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*
* HARD DISK BOOT PROGRAM.
* FOR M26, M10, AND M20.
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BOOTHD. PRN

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0100          ORG      100H

000D =      REVNUM  EQU      13
0050 =      IOADDR  EQU      120Q
0050 =      CONTRL  EQU      IOADDR
0050 =      STATUS  EQU      IOADDR
0053 =      DATA   EQU      IOADDR+3
0052 =      FUNCTN  EQU      IOADDR+2
0051 =      COMMD   EQU      IOADDR+1
0001 =      DREAD   EQU      1
0001 =      SECTOR  EQU      1
0002 =      OPDONE  EQU      2
0004 =      COMPLT  EQU      4
0008 =      HEADER  EQU      10Q
0005 =      DRENBL  EQU      5
0007 =      DSKRUN  EQU      7
0020 =      READY   EQU      40Q
0080 =      SYSTEM  EQU      200Q
00F8 =      STEPO   EQU      370Q
00FC =      DRIVEA  EQU      374Q

0100 C30003          JMP      START

0103          DS      509          ;ROOM FOR THE BOOT

0300 3EFC      START  MVI      A,DRIVEA          ;SELECT
0302 D352          OUT      FUNCTN              ;   DRIVE A
0304 3E05          MVI      A,DRENBL           ;TURN ON DRIVE
0306 D350          OUT      CONTRL             ;   COMMAND REGISTER
0308 DB50          RLOOP  IN       STATUS        ;TEST FOR
030A E620          ANI      READY              ;DRIVE A READY
030C C20803        JNZ      RLOOP
030F 3E07          MVI      A,DSKRUN           ;ENABLE THE
0311 D350          OUT      CONTRL             ;   CONTROLLER
0313 DB50          WAITZ  IN       STATUS        ;TEST FOR HEADS
0315 1F           RAR          ;   AT TRACK ZERO
0316 D22B03        JNC      SDONE
0319 3EF8          MVI      A,STEPO            ;EXECUTE
031B D352          OUT      FUNCTN              ;   THE
031D 3EFC          MVI      A,DRIVEA           ;   STEP OUT
031F D352          OUT      FUNCTN             ;   COMMAND
0321 DB50          WAITC  IN       STATUS        ;WAIT FOR
0323 E604          ANI      COMPLT             ;   THE SEEK
0325 CA2103        JZ       WAITC              ;   TO COMPLETE
0328 C31303        JMP      WAITZ

032B DB50          SDONE  IN       STATUS        ;GET AN IMAGE
032D 4F           MOV      C,A                ;   OF THE STATUS REG
032E DB50          IWAIT1 IN       STATUS        ;WAIT FOR

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0300 → 0B6B

6B+1 BYTES = 108 dec

0330	91		SUB	C	; THE INDEX PULSE
0331	CA2E03		JZ	IWAIT1	; TO ARRIVE
0334	DB50	IWAIT2	IN	STATUS	;WAIT FOR THE
0336	91		SUB	C	; NEXT INDEX PULSE
0337	C23403		JNZ	IWAIT2	;TEST FOR HEAD SETTLE
033A	DB50	IWAIT3	IN	STATUS	
033C	91		SUB	C	
033D	CA3A03		JZ	IWAIT3	
0340	3E08		MVI	A,HEADER	;RESET THE
0342	D351		OUT	COMMD	; BUFFER POINTER
0344	AF		XRA	A	; TO HEADER AREA
0345	D353		OUT	DATA	;HEAD 0
0347	D353		OUT	DATA	;TRACK 0
0349	3E01		MVI	A,SECTOR	;1 FOR CP/M
034B	D353		OUT	DATA	; OR 30 FOR DRIVERS
034D	3E80		MVI	A,SYSTEM	;SYSTEM KEY
034F	D353		OUT	DATA	
0351	3E01		MVI	A,DREAD	;ISSUE A
0353	D351		OUT	COMMD	; READ COMMAND
0355	DB50	WAITD	IN	STATUS	;WAIT FOR COMMAND
0357	E602		ANI	OPDONE	; TO COMPLETE
0359	CA5503		JZ	WAITD	
035C	DB53		IN	DATA	;LOW ORDER BYTE OF
035E	6F		MOV	L,A	; BOOTSTRAP ADDRESS
035F	5F		MOV	E,A	
0360	DB53		IN	DATA	;HIGH ORDER BYTE OF
0362	67		MOV	H,A	; BOOTSTRAP ADDRESS
0363	57		MOV	D,A	
0364	DB53	LLOOP	IN	DATA	;LOAD
0366	12		STAX	D	; THE
0367	1C		INR	E	; BOOTSTRAP
0368	C26403		JNZ	LLOOP	
036B	E9		PCHL		;BRANCH THERE

