

IDENTIFICATION

PRODUCT CODE: MAINDEC-X8-DITCB-C-D
PRODUCT NAME: DEC/X8 MODULE "TC58MT"
TC58 DECMAGTAPE EXERCISER
DATE CREATED: SEPTEMBER 7, 1972
MAINTAINER: DIAGNOSTIC GROUP
AUTHOR: LEONARD E. BEYERSDORFER

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MAYNARD, MASS. 01754

1. MODULE DESCRIPTION

"TC58MT" IS A DEC/X8 SOFTWARE MODULE WHICH EXERCISES A TC58 DECMAGTAPE SYSTEM WITH UP TO EIGHT TRANSPORTS. THE MAIN CHARACTERISTICS OF THIS MODULE ARE:

1. RECORD LENGTH VARIES RANDOMLY FROM 30 TO 1000 WORDS OCTAL.
2. FILE LENGTH VARIES RANDOMLY FROM 1 TO 200 RECORDS OCTAL.
(EOF IS NOT WRITTEN.)
3. THE TAPE OPERATIONS PERFORMED ARE WRITE/READ-COMPARE/READ FOR EACH "FILE". SPACE REVERSE IS USED TO MOVE FROM THE END TO THE BEGINNING OF THE FILE. REWIND IS USED ONLY WHEN EOF IS SENSED.
4. ALL OPERATIONS ARE DONE AT 800 BPI. NORMAL GAP IN CORE DUMP MODE (9 TRACK TREATED AS 7 TRACK). GAP AND DENSITY MAY BE CHANGED BY THE USER AS INDICATED LATER; HOWEVER, NO PROVISIONS HAVE BEEN INCLUDED TO OPERATE IN STANDARD 9 TRACK COMPATIBLE MODE.
5. ALL DRIVES WITHIN THE LIMITS OF THE LOWEST AND HIGHEST DRIVES SPECIFIED ARE RANDOMLY UTILIZED.
6. UNLIKE MANY OTHER DECMAGTAPE EXERCISERS, THIS MODULE STARTS AT THE CURRENT TAPE POSITION. TAPE IS FORCED TO BOT ONLY WHEN EOF IS SENSED.
7. CONTINUE MODE IS NEVER UTILIZED.
8. THE MODULE WILL HANG IF A SELECTED DRIVE IS OFF LINE OR OTHERWISE NOT READY.

2. REQUIREMENTS

1. PROCESSORS: PDP-8,8/I,8/L,8/E,8/M AND PDP-12.
2. OPTIONS: TC58 DECMAGTAPE CONTROL WITH UP TO EIGHT 7 AND/OR 9 TRACK TRANSPORTS (TU20, TU30, TU10 OR EQUIVALENTS).
3. SPECIAL: INDUSTRY CERTIFIED STANDARD MAGNETIC TAPE.

3. RESTRICTIONS

9 TRACK COMPATIBLE MODE MAY NOT BE USED. ALL 9 TRACK TRANSPORTS WILL BE OPERATED IN CORE DUMP MODE.

4. OPERATING INFORMATION

4.1 SPECIAL CONSIDERATIONS

THIS MODULE REQUIRES EXTERNAL BUFFERS.

4.2 BUILDING

1. JOB TYPE: INTERRUPT DRIVEN
2. PRIORITY: SHOULD BE ASSIGNED THE LOWEST INTERRUPT PRIORITY.
3. JOB SLOTS: JF1 OR JF2 ONLY; 4 PAGES REQUIRED.
4. STANDARD DEVICE CODES: 0700, 0710, 0720
5. STANDARD WORD COUNT: 7752
6. STANDARD CURRENT ADDRESS: 7753

4.3 INITIALIZING

AFTER THE INDICATED CODE LETTER IS PRINTED RESPOND BY TYPING THE PARAMETER IN THE MANNER SHOWN BELOW.

CODE	DEFINITION	RESPONSE	LIMITS	PRESET
A	LOWEST DRIVE	N	0-7	0
B	HIGHEST DRIVE	N	0-7	0
C	TYPE OF DATA	0 FOR RANDOM 1 NNNN FOR CONSTANT	ANY DATA WORD	RANDOM
D	RECORD LENGTH	0 FOR RANDOM 1 NNNN FOR CONSTANT	0030-1000	RANDOM
E	FILE LENGTH	0 FOR RANDOM 1 NNNN FOR CONSTANT	0001-0200	RANDOM
F	BUFFER TO USE	0 FOR RANDOM 1 NNNN FOR CONSTANT	LEGAL DESIGNATOR	RANDOM

IN ADDITION LOCATION "K606A" (0325) MAY BE CHANGED TO SPECIFY ANY LEGAL GAP OR DENSITY SELECTION EXCEPT 9 TRACK COMPATIBLE. CORE BUMP MODE MUST ALWAYS BE USED. BIT ASSIGNMENT IS THE SAME AS THE COMMAND REGISTER. CONTINUE MODE MAY BE FORCED BY CHANGING TC58MT LOCATION 0265 FROM 5263 TO 4777.

4.4 DEVICE SETUP

ALL DRIVES TO BE UTILIZED MUST BE ON LINE WITH TAPE POSITIONED AT OR AFTER BOT. THE WRITE PERMISS RING MUST BE IN PLACE.

