DB / / ERROR MESSAGE  
063.202 110 110 110 2437 PSEB DB 'HHH/' HARD COUNT  
063.206 123 123 123 2438 PSEC DB 'SSS/,' '+2000 SOFT COUNT

2440 \*\* RLF - READ LABEL PATTERN  
2441 \*  
2442 \* RLF READS A SECTOR, AND CHECKS THE LABEL PATTERN AND THE  
2443 \* TYPE PATTERN  
2444 \*  
2445 \* ENTRY (A) = TYPE  
2446 \* (HL) = BLOCK NUMBER  
2447 \* EXIT NONE  
2448 \* USES A,F,B,C,D,E  
2449  
2450

063.212 042 377 063 2451 RLF SHLD WLPC  
063.215 062 001 064 2452 STA WLPC  
063.220 076 000 2453 RLPO MVI A,DC.REA  
063.222 001 000 001 2454 LXI B,256  
063.225 021 102 067 2455 LXI D,BUFF  
063.230 315 307 063 2456 CALL SYDD,  
063.233 332 261 063 2457 JC RLP2 HARD ERROR, DONT CHECK  
063.236 041 102 067 2458 LXI H,BUFF  
063.241 021 377 063 2459 LXI D,WLPR  
063.244 006 000 2460 MVI B,O (B) = COUNT  
063.246 032 2461 RLP1 LDAX D  
063.247 276 2462 CMP M  
063.250 302 265 063 2463 JNE RLPERR  
063.253 043 2464 INX H  
063.254 023 2465 INX D  
063.255 005 2466 DCR B  
063.256 302 246 063 2467 JNZ RLP1  
063.261 052 377 063 2468 RLPO LHLD WLPC  
063.264 311 2469 RET ALL OK  
2470  
063.265 315 106 063 2471 RLPERR CALL IERR1 COUNT IT  
063.270 041 261 040 2472 LXI H,B,HECNT  
063.273 176 2473 MOV A,M  
063.274 306 001 2474 ADI 1  
063.276 322 303 063 2475 JNC RLPERR1 IF NOT >256  
063.301 076 200 2476 MVI A,128 WE'LL JUST USE 128, ITS BAD ENOUGH!  
063.303 167 2477 RLPERR1 MOV M,A ADVANCE HARD COUNT  
063.304 303 261 063 2478 JMP RLP2  
2479

2481 \*\* SYDD. - SYSTEM DEVICE DRIVER.

2482  
063.307 365 2483 SYDD. PUSH PSW  
063.310 072 366 066 2484 LDA UNIT  
063.313 062 061 041 2485 STA AIU.UNI  
063.316 361 2486 POP PSW  
063.317 315 130 040 2487 CALL SYDD  
063.322 320 2488 RNC ALL OK  
063.323 365 2489 PUSH PSW SAVE CODE  
063.324 072 261 040 2490 LIA D,HECNT  
063.327 247 2491 ANA A  
063.330 302 340 063 2492 JNZ SYDD1 DID FLAG HARD ERROR

063.333 076 002	2493	MVI	A,2
063.335 062 261 040	2494	STA	D,HECNT
063.340 361	2495	POP	PSW
063.341 311	2496	RET	RESTORE CODE

2498 \*\* WLP - WRITE LABEL PATTERN.  
2499 \*  
2500 \* WLP WRITES TO A SECTOR A LABEL PATTERN.  
2501 \*  
2502 \* THE PATTERN IS:  
2503 \*  
2504 \* DW SECTOR NUMBER  
2505 \* DB FLAG BYTE  
2506 \* DS 256-3 VARIOUS PATTERNS  
2507 \*  
2508 \* ENTRY (A) = FLAG BYTE  
2509 \* (HL) = SECTOR NUMBER  
2510 \* EXIT NONE  
2511 \* USES A,F,B,C,D,E  
2512  
2513  
063.342 042 377 063 2514 WLP SHLD WLPB  
063.345 345 2515 PUSH H SAVE (HL)  
063.346 052 240 040 2516 LHLD D,TT  
063.351 042 024 040 2517 SHLD ABUS. DISPLAY TRACK AND SECTOR  
063.354 341 2518 POP H  
063.355 062 001 064 2519 STA WLPC  
063.360 076 001 2520 MVI A,DC,WRI  
063.362 001 000 001 2521 LXI B,256  
063.365 021 377 063 2522 LXI D,WLPB  
063.370 315 307 063 2523 CALL SYDD:  
063.373 052 377 063 2524 LHLD WLPB  
063.376 311 2525 RET  
2526  
063.377 000 000 2527 WLPB DW 0 BLOCK NUMBER  
064.001 000 2528 WLPC DB 0 ID BYTE  
064.002 001 002 004 2529 DB 1,2,4,8,16,32,64,128  
064.012 377 376 374 2530 DB -1,-2,-4,-8,-16,-32,-64,-128  
064.022 000 377 000 2531 DB 0,-1,0,-1,0,-1,0,-1,0,-1,0,-1,0,-1  
064.042 360 360 360 2532 DB 360Q,360Q,360Q,360Q,360Q,360Q,360Q,360Q,360Q,360Q  
064.054 360 360 360 2533 DB 360Q,360Q,360Q,360Q,360Q,360Q,360Q,360Q,360Q,360Q  
064.062 017 017 017 2534 DB 17Q,17Q,17Q,17Q,17Q,17Q,17Q,17Q,17Q,17Q  
064.102 377 377 377 2535 DB -1,-1,-1,-1,-1,-1,-1,-1,-1,-1,-1,-1,-1,-1  
064.122 000 000 000 2536 DB 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0  
064.142 000 001 002 2537 DB 0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15  
064.162 020 021 022 2538 DB 16,17,18,19,20,21,22,23,24,25,26,27,28,29,30,31  
064.202 040 041 042 2539 DB 32,33,34,35,36,37,38,39,40,41,42,43,44,45,46,47  
064.222 060 061 062 2540 DB 48,49,50,51,52,53,54,55,56,57,58,59,60,61,62,63  
064.242 106 107 110 2541 DB 70,71,72,73,74,75,76,77,78,79  
064.254 120 121 122 2542 DB 80,81,82,83,84,85,86,87,88,89  
064.266 132 133 134 2543 DB 90,91,92,93,94,95,96,97,98,99  
064.300 144 145 146 2544 DB 100,101,102,103,104,105,106,107,108,109  
064.312 156 157 160 2545 DB 110,111,112,113,114,115,116,117,118,119

TEST = NEW FLOPPY DIAGNOSTIC.

SUBROUTINES

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WLP

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064.324	170	171	172	2546	DB	120,121,122,123,124,125,126,127,128,129
064.336	202	203	204	2547	DB	130,131,132,133,134,135,136,137,138,139
064.350	214	215	216	2548	DB	140,141,142,143,144,145,146,147,148,149
064.362	226	227	230	2549	DB	150,151,152,153,154,155,156,157,158,159
064.374	240	241	242	2550	DB	160,161,162,163,164,165,166,167,168,169
065.006				2551	DS	256-*#WLPB FINISH BLOCK

064.377 2554 XTEXT BITS

2556X \*\* BITS - BIT SET  
2557X \*

2558X \* BITS SETS THE SPECIFIED BIT IN THE ACCUMULATOR.

2559X \*

2560X \* ENTRY: A = ORIGINAL A

2561X \* B = NUMBER OF BIT TO SET ('7=HIGH...', '0=LOW')

2562X \*

2563X \* EXIT: A = 'ORIGINAL' A WITH 'BIT(B)' SET

2564X \*

2565X \* USES: PSW

2566X \*

2567X

064.377 305 2568X BITS PUSH B

2569X

065.000 365 2570X PUSH PSW

065.001 076 200 2571X MVI A,10000000B

065.003 004 2572X INR B

065.004 007 2573X BITSI RLC

065.005 005 2574X DCR B

065.006 302 004 065 2575X JNZ BITSI

2576X

065.011 117 2577X MOV C,A

065.012 361 2578X POP PSW

065.013 261 2579X ORA C

2580X

065.014 301 2581X POP BC

065.015 311 2582X RET

065.016 2583 XTEXT CCO

2585X \*\* \$CCO - CLEAR CONTROL-O

2586X \*

2587X \* \$CCO IS CALLED TO CLEAR THE EFFECT OF THE CTL-O CHARACTER.

2588X \*

2589X \* ENTRY NONE

2590X \* EXIT NONE

2591X \* USES NONE

2592X

2593X

065.016 315 054 031 2594X \$CCO CALL \$SAVALL SAVE REGISTERS

065.021 076 004 2595X MVI A,I,CONFL

065.023 001 001 000 2596X LXI B,CO,FLG CLEAR CO,FLG

065.026 377 006 2597X DB SYSCALL,.CONS1

065.030 303 047 031 2598X JMP \$RSTALL RESTORE REGISTERS AND RETURN

065.033 2599 XTEXT CDEHL

TEST - NEW FLOPPY DIAGNOSTIC:  
COMMON DECKS

\$CDEHL  
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2601X \*\* \$CDEHL - COMPARE (DE) TO (HL)

2602X \*

2603X \* \$CDEHL COMPARES (DE) TO (HL) FOR EQUALITY.

