

T8BOOT OPERATING INSTRUCTIONS

INTRO: T8BOOT is a bootstrap which is loaded into the PDP-8 and is used in conjunction with P8L which is loaded into the PDP-10. These programs allow PDP-8 program paper tapes (in BIN format) to be loaded into PDP-8 core through the PDP-10 paper tape reader.

USAGE: The order of loading is not important provided FM10 FULL is not set. If it is -

- a) do a PDP-10 RESET or
- b) load P8L into PDP-10 first.

- PDP-10:
1. Load P8L into PDP-10 using READIN. Program will go into switch loop.
 2. Remove P8L paper tape.
 3. Insert PDP-8 program paper tape in PDP-10 paper tape reader, position on leader.
 4. Set PDP-8 program starting address in switches 24-35. Toggle switch 0.

- PDP-8:
5. Toggle first part of T8BOOT into PDP-8.

7600	6371
7601	5200
7602	7200
7603	6372
7604	3771
7605	2371
7606	7000
7607	2370
7610	5200
7611	5356
(7770	0000
* (	
(7771	7756

* Note: These two LOC's required to be reset for subsequent reloads.

6. Set switches = 7600, press LOAD ADDRESS.
7. Set switches to desired value for program being loaded, press START.

(contd)

Part 2 of T8BOOT will be loaded from the PDP-10 and then the paper tape will be loaded and information transferred to the PDP-8, terminating with the transfer address.

FOR SUBSEQUENT PROGRAMS

PDP-10

Load PDP-8 program tape into PDP-10 P.T. Reader and press CONTINUE key.

PDP-8

Restore the contents of locations 7770 and 7771 as in step 5 and proceed to step 6.

* * * * *

/T8BOOT.PAL IS A BOOTSTRAP FOR LOADING PDP-8 BINARY
/ PROGRAMS PAPER TAPES VIA THE PDP-10 READER.
/

/THE PROGRAM FILE WHICH FOLLOWS CONSISTS OF TWO PARTS,
/

1.THE FIRST PART IS ASIMPLE BOOTSTRAP WHICH IS TOGGLED
/ OR LOADED WITH THE BINARY LOADER INTO THE PDP-8.
/

THE PDP-10 IS THEN LOADED WITH THE PDP-10 BOOTSTRAP,
/ FOLLOWED BY THE PDP-8 PAPER TAPE PROGRAM TO BE LOADED.
/

2.THE SECOND PART IS AN EXTENSION OF THE BASIC BOOTSTRAP
/ (PART 1) WHICH WHEN LOADED INTO THE PDP-8 PROVIDES
/

FOR A MORE COMPLEX LOADER. THIS PART IS LOADED INTO
/ PDP-8 CORE DURING INITIALIZATION PHASE OF
/

THE PDP-10 BOOTSTRAP,OR IT MAY BE TOGGLED INTO PDP-8 CORE.
/

6371 DAISKP=6371
6352 DARED1=6352 /READ (OR) BITS 0-11 INTO AC
6362 DARED2=6362 /.....12-23.....
6372 DARED3=6372 /.....24-35.....
/

/THE FOLLOWING IS PART 1 WHICH MUST BE TOGGLED
/ INTO PDP-8 FIRST.
/

/LOCATIONS WC AND CA MUSTBE SET BEFORE STARTING.
/

	7600		*7600	
7600	6371	NW,	DAISKP	
7601	5200		JMP	.-1 /WAIT FOR FM10 FULL
7602	7200		CLA	
7603	6372	NW1,	DARED3	
7604	3771		DCA	I CA /READ AND STORE 12-BIT WORD.
7605	2371		ISZ	CA
7606	7000		NOP	
7607	2370		ISZ	WC /INC WORD COUNT
7610	5200		JMP	NW
7611	5356		JMP	NR /END OF BLOCK;GET NEXT WC,IA.

/PART 2 NOW FOLLOWS.
/

/THIS PART IS NORMALLY LOADED BY THE PDP-10
/ BOOTSTRAP DURING ITS INITIALIZATION.
/

	7756		*7756	
7756	6371	NR,	DAISKP	
7757	5356		JMP	NR
7760	7200		CLA	
7761	6362		DARED2	
7762	3371		DCA	CA /GET CURRENT(INITIAL ADDRESS)
7763	6352		DARED1	
7764	7450		SNA	/GET WORD COUNT
7765	5771		JMP	I CA /IF WC=0,TRANSFER TO INITIAL ADDRESS.
7766	3370		DCA	WC
7767	5203		JMP	NW1 /OTHERWISE SAVE WC TO READ (WC) WORDS.
7770	0000	WC,	0	/WORD COUNT,MUST BE SET TO ZERO FOR PART 1.
7771	7756	CA,	NR	/CURRENT ADDRESS,MUST BE = (NR) FOR PART 1.

