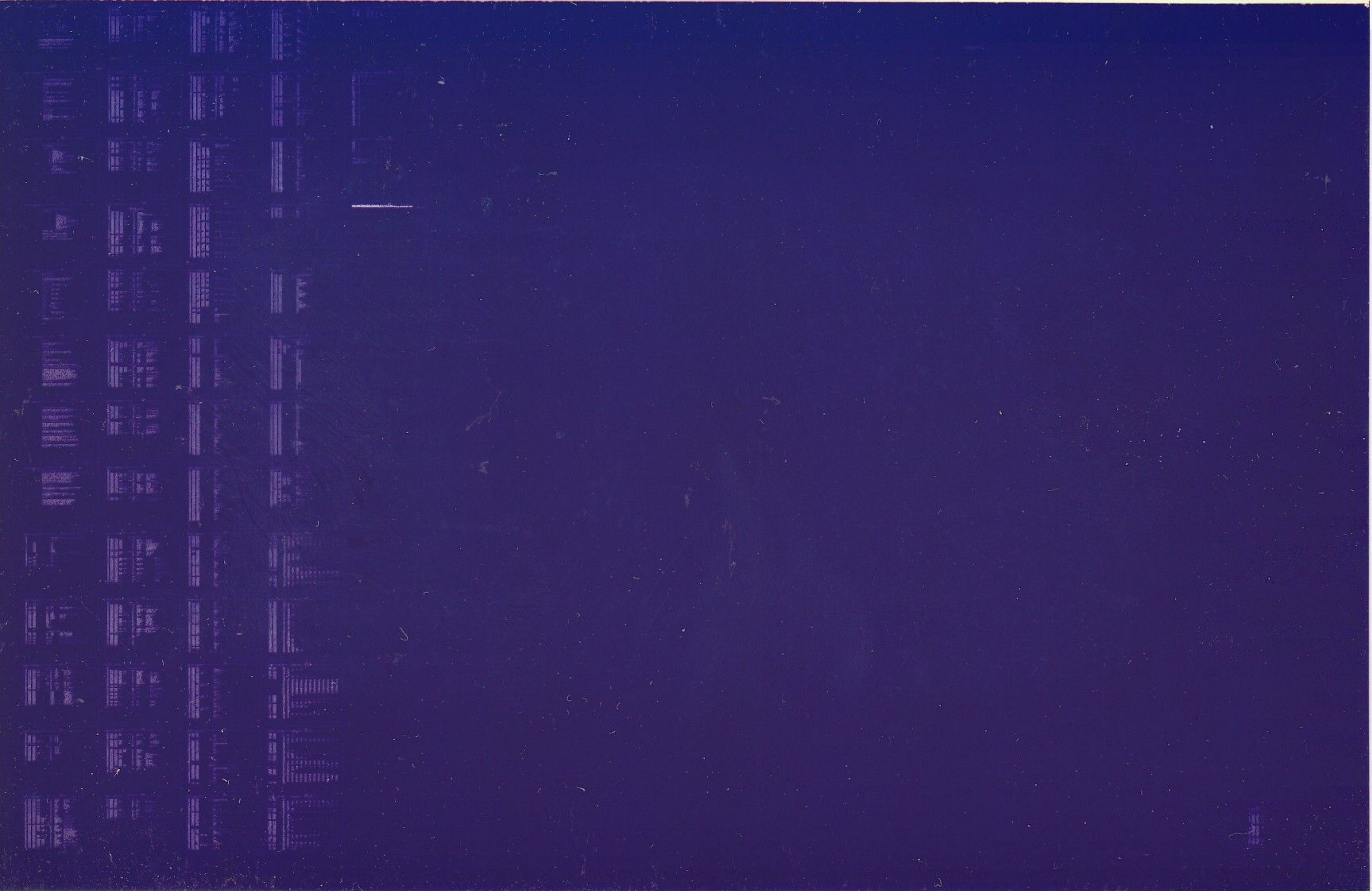


# GT40

VISUAL TEST  
MD-11-DDGTC-C

EP-DDGTC-C-DL-B  
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GT-40/GT-44 WITH VR14 VISUAL DISPLAY TEST MAINDEC-11-DDGTC-C  
DDGTCC.P11 15-SEP-76 00:00

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IDENTIFICATION

PRODUCT CODE: MAINDEC-11-DDGTC-C-D  
PRODUCT NAME: GT40/GT44 VISUAL DISPLAY TEST  
WITH VR14 DISPLAY  
DATE: DECEMBER 1976  
MAINTAINER: DIAGNOSTIC GROUP

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1. ABSTRACT

THIS VERSION OF THE PROGRAM SUPPORTS NON-SWITCH REGISTER CPU'S. FOR THESE CPU'S, THE SWITCH REGISTER CAN BE CHANGED BY CHANGING THE CONTENTS OF SWREG (170).

THIS PROGRAM CONTAINS A SERIES OF PATTERNS THAT ARE USED AS AIDS IN THE ALIGNMENT AND ADJUSTMENT OF THE GT40/GT44 DISPLAY SYSTEM WITH A VR14. FOR THIS TEST THE MAINTENCE SWITCHES ARE NOT USED (NORMAL POSITION).

2. REQUIREMENTS

2.1 EQUIPMENT

GT40 DISPLAY SYSTEM WITH VR14 DISPLAY SCOPE OR  
GT44 DISPLAY SYSTEM WITH VR14 DISPLAY SCOPE.

2.2 STORAGE

THIS PROGRAM USES LESS THAN 4K OF MEMORY.

2.3 PRELIMINARY PROGRAMS

ALL PROCESSOR MAINDECS, GT40/GT44 INSTRUCTION TEST I AND  
GT40/GT44 INSTRUCTION TEST II MUST HAVE RUN IN THEIR  
ENTIRETY BEFORE ATTEMPTING TO RUN THIS TEST.

3. LOADING PROCEDURE

3.1 METHOD

PROCEDURE FOR NORMAL BINARY TAPES SHOULD BE FOLLOWED.

4. STARTING PROCEDURE

4.1 STARTING ADDRESS

LOAD ADDRESS 0200  
START WITH SWITCHES 7=0, 8=0 FOR AUTO SEQUENCING  
THRU ALL NON-OPERATOR INTERVENTION PATTERNS.  
START WITH SWITCH BIT 7=0, 8=1 FOR SWITCH REGISTER PATTERN  
CONTROL (REF 4.2).  
START WITH SWITCH BIT 7=1, 8=0 OR 1 FOR KEYBOARD PATTERN  
CONTROL (REF 4.3).

4.2 CONTROL SWITCH SETTINGS (SWITCH REGISTER)

SWITCH REGISTER BITS 0,1,2,3 ARE USED TO SELECT EACH OF THE TESTS.

NON-OPERATOR INTERVENTION TESTS

SW 3-0 = 00 /DIRECTORY  
01 /DOT REPEATIBILITY  
02 /PINCUSHION <X AND Y OFFSET ADJ.>  
03 /OCTAGONS OR SQUARES  
04 /CHARACTER SET <CHAR ADJ.>  
05 /DASH LINES AND BLINK  
06 /VECTOR LENGTH TEST < X VECTOR LENGTH ADJ.>  
07 /VECTOR LENGTH TEST < Y VECTOR LENGTH ADJ.>  
10 /PHOSPHOR TEST <HORIZ>  
11 /PHOSPHOR TEST <VERT>  
12 /INTENSITY LEVELS, SYNC AND LIGHT-PEN TEST  
13 /EDGE TEST  
14 /SHORT VECTOR AND RELATIVE POINT TEST  
15 /GRAPHPLOT INCREMENT TEST

OPERATOR INTERVENTION TESTS

16 /LIGHT-PEN FOLLOW TEST  
17 /KEYBOARD ECHO  
SW 6 = 0 SELECT SUB-PICTURE 0  
SW 6 = 1 SELECT SUB-PICTURE 1 OR  
STOP DISPLAY FRAME MOTION  
SW 8 = 0 EXECUTE ALL NON-OPERATOR INTERVENTION FRAMES.  
SW 8 = 1 EXECUTE THE DISPLAY FRAME SPECIFIED BY SW 0-3.