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*****
*
* Hard Disk Boot program.
* For M26, M10, and M20.
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BOOTHD.ASM

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org 100h

revnum equ 13
IOADDR EQU 1200 (SDH) (HD)
CONTRL EQU IOADDR
STATUS EQU IOADDR
DATA EQU IOADDR+3
FUNCTN EQU IOADDR+2
COMMD EQU IOADDR+1
DREAD EQU 1
SECTOR EQU 1
OPDONE EQU 2
COMPLT EQU 4
HEADER EQU 100 8H
DRENBL EQU 5
DSKRUN EQU 7
READY EQU 400
SYSTEM EQU 2000
STEPO EQU 3700
DRIVEA EQU 3740

jmp start

ds 509 ;Room for the boot

START MVI A,DRIVEA ;select
      OUT FUNCTN ; drive A
      MVI A,DRENBL ;turn on drive
      OUT CONTRL ; command register
RLOOP IN STATUS ;test for
      ANI READY ;drive A ready
      JNZ RLOOP
      MVI A,DSKRUN ;enable the
      OUT CONTRL ; controller
WAITZ IN STATUS ;test for heads
      RAR ; at track zero
      JNC SDONE
      MVI A,STEPO ;execute
      OUT FUNCTN ; the
      MVI A,DRIVEA ; step out
      OUT FUNCTN ; command
WAITC IN STATUS ;wait for
      ANI COMPLT ; the seek
      JZ WAITC ; to complete
      JMP WAITZ

SDONE IN STATUS ;get an image
      MOV C,A ; of the status reg
IWAIT1 IN STATUS ;wait for
      SUB C ; the index pulse
      JZ IWAIT1 ; to arrive
IWAIT2 IN STATUS ;wait for the
      SUB C ; next index pulse
      JNZ IWAIT2 ;test for head settle
iwait3 in status
      sub c
      jz iwait3

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120

1000

TURN ON FIRST LOGICAL DL

GO TO TRACK 0

WAIT TILL READY

	MVI	A,HEADER	;reset the
	OUT	COMMD	; buffer pointer
	XRA	A	; to header area
	OUT	DATA	;head 0
	OUT	DATA	;track 0
	MVI	A,SECTOR	;1 for CP/M
	OUT	DATA	; or 30 for drivers
	MVI	A,SYSTEM	;system key 80
	OUT	DATA	
	MVI	A,DREAD	;issue a
	OUT	COMMD	; read command
WAITD	IN	STATUS	;wait for command
	ANI	OPDONE	; to complete
	JZ	WAITD	
	IN	DATA	;low order byte of
	MOV	L,A	; bootstrap address
	MOV	E,A	
	IN	DATA	;high order byte of
	MOV	H,A	; bootstrap address
	MOV	D,A	
LLOOP	IN	DATA	;load
	STAX	D	; the
	INR	E	; bootstrap
	JNZ	LLOOP	
	PCHL		;branch there

0051 COMMD	0004 COMPLT	0050 CONTRL	0053 DATA	0001 DREAD
0005 DRENBL	00FC DRIVEA	0007 DSKRUN	0052 FUNCTN	0008 HEADER
0050 IOADDR	032E IWAIT1	0334 IWAIT2	033A IWAIT3	0364 LLOOP
0002 OPDONE	0020 READY	000D REVNUM	0308 RLOOP	032B SDONE
0001 SECTOR	0300 START	0050 STATUS	00F8 STEPO	0080 SYSTEM
0321 WAITC	0355 WAITD	0313 WAITZ		