\$

WC IS
WHEN LOADED FROM 10, NR IS SET TO 7777
TO SET OUT OF LOOP

0000
0100

0200
0300

0400
0500

0600
0700

1000
1100

1200
1300

1400
1500

1600
1700

2000
2100

2200
2300

2400
2500

2600
2700

3000
3100

3200
3300

3400
3500

3600
3700

4000

4100

4200

4300

4400

4500

4600

4700

5000

5100

5200

5300

5400

5500

5600

5700

6000

6100

6200

6300

6400

6500

6600

6700

7000

7100

7200

7300

7400

7500

7600 11111111 11000000 00000000 00000000 00000000 00000000 00000000 00000000

7700 00000000 00000000 00000000 00000000 00000000 00000011 11111111 11000000

CA	7771
DAISKP	6371
DARED1	6352
DARED2	6362
DARED3	6372
NR	7756
NW	7600
NW1	7603
WC	7770

ERRORS DETECTED: 0

LINKS GENERATED: 0

RUN-TIME: 1 SECONDS

5K CORE USED

004000

LOC 4000

RIM10B

TITLE P8L: LOADER FOR PDP8 ON PDP10.7N0V73.

REMARK P8L IS A PROGRAM FOR LOADING PDP8 PAPER TAPE

REMARK PROGRAMS USING THE PDP-10 PAPER TAPE READER

REMARK AND THE DA10 FOR TRANSFERRING THE INFORMATION

REMARK TO THE PDP-8.

REMARK PDP-8 PROGRAM TAPES MUST BE IN BIN FORMAT.

REMARK THE STARTING ADDRESS IS SPECIFIED IN THE

REMARK PDP-10 CONSOLE SWITCHES.

REMARK A SIMPLE BOOTSTRAP MUST BE TOGGLED INTO THE

REMARK PDP-8 BEFORE STARTING.

REMARK BY INCORPORATING A SIMPLE PROCEDURE IN THE BASIC

REMARK PDP-8 BOOTSTRAP FOR TRANSFERRING CONTROL TO

REMARK A SPECIFIED STARTING ADDRESS, MORE COMPLEX

REMARK OPERATIONS MAY BE BUILT UP AND EXECUTED IN PDP-8 CORE.

;

;

;

; ACCUMULATOR DEFINITIONS.

;

000001

AC1=1

000002

AC2=2

000003

AC3=3

000010

C1=10 ; CHAR FROM FRAME 1-MSH OF 12-BIT PDP-8 WORD

000011

C2=11 ; CHAR FROM FRAME 2-LSH OF 12-BIT PDP-8 WORD

000012

C=12 ; ASSEMBLED CHAR= C1 C2

000013

CHAR=13 ; CURRENT CHAR READ FROM TAPE.

000014

CA=14 ; CURRENT ADDRESS TO STORE PDP-8 WORD.

000015

CHKSUM=15 ; ACCUMULATED CHECKSUM.

;

; DEVICE DEFN.

;

000014

DA10=CCI

;

; PROGRAM

;

004000 7 014 20 0 00 012320 START: CONO DA10,12320 ; CLEAR DA10 BUT SET FM10 EMPTY FLAG. +E

004001 476 00 0 00 004142 SETOM RNPF ; RESET PAPER TAPE FLAG.

004002 266 01 0 00 004105 JSA AC1, RCS ; READ CONSOLE SWITCHES

004003 200 01 0 00 004143 MOVE AC1, CSW ; FOR PDP-8 STARTING ADDRESS.

004004 620 01 0 00 770000 TRZ AC1, 770000

004005 202 01 0 00 004144 MOVEM AC1, SA# ; SAVE STARTING ADDRESS.

;

; TRANSFER PART 2 OF PDP-8 BOOTSTRAP TO PDP-8.

;

004006 211 02 0 00 000013 MOVNI AC2, +D11

004007 200 03 0 00 004100 MOVE AC3, BP1

004010 135 01 0 00 000003 NB: LDB AC1, AC3

004011 7 014 34 0 00 000200 CONSO DA10, 200

004012 324 00 0 00 004011 JUMPA .-1

004013 7 014 14 0 00 000001 DATA0 DA10, AC1 ; OUTPUT 12-BIT BYTE.