4.5 RUNNING

1. CNTR: UPDATED AFTER A COMPLETE FILE HAS BEEN WRITTEN, READ, COMPARED, READ AND DATA CHECKED.
2. SR10: WHEN SET TO A 1, THE BUFFER CURRENTLY ASSIGNED IS RETAINED.
3. SR11: WHEN SET TO A 1, THE DRIVE CURRENTLY IN USE IS RETAINED.

5. **ERROR INFORMATION**

ALL STATUS REGISTER INDICATED ERRORS ARE REPORTED AS STATUS ERRORS,
ALL DATA ERRORS AS DATA ERRORS.

5.1 **ERROR SYMBOL DEFINITIONS**

CODE: 0010 REWIND
 0020 READ
 0030 READ-COMPARE
 0040 WRITE
 0070 SPACE REVERSE

 0021 FALSE DATA ERROR (BAD SOFTWARE CHECKSUM BUT
 BUT DATA LOOKED GOOD ON WORD BY WORD CHECK).

 00X3 TRANSFER INCOMPLETE (WORD COUNT NON-ZERO BUT NO
 ERROR BIT WAS SET).

SA: FINAL CONTENTS OF STATUS REGISTER

SB: CURRENT BUFFER DESIGNATOR

SC: INITIAL WORD COUNT

SD: FINAL WORD COUNT

SE: INITIAL CURRENT ADDRESS

SF: FINAL CURRENT ADDRESS

SG: INITIAL COMMAND REGISTER

SH: FINAL COMMAND REGISTER

SI: RECORD TALLY (THE LAST RECORD IN A FILE IS 7777. THIS WORD
 MAY BE USED TO COMPARE READ-COMPARE ERRORS WITH DATA
 ERRORS FOUND DURING READ.)

CA: BUFFER ADDRESS

CB: GOOD DATA WORD

CC: BAD DATA WORD

6. **LISTING (ATTACHED)**

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/DEC/X8 EXTERNAL SYMBOL TABLE "EXTSYN"
/FOR USE IN ASSEMBLING DEC/X8 SOFTWARE MODULES;
/COPYRIGHT 1972, DIGITAL EQUIPMENT CORP., MAYNARD, MASS;
XLIST
PAUSE

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/MAINDEC-X8-DITC8-C-L "DEC/X8" TC58MT
/TC58 DECHAGTAPE SYSTEM MODULE FOR DEC/X8
/COPYRIGHT 1972, DIGITAL EQUIPMENT CORP., MAYNARD, MASS;
/THIS MODULE OPERATIONAL ON PDP-8,8/1,8/L,8/E AND PDP-12
/PRG: LEN BEYERSDORFER (X2537)

/BUILDER INSTRUCTIONS:
/1.PRIORITY: SHOULD BE ASSIGNED THE LOWEST INTERRUPT PRIORITY;
/2.JOB SLOT: 4 PAGES REQUIRED, SLOT JX1 OR JX2;

/INITIALISER INSTRUCTIONS:

/CODE DEFINED RESPONSE PRESET
/A: LOWEST DRIVE TO USE 0-7 0
/B: HIGHEST DRIVE TO USE 0-7 0
/C: TYPE OF DATA 0-RANDOM; 1-NNNN=CONSTANT 0-RANDOM
/D: RECORD LENGTH 0-RANDOM; 1-NNNN=CONSTANT (0000-1000) 0-RANDOM
/E: FILE LENGTH 0-RANDOM; 1-NNNN=CONSTANT (0001-0200) 0-RANDOM
/F: BUFFER ASSIGNMENT 0-RANDOM; 1-NNNN=CONSTANT 0-RANDOM

/ALLOWABLE PROGRAM MODIFICATION VIA *01
/LOCATION K600 MAY BE CHANGED TO LEGAL GAP AND DENSITY SELECTION;
/DO NOT USE 9 TRK COMPATABLE MODE;

/REPORT SYMBOL DEFINITIONS:
/1.REFER TO MODULE TABLE IN THIS LISTING FOR DESCRIPTION
/OF CNTR,BAI-SII,AND DAI-DO1
/2."CODE" DEFINITIONS:
/CODE DEFINED
/0010 REWIND
/0020 READ
/0030 READ COMPARE
/0040 WRITE
/0070 SPACE REVERSE
/00X1 FALSE DATA ERROR (BAD CHECKSUM BUT
/ DATA LOOKED GOOD ON WORD BY WORD CHECK,)
/00X3 TRANSFER INCOMPLETE (NO NON-ZERO,
/ BUT NO STATUS ERROR BIT WAS SET,)

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/TC58 STANDARDS:
 /WORD COUNT:7752
 /CURRENT ADDRESS:7753
 /DEVICE CODES:78,71,72;

 /TC58 IOT DEFINITIONS:
 6781 MTBF=6781 /PC+1 => PC IF MTF OR EF
 6711 MTCR=6711 /PC+1 => PC IF CONTROL READY
 6721 MTTR=6721 /PC+1 => PC IF DRIVE READY
 6712 MTAF=6712 /CLEAR STATUS (CLEAR ALL IF CONTROL READY)
 6724 MTRC=6724 /AO + CM => AG
 6714 MTCH=6714 /AGB=8,9=11 + CM AND AGB=8 => CM
 6716 MTLC=6716 /AO => CM (ALSO MTAF)
 6786 MTRS=6786 /SR => AG
 6722 MTGO=6722 /GO (ALSO LOAD BREAK FIELD FROM AG 6-8)