2604X \*

2605X \* ENTRY NONE

2606X \* EXIT 'Z' SET IF (DE) = (HL)

2607X \* USES A,F

2608X

2609X

030.216 2610X \$CDEHL EQU 30216A IN H17 ROM  
065.033 2611 XTEXT COMP

2613X \*\* \$COMP - COMPARE TWO CHARACTER STRINGS.

2614X \*

2615X \* \$COMP COMPARES TWO BYTE STRINGS.

2616X \*

2617X \* ENTRY (C) = COMPARE COUNT

2618X \* (DE) = FWA OF STRING #1

2619X \* (HL) = FWA OF STRING #2

2620X \* EXIT 'Z' CLEAR, IS MIS-MATCH

2621X \* (C) = LENGTH REMAINING

2622X \* (DE) = ADDRESS OF MISMATCH IN STRING #1

2623X \* (HL) = ADDRESS OF MISMATCH IN STRING #2

2624X \* 'C' SET, HAVE MATCH

2625X \* (C) = 0

2626X \* (DE) = (DE) + (OC)

2627X \* (HL) = (HL) + (OC)

2628X \* USES A,F,C,D,E,H,L

2629X

2630X

030.060 2631X \$COMP EQU 30060A IN H17 ROM  
065.033 2632 XTEXT CRLF

2634X \*\* \$CRLF - TYPE CARRIAGE RETURN/ LINE FEED

2635X \*

2636X \* \$CRLF IS USED TO GENERATE PAIDED CRLF'S.

2637X \*

2638X \* ENTRY NONE

2639X \* EXIT (A) = 0

2640X \* USES A,F

2641X

2642X

065.033 076 012 2643X \$CRLF MVI A,NL

065.035 377 002 2644X IIR SYS CALL,.SCOUT

065.037 257 2645X XRA A

065.040 311 2646X RET

065.041 2647 XTEXT DADA2

TEST - NEW FLOPPY DIAGNOSTIC.  
COMMON DECKS

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\$DADA 16:16:25 16-MAY-80

2649X \*\* \$DADA. - ADD (0,A) TO (H,L)

2650X \*

2651X \* ENTRY NONE

2652X \* EXIT (HL) = (HL) + (0A)

2653X \* USES A,F,H,L

2654X

2655X

030.101 2656X \$DADA. EQU 30101A IN H17 ROM  
065.041 2657 XTEXT DTB

2659X \*\* \$DTB - DELETE TRAILING BLANKS.

2660X \*

2661X \* \$DTB DELETES THE TRAILING BLANKS FROM A CODED LINE.

2662X \*

2663X \* ENTRY (HL) = LINE FWA

2664X \* EXIT (A) = LENGTH OF RESULT (EXCLUDING 00 TERMINATOR BYTE)

2665X \* USES A,F

2666X

2667X

065.041 325 2668X \$DTB PUSH D SAVE (DE)

065.042 124 2669X MOV D,H (DE) = FWA

065.043 135 2670X MOV E,L (DE) = FWA-1

065.044 033 2671X DCX D

065.045 176 2672X \$DTB1 MOV A,M

065.046 043 2673X INX H

065.047 247 2674X ANA A FIND END OF LINE

065.050 302 045 065 2675X JNZ \$DTB1

065.053 053 2676X DCX H (HL) = ADDRESS OF TERMINATING ZERO BYTE

2677X

2678X \* GOT END OF LINE. DELETE TRAILING BLANKS

2679X

065.054 053 2680X \$DTB2 DCX H BACKUP ONE CHARACTER

065.055 315 216 030 2681X CALL \$CDEHL

065.060 312 071 065 2682X JE \$DTB3 GONE PAST FRONT OF LINE, MUST BE ALL BLANKS

065.063 176 2683X MOV A,M

065.064 376 040 2684X CPI ,

065.066 312 054 065 2685X JE \$DTB2 GOT BLANK

2686X

2687X \* HAVE TRIMED LINE. COMPUTE LENGTH

2688X

065.071 043 2689X \$DTB3 INX H

065.072 066 000 2690X MVI M,0 TERMINATE LINE

065.074 175 2691X MOV A,L

065.075 223 2692X SUB E (A) = LENGTH +1 (FOR 00 BYTE)

065.076 353 2693X XCHG ,

065.077 043 2694X INX H (HL) = LINE FWA

065.100 321 2695X POP D RESTORE (DE)

065.101 311 2696X RET

065.102 2697 XTEXT HLIHL

TEST - NEW FLOPPY DIAGNOSTIC.  
COMMON DECKS

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\$HLIHL 16:16:30 16-MAY-80

2699X \*\* \$HLIHL = LOAD HL INDIRECT THROUGH HL.  
2700X \*  
2701X \* (HL) = ((HL))  
2702X \*  
2703X \* ENTRY NONE  
2704X \* EXIT NONE  
2705X \* USES A,H,L  
2706X  
030.211 2707X \$HLIHL EQU 30211A IN H17 ROM  
065.102 2708 XTEXT WER

2710X \*\* \$WER = WRITE ENABLE RAM.  
2711X \*  
2712X \* \$WER IS CALLED TO ENABLE WRITTING TO THE H17 CONTROLLER'S  
2713X \* RAM AREA.  
2714X \*  
2715X \* ENTRY NONE  
2716X \* EXIT NONE  
2717X \* USES NONE  
2718X  
2719X  
031.241 2720X \$WER EQU 31241A IN H17 ROM

2722X \*\* \$WDR = WRITE DISABLE RAM.  
2723X \*  
2724X \* \$WDR IS CALLED TO DISABLE WRITTING TO THE H17 CONTROLLER'S  
2725X \* RAM AREA.  
2726X \*  
2727X \* ENTRY NONE  
2728X \* EXIT NONE  
2729X \* USES NONE  
2730X  
2731X  
031.222 2732X \$WDR EQU 31222A IN H17 ROM  
065.102 2733 XTEXT UDD

2735X \*\* \$UDD = UNPACK DECIMAL DIGITS.  
2736X \*  
2737X \* UDD CONVERTS A 16 BIT VALUE INTO A SPECIFIED NUMBER OF  
2738X \* DECIMAL DIGITS. THE RESULT IS ZERO FILLED.  
2739X \*  
2740X \* ENTRY (B,C) = ADDRESS VALUE  
2741X \* (A) = DIGIT COUNT  
2742X \* (H,L) = MEMORY ADDRESS  
2743X \* EXIT (HL) = (HL) + (A)  
2744X \* USES ALL  
2745X

2746X  
031.157 2747X \$UDD EQU 31157A IN H17 ROM  
065.102 2748 XTEXT TYFCC

2750X \*\* \$TYFCC - TYPE A CHARACTER STRING BY COUNT.  
2751X \*  
2752X \* \$TYFCC TYPES A STRING OF CHARACTERS. THE CALLER SUPPLIES  
2753X \* THE CHARACTER ADDRESS AND COUNT.  
2754X \*  
2755X \* ENTRY (HL) = ADDRESS  
2756X \* (A) = COUNT  
2757X \* EXIT (HL) = LAST CHARACTER ADDRESS+1  
2758X \* USES A,F,H,L  
2759X

2760X  
065.102 2761X \$TYFCC EQU \*  
065.102 247 2762X ANA A  
065.103 310 2763X RZ NOTHING TO TYPE  
065.104 365 2764X PUSH FSW SAVE COUNT  
065.105 176 2765X MOV A,M (A) = CHARACTER  
065.106 043 2766X INX H  
065.107 377 002 2767X DB SYSCALL,.SCOUT  
065.111 361 2768X POP FSW  
065.112 075 2769X DCR A  
065.113 303.102.065 2770X JMP \$TYFCC  
065.116 2771 XTEXT MOVE

2773X \*\* \$MOVE - MOVE DATA  
2774X \*  
2775X \* \$MOVE MOVES A BLOCK OF BYTES TO A NEW MEMORY ADDRESS.  
2776X \* IF THE MOVE IS TO A LOWER ADDRESS, THE BYTES ARE MOVED FROM  
2777X \* FIRST TO LAST.  
2778X \*

2779X \* IF THE MOVE IS TO A HIGHER ADDRESS, THE BYTES ARE MOVED FROM  
2780X \* LAST TO FIRST.

2781X \*  
2782X \* THIS IS DONE SO THAT AN OVERLAPED MOVE WILL NOT 'RIPPLE'.