## 4.3 CONTROL SWITCH SETTINGS (DISPLAY KEYBOARD)

ALPHA CHARACTERS 'A' THRU 'P' ARE USED TO SELECT EACH OF THE TESTS.

CHARACTER	TEST
A	DIRECTORY
B	DOT REPEATABILITY
C	PINCUSHION (X AND Y OFFSET ADJ.)
D	OCTAGONS OR SQUARES
E	CHARACTER SET (CHAR. ADJ.)
F	DASH LINES AND BLINK
G	VECTOR LENGTH TEST (X VECTOR LENGTH ADJ.)
H	VECTOR LENGTH TEST (Y VECTOR LENGTH ADJ.)
I	PHOSPHOR TEST (HORIZ)
J	PHOSPHOR TEST (VERT)
K	INTENSITY LEVELS, SYNC AND LIGHT-PEN TEST
L	EDGE TEST
M	SHORT VECTOR AND RELATIVE POINT
N	GRAPHPLOT INCREMENT TEST
O	LIGHT-PEN FOLLOW TEST
P	KEYBOARD ECHO

DEPRESSING A 'RUBOUT' AFTER SELECTING A FRAME WILL LOCK ON THE SELECT FRAME.

DEPRESSING A 'CR' AFTER SELECTING A FRAME WILL SELECT SUB-PICTURE 1 OR STOP DISPLAY FRAME MOTION.

TO CONTINUE AFTER DEPRESSING A 'CR' OR 'RUBOUT' DEPRESS ANY KEY OTHER THAN 'CR' OR 'RUBOUT'.

DEPRESSING 'CONTROL C (<C>)' WHEN EXECUTING THE KEYBOARD ECHO TEST, WILL RETURN CONTROL TO THE DIRECTORY FRAME.

5. OPERATING PROCEDURE  
-----

## 5.1 OPERATIONAL SWITCHES

ALL OF THE TEST WILL RUN IN THEIR NORMAL MANNER WITHOUT ANY OPERATIONAL SWITCHES SELECTED. HOWEVER, SOME OF THE TESTS HAVE ADDITIONAL FEATURES AND THE ARE SELECTED BY USING SWITCH BIT 06 OR "CR" KEYBOARD KEY.

## 5.1.1 PINCUSHION TEST

SW 6 = 0 DISPLAY PINCUSHION  
SW 6 = 1 DISPLAY CROSSHATCH <IN-HOUSE TEST ONLY>

## 5.1.2 OCTAGON OR SQUARES

SW 6 = 0 DISPLAY OCTAGONS  
SW 6 = 1 DISPLAY SQUARES

## 5.1.3 VECTOR LENGTH TEST

SW 6 = 0 SWEEP MOVEMENT  
SW 6 = 1 STOP MOVEMENT

## 5.1.4 PHOSPHOR TEST

SW 6 = 0 SWEEP ACROSS THE SCREEN  
SW 6 = 1 STOP MOVEMENT

## 5.1.5 INTENSITY TEST

SW 6 = 0 ENABLE SYNC 'OFF'  
SW 6 = 1 ENABLE SYNC 'ON'

## 5.1.6 GRAPHPLOT INCREMENT TEST

SW 6 = 0 USE GRAPHPLOT X  
SW 6 = 1 USE GRAPHPLOT Y

## 5.1.7 LIGHT PEN FOLLOW

SW 6 = 0 DISPLAY LIGHT PEN FOLLOW  
SW 6 = 1 DISPLAY LIGHT PEN FIELD OF VIEW  
<IN-HOUSE TEST ONLY>

6. ERRORS  
-----

THE PROGRAM WILL ONLY HALT ON ERROR.  
THE PROGRAM DOES NOT CONTAIN FACILITES FOR THE REPORTING OF ERROR  
CONDITIONS.

7. RESTRICTIONS

IF USING THE SWITCH REGISTER (REF 4.2) TO CONTROL THE PROGRAM, THERE WILL BE A DELAY BEFORE THE NEW TEST IS SELECTED.

8. MISCELLANEOUS

## 8.1 DEVICE ADDRESS PROGRAM LOCATIONS

LOCATION 1000 CONTAINS THE GT40/GT44 DEVICE ADDRESS.  
LOCATION 1002 CONTAINS THE GT40/GT44 INTERRUPT VECTOR.  
LOCATION 1004 CONTAINS THE GT40/GT44 INTERRUPT BR LEVEL.

9. PROGRAM DESCRIPTION

## 9.1 DIRECTORY

THIS TEST USES THE CHARACTER MODE TO DISPLAY A DIRECTORY OF THE TESTS THAT ARE AVAILABLE.

## 9.2 DOT REPEATIBILITY

THIS TEST INTENSIFIES A DOT IN EACH CORNER AND A DOT IN THE CENTER OF THE SCREEN. THIS TEST IS USED TO VERIFY DOT REPEATIBILITY.

## 9.3 PINCUSHION AND VECTOR CURVATURE TEST (ADJUSTMENT OF X AND Y OFFSET POTS)

THIS TEST OUTLINES THE FULL SCREEN AREA, IT IS USEFUL IN CENTERING THE VIEWING AREA IN THE DISPLAY MASK. THIS TEST ALSO DRAWS A DIAGONAL LINE FROM LOWER LEFT CORNER TO THE UPPER RIGHT AND THEN RETURNS IN THE OPPOSITE DIRECTION. A SIMILAR SEQUENCE IS REPEATED STARTING AT LOWER RIGHT CORNER TO THE UPPER LEFT CORNER AND BACK. THE PURPOSE IS TO MAKE CERTAIN THAT THE VECTORS ARE LINEAR OVER THEIR ENTIRE LENGTH. WITH PROPER LENGTH VECTORS ONLY TWO DIAGONAL LINES SHOULD BE SEEN IN THE CENTER OF THE SCREEN. DO NOT ADJUST THE VECTOR LENGTH POTS WITH THIS DISPLAY PATTERN. SINGLE LINES SHOULD BE VISABLE AT THE TOP AND BOTTOM OF THE SCREEN, IF NOT ADJUST THE Y OFFSET POT. SINGLE LINES SHOULD BE VISABLE AT THE RIGHT AND LEFT EDGE OF THE SCREEN IF NOT ADJUST THE X OFFSET POT..

## 9.4 OCTAGONS OR SQUARES

A SERIES OF DIFFERENT SIZE OCTAGONS OR SQUARES ARE DRAWN TO DEMONSTRATE THAT CLOSED FIGURES CAN BE DRAWN USING DIFFERENT VECTOR LENGTHS (7, 17, 37, 77, 177, 377 AND 777). THIS TEST IS USED TO TEST THE END POINT MATCHING OF THE VECTORS.

