

DIGITAL RESEARCH

Post Office Box 579, Pacific Grove, California 93950, (408) 373-3403

MDS COLD START LOADERS

CP/M VERSION _____

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PACIFIC GROVE, CA. 93950

SER. # _____

MBOOT

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1>
2>
3>
4>
5> 3000      ORG      3000H      ;WE ARE LOADED HERE ON COLD START
6> 0000 =    BOOTB   EQU      00H      ;START OF COLD BOOT PROGRAM
7> 0000 =    BOOTL   EQU      00H      ;LENGTH OF BOOT
8> 0000 =    MBIAS   EQU      900H-$    ;BIAS TO ADD DURING LOAD
9> 0070 =    BASE    EQU      070H      ;'BASE' USED BY DISK CONTROLLER
10> 0070 =    RTYPE   EQU      BASE+1    ;RESULT TYPE
11> 0070 =    RBYTE   EQU      BASE+3    ;RESULT TYPE
12>
13> 00FF =    BSW     EQU      0FFH      ;BOOT SWITCH
14>
15>          ;
16>          ;      CLEAR DISK STATUS
17> 3000 DB79      IN      RTYPE
18> 3002 DB7B      IN      RBYTE
19>
20>          ;      COLDSTART
21> 3004 DBFF      IN      BSW
22> 3006 E602      ANI      2H      ;SWITCH ON?
23> 3008 C20430    JNZ      COLDSTART
24> 3000 211E30    LXI      H,BOOTV ;VIRTUAL BASE
25> 300E 0600      MVI      B,BOOTL ;LENGTH OF BOOT
26> 3010 110000    LXI      D,BOOTB ;DESTINATION OF BOOT
27> 3013 7E        MOVE,    MOV      A,M
28> 3014 12        STAX     D      ;TRANSFERRED ONE BYTE
29> 3015 23        INX      H
30> 3016 13        INX      D
31> 3017 05        DCR      B
32> 3018 C21330    JNZ      MOVE
33> 301B C30000    JMP      BOOTB ;TO BOOT SYSTEM
34>
35>          ;      BOOT LOADER PLACE HERE AT SYSTEM GENERATION
36> 009E =    LBIAS   EQU      $-00H+MBIAS ;COLD START BOOT BEGINS AT 00H
37> 301E          END

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SER. # _____

LBOOT

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1>
2>
3>
4> 0000 = BIAS EQU 000H ;BIAS FOR RELOCATION
5> 0000 = FALSE EQU 0
6> FFFF = TRUE EQU NOT FALSE
7> 0000 = TESTING EQU FALSE ;IF TRUE, THEN GO TO MON80 ON ERRORS
8>
9> 0000 = BDOSB EQU BIAS ;BASE OF DOS LOAD
10> 0005 = BDOS EQU 906H+BIAS ;ENTRY TO DOS FOR CALLS
11> 1700 = BDOSE EQU 1700H+BIAS ;END OF DOS LOAD
12> 1500 = BDOT EQU 1500H+BIAS ;COLD START ENTRY POINT
13> 1503 = RBOOT EQU BDOT+3 ;WARM START ENTRY POINT
14>
15> 0000 ORG 80H ;LOADED DOWN FROM HARDWARE BOOT AT 3000H
16>
17> 1700 = BDOSL EQU BDOSE-BDOSB
18> 0002 = HTPYS EQU 2 ;NUMBER OF TRACKS TO READ
19> 002E = BDOS5 EQU BDOSL/128 ;NUMBER OF SECTORS IN DOS
20> 0013 = BDOS0 EQU 25 ;NUMBER OF BDOS SECTORS ON TRACK 0
21> 0015 = BDOS1 EQU BDOS5-BDOS0 ;NUMBER OF SECTORS ON TRACK 1
22>
23> F000 = MON80 EQU 0F000H ;INTEL MONITOR BASE
24> FF0F = RMON80 EQU 0FF0FH ;RESTART LOCATION FOR MON80
25> 0070 = BASE EQU 070H ;'BASE' USED BY CONTROLLER
26> 0079 = RTYPE EQU BASE+1 ;RESULT TYPE
27> 007B = RBYTE EQU BASE+3 ;RESULT BYTE
28> 007F = RESET EQU BASE+7 ;RESET CONTROLLER
29>
30> 0070 = DSTAT EQU BASE ;DISK STATUS PORT
31> 0079 = LOW EQU BASE+1 ;LOW IOPB ADDRESS
32> 007A = HIGH EQU BASE+2 ;HIGH IOPB ADDRESS
33> 0003 = PCAL EQU 3H ;PFCALIBRATE SELECTED DRIVE
34> 0004 = READF EQU 4H ;DISK READ FUNCTION
35> 0100 = STACK EQU 100H ;USE END OF BOOT FOR STACK
36>
37> RSTART,
38> 0000 310001 LXI SP,STACK;IN CASE OF CALL TO MON80
39> CLEAR THE CONTROLLER
40> 0003 D37F OUT RESET ;LOGIC CLEARED
41>
42>
43> 0005 0602 MVI B,HTRKS ;NUMBER OF TRACKS TO READ
44> 0007 21B700 LXI H,IOPB0
45>
46> START,
47>
48> READ FIRST/NEXT TRACK INTO BDOSB
49> 000A 7D MOV A,L
50> 000B D379 OUT LOW
51> 000D 7C MOV A,H
52> 000E D37A OUT HIGH
53> 0000 DB78 IN DSTAT
54> 0002 E604 ANI 4
55> 0004 CA9000 JZ WAIT0