2783X \*  
2784X \* ENTRY (BC) = COUNT  
2785X \* (DE) = FROM  
2786X \* (HL) = TO  
2787X \* EXIT MOVED  
2788X \* (DE) = ADDRESS OF NEXT FROM BYTE  
2789X \* (HL) = ADDRESS OF NEXT \*TO\* BYTE  
2790X \* 'C' CLEAR  
2791X \* USES ALL  
2792X

2793X  
030.252 2794X \$MOVE EQU 30252A IN H17 ROM  
065.116 2795 XTEXT DU66

TEST - NEW FLOPPY DIAGNOSTIC.  
COMMON DECKS

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\$DU66 16:16:44 16-MAY-80

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2797X \*\* \$DU66 - UNSIGNED 16' / 16' DIVIDE.

2798X \* (HL) = (BC)/(DE)

2800X \*

2801X \* ENTRY (BC), (DE) PRESET

2802X \* EXIT (HL) = RESULT

2803X \* (DE) = REMAINDER

2804X \* USES ALL

2805X

2806X

030.106 2807X \$DU66 EQU 30106A IN H17 ROM

065.116 2808 XTEXT MOVEL

2810X \*\* \$MOVEL - MOVE DATA

2811X \*

2812X \* \$MOVEL MOVES A BLOCK OF BYTES TO A NEW MEMORY ADDRESS.

2813X \* IF THE MOVE IS TO A LOWER ADDRESS, THE BYTES ARE MOVED FROM

2814X \* FIRST TO LAST.

2815X \*

2816X \* IF THE MOVE IS TO A HIGHER ADDRESS, THE BYTES ARE MOVED FROM

2817X \* LAST TO FIRST.

2818X \*

2819X \* THIS IS DONE SO THAT AN OVERLAPED MOVE WILL NOT 'RIPPLE'.

2820X \*

2821X \* CALL \$MOVEL

2822X \* DW COUNT

2823X \* DW FROM

2824X \* DW TO

2825X \*

2826X \* ENTRY ((SP)) = RET

2827X \* (RET+0) = COUNT (WORD VALUE)

2828X \* (RET+2) = FROM

2829X \* (RET+4) = TO

2830X \* EXIT TO (RET+6)

2831X \* (DE) = ADDRESS OF NEXT FROM BYTE

2832X \* (HL) = ADDRESS OF NEXT \*TO\* BYTE

2833X \* 'C' CLEAR

2834X \* USES ALL

2835X

2836X

065.116 341 2837X \$MOVEL POP H (HL) = RET

065.117 116 2838X MOV C,M

065.120 043 2839X INX H

065.121 106 2840X MOV B,M (BC) = COUNT

065.122 043 2841X INX H

065.123 136 2842X MOV E,M

065.124 043 2843X INX H

065.125 126 2844X MOV D,M (DE) = FROM

065.126 043 2845X INX H

065.127 325 2846X PUSH I ((SP)) = FROM

065.130 136 2847X MOV E,M

065.131 043 2848X INX H

065.132 126 2849X MOV D,M (DE) = TO

TEST - NEW FLOPPY DIAGNOSTIC.  
COMMON DECKS

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\$MOVE..... 16:16:47 16-MAY-80

065.133 043	2850X	INX	H	
065.134 343	2851X	XTHL		((SP)) = RET, (HL) = FROM
065.135 353	2852X	XCHG		(DE) = FROM , (HL) = TO
065.136 303 252 030	2853X	JMP	\$MOVE	MOVE IT
065.141	2854	XTEXT	SAVALL	

2856X \*\* \$RSTALL - RESTORE ALL REGISTERS.

2857X \*

2858X \* \$RSTALL RESTORES ALL THE REGISTERS OFF THE STACK, AND  
RETURNS TO THE PREVIOUS CALLER.

2860X \*

2861X \* ENTRY (SP) = PSW

2862X \* (SP+2) = BC

2863X \* (SP+4) = DE

2864X \* (SP+6) = HL

2865X \* (SP+8) = RET

2866X \* EXIT TO \*RETN\*, REGISTERS RESTORED

2867X \* USES ALL

2868X

2869X

031.047 2870X \$RSTALL EQU 31047A IN H17 ROM

2872X \*\* \$SAVALL - SAVE ALL REGISTERS ON STACK.

2873X \*

2874X \* \$SAVALL SAVES ALL THE REGISTERS ON THE STACK.

2875X \*

2876X \* ENTRY NONE

2877X \* EXIT (SP) = PSW

2878X \* (SP+2) = BC

2879X \* (SP+4) = DE

2880X \* (SP+6) = HL

2881X \* USES H,L

2882X

2883X

031.054 2884X \$SAVALL EQU 31054A IN H17 ROM

065.141

2885 XTEXT TJMP

2887X \*\* \$TJMP - TABLE JUMP.

2888X \*

2889X \* USAGE

2890X \*

2891X \* CALL \$TJMP (A) = INDEX

2892X \* DW ADDR1

2893X \*

2894X \*

2895X \*

2896X \* DW ADDRN

2897X \*

2898X \* ENTRY (A) = INDEX

2899X \* EXIT TO PROCESSOR  
2900X \* (A) = INDEX\*2  
2901X \* USES NONE.  
2902X  
2903X  
031.061 2904X \$TJMP EQU 31061A IN H17 ROM, (A) = INDEX\*2  
2905X  
031.062 2906X \$TJMP EQU 31062A IN H17 ROM  
065.141 2907 XTEXT MLU

2909X \*\* MLU - MAP LOWER CASE LINE TO UPPER CASE.  
2910X \*  
2911X \* MLU MAPS THE LOWER CASE ALPHABETICS IN A LINE TO UPPER CASE,  
2912X \*  
2913X \* ENTRY (HL) = LINE FWA  
2914X \* EXIT NONE  
2915X \* USES NONE  
2916X  
2917X  
065.141 365 2918X \$MLU PUSH PSW SAVE (PSW)  
065.142 345 2919X PUSH H SAVE FWA  
065.143 053 2920X DCX H ANTICIPATE INX H  
065.144 043 2921X \$MLU1 INX H  
065.145 176 2922X MOV A,M (A)= CHARACTER  
065.146 315 161 065 2923X CALL \$MCU MAP CHAR TO UPPER  
065.151 167 2924X MOV M,A  
065.152 247 2925X ANA A  
065.153 302 144 065 2926X JNZ \$MLU1 MORE TO GO  
065.156 341 2927X POP H RESTORE (HL)  
065.157 361 2928X POP PSW RESTORE (PSW)  
065.160 311 2929X RET  
065.161 2930 XTEXT MCU

2932X \*\* MCU - MAP LOWER CASE TO UPPER CASE.  
2933X \*  
2934X \* MCU MAPS A LOWER CASE ALPHABETIC TO UPPER  
2935X \* CASE.  
2936X \*  
2937X \* ENTRY (A) = CHARACTER  
2938X \* EXIT (A) = CHARACTER RESULT  
2939X \* USES A,F  
2940X  
2941X  
065.161 376 141 2942X \$MCU CPI 'a'  
065.163 330 2943X RC NOT LOWER CASE  
065.164 376 173 2944X CPI 'z'+1  
065.166 320 2945X RNC NOT LOWER CASE  
065.167 326 040 2946X SUI 'a'-'A'  
065.171 311 2947X RET  
065.172 2948 XTEXT RTL

2950X \*\* \$RTL - READ TEXT LINE.  
2951X \*  
2952X \* \$RTL READS A LINE FROM THE TERMINAL.  
2953X \*  
2954X \* CHARACTER ARE ACCEPTED FROM THE TERMINAL, RUBOUT AND BACKSPACE  
2955X \* CHARACTERS ARE PROCESSED. WHEN A CARRIAGE RETURN IS ENTERED,  
2956X \* \$RTL RETURNS.  
2957X \*  
2958X \* ENTRY '(HL)' = BUFFER FWA  
2959X \* EXIT 'C' CLEAR IF OK  
2960X \* DATA IN BUFFER  
2961X \* (A) = TEXT LENGTH  
2962X \* 'C' SET IF CTL-D STRUCK  
2963X \* USES A,F  
2964X  
2965X  
065.172 315 201 065 2966X \$RTL CALL \$RTL \$RTL IN UPPER CASE  
065.175 330 2967X RC CTL-D  
065.176 303 141 065 2968X JMP \$MLU MAP LINE TO UPPER CASE  
2969X  
065.201 2970X \$RTL EQU \*  
065.201 345 2971X PUSH H SAVE FWA  
065.202 315 270 065 2972X \$RTL1 CALL \$RCHAR  
065.205 376 004 2973X CPI CTLD  
065.207 312 234 065 2974X JE \$RTL2 CTL-D STRUCK  
065.212 167 2975X MOV M,A  
065.213 043 2976X INX H  
065.214 376 012 2977X CPI NL  
065.218 302 202 065 2978X JNE \$RTL1  
065.221 053 2979X DCX H  
065.222 066 000 2980X MVI M,O  
065.224 043 2981X INX H  
2982X  
2983X \* ALL DONE. COMPUTE LENGTH  
2984X  
065.225 353 2985X XCHG (DE) = LWA+1  
065.226 343 2986X XTHL (HL) = FWA  
065.227 173 2987X MOV A,E  
065.230 225 2988X SUB L (A) = LENGTH  
065.231 247 2989X ANA A CLEAR CARRY  
065.232 321 2990X POP D RESTORE (DE)  
065.233 311 2991X RET  
2992X  
2993X \* CTL-D STRUCK  
2994X  
065.234 341 2995X \$RTL2 POP H (HL) = FWA  
065.235 067 2996X STC  
065.236 311 2997X RET  
065.237 2998 XTEXT TBL5