- 9.5 CHARACTER SET <ADJUSTMENT OF THE CHARACTER POT'S>  
TWO COMPLETE SETS OF ASCII CHARACTERS AVAILABLE FROM THE CHARACTER GENERATOR ARE DISPLAYED. THE CHARACTERS ARE DISPLAYED IN FOUR LINES OF TEXT. THE FIRST HALF OF A LINE IS IN 'NORMAL' FONT THE SECOND HALF OF A LINE IS IN 'ITALICS' FONT.
- 9.6 DASH LINES AND BLINK TEST  
THIS TEST IS USED TO TEST THE FOUR TYPES OF VECTOR LINES. FOUR VECTORS ARE PLOTTED USING EACH OF THE FOUR LINE REGISTER VALUES. THIS TEST ALSO ENABLES THE BLINK OPTION. THE FIRST VECTOR ON A LINE SHOULD NOT BLINK. THE SECOND VECTOR ON A LINE SHOULD BLINK.
- 9.7 VECTOR LENGTH TEST <ADJUSTMENT OF X AND Y VECTOR LENGTH>  
A SERIES OF INCREMENTING ANGLE VECTORS ARE DRAWNED FROM THE SCREEN ORGIN TO THE OPPOSITE EDGE OF THE SCREEN. THESE VECTORS SHOULD TERMINATE ON THE LINE DRAWNED AT THE VIEWING EDGE. IF THE VECTORS DO NOT END ON THE LINE, ADJUST THE APPROPRIATE VECTOR LENGTH POT.
- 9.8 PHOSPHOR TEST  
A WIDE BAND OF INTENSIFIED VECTORS IS DISPLAYED TO ALLOW FOR VISUAL INSPECTION OF THE CRT PHOSPHOR. THIS TEST ALSO TEST FOR ANY DISTORTION IN DEFLECTION CROSS-OVER IN THE SCOPE.
- 9.9 INTENSITY LEVEL, SYNC AND LIGHT-PEN SENSITIVITY TEST  
EIGHT VECTORS ARE DRAWN USING EACH OF THE EIGHT INTENSITY LEVELS. THE INTENSITY SHOULD BE ADJUSTED SO THAT THE LEVEL 0 IS BARELY VISABLE. THIS TEST IS ALSO USED TEST THE LIGHT PEN SENSITIVITY. ALL LINES ARE SET TO ALLOW A LIGHT PEN HIT. THEN HIT THE MESSAGE 'LIGHT PEN HIT' WILL BE DISPLAYED ON THE LINE HIT. THIS TEST IS ALSO USED TO TEST THE 'SYNC' LOGIC IF SELECTED.
- 9.10 EDGE SQUARES TEST  
THIS TEST IS USED TO TEST FOR PROPER EDGE BLANKING AND REENTRY SETTLE TIME. THE SCREEN IS OUTLINED AND FOUR RECTANGLES ARE DRAWNED AS TO EXCEED THE EDGE OF THE SCREEN. ONLY HALF OF EACH RECTANGLE SHOULD BE VISIBLE.



## 9.11 SHORT VECTOR AND RELATIVE POINT TEST

THIS TEST IS USED TO VERIFY PROPER DECODING OF THE SHORT VECTOR AND RELATIVE POINT. A SERIES OF IDENTIFIED VERTICAL LINES ARE PLOTTED USING SHORT VECTOR MODE. THE TEST THEN REPEATS USING RELATIVE POINT. THE RESULTS IS THAT A SINGLE HORIZONTAL LINE APPEARS TO THE RIGHT OF THE VERTICAL LINES. ALSO INCLUDED IS A RELATIVE POINT REPEATABILITY TEST. FOUR SETS OF THREE OCTAGONS EACH WILL BE DISPLAYED. THE INNER OCTAGON IS DRAWN USING SHORT VECTOR MODE WITH A DELTA X, Y OF 71 OCT. THE MIDDLE OCTAGON IS DRAWN USING RELATIVE POINT MODE WITH A DELTA X, Y OF 74 OCT. THE OUTER OCTAGON IS DRAWN USING SHORT VECTOR MODE WITH AN DELTA X, Y OF 77 OCT. THE MIDDLE OCTAGON SHOULD BE EQUAL DISTANCE FROM THE OUTER OCTAGONS AND SHOULD NOT MOVE.

## 9.12 GRAPHPLOT INCREMENT TEST

A SERIES OF POINTS ARE PLOTTED WITH EACH POSSIBLE VALUE IN THE GRAPHPLOT INCREMENT REGISTER FROM 0-77. THE RESULTING PATTERN USED SHOULD APPEAR TO BE A SERIES OF POINTS AT AN INCREASING ANGLE.

## 9.13 LIGHT-PEN FOLLOW TEST

IN THIS OPERATOR INTERVENTION TEST A TRACKING CROSS IS DISPLAYED. THE OPERATOR MAY MOVE ACROSS THE SCREEN WITH THE LIGHT PEN. AN X AND Y OCTAL READOUT IS ALSO DISPLAYED TO THE OPERATOR.

## 9.14 KEYBOARD ECHO TEST.

THIS IS AN OPERATOR INTERVENTION TEST USED TO INSURE PROPER OPERATION OF THE DISPLAY KEYBOARD. WHEN A DISPLAYABLE CHARACTER KEY IS DEPERSESSED THE CHARACTER IS DISPLAYED ON THE SCREEN. IN SELECTING THE SHIFT-OUT MODE, IF THE KEY DEPERSESSED IS NOT A CONTROL CHARACTER, THE PROGRAM WILL TRAP TO THE SHIFT-OUT VECTOR. AN OCTAL CHARACTER VALUE READOUT IS ALSO DISPLAYED AS AN AID IN ADJUSTING THE TTY CLOCK.

.LIST

360  
361  
362

363  
364  
365  
366  
367  
368  
369  
370  
371  
372  
373  
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375  
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393  
394  
395

000000  
000001  
000002  
000003  
000004  
000005  
000006  
000007  
104000  
000004  
000500  
177570

000024  
000024  
000028  
000030  
000030  
000032  
000034  
000170  
000000  
000172  
177570

SWREG:  
SWR:

.ENABL ABS,AMA  
.TITLE GT-40/GT-44 WITH VR14 VISUAL DISPLAY TEST MAINDEC-11-DDGTC-C  
.LIST ME  
.NLIST MC,MD,CND

R0=%0  
R1=%1  
R2=%2  
R3=%3  
R4=%4  
R5=%5  
SP=%6  
PC=%7  
SCOPE=EMT  
ERRVEC=4  
STKPTR=500  
DSWR=177570

;11/45 LIGHT DISPLAY REGISTER

;0-776 IS FILLED WITH .+2, HALT  
.LIST

.=24  
.WORD LOWPWR  
340

.=30  
.WORD SCOPEA ;EMT RETURN  
340

.=170  
.WORD 0  
.WORD DSWR

```

396
397
398 000200 000200      . =200
399      000137 001356  JMP      START ;DISPLAY TEST
400
401 001000 001000      . =1000
402 001002 172000      GSADD: 172000 ;DISPLAY STARTING ADDRESS
403 001004 000320      GSVCT: 320 ;DISPLAY INTERRUPT VECTOR STARTING ADDRESS
404      000200      GSBRL: 200 ;DISPLAY BR LEVEL
405 001006 000000      ICNT: 0
406 001010 177776      PSW: 177776
407 001012 177560      TKS: 177560
408 001014 177562      TKB: 177562
409 001016 012536      DBUF: BUFFER ;FIRST WORD IN THE DISPLAY BUFFER
410 001020 012540      DBUF1: BUFFER+2 ;SECOND WORD
411 001022 012542      DBUF2: BUFFER+4 ;THIRD WORD
412 001024 012544      DBUF3: BUFFER+6 ;FOURTH WORD
413 001026 012546      DBUF4: BUFFER+10 ;FIFTH WORD
414 001030 012550      DBUF5: BUFFER+12
415 001032 000000      DSAVE: 0 ;TEMP REG.
416 001034 000000      DSAVE1: 0
417 001036 000000      DSAVE2: 0
418 001040 000000      DSAVE3: 0
419 001042 000000      HOLD: 0
420 001044 000000      TSAVE: 0
421 001046 000000      CNTR: 0
422 001050 000000      CHANGE: 0
423 001052 000000      LOKRB: 0
424
425
426
427 ;GS ADDRESSES AND INTERRUPT VECTORS
428
429 001054 172000      DPC: 172000 ;DISPLAY PROGRAM COUNTER
430 001056 172002      DSR: 172002 ;DISPLAY STATUS REGISTER
431 001060 172004      XPOS: 172004 ;DISPLAY X AXIS REGISTER
432 001062 172006      YPOS: 172006 ;DISPLAY Y AXIS REGISTER
433
434 001064 000320      DDONE: 320 ;DISPLAY INTERRUPT VECTOR FOR STOP
435 001066 000322      DDONE1: 322
436
437 001070 000324      LPVCT: 324 ;DISPLAY INTERRUPT VECTOR FOR LIGHT-PEN
438 001072 000326      LPVCT1: 326
439
440 001074 000330      TIMEVT: 330 ;DISPLAY INTERRUPT VECTOR FOR TIME-OUT OR SHIFT-OUT
441 001076 000332      TMEVT1: 332
442