 /FUNCTION DESIGNATIONS:
 0018 REWIND=18;READ=28;RDCOMP=38;WRITE=48;INEOF=58;SPCPWD=68;SPGREV=78
 0020
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 0070

 /MODULE TABLE
 0200
 0201 JOB, 0 /JOB NUMBER
 0202 TEXT1, TEXT "TC58MT"
 0203
 0204
 0205 TEXT "DITCB-C"
 0206
 0207
 0210
 0211 HMT/CDP /OP=IF
 0212 JMP I HMTEDF
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/MAINDEC=X8-DITCB-C-L "DEC/X8" TC58MT PAL18 V141 7-SEP-72 28188 PAGE 2-2

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INTACK, CIF 00 /ACKNOWLEDGE INTERRUPT;
 JMS I IHRET
 -1
 KILL, -1 /PRIORITY
 KILLED, -1 /COMMAND TO KILL JOB.
 CNTR, 0 /MODULE SETS TO -1 WHEN JOB KILLED.
 ERROR, 0 /NUMBER OF EXERCISER LOOP PASSES.
 /ERROR CALL.
 DCA .+11
 LAS
 AND 8 K4
 SRA
 DCA KILL
 JMS HMTEDF
 IOF
 CIF 00
 JMS I ERRP
 0
 JMP I ERROR
 CODE, 0 /ERROR CODE.
 -11
 /STATUS ERROR ENTRY TALLY;
 ERRSA, 0 /STATUS REG.
 ERRSB, 0 /BUFFER WORD
 ERRSC, 0 /INIT WC
 ERRSD, 0 /FINAL WC
 ERRSE, 0 /INIT CA
 ERRSF, 0 /FINAL CA
 ERRSG, 0 /INIT CM
 ERRSH, 0 /FINAL CM
 ERRSI, 0 /RECORD TALLY
 -3
 ERRDA, 0 /DATA ERROR ENTRY TALLY.
 ERRDB, 0 /BUFFER ADDRESS
 ERRDC, 0 /GOOD DATA
 /BAD DATA

 /END OF MODULE TABLE

 /HAG TAPE DO IT!
 /
 JMS GO
 /
 FUNC
 /
 RETURNS HERE IF NO STATUS ERRORS OR IF ERROR IS PE, RG, ST OR ORL.
 /REPEATED FUNCTION MAY REENTER BY DOING JMP NONSTP;
 GO, 0 /INITIAL ENTRY
 TAD ERRSC /MAKE INIT CM
 AND K70000
 TAD I 00
 TAD K666A
 DCA ERRSC
 JMS SETUP
 JMP STRSTP

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172 0265 5263 NONSTP, JMP ,=2 /CHANGE TO JMS SETUP TO FORCE CONTINUE MODE ATTEMPT,
173 0266 6711 DC71A, MTCR /CONTROL READY?
174 0267 5385 STRSTP, MTCR MAGTAP=1 /NO, GO NON STOP
175 0270 6711 /GO START STOP
176 0271 5270 TAD KILL
177 0272 1217 SNA
178 0273 7450 JMP ,=4
179 0274 5388 DCA KILLED
180 0275 3220 JMS I (RELEASE
181 0276 4776 SERVEX
182 0277 5884 TAD ERRSG
183 0388 1246 DC71B, MTCR
184 0381 6716 CLA CHA /LOAD CH
185 0382 7240 DC72A, MTCR /AG INDICATES START/STOP
186 0383 6721 /WAIT FOR DRIVE
187 0384 5383 JMP ,=1
188 0385 6882 IOF /SET UP BREAK FIELD
189 0386 3370 MAGTAP, DCA MODSET /SAVE =1 FOR START/STOP, 8 FOR CONTINUE MODE;
190 0387 1241 TAD ERRSG
191 0310 0185 AND E K78
192 0311 6722 DC72C, MTCR /GO
193 0312 2370 198 MODSET /CONTINUE MODE?
194 0313 6711 DC71C, MTCR /YES, GO SET?
195 0314 5388 JMP ,=4 /YES, OK;
196 0315 6712 GONOST, MTCR /NO, CLEAR FLAGS;
197 0316 6881 ION
198 0317 5263 JMP NONSTP=2 /GO START STOP;
199 0320 7240 CLA CHA /ALLOW ONE INTERRUPT
200 0321 3775 DCA RENTRY
201 0322 5884 SERVEX /OUT
202 0323 7752 TC58MC, 7752
203 0324 7753 TC58CA, 7753
204 0325 8888 K688A, 8888 /888 BPI, NORMAL GAP, ENI, COREDUMP;
205 0326 7888 K7888B, 7888
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210 /DEFERRED SERVICE;
211 0327 6281 DEFSRV, CDF 88
212 0330 1723 TAD I TC58MC /SAVE FINAL HQ AND CA
213 0331 3243 DCA ERRSG
214 0332 1724 TAD I TC58CA
215 0333 3245 DCA ERRSF
216 0334 4211 JMS HOMEDF
217 0335 1655 TAD I GO
218 0336 3236 DCA CODE
219 0337 1248 TAD ERRSA /ERROR FLAG?
220 0340 7588 SNA
221 0341 5353 JMP DEFC1 /NO,
222 0342 7186 CLL RYL /NOT?
223 0343 7518 SPA
224 0344 5365 JMP DEFERR=3 /YES, OK;
225 0345 0110 AND E K288 /NO,
226 0346 7658 SNA CLA /NOT?