3000X \*\* \$TBL\$ - TABLE SEARCH  
3001X \*  
3002X \* TABLE FORMAT  
3003X \*  
3004X \* DB KEY1,VAL1,  
3005X \* : :  
3006X \* : :  
3007X \* DB KEYN,VALN  
3008X \* DB 0  
3009X \*  
3010X \* ENTRY (A) = PATTERN  
3011X \* (H,L) = TABLE FWA  
3012X \* EXIT (A) = PATTERN IF FOUND  
3013X \* 'Z' SET IF FOUND  
3014X \* 'Z' CLEAR IF NOT FOUND OR PATTERN=0 /78.10.GC/  
3015X \* USES A,F,H,L  
3016X  
3017X  
065.237 305 3018X \$TBL\$ PUSH B  
065.240 376 000 3019X CPI 0 /78.10.GC/  
065.242 312 264 065 3020X JZ TBL2 /78.10.GC/  
065.245 107 3021X MOV B,A  
065.246 176 3022X TBL1 MOV A,M (A) = CHARACTER  
065.247 043 3023X INX H  
065.250 270 3024X CMP B  
065.251 312 266 065 3025X JZ TBL3 IF MATCH  
065.254 247 3026X ANA A  
065.255 043 3027X INX H SKIP PAST  
065.256 302 246 065 3028X JNZ TBL1 IF NOT END OF TABLE  
065.261 053 3029X DCX H  
065.262 053 3030X DCX H  
065.263 257 3031X XRA A SET TO ZERO FOR OLD USERS /78.10.GC/  
065.264 376 001 3032X TBL2 CPI 1 CLEAR ZERO /78.10.GC/  
3033X  
3034X \* DONE  
3035X  
065.266 301 3036X TBL3 POP B  
065.267 311 3037X RET  
065.270 3038 XTEXT RCHAR

3040X \*\* \$RCHAR - READ SINGLE CHARACTER FROM CONSOLE.  
3041X \*  
3042X \* ENTRY NONE  
3043X \* EXIT (A) = CHARACTER  
3044X \* USES A,F  
3045X  
3046X  
065.270 377 001 3047X \$RCHAR DB SYSCALL,.SCIN  
065.272 332 270 065 3048X JC \$RCHAR NOT READY  
065.275 311 3049X RET  
3050X  
065.276 377 002 3051X \$WCHAR DB SYSCALL,.SCOUT  
065.300 311 3052X RET

065.301 3053 XTEXT TYPCH

3055X \*\* \$TYPCH - TYPE SINGLE CHARACTER.  
3056X \*  
3057X \* ENTRY (RET) = CHARACTER  
3058X \* EXIT TO (RET)+1  
3059X \* (A) = CHARACTER TYPED  
3060X

3061X  
065.301 343 3062X \$TYPCH XTHL (HL) = RETURN ADDRESS  
065.302 176 3063X MOV A,M (A) = CHARACTER  
065.303 043 3064X INX H  
065.304 343 3065X XTHL RESTORE ADVANCED EXIT ADDRESS  
3066X  
3067X \*\* \$TYPC. - TYPE SINGLE CHARACTER.  
3068X \*  
3069X \* ENTRY (A) = CHARACTER  
3070X \* EXIT TO (RET)  
3071X  
065.305 377 002 3072X \$TYPC. DB SYSCALL,.SCOUT  
065.307 311 3073X RET  
065.310 3074 XTEXT TDD

3076X \*\* \$TDD - TYPE DECIMAL DIGITS.  
3077X \*  
3078X \* \$TDD TYPES A 16 BIT VALUE AS 1 TO 5 DECIMAL DIGITS.  
3079X \*  
3080X \* ENTRY (D,E) = VALUE  
3081X \* (A) = DIGIT COUNT  
3082X \* EXIT VALUE TYPED.  
3083X \* USES A,B,C,F  
3084X  
3085X

065.310 076 005 3086X \$TDD. MVI A,5  
065.312 345 3087X \$TDD PUSH H  
065.313 365 3088X TDD1 PUSH PSW  
065.314 041 357 065 3089X LXI H,TIDA-2  
065.317 007 3090X RLC (A) = DIGIT NUMBER\*2  
065.320 315 101 030 3091X CALL \$DADA.  
065.323 176 3092X MOV A,M  
065.324 043 3093X INX H  
065.325 146 3094X MOV H,M  
065.326 157 3095X MOV L,A (HL) = MULTIPLE OF 10  
065.327 353 3096X XCHG (DE) = DIVISOR, (HL) = VALUE  
065.330 076 377 3097X MVI A,3770  
065.332 031 3098X TDD2 DAD D  
065.333 074 3099X INR A  
065.334 332 332 065 3100X JC TDD2 IF MORE TO GO  
065.337 306 060 3101X ANI '0'  
065.341 315 305 065 3102X CALL \$TYPC. TYPE DIGIT

065.344 175 3103X MOV A,L  
065.345 223 3104X SUB E  
065.346 137 3105X MOV E,A REMOVE EXTRA SUBTRACTION  
065.347 174 3106X MOV A,H  
065.350 232 3107X SBB D  
065.351 127 3108X MOV D,A  
065.352 361 3109X POP PSW  
065.353 075 3110X DCR A  
065.354 302 313 065 3111X JNZ T001 IF MORE DIGITS  
065.357 341 3112X POP H  
065.360 311 3113X RET EXIT  
3114X  
065.361 302 3115X T001 EQU \*  
065.361..377..377..3116X DW -1  
065.363 366 377 3117X DW -10  
065.365..234..377..3118X DW -100  
065.367 030 374 3119X DW -1000  
065.371 360 330 3120X DW -10000  
065.373 3121 XTEXT \$DADA

3123X \*\* \$DADA - PERFORM (H,L) = (H,L) + (0,A)  
3124X \*  
3125X \* ENTRY (H,L) = BEFORE VALUE  
3126X \* (A) = BEFORE VALUE  
3127X \* EXIT (H,L) = (H,L) + (0,A)  
3128X \* 'C' SET IF OVERFLOW  
3129X \* USES F,H,L  
3130X  
3131X  
030.072 3132X \$DADA EQU 30072A IN H17 ROM  
065.373 3133 XTEXT UDIN

3135X \*\* \$UDIN - UNPACK DECIMAL DIGITS.  
3136X \*  
3137X \* UDIN CONVERTS A 16 BIT VALUE INTO A SPECIFIED NUMBER OF  
3138X \* DECIMAL DIGITS. THE RESULT IS NULL FILLED TO THE LEFT.  
3139X \*  
3140X \* ENTRY (B,C) = ADDRESS VALUE  
3141X \* (A) = DIGIT COUNT  
3142X \* (H,L) = MEMORY ADDRESS  
3143X \* EXIT (HL) = (HL) + (A)  
3144X \* USES ALL  
3145X  
3146X  
065.373 3147X \$UDIN EQU \*  
065.373 315 072 030 3148X CALL \$DADA  
065.376 345 3149X PUSH H SAVE FINAL (H,L) VALUE  
3150X  
065.377 365 3151X UDIN1 PUSH PSW  
066.000 345 3152X PUSH H