```

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;MONITOR ROUTINE
443
444
445 001100 005737 002114 SCOPEA: TST KRBD ;TEST IF SW OR "KRB"
446 001104 001014 BNE SCOPEF ;BR IF "KRB"
447 001106 005037 005624 CLR SWITCH ;CLEAR "SWITCH"
448 001112 032777 000100 177052 BIT #100,2SWR ;TEST FOR "HOLD/STOP SWITCH"
449 001120 001402 BEQ SCOPEE ;BR IF CLEARED
450 001122 005137 005624 COM SWITCH ;SET SWITCH
451 001126 032777 000400 177036 SCOPEE: BIT #400,2SWR ;TEST BIT 8
452 001134 001010 BNE SCOPEB
453 001136 005737 001042 SCOPEF: TST HOLD ;TEST FOR "HOLD/STOP"
454 001142 001012 BNE SCOPED ;BR IF SET
455 001144 000240 NOP
456 001146 004737 001536 JSR PC, SETUP ;RESET HOUSEKEEPING
457 001152 000240 NOP
458 001154 000002 RTI ;EXIT
459 001156 017704 177010 SCOPEB: MOV 2SWR,R4 ;READ SWITCHES
460 001162 042704 177760 SCOPEC: BIC #177760,R4 ;MASK TO BITS 4-15
461 001166 006304 ASL R4 ;MOVE LEFT
462 001170 012706 000500 SCOPED: MOV #STKPTR, SP ;RESET STACK
463 001174 000240 NOP
464 001176 004737 001536 JSR PC, SETUP ;RESET HOUSEKEEPING
465 001202 000240 NOP
466 001204 000174 001210 JMP 2DISPTC(R4) ;JMP TO THAT TEST
467
468 001210 002120 DISPTC: FILE0+2 ;DIRECTORY
469 001212 002132 FILE1+2 ;DOT REPEATIBILITY
470 001214 002144 FILE2+2 ;PINCUSHION
471 001216 002410 FILE3+2 ;OCTAGONS OR SQUARES
472 001220 002464 FILE4+2 ;CHARACTER SET
473 001222 003074 FILE5+2 ;DASH LINES AND BLINK
474 001224 003106 FILE6+2 ;X VECTOR LENGTH
475 001226 003240 FILE7+2 ;Y VECTOR LENGTH
476 001230 003372 FILE10+2 ;X PHOSPHOR TEST
477 001232 003446 FILE11+2 ;Y PHOSPHOR TEST
478 001234 003522 FILE12+2 ;INTENSITY LEVEL AND LIGHTPEN
479 001236 003664 FILE13+2 ;EDGE SQUARES
480 001240 003676 FILE14+2 ;SHORT VECTOR RELATIVE POINT TEST
481 001242 004156 FILE15+2 ;GRAPHLOT TEST
482 001244 004412 FILE16+2 ;LIGHT-PEN FOLLOW
483 001246 005122 FILE17+2 ;KEY BOARD ECHO
484

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485
486
487 001250 010046          LOWPWR: MOV      R0,-(SP)
488 001252 010146          MOV      R1,-(SP)
489 001254 010246          MOV      R2,-(SP)
490 001256 010346          MOV      R3,-(SP)
491 001260 010446          MOV      R4,-(SP)
492 001262 010546          MOV      R5,-(SP)
493 001264 010637 001300  MOV      SP,LOWSV
494 001270 012737 001302 000024  MOV      #HIGPWR,3#24
495 001276 000000          HALT
496
497 001300 000000          LOWSV:  0
498
499 001302 013706 001300  HIGPWR: MOV      LOWSV,SP
500 001306 012605          MOV      (SP)+,R5
501 001310 012604          MOV      (SP)+,R4
502 001312 012603          MOV      (SP)+,R3
503 001314 012602          MOV      (SP)+,R2
504 001316 012601          MOV      (SP)+,R1
505 001320 012600          MOV      (SP)+,R0
506 001322 012737 001250 000024  MOV      #LOWPWR,3#24
507 001330 012706 000500          MOV      #STKPTR,SP
508 001334 000240          NOP
509 001336 000240          NOP
510 001340 000240          NOP
511 001342 000000          HALT
512 001344 000240          NOP
513 001346 000240          NOP
514 001350 000240          NOP
515 001352 000137 001170          JMP      SCOPED

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516 001356 012706 000500          START:  MOV    #STKPTR,SP      ;SET UP THE STACK
517 001362 012777 000340 177420  MOV    #340,SPSW      ;RAISE PSW
518 001370 012700 001054          MOV    #DPC,RO        ;GET POINTER
519 001374 013701 001000          MOV    GSADD,R1       ;GET SUPPLIED ADDRESS
520 001400 010120          STRA:  MOV    R1,(0)+    ;UPDATE
521 001402 062701 000002          ADD    #2,R1          ;THE
522 001406 022700 001064          CMP    #DPC+10,RO     ;ADDRESSES
523 001412 001372          BNE    STRA           ;UNTIL DONE
524 001414 012700 001064          MOV    #DDONE,RO      ;GET POINTER
525 001420 013701 001002          MOV    GSVCT,R1       ;GET SUPPLIED VECTOR
526 001424 010120          STRB:  MOV    R1,(0)+    ;UPDATE
527 001426 062701 000002          ADD    #2,R1          ;THE VECTORS
528 001432 022700 001100          CMP    #DDONE+14,RO  ;
529 001436 001372          BNE    STRB           ;
530 001440 005037 005624          CLR    SWITCH         ;HOUSEKEEP
531 001444 005037 001042          CLR    HOLD           ;
532 001450 005004          CLR    R4             ;
533 001452 005037 001044          CLR    TSAVE          ;
534 001456 004737 001536          STRC:  JSR    PC,SETUP ;SET UP VECTORS
535 001462 005037 001042          CLR    HOLD           ;
536 001466 012737 001000 012052  MOV    #1000,RAY14A    ;HOUSEKEEP X,Y ORIGIN FOR LIGHTPEN
537 001474 012737 000600 012054  MOV    #600,RAY14B
538 001502 012737 030060 012032  MOV    #30060,DLT14A  ;INITIALIZE X READOUT
539 001510 012737 030060 012034  MOV    #30060,DLT14A+2
540 001516 012737 030060 012044  MOV    #30060,DLT14B  ;INITIALIZE Y READOUT
541 001524 012737 030060 012046  MOV    #30060,DLT14B+2
542 001532 000137 002116          JMP    FILED          ;START THE TEST
543
544 001536 012737 000062 000060  SETUP:  MOV    #62,SP#60      ;RESET KRB VECTOR
545 001544 012737 000000 000062  MOV    #0,SP#62
546 001552 042777 000100 177232  BIC    #100,SPTKS     ;CLEAR INT ENABLE
547 001560 005037 002114          CLR    KRBD
548 001564 013746 000004          MOV    SP#ERRVEC,-(SP) ;SAVE VECTOR CONTENTS
549 001570 012737 001616 000004  MOV    #1$,SP#ERRVEC  ;SET UP FOR TRAP
550 001576 012737 177570 000172  MOV    #DSWR,SP#SWR   ;SET UP TO TEST FOR SWITCH REGISTER
551 001604 022777 177777 176360  CMP    #-1,SP#SWR    ;TEST FOR SWITCH REGISTER
552 001612 001005          BNE    3$            ;SWTICH REGISTER PRESENT
553 001614 000401          BR     2$            ;NO SWITCH REGISTER
554 001616 022626          1$:  CMP    (SP)+,(SP)+   ;POP 2 WORDS OFF STACK
555 001620 012737 000170 000172  2$:  MOV    #SWREG,SP#SWR ;SET UP FOR SOFTWARE SWITCH REGISGER
556 001626 012637 000004          3$:  MOV    (SP)+,SP#ERRVEC ;RESTORE VECTOR CONTENTS
557 001632 032777 000200 176332  BIT    #200,SP#SWR   ;TEST FOR "KRB" CONTROL
558 001640 001413          BEQ    SETUPA        ;BR IF NOT
559 001642 005137 002114          COM    KRBD          ;SET "KRB" CONTROL
560 001646 012737 001746 000060  MOV    #RETB,SP#60   ;SET UP "KRB" INT
561 001654 012737 000340 000062  MOV    #340,SP#62
562 001662 052777 000100 177122  BIS    #100,SPTKS    ;ENABLE "KRB" INT
563 001670 012777 001732 177166  SETUPA: MOV    #SETUPB,DDONE ;SET UP GT DONE VECTOR
564 001676 012777 000340 177162  MOV    #340,DDONE1
565 001704 013777 001072 177156  MOV    LPVCT1,ALPVCT ;RESET LIGHT-PEN VECTOR
566 001712 005077 177154          CLR    ALPVCT1
567 001716 013777 001076 177150  MOV    TMEVT1,ATIMEVT ;RESET TIME-OUT/SHIFT OUT VECTOR
568 001724 005077 177146          CLR    ATIMEVT1
569 001730 000207          RTS    PC             ;EXIT
570