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004014 133 00 0 00 000003      IBP      AC3
004015 341 02 0 00 004010      AOJL     AC2, NB      ;TRANSFER 11 WORDS.
004016 400 15 0 00 000000      CLEAR   CHKSUM,
004017 266 01 0 00 004116      RNC:     JSA      AC1, RNPTC    ;READ NEXT CHAR FROM PAPER TAPE.
004020 306 13 0 00 000200      CAIN     CHAR, 200    ;IGNORE LEADER
004021 324 00 0 00 004017      JUMPA    (-2) RNC
004022 200 10 0 00 000013      RNB:     MOVE     C1, CHAR      ;GAIN CH
004023 266 01 0 00 004116      JSA      AC1, RNPTC    ;JUMPE CHAR, RNC
004024 200 11 0 00 000013      MOVE     C2, CHAR      ;SAVE 2CHARS. IN C1, C2.
004025 400 12 0 00 000000      CLEAR   C,
004026 137 11 0 00 004147      DPB      C2, [POINT 6, C, 35]
004027 137 10 0 00 004150      DPB      C1, [POINT 6, C, 29]
004030 266 01 0 00 004116      JSA      AC1, RNPTC    ;LOOK AHEAD FOR TRAILER.
004031 306 13 0 00 000200      CAIN     CHAR, 200
004032 324 00 0 00 004056      JUMPA    TEND          ;TRAILER FOUND-END OF TAPE.
;
;ASSEMBLE PDP-8 WORD
;
004033 602 11 0 00 000300      TRNE     C2, 300        ;SECOND FRAME SHOULD ALWAYS HAVE
004034 324 00 0 00 004077      JUMPA    FMTRR          ; CH.8,7 = 00.
004035 135 02 0 00 004151      LDB      AC2, [POINT 2, C1, 29]
004036 306 02 0 00 000001      CAIN     AC2, 1         ;CHECK CH.8,7 OF TAPE
004037 324 00 0 00 004054      JUMPA    ORIG          ; FOR 01 - ORIGIN; OTHERWISE 00 ONLY.
004040 326 02 0 00 004077      JUMPN    AC2, FMTRR     ;NOT 01 OR 00, ERROR IN FORMAT.
;
;HAVE A VALID DATA WORD TO SEND TO PDP-8
;FORMAT 3 12-BIT BYTES AS FOLLOWS
; WORD COUNT=-1, ADDRESS, 12-BIT CONTENTS.
;
004041 474 02 0 00 000000      SETO     AC2,
004042 137 02 0 00 004152      DPB      AC2, [POINT 12, T08W#, 11]
004043 137 14 0 00 004153      DPB      CA, [POINT 12, T08W, 23]
004044 137 12 0 00 004154      DPB      C, [POINT 12, T08W, 35]
004045 7 014 34 0 00 000200     CONSO    DA10, 200      ;WAIT FOR FM10 EMPTY SET.
004046 324 00 0 00 004045      JUMPA    -1
004047 7 014 14 0 00 004146     DATA0   DA10, T08W     ;OUTPUT TO DA10.
004050 344 14 0 00 004051      AOJA     CA, ACS        ;INCREMENT CURRENT ADDRESS.
;
;ACCUMULATE CHECKSUM
;
004051 270 15 0 00 000010      ACS:     ADD      CHKSUM, C1
004052 270 15 0 00 000011      ADD      CHKSUM, C2
004053 324 00 0 00 004022      JUMPA    RNB          ;READ NEXT BLOCK OF 2 FRAMES.
;
;ORIGIN SETTING FUNCTION DETECTED.
;
004054 200 14 0 00 000012      ORIG:    MOVE     CA, C      ;SET CURRENT ADDRESS
004055 324 00 0 00 004051      JUMPA    ACS          ;GO TO ACCUM. CHECKSUM
;
;TRAILER DETECTED.
;
004056 7 104 20 0 00 000000     TEND:    CONO     PTR, 0      ;STOP PAPER TAPE READER.
004057 405 15 0 00 007777      ANDI     CHKSUM, 7777

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004060 312 15 0 00 000012 CAME CHKSUM, C
004061 254 04 0 00 004000 HALT START ;ERROR-CHECKSUM.
004062 400 02 0 00 000000 CLEAR AC2,
004063 137 02 0 00 004152 DPB AC2, [POINT 12, T08W, 11]
004064 200 02 0 00 004144 MOVE AC2, SA ;SET ADDRESS TO STARTING ADDRESS.
004065 137 02 0 00 004153 DPB AC2, [POINT 12, T08W, 23]
004066 400 02 0 00 000000 CLEAR AC2,
004067 137 02 0 00 004154 DPB AC2, [POINT 12, T08W, 35]
004070 7 014 34 0 00 000200 CONSO DA10, 200
004071 324 00 0 00 004070 JUMPA .-1
004072 7 014 14 0 00 004146 DATAO DA10, T08W
004073 7 014 34 0 00 000200 CONSO DA10, 200
004074 324 00 0 00 004073 JUMPA .-1
004075 7 014 20 0 00 012520 CONO DA10, 12520 ;CLEAR ALL DA10 FLAGS.
004076 254 04 0 00 004000 HALT START
004077 254 04 0 00 004000 FMterr: HALT START