066.001 021 012 000 3153X LXI D,10  
066.004 315 106 030 3154X CALL \$DU66 (H,L) = VALUE/10  
066.007 104 3155X MOV B,H  
066.010 115 3156X MOV C,L (BC) = QUOTIENT  
066.011 341 3157X POP H  
066.012 076 060 3158X MVI A,'0'  
066.014 203 3159X ADD E ADD REMAINDER  
066.015 053 3160X DCX H  
066.016 167 3161X MOV M,A STORE DIGIT  
066.017 170 3162X MOV A,B  
066.020 261 3163X ORA C  
066.021 312 033 066 3164X JZ UDNN2 ALL ZEROS  
066.024 361 3165X POP PSW  
066.025 075 3166X ICR A  
066.026 302 377 065 3167X JNZ UDNN1 IF MORE TO GO  
3168X  
3169X \* ALL DONE, EXIT  
3170X  
066.031 341 3171X UDNN1.5 POP H RESTORE H  
066.032 311 3172X RET RETURN  
3173X  
3174X \* DIGITS LEADING THIS ONE ARE ZERO, STORE NULLS INSTEAD.  
3175X  
066.033 361 3176X UDNN2 POP PSW  
066.034 075 3177X UDNN3 ICR A  
066.035 312 031 066 3178X JE UDNN1.5 ALL DONE  
066.040 053 3179X DCX H  
066.041 066 000 3180X MVI M,0  
066.043 303 034 066 3181X JMP UDNN3  
066.046 . 3182 XTEXT RND  
  
3184X \*\* \$RND - COMPUTE TAUSWORTH 15 BIT RANDOM NUMBER  
3185X \*  
3186X \* \$RND COMPUTES A RANDOM NUMBER USING RSEED  
3187X \* AS THE SEED:  
3188X \*  
3189X \* ENTRY (RSEED) = NON-ZERO SEED(16 BIT)  
3190X \* EXIT (HL) = RANDOM NUMBER  
3191X \* USES A,F,H,L  
3192X  
3193X  
066.046 052 364 066 3194X \$RND LHLD RSEED (HL) = SEED  
066.051 325 3195X PUSH D SAVE (DE)  
066.052 026 017 3196X MVI D,15 (D) = BIT COUNT  
3197X  
066.054 174 3198X RND1 MOV A,H SHIFT RIGHT ONE  
066.055 247 3199X ANA A  
066.056 037 3200X RAR  
066.057 147 3201X MOV H,A  
066.060 175 3202X MOV A,L  
066.061 037 3203X RAR  
066.062 157 3204X MOV L,A  
066.063 027 3205X RAL 'C' = 1

066.064 027 3206X RAL  
066.065 027 3207X RAL  
066.066 027 3208X RAL 'C' = 100  
066.067 255 3209X XRA L XOR WITH VALUE  
066.070 027 3210X RAL  
066.071 027 3211X RAL  
066.072 027 3212X RAL  
066.073 346 100 3213X ANI 1000  
066.075 264 3214X ORA H INSERT IN' LEFT  
066.076 147 3215X MOV H,A  
066.077 025 3216X DCR D  
066.100 302 054 066 3217X JNZ RND1 MORE TO GO  
066.103 042 364 066 3218X SHLD RSEED SAVE SEED  
066.106 321 3219X POP D RESTORE (DE)  
3220X  
066.107 311 3221X RET EXIT  
000.001 3222 \$CMP\$ EQU 1  
066.110 3223 XTEXT TYPLN

3225X \*\* \$TYPLN - TYPE LINE.  
3226X \*  
3227X \* \$TYPLN IS CALLED TO TYPE A LINE OF TEXT. ZERO BYTES ARE  
3228X \* TAKEN AS CRLF (WITH THE PROPER PADDING)  
3229X \*  
3230X \* CALL \$TYPLN  
3231X \* DB N BYTE COUNT OF FOLLOWING MESSAGE  
3232X \* DB 'N-CHARACTER MESSAGE'  
3233X \*  
3234X \* ENTRY (RET) = TEXT COUNT  
3235X \* (RET)+1 - (RET)+N = TEXT  
3236X \* EXIT TO (RET)+N+1  
3237X \* USES A,F  
3238X \*  
3239X \*  
3240X  
066.110 343 3241X \$TYPLN, XTHL (H,L) = COUNT ADDRESS  
066.111 176 3242X MOV A,M (A) = COUNT  
066.112 043 3243X INX H (H,L) = TEXT ADDRESS  
066.113 345 3244X PUSH H SAVE TEXT FWA  
066.114 315 072 030 3245X CALL \$DADA CALCULATE RETURN ADDRESS  
066.117 343 3246X XTHL (HL) = TEXT ADDRE  
066.120 315 126 066 3247X CALL \$TYPL OUTPUT LINE  
066.123 341 3248X POP H (HL) = RETURN ADDRESS  
066.124 343 3249X XTHL RESTORE (HL), SET RETURN ADDRESS  
066.125 311 3250X RET  
3251X  
3252X \*\* \$TYPL - TYPE LINE.  
3253X \*  
3254X \* ENTRY (HL) = ADDRESS  
3255X \* (A) = COUNT  
3256X \* EXIT NONE  
3257X \* USES A,F,H,L  
3258X

TEST - NEW FLOPPY DIAGNOSTIC.  
COMMON DECKS.

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\$TYPLN

066.126 3259X \$TYPL EQU \*  
066.126 247 3260X ANA A  
066.127 310 3261X RZ NOTHING TO TYPE  
066.130 365 3262X PUSH PSW SAVE COUNT  
066.131 176 3263X MOV A,M (A) = CHARACTER  
066.132 043 3264X INX H  
066.133 247 3265X ANA A  
000.001 3266X IF \$CMP\$ IF HAVE COMPRESSED SPACES  
3267X JM TPL2 IS COMPRESSED SPACE  
3268X ENDIF  
066.134 314 033 065 3269X CZ \$CRLF  
066.137 315 305 065 3270X CALL \$TYPCH TYPE CHARACTER  
066.142 361 3271X TPL1 POP PSW  
066.143 075 3272X DCR A  
066.144 302 126 066 3273X JNZ \$TYPL  
066.147 311 3274X RET  
000.001 3275X IF \$CMP\$ IF COMPRESSED TEXT  
3276X  
3277X \* HAVE COMPRESSED SPACE.  
3278X  
3279X TPL2 ICR A  
3280X CP \$TYPCH TYPE .00..IF CHARACTER WAS 2000  
3281X DB 0  
3282X ANA A SET CODES  
3283X TPL3 JP TPL1 ALL EXPANDED  
3284X PUSH PSW SAVE COUNT  
3285X CALL \$TYPCH  
3286X DB ''  
3287X POP PSW  
3288X DCR A  
3289X JMP TPL3  
3290X ENDIF  
066.150 3291 XTEXT TYPT2  
  
3293X \*\* \$TYPTX - TYPE TEXT.  
3294X \*  
3295X \* \$TYPTX IS CALLED TO TYPE A BLOCK OF TEXT ON THE SYSTEM CONSOLE.  
3296X \*  
3297X \* IMBEDDED ZERO BYTES INDICATE A CARRIAGE RETURN LINE FEED,  
3298X \* A BYTE WITH THE 2000 BIT SET IS THE LAST BYTE IN THE MESSAGE.  
3299X \*  
3300X \* ENTRY (RET) = TEXT  
3301X \* EXIT TO (RET+LENGTH)  
3302X \* USES A,F  
3303X  
3304X  
031.136 3305X \$TYPTX EQU 31136A IN H17 ROM  
3306X  
031.144 3307X \$TYPTX EQU 31144A IN H17 ROM  
066.150 3308 XTEXT DOS DISMOUNT OPERATING SYSTEM

3310X \*\* \$DOS - DISMOUNT OPERATING SYSTEM.  
3311X \*  
3312X \* \$DOS DISMOUNTS SY2:, SY1: (IF MOUNTED), AND SY0:. /79.11.6C/  
3313X \*  
3314X \* THE USER IS MESSED ABOUT THE DISKS, AND THE OPERATING  
3315X \* SYSTEM IS NOTIFIED.  
3316X \*  
3317X \*  
3318X \* ENTRY NONE  
3319X \*  
3320X \* EXIT (PSW) = 'C' CLEAR IF NO ERROR  
3321X \* 'C', SET IF ERROR  
3322X \* (A) = ERROR CODE  
3323X \*  
3324X \* USES ALL  
3325X \*  
3326X  
066.150 315 136 031 3327X \$DOS CALL \$TYPTX  
066.153 012 007 104 3328X DB NL,BELL,'Dismounting All Disks:',NL,ENL  
3329X  
066.205 076 000 3330X MVI A,DVLO  
066.207 377 010 3331X DB SYSCALL,,LOAD0  
066.211 330 3332X RC  
066.212 076 001 3333X MVI A,DVLI  
066.214 377 010 3334X DB SYSCALL,,LOAD0  
066.216 330 3335X RC  
3336X  
066.217 041 357 066 3337X LXI H,DOSC  
066.222 315 335 066 3338X CALL DOS.  
066.225 330 3339X RC  
066.226 041 352 066 3340X LXI H,DOSB  
066.231 315 335 066 3341X CALL DOS.  
066.234 330 3342X RC FATAL ERROR  
066.235 041 345 066 3343X LXI H,DOSA  
066.240 315 335 066 3344X CALL DOS.  
066.243 330 3345X RC  
3346X  
066.244 315 136 031 3347X CALL \$TYPTX  
066.247 012 122 145 3348X DB NL,'Remove the Disk(s). Hit RETURN when ready:',/ +200Q  
066.323 315 270 065 3349X DOS1 CALL \$RCHAR READ CHARACTER  
066.326 376 012 3350X CPI NL  
066.330 302 323 066 3351X JNE DOS1  
066.333 247 3352X ANA A CLEAR CARRY  
066.334 311 3353X RET  
3354X  
3355X \* DISMOUNT A DEVICE WITHOUT REGARD TO WHETHER MOUNTED OR NOT  
3356X  
066.335 377 201 3357X DOS. DB SYSCALL,,IMOUN  
066.337 320 3358X RNC  
066.340 376 042 3359X CPI EC,NVM NO VOLUME MOUNTED ERROR NOT CONSIDERED FATAL  
066.342 310 3360X RZ NOT FATAL, CARRY NOW CLEAR  
066.343 067 3361X STC FLAG FATAL ERROR  
066.344 311 3362X RET  
3363X  
066.345 123 131 060 3364X DOSA DB 'SY0:',0  
066.352 123 131 061 3365X DOSB DB 'SY1:',0