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571 001732 005777 177120          SETUPB: TST      JDSR          ;TEST FOR STOP
572 001736 100401          BMI          ;+4
573 001740 000000          HALT
574 001742 000002          RTI
575 001744 000000          HALT
576
577 001746 117737 177042 001044 RETB:  MOVB      JTKB, TSAVE      ;READ THE CHARACTER
578 001754 042737 177600 001044      BIC      #177600, TSAVE      ;MASK TO 7 BITS
579 001762 022737 000015 001044      CMP      #15, TSAVE         ;TEST FOR "CR"
580 001770 001440          BEQ      KYT3              ;BR IF
581 001772 005037 005624          CLR      SWITCH           ;CLEAR "SWITCH"
582 001776 162737 000101 001044      SUB      #101, TSAVE       ;MAKE 0-77
583 002004 100426          BMI          KYT1
584 002006 022737 000017 001044      CMP      #17, TSAVE
585 002014 100412          BMI          KYT2
586 002016 013704 001044          MOV      TSAVE, R4
587 002022 012737 177777 001050      MOV      #-1, CHANGE
588 002030 005037 005624          CLR      SWITCH
589 002034 005037 001042          CLR      HOLD
590 002040 000002          RTI          ;EXIT
591 002042 022737 000076 001044      KYT2:  CMP      #76, TSAVE
592 002050 001015          BNE      KYT4
593 002052 012737 177777 001042      MOV      #-1, HOLD
594 002060 000002          RTI          ;RUBOUT
595 002062 005037 001042          KYT1:  CLR      HOLD
596 002066 000002          RTI
597 002070 000000          HALT          ;FATAL ERROR RTI FAILED
598
599
600
601 002072 012737 177777 005624      KYT3:  MOV      #-1, SWITCH
602 002100 000002          RTI
603 002102 000000          HALT          ;FATAL ERROR, RTI FAILED
604
605 002104 162737 000040 001044      KYT4:  SUB      #40, TSAVE
606 002112 000734          BR      KYT5
607 002114 000000          KRBD:  D
608

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        .LIST
        ;EXECUTE DIRECTORY FRAME
009      FILED:  SCOPE
010      JSR      5,MESG      ;EXIT TO DISPLAY A FRAME
011      1000
012      FRMED      ;USING THE DIR. FRAME
013
014      ;EXECUTE DOT REPEATIBILITY FRAME
015      FILE1:  SCOPE
016      JSR      5,MESG      ;EXIT TO DISPLAY A FRAME
017      100000
018      FRAME1      ;USING THE DOR REPEAT FRAME
019
020      ;EXECUTE PINCUSHION FRAME
021      FILE2:  SCOPE
022      MOV      #BUFFER,RO      ;LOAD START ADDRESS
023      JSR      PC,SETPNT      ;LOAD D.O ORGIN
024      MOV      #20,R1      ;SETUP COUNT
025      1S:      MOV      #INTX,(RO)+      ;LOAD INT LINE
026      MOV      #MAXY,(RO)+      ;MAX Y
027      MOV      #100,(RO)+      ;LOAD DELTA X
028      MOV      #MINUSX+MAXY,(RO)+      ;LOAD - MAX Y
029      DEC      R1      ;FINISHED ?
030      BNE      1S      ;BR IF NOT
031      MOV      #MINUSX+1,(RO)+      ;GO BACK 1 UNIT
032      MOV      #0,(RO)+
033      MOV      #INTX,(RO)+
034      MOV      #MAXY,(RO)+      ;PLOT LAST LINE
035      JSR      PC,SETPNT      ;SET ORGIN
036      MOV      #MAXY+1/100,R1      ;SETUP COUNT
037      2S:      MOV      #INTX+MAXX,(RO)+      ;LOAD DELTA X MAX
038      MOV      #0,(RO)+      ;LOAD DELTA Y = 0
039      MOV      #MINUSX+MAXX,(RO)+      ;RETRACE
040      MOV      #100,(RO)+      ;LOAD DELTA Y OF 100
041      DEC      R1      ;FINISHED ?
042      BNE      2S      ;BR IF NOT
043      MOV      #0,(RO)+
044      MOV      #MINUSX+1,(RO)+      ;PLOT LAST LINE
045      MOV      #INTX+MAXX,(RO)+
046      MOV      #0,(RO)+
047      MOV      #DSTOP,(RO)+      ;LOAD STOP
048      MOV      #DJMP,(RO)+      ;LOAD JUMP
049      MOV      #BUFFER,(RO)
050      JMP      FILE2A
051
052      SETPNT:  MOV      #POINT!INT4,(RO)+      ;LOAD POINT
053      MOV      #0,(RO)+      ;AT X
054      MOV      #0,(RO)+      ;AT Y
055      MOV      #LONGV,(RO)+      ;LONG VECTOR
056      RTS      PC      ;EXIT
057
058      002116  104000
059      002120  004537  005460
060      002124  001000
061      002126  005626
062
063      002130  104000
064      002132  004537  005460
065      002136  100000
066      002140  007206
067
068      002142  104000
069      002144  012700  012536
070      002150  004737  002320
071      002154  012701  000020
072      002160  012720  040000
073      002164  012720  001377
074      002170  012720  000100
075      002174  012720  021377
076      002200  005301
077      002202  001366
078      002204  012720  020001
079      002210  012720  000000
080      002214  012720  040000
081      002220  012720  001377
082      002224  004737  002320
083      002230  012701  000014
084      002234  012720  041777
085      002240  012720  000000
086      002244  012720  021777
087      002250  012720  000100
088      002254  005301
089      002256  001366
090      002260  012720  000000
091      002264  012720  020001
092      002270  012720  041777
093      002274  012720  000000
094      002300  012720  173400
095      002304  012720  160000
096      002310  012710  012536
097      002314  000137  002342
098
099      002320  012720  117000
100      002324  012720  000000
101      002330  012720  000000
102      002334  012720  110000
103      002340  000207
    
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662
663 002342 012737 004000 001046 FILE2A: MOV #4000,CNTR ;LOAD COUNTER
664 002350 005737 005624 FILE2B: TST SWITCH ;TEST SWITCH
665 002354 001405 BEQ FILE2C ;BR IF SUBTEST NOT SELECTED
666 002356 004537 005460 JSR R5,MESG ;EXIT TO DISPLAY FRAME
667 002362 000001 |
668 002364 012536 BUFFER ;USING THE CROSS HATCH PATTERN
669 002366 000404 BR FILE2D ;BR
670
671 002370 004537 005460 FILE2C: JSR R5,MESG ;EXIT TO DISPLAY FRAME
672 002374 000001 |
673 002376 007276 FRAME2 ;USING THE OFFSET PATTERN
674 002400 005337 001046 FILE2D: DEC CNTR ;FINISHED ?
675 002404 001361 BNE FILE2B ;BR IF NOT
676
677 ;EXECUTE OCTAGONS OR SQUARES
678
679 002406 104000
680 002410 012737 014000 001046 FILE3: SCOPE
681 002416 005737 005624 FILE3A: MOV #14000,CNTR ;SET UP A COUNTER
682 002422 001010 TST SWITCH
683 002424 004537 005460 BNE FILE3B ;BRANCH IF SUB-TEST
684 002430 000001 JSR S,MESG ;DISPLAY TEST
685 002432 007402 |
686 002434 005337 001046 FRAME3 ;FRAME # 3
687 002440 001366 DEC CNTR ;DECREMENT COUNTER
688 002442 000407 BNE FILE3A ;BRANCH IF NOT COMPLETE
689 BR FILE4 ;EXIT TO NEXT TEST
690
691 002444 004537 005460 FILE3B: JSR S,MESG ;DISPLAY TEST
692 002450 000001 |
693 002452 007772 FRAME3A ;FRAME # 3A
694 002454 005337 001046 DEC CNTR ;DECREMENT COUNTER
695 002460 001356 BNE FILE3A ;BRANCH IF NOT COMPLETE