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227 0347 5362 JMP DEFERR /NO,
228 0350 4255 JMS GO /YES, REWIND
229 0351 8810 REWIND
230 0352 5774 JMP I (EXER
231 0353 7280 DEFC1, CLA
232 0354 1243 TAD ERRSG /NO=?
233 0355 7658 SNA CLA
234 0356 5655 JMP I GO /YES, ALL IS OK/OK.
235 0357 1236 K1236, TAD CODE /IT ISN'T, ERROR,
236 /IFNRO CHKE-1236 (OUCH)
237
238 0360 1872 TAD E K3
239 0361 3236 DCA CODE
240 0362 4222 DEFERR, JMS ERROR
241 0363 1240 TAD ERRSA /IS ERROR PARITY, R/C, RL, DRL AND/OR BAD TAPE?
242 0364 8387 AND K1236
243 0365 7640 SEA CLA
244 0366 5655 JMP I GO /YES, CONTINUE IN SEQUENCE;
245 0367 5773 JMP I (EXERA /FORCE RETURN TO INTERNAL LOOP;
246 /-START/STOP, SUBCONTINUE;
247 0370 8888 MODSET, 8
248 0371 1253 DATCON, 8
249 0372 5770 TAD ERRSG
250 0373 8373 JMP I DATCON
251 0373 8642
252 0374 8688
253 0375 8421
254 0376 1888
255 0377 1131
256 0488
257
258
259 /INTERRUPT SERVICE;
260
261 0488 8888 INT, 8
262 0481 2221 ISB RENTRY /REENTRANT?
263 0482 5213 JMP ,=11 /YES
264 0483 4777 JMS HOMEDF
265 0484 6786 DC78A, MTR8
266 0485 3776 DCA ERRSA /SAVE STATUS
267 0486 6724 DC72B, MTRC
268 0487 3775 DCA ERRSH /SAVE CH
269 0418 6712 DC71D, MTCR
270 0411 1374 TAD (DEFSRV
271 0412 3773 JMP INTACK /CLEAR AT LEAST EP AND MTP
272 0413 3221 DCA RENTRY /DEFER THE REST
273 0414 6814 RDF /REENTRANT
274 0415 1828 TAD E K81DFP
275 0416 3217 DCA ,=1
276 0417 7482 HLT/CIF CDF
277 0420 5688 JMP I INT
278 0421 8888 RENTRY, 8
279
280 0422 8888 LGTCON, 8

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281 0423 1772' TAD LENGTH
282 0424 5622 JMP I LGTCOM
283
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285
286 /RANDOM NUMBER GENERATOR
287
288 0425 0000 RANDOM, 0
289 0426 2257 ISB RAN1
290 0427 7000 NOP
291 0430 1240 TAD RAN2
292 0431 1243 TAD K1111A
293 0432 7104 CLL RAL
294 0433 7420 SNL
295 0434 7001 IAC
296 0435 3240 DCA RAN2
297 0436 1257 TAD RAN1
298 0437 1240 TAD RAN2
299 0440 5625 JMP I RANDOM
300 0441 0000 SAVRAN, 0 /PRESET
301 0442 3240 DCA RAN2
302 0443 4777 JMS I (HOMEDP
303 0444 1257 TAD RAN1
304 0445 3241 DCA SAV1
305 0446 1240 TAD RAN2
306 0447 3242 DCA SAV2
307 0450 5641 JMP I SAVRAN
308 0451 0000 RESRAN, 0 /RESTORE
309 0452 1241 TAD SAV1
310 0453 3257 DCA RAN1
311 0454 1242 TAD SAV2
312 0455 3240 DCA RAN2
313 0456 5651 JMP I RESRAN
314 0457 0000 RAN1, 0
315 0460 0000 RAN2, 0
316 0461 0000 SAV1, 0
317 0462 0000 SAV2, 0
318 0463 1111 K1111A, 1111
319
320
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322
323 0464 0000 DATCHK, 0
324 0465 1771 TAD I (ERRSD
325 0466 4770 JMS I (SUMCHK
326 0467 7041 CIA
327 0470 1767 TAD I (SUMSAV
328 0471 7650 SNA CLA
329 0472 5664 JMP I DATCHK
330 0473 4291 JMS RESRAN
331 0474 1771 TAD I (ERRSD
332 0475 4325 JMS DATSET
333 0476 3303 DCA ,05
334 0477 1766 TAD I (DATGEV
335 0500 3325 DCA DATSET

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/CHECK DATA,
/SET FINAL WC,
/SUMCHECK,
/0000?
/YES, BUT;
/NO, RESTORE DATA GENERATOR;
/PRESET TO CHECK DATA;
/SAVE CDP TO BUFFER FIELD;
/MOVE DATA GENERATOR POINTER TO THIS
/PAGE