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56>
57>
58> 0097 DB79
59> 0099 E603
60> 009B FE02
61>
62>
63>
64>
65>
66> 009D D28000
67>
68>
69> 00A0 DB78
70>
71> 00A2 17
72> 00A3 DC0FFF
73> 00A6 1F
74> 00A7 E61E
75>
76>
77>
78>
79>
80> 00A9 C28000
81>
82>
83>
84> 00AC 110700
85> 00AF 19
86> 00B0 05
87> 00B1 C28A00
88>
89>
90>
91> 00B4 C30015
92>
93>
94> 00B7 80
95> 00B8 04
96> 00B9 15
97> 00BA 00
98> 00BB 02
99> 00BC 0000
100> 0007 =
101>
102> 00BE 80
103> 00BF 04
104> 00C0 15
105> 00C1 01
106> 00C2 01
107> 00C3 800C
108>
109> 00C5

```

CHECK DISK STATUS

```

IN RTYPE
ANI 11B
CPI 2

IF TESTING
CNC RMON80 ;GO TO MONITOR IF 11 OR 10
ENDIF
IF NOT TESTING
JNC RSTART ;RETRY THE LOAD
ENDIF

IN RBYTE ;I/O COMPLETE, CHECK STATUS
IF NOT READY, THEN GO TO MON80
RAL
CC RMON80 ;NOT READY BIT SET
RAR ;RESTORE
ANI 11110B ;OVERRUN/ADDR ERR/SEEK/CRC/XXXX

IF TESTING
CNZ RMON80 ;GO TO MONITOR
ENDIF
IF NOT TESTING
JNZ RSTART ;RETRY THE LOAD
ENDIF

LXI D,IOPBL ;LENGTH OF IOPB
DAD D ;ADDRESSING NEXT IOPB
DCR B ;COUNT DOWN TRACKS
JNZ START

JMP TO BOOT TO PRINT INITIAL MESSAGE. AND SET UP JMPs
JMP BOOT

PARAMETER BLOCKS
IOPB0, DB 80H ;IOCU, NO UPDATE
DB READF ;READ FUNCTION
DB BDOS0 ;# SECTORS TO READ ON TRACK 0
DB 0 ;TRACK 0
DB 2 ;START WITH SECTOR 2 ON TRACK 0
DW BDOSB ;START AT BASE OF BDOS
EQU *-IOPB0

IOPB1, DB 80H
DB READF
DB BDOS1 ;SECTORS TO READ ON TRACK 1
DB 1 ;TRACK 1
DB 1 ;SECTOR 1
DW BDOSB+BDOS0*128 ;BASE OF SECOND READ

END

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