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:DISPLAY FILE  
:CHARACTER AND ITALICS TEST  
:SET UP THE BUFFER FOR THIS TEST

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FILE4: SCOPE
MOV #BUFFER,R0
MOV #STATSB!SIZED,(0)+
MOV #STATSA!ITALO!SYNOFF!GREEN,(0)+
MOV #POINT!INT4!LPOFF!BLKOFF!LINEO,(0)+ ;LOAD POINT MPDE
MOV #0,(0)+
MOV #MAXY-77,(0)+
MOV #CHAR,(0)+
MOVB #17,(0)+
MOVB #17,(0)+
MOV #100,STCHAR ;LOAD INITIAL CHAR.
JSR PC,LOADBF
MOV #140,STCHAR ;LOAD INITIAL LC CHAR
JSR PC,LOADBF ;LOAD LINE
MOV #40,STCHAR ;LOAD NUMBERS AND PUNCT
JSR PC,LOADBF ;LOAD LINE
MOV #STATSA!ITALO,(R0)+ ;LOAD NORMAL FONT
JSR PC,LOADSP ;LOAD SPECIAL CHARS
JSR PC,SPACE ;INSERT SPACES
MOV #STATSA!ITAL1,(R0)+ ;LOAD ITALICS FONT
JSR PC,LOADSP ;LOAD SPIECAL
MOV #DSTOP,(R0)+ ;LOAD DSTOP
MOV #DJMP,(R0)+
MOV #BUFFER,(R0)+
JMP FILE4A

LOADSP: MOVB #16,(R0)+
MOV #0,R2 ;SET INITIAL SHIFT OUT CHAR
MOV #37,R3 ;LOAD COUNT
1$: MOVB R2,(R0)+ ;LOAD CHAR
2$: INC R2
CMP #17,R2 ;TEST FOR SI
BEQ R3 ;BR IF SI "17"
DEC R3 ;FINISHED?
BNE 1$ ;BR IF NOT
MOV #20017,(R0)+ ;LOAD SHIFT-IN SPACE
RTS PC ;EXIT

LOADBF: MOV #STATSA!ITALO,(R0)+ ;LOAD NORMAL FONT
MOV STCHAR,R2 ;GET STARTING CHAR
JSR PC,FILLIT ;LOAD THE CHARACTERS
JSR PC,SPACE ;INSERT SPACES
MOV #STATSA!ITAL1,(R0)+ ;LOAD ITALICS FONT
MOV STCHAR,R2 ;GET STARTING CHARACTER
JSR PC,FILLIT ;LOAD THE CHARACTERS
JSR PC,CRLF ;INSERT CR-LF
RTS PC ;EXIT

STCHAR: 0

CRLF: MOVB #15,(0)+

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751 002742 112720 000012      MOVB  #12,(0)+
752 002746 112720 000012      MOVB  #12,(0)+
753 002752 112720 000012      MOVB  #12,(0)+
754 002756 000207              RTS    PC                ;EXIT
755
756 002760 012703 000040      FILLIT: MOV  #40,R3
757 002764 110220      FILLA: MOVB  R2,(0)+
758 002766 005202              INC   R2
759 002770 005303              DEC   R3
760 002772 001374              BNE  FILLA
761 002774 000207              RTS    7
762
763 002776 012703 000010      SPACE: MOV  #10,R3
764 003002 112720 000040      1$:  MOVB  #40,(R0)+      ;LOAD A SPACE
765 003006 005303              DEC   R3
766 003010 001374              BNE  1$                ;BR IF NOT DONE
767 003012 000207              RTS    PC                ;EXIT
768
769              ;ACTUAL DISPLAY ROUTINE
770
771 003014 012737 001000 003070  FILE4A: MOV  #1000,10$      ;LOAD A COUNTER
772 003022 012737 001300 012546  4$:  MOV  #MAXY-77,BUFFER+10 ;LOAD STARTING POINT
773 003030 004537 005460              JSR  R5,MESG
774 003034 000001              I
775 003036 012536              BUFFER
776
777 003040 012737 000400 012546      MOV  #400,BUFFER+10
778 003046 004537 005460              JSR  R5,MESG
779 003052 000001              I
780 003054 012536              BUFFER
781
782 003056 005337 003070              DEC   10$
783 003062 001357              BNE  4$                ;FINISHED ?
784 003064 000137 003072              JMP  FILES              ;BR IF NOT
785                                     ;GO TO NEXT TEST
786 003070 000000      10$:  0
787
788              ;EXECUTE DASH LINES AND BLINK
789
790 003072 104000      FILES: SCOPE
791 003074 004537 005460              JSR  5,MESG            ;EXIT TO DISPLAY A FRAME
792 003100 010000              10000
793 003102 010242              FRMES                ;USING THE DASH AND BLINK FRAME

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794
795 ;EXECUTE VECTOR LENGTH TEST <HORIZ>
796
797 003104 104000 FILE6: SCOPE
798 003106 012737 041777 010540 MOV #INTX!MAXX,DELTX6 ;SET UP VERTICAL HEIGHT
799 003114 012737 000010 001036 MOV #10,DSAVE2 ;SET UP TIMER
800 003122 012737 000000 001034 MOV #0,DSAVE1
801 003130 012737 000040 001046 LOOPA: MOV #40,CNTR ;SET UP EXECUTION COUNT
802 003136 012737 000140 001032 LOOPA1: MOV #MAXY+1/10,DSAVE ;SET UP
803 003144 013737 001034 010542 MOV DSAVE1,DELTY6
804 003152 004537 005460 JSR 5,MESG ;EXIT TO DISPLAY FRAME
805 003156 000001
806 003160 010474 1 FRME6 ;VECTOR LENGTH FRAME
807 003162 004537 005460 LOOPA2: JSR 5,MESG ;EXIT TO DISPLAY FRAME
808 003166 000001
809 003170 010530 1 FRME6A ;VECTOR LENGTH FRAME
810 003172 062737 000010 010542 ADD #10,DELTY6 ;UPDATE ANGLE
811 003200 005337 001032 DEC DSAVE ;FINISHED ALL THE ANGLES
812 003204 001366 BNE LOOPA2 ;BR IF NOT
813 003206 005337 001046 LOOPA3: DEC CNTR ;DONE COUNT?
814 003212 001351 BNE LOOPA1 ;BR IF NOT
815 003214 000240 NOP
816 003216 005737 005624 TST SWITCH ;TEST SWITCH
817 003222 001342 BNE LOOPA ;BR IF HALT MOTION
818 003224 005237 001034 INC DSAVE1 ;UPDATE INITIAL ANGLE
819 003230 005337 001036 DEC DSAVE2 ;FINISHED ALL?
820 003234 001335 BNE LOOPA ;BR IF NOT
821
822 ;EXECUTE VECTOR LENGTH TEST <VERT>
823
824 003236 104000 FILE7: SCOPE
825 003240 012737 040000 001034 MOV #INTX,DSAVE1 ;SETUP INITIAL X
826 003246 012737 001377 010542 MOV #MAXY,DELTY6 ;SETUP INITIAL Y
827 003254 012737 000010 001036 MOV #10,DSAVE2 ;SETUP EXECUTION COUNT
828 003262 012737 000040 001046 LOOPB: MOV #40,CNTR ;SETUP DELAY
829 003270 012737 000200 001032 LOOPB1: MOV #200,DSAVE
830 003276 013737 001034 010540 MOV DSAVE1,DELTX6 ;EXIT TO DISPLAY FRAME
831 003304 004537 005460 JSR 5,MESG ;VECTOR LENGTH TEST FRAME
832 003310 000001
833 003312 010474 1 FRME6 ;EXIT TO DISPLAY FRAME
834 003314 004537 005460 LOOPB2: JSR 5,MESG ;EXIT TO DISPLAY FRAME
835 003320 000001
836 003322 010530 1 FRME6A ;VECTOR LENGTH FRAME
837 003324 062737 000010 010540 ADD #10,DELTX6 ;UPDATE ANGLE
838 003332 005337 001032 DEC DSAVE ;FINISHED ALL THE ANGLES
839 003336 001366 BNE LOOPB2 ;BR IF NOT
840 003340 005337 001046 LOOPB3: DEC CNTR ;DONE COUNT?
841 003344 001351 BNE LOOPB1 ;BR IF NOT
842 003346 000240 NOP
843 003350 005737 005624 TST SWITCH ;TEST SWITCH
844 003354 001342 BNE LOOPB ;BR IF HALT MOTION
845 003356 005237 001034 INC DSAVE1 ;UPDATE INITIAL ANGLE
846 003362 005337 001036 DEC DSAVE2 ;FINISHED ALL?
847 003366 001335 BNE LOOPB ;BR IF NOT