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336 0501 4725 JMS I DATSET
337 0502 3765 DCA I (ERRSD
338 0503 7402 HLT/CDP
339 0504 1417 AUG, TAD I AUTO
340 0505 4777 JMS I (HOMEDP
341 0506 3764 DCA I (ERRSDC
342 0507 1017 AUG, TAD I AUTO
343 0510 3763 DCA I (ERRSDA
344 0511 1764 TAD I (ERRSDC
345 0512 7041 CIA
346 0513 1765 TAD I (ERRSD
347 0514 7440 SNA
348 0515 4762 JMS I (ERROR
349 0516 2761 ISB I (BUFTAL
350 0517 5301 JMP ,=16
351 0520 1760 TAD I (CODE
352 0521 7001 IAC
353 0522 3760 DCA I (CODE
354 0523 4762 JMS I (ERROR
355 0524 5664 JMP I DATCHK
356 0525 0000 DATSET, 0
357 0526 7041 CIA
358 0527 1757 TAD I (ERRSD
359 0530 7450 SNA
360 0531 5664 JMP I DATCHK
361 0532 3761 DCA I (BUFTAL
362 0533 1756 TAD I (ERRSD
363 0534 3017 AUG, DCA I AUTO
364 0535 1755 TAD I (ERRSD
365 0536 0105 AND Z K70
366 0537 1064 TAD Z KCDP
367 0540 5725 JMP I DATSET
368 0541 0000 INISR1, 0
369 0542 4754 JMS I (INISR3
370 0543 7112 CLL RTR
371 0544 7012 RTR
372 0545 7010 RAR
373 0546 7041 CIA
374 0547 5741 JMP I INISR1
375 0550 0000 FILCON, 0
376 0551 1753' TAD RECORD
377 0552 5750 JMP I FILCON
378
379 /END OF PAGE
380
381 0553 0727
382 0554 1120
383 0555 0241
384 0556 0244
385 0557 0242
386 0560 0236
387 0561 0722
388 0562 0222
389 0563 0252
390 0564 0254

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/GENERATE I WORD,
/SAVE IN 0000,
/OP TO BUFFER FIELD;
/SET WORD IN BUFFER,
/OP=IF
/SAVE IN 010;
/SET ADDR AND SAVE;
/0000=READY?
/NO, DATA ERROR (AG NOT 0)
/DONE?
/NO;
/YES, SET CODE=0001
/CLOSE ERROR ROUTINE;
/001;
/SET UP FOR DATA GENERATE OR CHECK;
/COMPUTE LENGTH TO FILL OR CHECK;
/SAVE IT;
/PUT CA IN AUTO INDEX;
/COMPUTE CDP TO BUFFER FIELD;
/EXIT WITH IT IN AG.
/INITIALISE SERVICE 1;
/SERVICE 3
/MOVE TO BITS [-3
/NEGATE
/OUT

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391 0565 0253
392 0566 0768
393 0567 0723
394 0570 0732
395 0571 0243
396 0572 0726
397 0573 0214
398 0574 0327
399 0575 0247
400 0576 0240
401 0577 0211
402 0600
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407 0600 7604 EXER, LAS /CHANGE DRIVES?
408 0601 7010 RAR
409 0602 7620 SNL CLA
410 0603 4777 JMS I (RANDOM /YES
411 0604 1776 TAD I (ERRSG /NO,
412 0605 0304 AND K7000A
413 0606 3776 DCA I (ERRSG
414 0607 1776 TAD I (ERRSG
415 0610 7110 CLL RAR
416 0611 1324 TAD LODRV
417 0612 7710 SPA CLA
418 0613 5203 JMP ,=10
419 0614 1776 TAD I (ERRSG
420 0615 7110 CLL RAR
421 0616 1325 TAD HIDRV
422 0617 7740 SMA SEA CLA
423 0620 5203 JMP ,=15
424 0621 4757 JMS I BUFGEV /GENERATE BUFFER AND CA
425 0622 1775 TAD I (ERRSG
426 0623 0131 AND E K7600
427 0624 1331 TAD M1A
428 0625 3774 DCA I (ERRSG
429 0626 4762 JMS I FILGEV /# OF RECORDS (1-8000)
430 0627 0130 AND E K177
431 0630 1131 TAD E K7600
432 0631 3327 DCA RECORD
433 0632 4761 JMS I LGTGEV /RECORD LENGTH
434 0633 0330 AND K777A / (30-1000 WORDS)
435 0634 1304 TAD K7000A
436 0635 3326 DCA LENGTH
437 0636 1326 TAD LENGTH
438 0637 1103 TAD E K30
439 0640 7740 SMA SEA CLA
440 0641 5232 JMP ,=7
441 0642 4306 EXERA, JMS WRTSET /SET UP TO WRITE
442 0643 6201 CDF 00
443 0644 1466 TAD I E K0 /PRESET RANDOM
444 0645 4773 JMS I (SAVRAN