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066.357 123 131 062 3366X DOSC DB 'SY2:,,0  
3367

TEST - NEW FLOPPY DIAGNOSTIC.  
DATA AND CONSTANTS

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066.364 000 000 3370 RSEED DW 0 RANDOM NUMBER SEED  
066.366 000 3372 UNIT DB 0 UNIT NUMBER  
066.367 3373  
066.367 3374 MEML EQU \* MEM LWA  
066.367 3375  
066.367 3376 PATCH DS 40 PATCH AREA  
066.367 3377  
067.037 3378 PASS DS 2 PASS NUMBER  
067.041 3379  
067.041 3380  
067.042 3381 MAIA DS 1 TRACK SEEK TIME  
067.042 3382  
067.042 3383 LINE DS 32 LINE BUFFER  
067.102 3384  
067.102 3385 \*\* MULTI-USE BUFFER  
067.102 3386 \*  
067.102 3387 \* THIS FREE SPACE IS USED BY MANY ROUTINES.  
067.102 3388  
067.102 3389 FREE EQU \*  
067.102 3390 LABEL DS 256 LABEL SECTOR  
067.102 3391 ORG FREE  
067.102 3392 BUFF DS 10\*256 ENOUGH FOR A TRACK  
101.102 3393 . SET \*  
067.102 3394 . ORG FREE  
067.102 3395 SECERR DS 390\*2  
072.116 3396 SECBUF DS 256  
073.116 3397 SECBUF2 DS 256  
074.116 3398 . SET \*  
074.116 3399 END

ASSEMBLY COMPLETE

3399 STATEMENTS

0 ERRORS DETECTED

9896 BYTES FREE

\$CCO	065016	988	1032	1895	1903	1917	2594L
\$CDEHL	030216	1767	2610E	2681			
\$CMPS	000001	3222E	3266	3275			
\$COMP	030060	1736	2372	2631E			
\$CRLF	065033	1497	1614	2643L	3269		
\$DADA	030072	3132E	3148	3245			
\$DADA	030101	1391	1714	2656E	3091		
\$IOS	066150	922	3327L				
\$DTB	065041	2668L					
\$DTB1	065045	2672L	2675				
\$DTB2	065054	2680L	2685				
\$DTB3	065071	2682	2689L				
\$DU66	030106	2807E	3154				
\$HLIHL	030211	2707E					
\$MCU	065161	2923	2942L				
\$MLU	065141	2918L	2968				
\$MLU1	065144	2921L	2926				
\$MOVE	030252	2794E	2853				
\$MOVEL	065116	1956	2837L				
\$RCHAR	065270	2972	3047L	3048	3349		
\$RND	066046	2138	3194L				
\$RSTALL	031047	1641	2355	2387	2598	2870E	
\$RTL	065201	1907	1928	2966	2970E		
\$RTL	065172	992	2369	2966L			
\$RTL1	065202	2972L	2978				
\$RTL2	065234	2974	2995L				
\$SAVALL	031054	1630	2350	2381	2594	2884E	
\$TBL5	065237	997	3018L				
\$TDD	065312	1619	1636	3087L			
\$TDD	065310	3086L					
\$TJMP	031061	1010	2904E				
\$TJMP	031062	2906E					
\$TYPC	065305	3072L	3102	3270			
\$TYPCC	065102	2761E	2770				
\$TYPCH	065301	3062L					
\$TYPL	066126	3247	3259E	3273			
\$TYPLN	066110	3241L					
\$TYPTX	031136	934	979	989	999	1033	1465
		1540	1547	1620	1631	1637	1782
		1918	1924	3305E	3327	3347	1785
\$TYPTX	031144	3307E					1805
\$UD0	031157	2747E					1842
\$UDDN	065373	1825	1857	2425	2431	3147E	
\$WCHAR	065276	1002	1495	1923	3051L		
\$WIR	031222	2732E					
\$WER	031241	2720E					
.	074116	3393S	3398S				
.ABUSS	040024	115E	1471	1581	1584	1588	1696
.ALARM	002136	88E					1700
.ALEDS	040013	113E	1122	1140	1142		1829
.CHFLG	000060	858L					2169
.CLEAR	000055	855L	908				2267
.CLEARA	000056	856L					2517
.CLOSE	000046	848L					
.CLRCO	000007	832L	978				
.CONSL	000006	831L	2597				
.CRC	002347	96E					
.CRCSUM	040027	116E					

.CTC	002172	90E						
:CTLG	000041	843L	927	966				
:CTLFLG	040011	112E						
:DEBUG	000001	32E	2382					
:DECODE	000053	853L						
:DELET	000050	850L						
:DISMT	000061	859L						
:ILEDIS	040021	114E						
:ILY	000053	85E	1150	2173				
:IMNMS	000203	870L						
:IMOUN	000201	868L	3357					
:IOD	003122	99E						
:DODA	003356	101E	1390					
:DSPMOD	040007	110E	911					
:DSPROT	040006	109E	973	1693				
:DUMP	001374	87E						
:ERROR	000057	857L	1037					
:EXIT	000000	825L	1046					
:HORN	002140	89E						
:IMENT	000000	84E						
:IOWRK	040002	107E						
:LINK	000040	842L						
:LOAD	001267	86E						
:LOADD	000062	860L						
:LOADO	000010	833L	3331	3334				
:MFLAG	040010	111E	913	915	975	1104		
:MONMS	000202	869L						
:MOUNT	000200	867L						
:NAME	000054	854L						
:OPENC	000045	847L						
:OPENR	000042	844L						
:OPENU	000044	846L						
:OPENW	000043	845L						
:PCHL	002264	92E						
:POSIT	000047	849L						
:PRINT	000003	828L	1827	1859	2433			
:RCK	003260	100E						
:READ	000004	829L						
:REGI	040005	108E						
:REGFTR	040035	119E						
:RENAM	000051	851L						
:RESET	000204	871L						
:RNB	002331	95E						
:RNP	002325	94E						
:SCIN	000001	826L	3047					
:SCOUT	000002	827L	1414	1433	1437	2644	2767	3051
:SETTF	000052	852L						3072
:SRS	002265	93E						
:START	040000	106E						
:SYSRES	000012	835L						
:TICCNT	040033	118E	950					
:TFERR	002205	91E						
:TPERRX	040031	117E						
:UIVEC	040037	120E						
:VERS	000011	834L	899					
:WNB	003024	98E						
:WNF	003017	97E						
:WRITE	000005	830L						