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048
049
050
051 003370 104000
052 003372 005037 010554
053 003376 004537 005460
054 003402 000050
055 003404 010552
056 003406 004537 005460
057 003412 000001
058 003414 010652
059 003416 000240
060 003420 005737 005624
061 003424 001364
062 003426 062737 000001 010554 D7C:
063 003434 022737 002000 010554
064 003442 001355
065
066 ;PHOSPHOR TEST <HORIZONTAL>
067
068 FILE10: SCOPE
069 CLR DELTX7
070 D7A: JSR 5,MESG ;EXIT TO DISPLAY A FRAME
071 50
072 FRME10 ;USING THE HORIZ FRAME
073 JSR 5,MESG ;EXIT TO DISPLAY A FRAME
074 1
075 FRM10 ;USING THE PERIMETER BOX
076 NOP
077 TST SWITCH ;TEST THE "SWITCH"
078 BNE D7A ;BR IF FREEZE THE MOVEMENT
079 ADD #1,DELTX7 ;UPDATE THE X ORIGIN
080 CMP #2000,DELTX7 ;TEST IF THE END
081 BNE D7A ;BR IF NOT
082
083 ;PHOSPHOR TEST <VERTICAL>
084
085 FILE11: SCOPE
086 CLR DELTY7
087 D7D: JSR 5,MESG ;EXIT TO DISPLAY A FRAME
088 50
089 FRME11 ;USING THE VERT FRAME
090 JSR 5,MESG ;EXIT TO DISPLAY A FRAME
091 1
092 FRM10 ;USING THE PERIMETER BOX
093 NOP
094 TST SWITCH ;TEST THE "SWITCH"
095 BNE D7D ;BR IF FREEZE THE MOVEMENT
096 ADD #1,DELTY7 ;UPDATE THE Y ORIGIN
097 CMP #MAXY+1,DELTY7 ;TEST IF THE END
098 BNE D7D ;BR IF NOT

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883
884 ;INTENSITY LEVEL TEST
885
886 003520 104000 FILE12: SCOPE
887 003522 012777 003616 175340 MOV #RETL, @LPVCT ;SET UP LIGHT-PEN VECTOR
888 003530 013777 001004 175334 MOV GSBRL, @LPVCT1 ;SET UP BR LEVEL
889 003536 012737 004000 001032 MOV #4000, DSAVE ;SET UP A EXECUTION COUNT
890 003544 005737 005624 FLE12A: TST SWITCH ;TEST THE "SWITCH"
891 003550 001004 BNE FLE12B ;BR IF SET "SYNC"
892 003552 042737 000004 010716 BIC #4, SYN12 ;ENSURE CLEAR "SYNC"
893 003560 000403 BR FLE12C ;BY PASS
894 003562 052737 000004 010716 FLE12B: BIS #4, SYN12 ;SET THE "SYNC"
895 003570 004537 005460 FLE12C: JSR 5, MMSG ;EXIT TO DISPLAY FRAME
896 003574 000001
897 003576 010710 FRME12 ;USING THE "INTENSITY" FRAME
898 003600 005337 001032 DEC DSAVE ;FINISHED?
899 003604 001423 BEQ FLE12D ;YES, EXIT
900 003606 012737 173400 011316 MOV #DSTOP, RAYLPA ;NO, RESET MESSAGE
901 003614 000753 BR FLE12A ;BR BACK
902 003616 012737 164000 011316 RETLP: MOV #DNOP, RAYLPA ;LIGHT-PEN HIT
903 003624 017737 175232 011330 MOV @YPOS, LPPNT ;READ Y POSITION
904 003632 042737 176000 011330 BIC #176000, LPPNT ;MASK THE BITS
905 003640 022626 CMP (SP)+, (SP)+ ;POP THE STACK
906 003642 012777 000001 175204 MOV #1, @DPC ;SINGLE STEP THE DISPLAY
907 003650 000137 005476 JMP MMSG ;JUMP TO WAIT
908 003654 013777 001072 175206 FLE12D: MOV LPVCT1, @LPVCT ;RESET THE LIGHT-PEN VECTOR
909
910
911 ;EXECUTE EDGE TEST
912
913 003662 104000 FILE13: SCOPE
914 003664 004537 005460 JSR 5, MMSG ;EXIT TO DISPLAY FRAME
915 003670 010000
916 003672 011360 FRME13 ;USING THE "EDGE" FRAME

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917
918 ;SHORT VECTOR AND RELATIVE POINT TEST
919
920 003674 104000 FILE14: SCOPE
921 003676 012700 012536 MOV #BUFFER,RO ;SET UP RO
922 003702 012720 114000 MOV #POINT,(0)+ ;SET UP INITIAL
923 003706 012720 000240 MOV #240,(0)+ ;X POSITION
924 003712 012720 000600 MOV #MAXY+1/2,(0)+ ;Y POSITION
925 003716 012720 107004 MOV #SHORTV!INT4!LINE0,(0)+ ;LOAD "SHORT VECTOR"
926 003722 004737 003754 JSR PC,LOADVT ;LOAD THE DISPLAY PATTERN
927 003726 012720 130000 MOV #RELATV,(0)+ ;LOAD "RELATIVE POINT"
928 003732 004737 003754 JSR PC,LOADVT ;LOAD THE DISPLAY PATTERN
929 003736 012720 173400 MOV #DSTOP,(0)+ ;LOAD "DISPLAY STOP"
930 003742 012720 160000 MOV #DJMP,(0)+ ;LOAD "DISPLAY JUMP"
931 003746 012720 012536 MOV #BUFFER,(0)+ ;TO THE BUFFER ADDRESS
932 003752 000413 BR FIL14A ;BR TO THE FRAME
933
934 003754 012737 000024 001046 LOADVT: MOV #24,CNTR ;LOAD A COUNTER
935 003762 012720 040077 LADVT: MOV #INTX+77,(0)+ ;LOAD A DELTA Y
936 003766 012720 004177 MOV #4177,(0)+ ;LOAD A DELTA X,Y
937 003772 005337 001046 DEC CNTR ;FINISHED?
938 003776 001371 BNE LADVT ;BR IF NOT
939 004000 000207 RTS PC ;EXIT
940
941 004002 012737 004000 004152 FIL14A: MOV #4000,10$ ;LOAD COUNTER
942 004010 012737 000200 011640 1$: MOV #200,FRM14A ;LOAD FIRST OCTAGON
943 004016 012737 000200 011642 MOV #200,FRM14B
944 004024 004537 005460 JSR R5,MSG ;DISPLAY OCT.
945 004030 000001 1
946 004032 011634 FRME14
947 004034 012737 001400 011640 MOV #1400,FRM14A ;LOAD SECOND OCTAGON
948 004042 012737 000200 011642 MOV #200,FRM14B
949 004050 004537 005460 JSR R5,MSG ;DISPLAY 2ND OCT.
950 004054 000001 1
951 004056 011634 FRME14
952 004060 012737 001400 011640 MOV #1400,FRM14A ;LOAD THIRD OCTAGON
953 004066 012737 001000 011642 MOV #MAXY-377,FRM14B
954 004074 004537 005460 JSR R5,MSG
955 004100 000001 1
956 004102 011634 FRME14
957 004104 012737 000200 011640 MOV #200,FRM14A ;LOAD FOURTH OCTAGON
958 004112 012737 001000 011642 MOV #MAXY-377,FRM14B
959 004120 004537 005460 JSR R5,MSG ;DISPLAY 4TH OCT.
960 004124 000001 1
961 004126 011634 FRME14
962 004130 004537 005460 JSR R5,MSG ;DISPLAY BAR
963 004134 000001 1
964 004136 012536 BUFFER
965 004140 005337 004152 DEC 10$ ;FINISHED ?
966 004144 001321 BNE 1$ ;BR IF NOT
967 004146 000137 004154 JMP FILE15 ;NEXT TEST
968 004152 000000 10$: 0
969