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445 0646 4772 JMS I (DATSET /FILL BUFFER
446 0647 3250 DCA ,=1
447 0650 7402 HLT/CDF
448 0651 4760 JMS I DATGEV
449 0652 3417 DCA I AUTO
450 0653 2322 AUE, ISZ BUFTAL
451 0654 5251 JMP ,=3
452 0655 4771 JMS I (HOMEDF
453 0656 4332 JMS SUMCHK /BUNCHCHECK
454 0657 3323 DCA SUMSAV
455 0658 4770 JMS I (GO /WRITE A RECORD STREAM
456 0661 0040 WRITE
457 0662 2767 ISZ I (ERRSI
458 0663 5766 JMP NONSTP
459 0664 4314 JMS SPACE
460 0665 4306 JMS WRTSET /BACKSPACE TO 1ST RECORD
461 0666 4770 JMS I (GO /READ/COMPARE
462 0667 0030 RDCOMP
463 0670 2767 ISZ I (ERRSI
464 0671 5766 JMP NONSTP
465 0672 4314 JMS SPACE
466 0673 4306 JMS WRTSET
467 0674 4346 JMS CLRBUF
468 0675 4770 JMS I (GO /READ AND CHECK DATA
469 0676 0020 READ
470 0677 4763 JMS I (DATCHK /CHECK DATA
471 0700 4346 JMS CLRBUF
472 0701 2767 ISZ I (ERRSI
473 0702 5766 JMP NONSTP
474 0703 2764 ISZ I (CNTR /UPDATE PAGE COUNTER
475 0704 7000 K7000A, 7000/NOP
476 0705 5200 JMP EXER /LOOP
477 0706 0000 WRTSET, 0 /SET UP FOR WRITE RDCOMP READ
478 0707 1327 TAD RECORD
479 0710 3767 DCA I (ERRSI
480 0711 1326 TAD LENGTH
481 0712 3763 DCA I (ERRSG
482 0713 5766 JMP I WRTSET
483 0714 0000 SPACE, 0
484 0715 1327 TAD RECORD
485 0716 3763 DCA I (ERRSG /SPACE REVERSE ALL RECORDS
486 0717 4770 JMS I (GO
487 0720 0070 SPGREV
488 0721 5714 JMP I SPACE
489 0722 0000 BUFTAL, 0
490 0723 0000 SUMSAV, 0
491 0724 0000 LODRV, 0
492 0725 0000 HIDRV, 0
493 0726 0000 LENGTH, 0
494 0727 0000 RECORD, 0
495 0730 0777 K777A, 777
496 0731 7777 M1A, -1
497 0732 0000 SUMCHK, 0
498 0733 4772 JMS I (DATSET /BUNCHCHECK BUFFER
499 0734 3335 DCA ,=1

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500 0735 7482 HLT/CDP
501 0736 7188 CLL
502 0737 1417 AUG, TAD I AUTO
503 0740 7438 SRL
504 0741 7881 IAC
505 0742 2322 ISB BUFTAL
506 0743 5336 JMP ,+5
507 0744 4771 JMS I (HOMEDF
508 0745 5732 JMP I SUMCHK
509 0746 0880 CLRBUF, 0 /CLEAR BUFFER
510 0747 4772 JMS I (DATSET
511 0750 3351 DCA ,+1
512 0751 7482 HLT/CDP
513 0752 3417 AUY, DCA I AUTO
514 0753 2322 ISB BUFTAL
515 0754 5352 JMP ,+2
516 0755 4771 JMS I (HOMEDF
517 0756 5746 JMP I CLRBUF
518
519
520 /END OF PAGE
521
522 0757 *
523 /NOTE! THESE LOC'S ARE SPECIFIED BELOW THE *, SO THAT THE ADDRESSES
524 /INDICATED ARE MODIFIED PROPERLY BY THE DEC-X8 LOADER,
525 0757 1817 BUFGEV, BUFRAN /BUFCON
526 0760 0425 DATGEV, RANDOM /DATCON
527 0761 0425 LGTGEV, RANDOM/LGTCON
528 0762 0425 FILGEV, RANDOM/FILCON
529 0763 0242
530 0764 0221
531 0765 0464
532 0766 0265
533 0767 0258
534 0770 0255
535 0771 0211
536 0772 0525
537 0773 0441
538 0774 0244
539 0775 0241
540 0776 0246
541 0777 0425
542 1000 *1000
543
544
545 1000 1000 LTRCOD=,
546 1000 0800 RELEAS, 0 /ROUTINE TO RELEASE EXTERNAL BUFFERS
547 1001 1777 TAD I (ERRSB
548 1002 0802 IOF
549 1003 0202 CIP 00
550 1004 4457 RLBUF,
551 1005 5608 JMP I RELEAS
552
553

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554
555
556 /ROUTINE TO ASSIGN AND HOLD A SPECIFIED BUFFER WHICH MUST BE
557 /LEGALLY SPECIFIED IN CONBUF (STANDARD BUFFER DESIGNATOR)
558
559 1006 0808 BUFCON, 0
560 1007 1777 TAD ERRSB /GET CURRENT BUFFER WORD,
561 1010 7841 CIA
562 1011 1216 TAD CONBUF
563 1012 7658 SNA CLA /SPECIFIED BUFFER ASSIGNED?
564 1013 5606 JMP I BUFCON /YES, EXIT,
565 1014 4217 JMS BUFRAN /NO, GET NEW BUFFER,
566 1015 5287 JMP BUFCON+1 /CHECK IT
567 1016 0808 CONBUF, 0 /MUST CONTAIN LEGAL BUFFER DESIGNATOR,
568
569 /ROUTINE TO ASSIGN A BUFFER OBSERVING BR 10:
570
571 1017 0808 BUFRAN, 0
572 1020 7684 LAB /PUT BR 10 (NOT) IN LINK,
573 1021 7812 RTR
574 1022 7220 CLA CHL
575 1023 1777 TAD ERRSB /BUFFER WORD IN AC,
576 1024 7468 SNL SEA
577 1025 5233 JMP ,+6 /EXIT IF AC NON ZERO AND LINK SET,
578 1026 7648 SEA CLA
579 1027 4208 JMS RELEAS /RELEASE BUFFER IF AC NON ZERO,
580 1030 0802 IOF /ASSIGN A BUFFER
581 1031 6282 CIP 00
582 1032 4468 ASBUFF
583 1033 3777 DCA ERRSB /SAVE BUFFER DESIGNATOR,
584 1034 5617 JMP I BUFRAN /EXIT,
585
586
587
588 /RUNNER
589
590 1035 3776 RUN, DCA CNTR
591 1036 3777 DCA ERRSB
592 1037 5775 JMP EXER
593
594
595 /INITIALIZER
596
597 1048 4444 INIT, MESSAGE /"INIT" IS INITIALIZING ADDRESS,
598 1041 0281 TEXTS
599 1042 1117 INITLP, TAD Z K581 /SET CODE TO "A"
600 1043 3288 DCA LTRCOD
601 1044 4774 JMS I (INISRL /GET LOW DRIVE,
602 1045 3773 DCA I (LOORV /SAVE IN BITS 1-3 NEGATED
603 1046 4774 JMS I (INISRL /SAME FOR HIGH DRIVE,
604 1047 3772 DCA I (MIDRV
605 1050 4387 JMS INISRL /TYPE OF DATA,
606 1051 5255 JMP ,+4 /RANDOM
607 1052 3771 DCA I (ERRSB /CONSTANT=SAVE IN GOOD DATA,
608 1053 1378 TAD (DATCON /PRESET POINTERS,