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ABS.COI.000010	594L	874
ABS.ENT.000006	592L	
ABS.ID.000000	588L	
ABS.LDA.000002	590L	
ABS.LEN.000004	591L	
AC.DLY.000156	195E	
AIO.CGN.041047	743L	
AIO.CHA.041116	758L	
AIO.CNT.041111	754L	
AIO.CSI.041050	744L	
AIO.DDA.041041	739E	
AIO.DES.041055	748L	
AIO.DEV.041057	749L	
AIO.DIR.041062	752L	
AIO.DTA.041053	747L	
AIO.EOF.041113	756L	
AIO.EDM.041112	755L	
AIO.FLG.041043	740L	
AIO.GRT.041044	741L	
AIO.LGN.041051	745L	
AIO.LSI.041052	746L	
AIO.SFG.041046	742L	
AIO.TFP.041114	757L	
AIO.UNI.041061	750L	1008 1944 2485
AIO.VEC.041040	738L	
BELL.000007	129E	935 1000 1034 1035 1888 1919 3328
BITS.064377	1065	2568L
BITS1.065004	2573L	2575
BKSP.000010	131E	
BOOT.P.000001	718E	
BUFF.047102	943	2006 2015 2084 2100 2300 2309 2455 2458 3392L
C.ISYN.000375	189E	
C.STX.000002	133E	
C.SYN.000026	132E	
CB.CLI.000100	54E	69
CB.MTL.000040	53E	
CB.SPK.000200	55E	
CB.SSI.000020	52E	
CCP.057347	1516	1530 1992L
CCP1.057361	1997L	2048
CCP1.5.057376	2005L	
CCP2.060025	2017L	2026
CCP2.5.060045	2014	2030L 2065
CCP3.060076	2034	2046L
CCPA.060105	2044	2052L
CCFA.060141	2004	2007 2072L
CCFB.060131	1994	2000 2030 2046 2068L
CCPC.060133	1993	2045 2068 2069L
CCPERR.060107	2019	2023 2058L
CCPERR1.060125	2062	2064L
CIB.H84.000001	661E	
CIB.H85.000000	660E	
CEC.063045	1469	1708 1830 2350L 2416 2434
CIF.062263	1542	2263L
CIP1.062266	2244L	2275
CO.FLG.000001	573E	2596
CR.000015	125E	
CS.FLG.000200	574E	

CSL.CHR 000001	551E
CSL.ECH 000200	549E
CSL.WRP 000002	550E
CSV 050076	1583 1587 1591 1666L
CSV1 050106	1672L 1677
CSV10 050317	1711 1764L
CSV2 050125	1682 1690L
CSV3 050145	1700L 1768
CSV4 050156	1708L 1760
CSV5 050211	1724L
CSV6 050223	1726 1731L
CSV7 050255	1735 1737 1741L
CSV8 050275	1748 1750L
CSV9 050311	1754 1757L
CSYA .050335	1690 1717 1771L
CSVB .050336	1704 1772L
CTLA .000001	140E
CTLB .000002	141E
CTLC .000003	142E 926 965
CTLD .000004	143E 2973
CTLQ .000017	144E
CTLP .000020	145E
CTLQ .000021	146E
CTLs .000023	147E
CTLZ .000032	148E
CTP.2SB 000010	559E
CTP.BKM 000002	560E
CTP.BKS 000200	556E
CTP.MLI 000040	557E
CTP.MLO 000020	558E
CTP.TAB 000001	561E
CYR .063065	1807 1898 2368L
CYRA .063103	2370 2374L
D.ABORT 040141	458L
D.CIE 040160	463L
D.CON 040110	409L 428
D.DLY 040235	478L
D.DLYHS 040244	496L
D.DLYMO 040243	495L
D.DRVTB 040251	501L
D.DTS 040163	464L
D.DVCTL 040242	493L 1070
D.E.CHK 040267	512L
D.E.HCK 040270	513L
D.E.HSY 040266	511L
D.E.MDS 040265	510L
D.E.TRK 040272	515L
D.E.VOL 040271	514L
D.ERR 040265	509L 958 959 960
D.ERRL 040273	516L
D.ERT 040232	477L
D.ERTS 040126	444L
D.HECNT 040261	503L 1727 1740 1745 1832 2059 2352 2409 2420 2472 2490 2494
D.LPS 040177	468L
D.LPSA 040116	435L
D.MAI 040171	466L
D.MAIA 040115	434L 917 971 1819 1854
D.MAO 040174	467L

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D.MOUNT	040133	456L
D.OECNT	040264	505L
D.OPR	040273	520L
D.OPW	040275	521L
D.RAM	040240	412L
D.RAML	000037	523E
D.RDB	040202	469L
D.READ	040147	460L
D.READR	040152	461L
D.SIP	040205	470L
D.SIPA	040117	436L
D.SIPB	040120	437L
D.SIT	040166	465L
D.SECNT	040262	504L
D.STS	040210	471L
D.STSA	040121	438L
D.STSB	040122	439L
D.STZ	040213	472L
D.SYIN	040130	455L
D.TRKPT	040245	498L
D.TS	040241	491L
D.TT	040240	490L
D.UDLY	040216	473L
D.VEC	040130	411L
D.VOLPT	040247	499L
D.WHIA	040123	440L
D.WNB	040227	476L
D.WNHA	040124	441L
D.WRITA	040112	431L
D.WRITB	040113	432L
D.WRITC	040114	433L
D.WRITE	040155	462L
D.WSC	040221	474L
D.WSCA	040125	442L
D.WSF	040224	475L
D.XIT	040144	459L
D.XITA	040110	430L
D.XOK	040136	457L
D2H	046235	1124
D2H1	046246	1387
DC.ABT	000007	391L
DC.CLO	000006	390L
DC.LDI	000011	393L
DC.MAX	000012	394L
DC.MDU	000010	392L
DC.OPU	000003	387L
DC.OPU	000005	389L
DC.OPW	000004	388L
DC.REA	000000	384L
DC.RER	000002	386L
DC.WRI	000001	385L
DDF.ROL	000011	334E
DDF.BOO	000000	333L
DDF.LAB	000011	335L
DDF.RGT	000012	336L
DDF.USR	000014	337L
DEV.DIA	000004	621L
DEV.DVG	000016	633L

DEV.DVL	000014	632L
DEV.FLG	000006	622L
DEV.JMP	000003	620L
DEV.MNU	000011	629L
DEV.MUM	000010	628L
DEV.NAM	000000	612L
DEV.RES	000002	616L
DEV.SPG	000007	627L
DEV.UNT	000012	630L
DEVELEN	000017	635E
DF.CLR	000376	306E
DF.DI	000040	165E
DF.DS0	000002	161E 1066
DF.DS1	000004	162E 1067
DF.DS2	000010	163E 1068
DF.EMP	000377	305E
DF.HD	000001	155E 1086 1093
DF.MD	000020	164E 1069
DF.SD	000010	158E
DF.ST	000100	166E
DF.T0	000002	156E
DF.WG	000001	160E
DF.WP	000004	157E
DF.WR	000200	167E
DIAG1	043126	930 943L
DIAG2	044342	998 1007L
DIAGA	044370	996 1019L
DIR.ALI	000025	321L
DIR.CLU	000015	314L
DIR.CRD	000023	320L
DIR.EXT	000010	309L
DIR.FGN	000020	317L
DIR.FLG	000016	315L
DIR.LGN	000021	318L
DIR.LSI	000022	319L
DIR.NAM	000000	308L
DIR.PRO	000013	310L
DIR.VER	000014	311L
DIRELEN	000027	323E 752
DIRIBL	000015	312E
DM.MR	000000	59E
DM.MW	000001	60E
DM.RR	000002	61E
DM.RW	000003	62E
DOS.	066335	3338 3341 3344 3357L
DOS1	066323	3349L 3351
DOSA	066345	3343 3364L
DOSC	066352	3340 3365L
DOSC	066357	3337 3366L
DF.IC	000177	153E 1071 1085 1092
DR.IM	000001	617E
DR.FR	000002	618E
DRIVE	046343	1011 1465L
DRIVE1	047014	1469L 1500
DT.CR	000002	624E
DT.CW	000004	625E
DT.DD	000001	623E
DUN	055257	928 1880L

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## CROSS REFERENCE TABLE

FT.BAC	000003	605E
FT.PIC	000001	603E
FT.REL	000002	604E
HOS.SPG	000002	330E
I.CONFL	000004	576E
I.CONTY	000001	563E
I.CONWI	000003	569E
I.CSLMD	000000	553E
I.CUSOR	000002	566E
IERR1	063106	1738
IP.PAD	000360	45E
LAB.DAT	000000	349E
LAB.DIS	000003	345L
LAB.GRT	000005	346L
LAB.IND	000001	344L
LAB.LAB	000021	356L
LAB.LBL	000074	357E
LAB.NOD	000002	351E
LAB.SER	000000	343L
LAB.SPG	000007	347L
LAB.SYS	000001	350E
LAB.VER	000011	354L
LAB.VLT	000010	353L
LABEL	067102	1952
LF	000012	126E
LINE	067042	991
M.FOX	000303	79E
M.PAMB	000021	78E
MAIA	067041	918
MEDIA	047242	1012
MEDIA1	047254	1574L
MEDIA10	050026	1604
MEDIA2	047331	1598L
MEDIA3	047342	1601
MEDIAA	050075	1573
MEML	066367	877
MOUNT	042261	924E
NL	000012	137E
		925
		138
		935
		936
		980
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		2643
		2977
		3328
		3328
		3348
		3350
NUL2	000000	128E
NULL	000200	127E
OP.CTL	000360	46E
OP.DIG	000360	47E
OP.SEG	000361	48E
OVL.COD	000000	364L
OVL.ENS	000010	369E
OVL.EN	000004	366L
OVL.FLB	000006	367L
OVL.IN	000001	685E
OVL.NUM	000014	687E
OVL.RES	000002	686E
OVL.SIZ	000002	365L
OVL.UCS	000200	688E
OVL0	000000	375L
OVL1	000001	376L
		3330
		3333