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;CONSTANTS

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004100 30 14 0 00 004101 BP1: POINT 12, T08BS, 11
004101 6371 5356 7200 T08BS: BYTE (12) 6371, 5356, 7200
004102 6362 3371 6352 BYTE (12) 6362, 3371, 6352
004103 7450 5771 3370 BYTE (12) 7450, 5771, 3370
004104 5203 7777 0000 BYTE (12) 5203, 7777

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;SUBROUTINES

;RCS SUBROUTINE TO READ CONSOLE SWITCHES.
;VALUE RETURNED IN VAR. CSW

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004105 000000 000000 RCS: 0
004106 202 01 0 00 004145 MOVEM AC1, SAC#
004107 7 000 04 0 00 000001 RSW AC1 ;READ THE SWITCHES
004110 325 01 0 00 004107 JUMPGE AC1, .-1 ;WAIT FOR SIGN SWITCH TO BE SET.
004111 202 01 0 00 004143 MOVEM AC1, CSW# ;THEN SAVE VALUE OF SWITCHES.
004112 7 000 04 0 00 000001 RSW AC1
004113 321 01 0 00 004112 JUMPL AC1, .-1 ;NOW WAIT FOR SWITCHES TO BE RELEASED.
004114 200 01 0 00 004145 MOVE AC1, SAC
004115 267 01 0 01 000000 JRA AC1, (AC1)

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;RNPTC SUBROUTINE
;READS NEXT CHAR(FRAME) FROM PAPER TAPE
;CHARS.BETWEEN RUBOUTS AND INC.RUBOUTS ARE IGNORED.

```

004116 000000 000000 RNPTC: 0
004117 202 01 0 00 004141 MOVEM AC1, RNPTAC
004120 200 01 0 00 004142 MOVE AC1, RNPF
004121 622 01 0 00 777777 TRZE AC1, -1
004122 7 104 20 0 00 000020 CONO PTR, 20 ;START READER BY SETTING BUSY.
004123 202 01 0 00 004142 MOVEM AC1, RNPF ;RESET FIRST ENTRY FLAG.
004124 7 104 34 0 00 000010 RNPT1: CONSO PTR, 10
004125 324 00 0 00 004124 JUMPA .-1
004126 7 104 04 0 00 000013 DATAI PTR, CHAR

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Present bootshop does not set byte #3 to clear FM10 FULL.

004127	302 13 0 00 000377	CAIE	CHAR, 377	;IGNORE CHARS.BETWEEN DELETES.
004130	324 00 0 00 004137	JUMPA	RNPTF	
004131	7 104 34 0 00 000010	CONSO	PTR, 10	
004132	324 00 0 00 004131	JUMPA	.-1	;READ AND IGNORE TO NEXT DELETE.
004133	7 104 04 0 00 000013	DATA1	PTR, CHAR	
004134	302 13 0 00 000377	CAIE	CHAR, 377	
004135	324 00 0 00 004131	JUMPA	.-4	
004136	324 00 0 00 004124	JUMPA	RNPT1	
004137	200 01 0 00 004141	RNPTF: MOVE	AC1, RNPTAC	
004140	267 01 0 01 000000	JRA	AC1,(AC1)	
004141	000000 000000	RNPTAC: 0		
004142	777777 777777	RNPF: -1		;FIRST ENTRY FLAG.
	004000	END	START	

NO ERRORS DETECTED

PROGRAM BREAK IS 000000
ABSOLUTE BREAK IS 004155

2K CORE USED

AC1	000001	
AC2	000002	
AC3	000003	
ACS	004051	
BP1	004100	
C	000012	
C1	000010	
C2	000011	
CA	000014	
CCI	000014	SPD
CHAR	000013	
CHKSUM	000015	
CSW	004143	
DA10	000014	
FMterr	004077	
NB	004010	
ORIG	004054	
PTR	000104	SPD
RCS	004105	
RNB	004022	
RNPF	004142	
RNPT1	004124	
RNPTAC	004141	
RNPTC	004116	
RNPTF	004137	
SA	004144	
SAC	004145	
START	004000	
TEND	004056	
TOBBS	004101	
TOBW	004146	