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609 1854 7410 SKP
610 1855 1367 TAD (RANDOM
611 1856 3766 DCA I (DATGEV
612 1857 4387 JMS INISR2 /RECORD LENGTH
613 1860 5265 JMP ,+5
614 1861 7041 CIA
615 1862 3765 DCA I (LENGTH
616 1863 1364 TAD (LGTCOD
617 1864 7410 SKP
618 1865 1367 TAD (RANDOM
619 1866 3763 DCA I (LGTCGEV
620 1867 4387 JMS INISR2 /# OF RECORDS PER FILE
621 1870 5275 JMP ,+5
622 1871 7041 CIA
623 1872 3762 DCA RECORD
624 1873 1361 TAD (FILCON
625 1874 7410 SKP
626 1875 1367 TAD (RANDOM
627 1876 3760 DCA FILGEV
628 1877 4387 JMS INISR2 /BUFFER ASSIGNMENT
629 1100 5304 JMP ,+4 /RANDOM
630 1101 3216 DCA CONBUF /CONSTANT=SAVE IN HOLDER,
631 1102 1397 TAD (BUFCOD /PRESET POINTERS,
632 1103 7410 SKP
633 1104 1396 TAD (BUFRAN
634 1105 3755 DCA I (BUFGV
635 1106 5020 INITEX
636 1107 0000 INISR2, 0 /OUT,
637 1110 4320 JMS INISR3 /SERVICE 2
638 1111 7650 SNA CLA /OO SERVICE 3,
639 1112 5707 JMP I INISR2 /RANDOM BUT
640 1113 2387 ISB INISR2 /NOT 0 IS CONSTANT,
641 1114 4455 SPACE2 /2 SPACES,
642 1115 4443 FOROCT /GET 4 OCTAL NUMBERS
643 1116 5242 JMP INITLP /ERROR,
644 1117 5707 JMP I INISR2 /OUT
645
646 1120 0000 INISR3, 0 /SERVICE 3,
647 1121 4454 CRLF /CARRIAGE RET=LINE FEED.
648 1122 1200 TAD LTRCOD /GET LETTER CODE,
649 1123 4450 TYPE /PRINT IT
650 1124 4455 SPACE2 /2 SPACES
651 1125 4442 ONEOCT /GET ONE OCTAL NUMBER,
652 1126 5242 JMP INITLP /ERROR,
653 1127 2200 ISB LTRCOD /UPDATE LETTER CODE,
654 1130 5720 JMP I INISR3 /OUT,
655
656 1131 0000 SETUP, 0 /SET UP WC AND CA
657 1132 7200 CLA
658 1133 1794 TAD ERRSC
659 1134 3320 DCA INISR3
660 1135 1793 TAD ERRSE
661 1136 6201 CDF 00
662 1137 3744 DCA I TC58CB
663 1140 1320 TAD INISR3

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664 1141 3745 DCA I TC58WD
665 1142 4752 JMS MONEDF
666 1143 5731 JMP I SETUP
667 1144 7753 TC58CB, 7753
668 1145 7752 TC58WD, 7752
669
670
671
672 /END OF PAGE AND END OF PROGRAM CODE
673
674 1146 EOP4=,
675 1841 0201 *INIT+1
676 1146 *EOP4 TEXT1
677 1152 0211
678 1153 0244
679 1154 0242
680 1155 0757
681 1156 1017
682 1157 1006
683 1160 0762
684 1161 0550
685 1162 0727
686 1163 0761
687 1164 0422
688 1165 0726
689 1166 0760
690 1167 0425
691 1170 0370
692 1171 0253
693 1172 0725
694 1173 0725
695 1174 0541
696 1175 0600
697 1176 0221
698 1177 0241

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0000
0100
0200 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
0300 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
0400 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
0500 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
0600 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
0700 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111

1000 11111111 11111111 11111111 11111111 11111111 11111111 11111111 11111111
1100 11111111 11111111 11111111 11111111 11111111 00011111 11111111 11111111