PASS	067037	953	1468	1486	3378L	
PATCH	066367	3376L				
PSE	063114	1473	1475	1477	1479	1481
PSE1	063136	2411	2420L			
PSEA	063201	2432	2436L			
PSEB	063202	2423	2437L			
PSEC	063204	2430	2438L			
QUOTE	000047	134E				
R.WHD	036235	1056E	1077			
R.WNH	036271	1055E	1078			
RESTART	043176	964	967L	968	995	1003
RLP	063212	2198	2269	2451L		
RLF0	063220	2453L				
RLP1	063246	2461L	2467			
RLP2	063261	2457	2468L	2478		
RLPERR	063265	2463	2471L			
RLPERR1	063303	2475	2477L			
RND1	066054	3198L	3217			
ROMBDOT	030000	404E				
RRT	060221	1549	2127L			
RRT0	060227	2129L	2134			
RRT00	060246	2138L	2162	2176		
RRT1	060264	2148L	2149			
RRT1.3	060313	2157	2160	2164L		
RRT1.5	060347	2165	2179L			
RRT2	060367	2179	2193L			
RRTA	061001	2127	2186	2194	2200L	2210
RRTAL	001220	2128	2210E			
RRTB	062221	2136	2166	2168	2211L	
RSEED	066364	951	3194	3218	3370L	
RUBOUT	000177	130E				
RZL	057213	929	1943L			
RZLA	057310	1957	1966L	1967		
RZLAL	000037	1957	1967E			
S.BAUD	040344	662L				
S.BOOTF	041034	717L				
S.CAADR	040333	580L				
S.CACC	041006	701L				
S.CCTAB	040335	581L				
S.CIB	040343	659L				
S.CFWA	040352	669L				
S.CODE	041007	702L				
S.CONFL	040332	578L				
S.CONTY	040327	565L				
S.CONWI	040331	571L				
S.CSLMD	040326	554L	564	567	570	577
S.CUSR	040330	568L				
S.DATC	040310	536L				
S.DATE	040277	535L				
S.DCS	041033	715L				
S.DDITA	040366	680L				
S.DDGRP	040364	677L				
S.DDLP	040360	675L				
S.DILEN	040362	676L				
S.DIOPC	040370	681L				
S.DFWA	040354	670L				
S.DIREA	041016	709L				
S.IILINK	040346	667L				

S.FASER	041013	708L
S.FCI	041021	710L
S.GRTO	024000	400E
S.GRT1	025000	401E
S.GRT2	026000	402E
S.GUP	041027	712L
S.HIMEM	040316	538L
S.INT	040343	414L 655
S.JUMPS	041010	706L
S.MOUNT	041032	714L
S.OFWA	040350	668L
S.OMAX	040324	544L
S.OSN	041004	697L
S.OVLE	041000	694L
S.OVFLF	040371	690L
S.OVLS	040376	693L
S.OVSTK	041035	722L
S.RFWA	040356	671L
S.SCI	041024	711L
S.SCR	041120	760L
S.SDID	041010	707L
S.SOVR	041146	416L 418
S.SSN	041002	696L
S.SYSM	040320	540L
S.TIME	040312	537L
S.UCSF	040372	691L
S.UCSL	040374	692L
S.USRM	040322	542L
S.VAL	040277	413L 533
SC.ACE	000350	194E
SC.UART	000372	263E
SECBUF	072116	1666 1715 1732 3396L
SECBUF2	073116	1667 1733 3397L
SECERR	067102	1571 1596 1743 3395L
SEEK	050351	1013 1781E
SEEK1	054364	1813L 1846
SEEK3	055073	1815 1834 1838 1850L
SEEKA	055124	1826 1862L
SEEKB	055134	1820 1863L
SEEKC	055170	1858 1864L
SEEKD	055224	1855 1865L
STACK	042200	420E 967
STACKL	001032	418E
SYID	040130	410E 977 1060 1719 1946 1949 1954 1964 2487
SYID.	063307	946 2009 2102 2302 2311 2456 2483L 2523
SYIDI.	063340	2492 2495L
SYSCALL	000377	818E 899 908 927 966 978 1037 1046 1414 1433 1437 1827
TAB	000011	135E 1859 2433 2597 2644 2767 3047 3051 3072 3331 3334 3357
		1798 1799 1800 1801 1802 1803 1881 1881 1881 1882 1882 1883
TBL1	065246	3022L 3028
TBL2	065264	3020 3032L
TBL3	065266	3025 3036L
TDD1	065313	3088L 3111
TDD2	065332	3098L 3100
TDDA	065361	3089 3115E
TEST	042200	878 898E

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TEST1	042212	900	903L
TEST2	042220	902	907L
TESTA	047150	1472	1506L
TESTB	047160	1474	1513L
TESTC	047172	1476	1520L
TESTD	047203	1478	1527L
TESTE	047215	1480	1534L
TESTF	047224	1482	1540L
TESTG	047233	1484	1547L
THD	046264	1147	1405L
THD.	046336	1411	1418 1427 1430 1436L
TIME	045041	1015	1058E
TIMEO	045066	1073L	1115I
TIME1	045102	1082L	1088 1097
TIME2	045113	1089L	1095
TIME3	045141	1106L	1116
TIMEA	045235	1105	1181E
TPL1	066142	3271L	
UC.2SB	000004	220E	
UC.5BW	000000	216E	
UC.6BW	000001	217E	
UC.7BW	000002	218E	
UC.8BW	000003	219E	
UC.BI	000020	239E	
UC.CTS	000020	248E	
UC.DICS	000001	244E	
UC.DDR	000002	245E	
UC.DLA	000200	225E	
UC.DR	000001	235E	
UC.DRL	000010	247E	
UC.DSR	000040	249E	
UC.DTR	000001	228E	
UC.EDA	000001	206E	
UC.EPS	000020	222E	
UC.FE	000010	238E	
UC.IID	000006	213E	
UC.IIF	000001	212E	
UC.LOO	000020	232E	
UC.MSI	000010	209E	
UC.OR	000002	236E	
UC.OU1	000004	230E	
UC.OU2	000010	231E	
UC.FE	000004	237E	
UC.PEN	000010	221E	
UC.RI	000100	250E	
UC.RLS	000200	251E	
UC.RSI	000004	208E	
UC.RTS	000002	229E	
UC.SB	000100	224E	
UC.SKP	000040	223E	
UC.TER	000004	246E	
UC.THE	000040	240E	
UC.TRE	000002	207E	
UC.TSE	000100	241E	
UCI.ER	000020	285E	
UCI.IE	000002	287E	
UCI.IR	000100	283E	
UCI.RE	000004	286E	

UCI.R0	000040	284E
UCI.TE	000001	288E
UDDN1	065377	3151L 3167
UDDN1.5	066031	3171L 3178
UDDN2	066033	3164 3176L
UDDN3	066034	3177L 3181
UDR	000000	260E
UF.FCT	000100	182E
UF.RIA	000001	179E
UF.ROR	000002	180E
UF.RPE	000004	181E
UF.TBM	000200	183E
UMI.16X	000002	279E
UMI.1B	000100	268E
UMI.1X	000001	277E
UMI.2B	000300	270E
UMI.64X	000003	279E
UMI.HB	000200	269E
UMI.L5	000000	273E
UMI.L6	000004	274E
UMI.L7	000010	275E
UMI.L8	000014	276E
UMI.PA	000020	272E
UMI.PE	000040	271E
UNIT	066366	1007 1061 1913 1921 1943 2484 3372L
UNT.DIS	000005	644L
UNT.FLG	000000	641L
UNT.GRT	000001	642L
UNT.GTS	000003	643L
UNT.SIZ	000007	646E
UO.CLK	000001	71E 974
UO.DDU	000002	70E 914 1103
UO.HLT	000200	68E 974
UO.NFR	000100	69E 914
UP.DP	000174	173E
UP.FC	000175	174E
UP.SC	000176	174E
UP.SR	000176	177E
UP.ST	000175	175E
UR.ILL	000000	201E
UR.DLM	000001	203E
UR.IER	000001	205E
UR.IIR	000002	211E
UR.LCR	000003	215E
UR.LSR	000005	234E
UR.MCR	000004	227E
UR.MSR	000006	243E
UR.RBR	000000	197E
UR.THR	000000	199E
USERFWA	042200	421E 874 876 877
USR	000001	261E
USR.FE	000040	292E
USR.OE	000020	293E
USR.PE	000010	294E
USR.RXR	000002	296E
USR.TXE	000004	295E
USR.TXR	000001	297E
VERS	000026	816E 901 1882 1882

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