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
7700

```

```

0001 FIELD 1
699 /LOADER CALL
700
701
702 1200 1040 INIT:RUN:INT
703 1201 1035
704 1202 0400
705
706 1203 6701 MTBF:0:1:HLT:HLT:HLT
    1204 0000
    1205 0001
707 1206 7402
708 1207 7402
709 1210 7402
710 1211 7772 =6:AUB:AUQ:AUD:Aug:AUE:AUU
711 1212 0504
712 1213 0507
713 1214 0534
714 1215 0737
715 1216 0692
716 1217 0792
717
718 1220 7775 =3
719
720 1221 0700 0700:-2:1:0C70A
    1222 7776
    1223 0001
    1224 0404
721
722
723 1225 0710 0710:-6:0C71A:0C71B:0C71C:0C71D:STR0TP:00N0ST
    1226 7772
724 1227 0266
725 1230 0301
726 1231 0313
727 1232 0410
728 1233 0270
729 1234 0319
730
731 1235 0720 0720:-3:0C72A:0C72B:0C72C
    1236 7775
732 1237 0303
733 1240 0406
734 1241 0311
735
736 1242 7777 =1:7752:-2:TC58WC:TC58WD
    1243 7792
    1244 7776
737 1245 0323
738 1246 1145
739
740 1247 7777 =1:7753:-2:TC58CA:TC58CB
    1250 7753
    1251 7776
741 1252 0324
742 1253 1144

```

0000
0100

0200
0300

0400
0500

0600
0700

1000
1100

1200 11111111 11111111 11111111 11111111 11111111 11110000 00000000 00000000
1300 00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000

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
7700

ASBUFF	4460	EXINIT	0020	K5402	0003	MTCH	6714
ASBUFF	0060	EXSERV	0004	K606A	0325	MTCR	6711
AUB	0504	EXTMEM	0161	K64	0070	MTGO	6722
AUC	0507	FILCON	0550	K7	0075	MTLC	6716
AUD	0534	FILGEV	0762	K70	0105	MTRC	6724
AUG	0737	FOROCP	0043	K7000A	0704	MTRS	6706
AUTO	0017	FOROCT	4443	K7000B	0326	MTSF	6701
AUY	0752	GO	0255	K7510	0125	MTTR	6721
AUE	0692	GONOST	0315	K7520	0126	MUL26P	0045
BUFCOM	1006	HIDRV	0725	K7540	0127	NONSTP	0245
BUFGV	0757	HOMEDP	0211	K7600	0131	ONEOCP	0042
BUFRAN	1017	IMRETP	0026	K77	0106	ONEOCT	4442
BUFTAL	0722	INISR1	0941	K7735	0132	PRNT1	4491
CHK1	1236	INISR2	1107	K7740	0133	PRNT1P	0051
CLRBUF	0746	INISR3	1120	K7750	0134	PRNT2	4492
CNTR	0221	INIT	1040	K7760	0135	PRNT2P	0052
CODE	0236	INITEX	0020	K7771	0136	PRNT4	4493
CONBUF	1016	INITLP	1042	K7773	0137	PRNT4P	0053
CRLF	4454	INT	0400	K7774	0140	RAN1	0457
CRLFP	0054	INTACK	0014	K7775	0141	RAN2	0460
DATCHK	0444	IOPHSP	0056	K777A	0730	RANDOM	0425
DATCON	0370	JOB	0200	K00P	0044	RDCHMP	0030
DATGEV	0760	K0	0066	K01P	0005	READ	0020
DATSET	0525	K10	0076	K01P0F	0020	RECORD	0727
DC70A	0404	K100	0107	KILL	0217	RELEASE	1000
DC71A	0266	K11	0077	KILLED	0220	RETRY	0481
DC71B	0301	K1111A	0463	K10P	0004	RETRAN	0401
DC71C	0313	K116	0071	LENGTH	0726	REXIND	0010
DC71D	0410	K1236	0357	LOGCON	0402	RLBUFF	4497
DC72A	0303	K13	0100	LOGGEV	0761	RLBUFF	0057
DC72B	0406	K17	0101	L10N	4440	RUN	1039
DC72C	0311	K177	0130	L10NP	0040	SAV1	0461
DEFCL	0393	K20	0102	LODRV	0724	SAV2	0462
DEFERR	0362	K200	0110	LTRCOD	1000	SAVRAN	0441
DEFSRV	0327	K2000	0122	M1A	0731	SENVEX	0004
ZOP4	1146	K212	0111	M00	0135	SETUP	1131
ERRDA	0292	K215	0112	M200	0131	SPACE	0714
ERRDB	0293	K240	0113	M240	0127	SPACE2	4495
ERRDC	0294	K260	0114	M260	0120	SPACEP	0055
ERRDR	0222	K272	0115	M270	0125	SPGFND	0060
ERRP	0041	K277	0116	M3	0141	SPGREV	0070
ERRSA	0240	K3	0072	M30	0134	SYRSTP	0270
ERRSB	0241	K30	0103	M4	0140	SUNCHK	0732
ERRSC	0242	K301	0117	M40	0133	SUNSAV	0733
ERRSD	0243	K32	0067	M43	0132	T090CA	0304
ERRSE	0244	K323	0120	M5	0137	T090CB	1144
ERRSF	0245	K4	0073	M7	0130	T090HC	0323
ERRSG	0246	K40	0104	MA0TAP	0300	T090HD	1145
ERRSH	0247	K400	0121	MESSAGE	4444	TEXT1	0201
ERRSI	0250	M5	0074	MESSAGEP	0044	THO0CP	0041
EXER	0600	K5200	0123	MODSET	0370	THO0CT	4441
EXERA	0642	K540	0124	MTAF	6712	TYPE	4450

TYPEP 0050
LEOF 0050
WRITE 0040
LRTSET 0706

ERRORS DETECTED: 0
LINKS GENERATED: 22
RUN-TIME: 7 SECONDS
3K CORE USED