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970
971 ;GRAPHPLOT X-Y TEST
972
973 004154 104000 FILE15: SCOPE
974 004156 012700 012536 MOV #BUFFER,RO ;LOAD RO
975 004162 012720 117600 MOV #POINT:INT7,(0)+ ;LOAD INITIAL POINT
976 004166 012720 000000 MOV #0,(0)+
977 004172 012720 000000 MOV #0,(0)+
978 004176 012720 170052 MOV #STATSA:ITALD:SYNOFF:GREEN,(RO)+ ;RESET THE STATUS A
979 004202 012720 174100 MOV #STATSB:INCR,(0)+ ;LOAD INITIAL STATUS B
980 004206 012720 120000 MOV #GRAPHX,(0)+ ;LOAD GRAPH X INST
981 004212 012705 000040 DFL15C: MOV #40,R5 ;LOAD STARTUP COUNT
982 004216 012737 000000 001032 MOV #0,DSAVE ;LOAD INITIAL PLOT
983 004224 000403 BR 2$
984 004226 062737 000020 001032 1$: ADD #20,DSAVE ;UPDATE PLOT POINT
985 004234 013720 001032 2$: MOV DSAVE,(0)+ ;SAVE THE POINT
986 004240 005305 DEC R5 ;FINISHED?
987 004242 001371 BNE 1$ ;BR IF NOT
988 004244 012720 173400 MOV #DSTOP,(0)+ ;LOAD "DSTOP"
989 004250 012720 160000 MOV #DJMP,(0)+ ;LOAD "DJMP"
990 004254 012720 012536 MOV #BUFFER,(0)+ ;LOAD RETURN
991 004260 012737 000200 001032 MOV #200,DSAVE ;LOAD POINT COUNT
992 004266 042777 004000 174534 DFL15D: BIC #4000,DBUF5 ;ENSURE "GRAPHX"
993 004274 005737 005624 TST SWITCH ;TEST SWITCH
994 004300 001403 BEQ DFL15B ;BR IF GRAPHX
995 004302 052777 004000 174520 BIS #4000,DBUF5 ;SET GRAPHY
996 004310 004537 005460 DFL15B: JSR 5,MESG ;EXIT TO DISPLAY A FRAME
997 004314 000001 1
998 004316 012536 BUFFER ;USING THE GENERATED PATTERN
999 004320 062777 000001 174500 ADD #1,DBUF4 ;UPDATE INCREMENT
1000 004326 022777 174200 174472 CMP #STATSB+200,DBUF4 ;TEST IF LAST INCREMENT
1001 004334 001365 BNE DFL15B ;BR IF NOT
1002 004336 012777 174100 174462 MOV #STATSB:INCR,DBUF4 ;RELOAD INCREMENT
1003 004344 005337 001032 DEC DSAVE ;FINISHED 10 SEC?
1004 004350 001346 BNE DFL15D ;BR IF NOT
1005
1006 004352 013700 000042 MOV #42,RO
1007 004356 001407 BEQ HERE ;ACT-11/DDP-11
1008 004360 000005 RESET
1009 004362 000005 RESET
1010 004364 004710 LOGICAL: JSR PC,(RO)
1011 004366 000240 NOP
1012 004370 000240 NOP
1013 004372 000240 NOP
1014 004374 000240 NOP
1015 004376 000137 002116 HERE: JMP FILED
1016 004402 000240 NOP
1017 004404 000240 NOP
1018 004406 000240 NOP

```



```

1019
1020 ;OPERATOR OPERATOR INTERVENTION TESTS
1021
1022 FILE16: SCOPE
1023 004410 104000 MOV #RET14, @LPVCT
1024 004412 012777 004662 174450 MOV GSBRL, @LPVCT1
1025 004420 013777 001004 174444 MOV #100, DSAVE1 ;SET UP COUNT
1026 004426 012737 000100 001034 1$: MOV #BUFFER, R0 ;LOAD START ADDR.
1027 004434 012700 012536 MOV #100, DSAVE
1028 004440 012737 000100 001032 MOV #POINT!INT7!LPON!LINE0, (R0)+ ;LOAD POINT
1029 004446 012720 117744 MOV #700, (R0)+ ;LOAD X POINT
1030 004452 012720 000700 MOV #474, (R0)+ ;LOAD Y POINT
1031 004456 012720 000474 MOV PC, LOADUP ;LOAD UP THE BUFFER
1032 004462 004737 004624 JSR PC, LOADUP ;LOAD DSTOP
1033 004466 012720 173400 MOV #DSTOP, (R0)+ ;LOAD DJUMP
1034 004472 012720 160000 MOV #DJMP, (R0)+ ;LOAD RETURN ADDRESS
1035 004476 012720 012536 MOV #BUFFER, (R0)+ ;CLEAR HIT COUNT
1036 004502 005037 005116 CLR HITCNT ;PRESET THE READOUT
1037 004506 012737 030060 012442 MOV #30060, FRM16B-2
1038 004514 012737 030060 012440 MOV #30060, FRM16B-4
1039 004522 005737 005624 4$: TST SWITCH ;TEST SWITCH BIT
1040 004526 001005 BNE 6$ ;BR IF SUBTEST
1041
1042 004530 004537 005460 JSR R5, MESH ;EXIT TO DISPLAY FRAME
1043 004534 000100 100 ;USINT THE LIGHT-PEN FRAME
1044 004536 011762 FRM16 ;BR BACK
1045 004540 000770 BR 4$
1046
1047 004542 004537 005460 6$: JSR R5, MESH ;EXIT TO DISPLAY FRAME
1048 004546 000001 1 ;ASCII SUBTITLE
1049 004550 012350 FRM16A
1050
1051 004552 004537 005460 JSR R5, MESH ;EXIT TO DISPLAY FRAME
1052 004556 000001 1 BUFFER
1053 004560 012536
1054
1055
1056 004562 005337 001032 DEC DSAVE ;FINISHED ?
1057 004566 001355 BNE 4$ ;BR IF NOT MINI-LOOP
1058
1059 004570 005337 001034 DEC DSAVE1 ;FINISHED ?
1060 004574 001317 BNE 1$ ;BR IF NOT
1061 004576 000137 004410 JMP FILE16 ;RESTART
1062
    
```

```

1063
1064 004602 012701 000030      LOADAC: MOV      #24, R1          ;LOAD COUNT
1065 004606 012720 130000      MOV      #RELATV, (R0)+ ;LOAD RELATIVE POINT
1066 004612 012720 040004      1$:      MOV      #INTX+4, (R0)+ ;LOAD INTEN BIT
1067 004616 005301              DEC      R1          ;FINISHED ?
1068 004620 001374              BNE     1$          ;BR IF NOT
1069 004622 000207              RTS     PC          ;EXIT
1070
1071 004624 012737 000030 001046 LOADUP: MOV      #24, CNTR      ;LOAD COUNT
1072 004632 004737 004602      1$:      JSR     PC, LOADAC ;LOAD ACCROSS
1073 004636 012720 110000      MOV      #LONGV, (R0)+ ;LOAD LONG VECTOR
1074 004642 012720 000004      MOV      #4, (R0)+     ;LOAD VECTOR OVER
1075 004646 012720 020140      MOV      #MINUSX+140, (R0)+ ;AND UP
1076 004652 005337 001046      DEC      CNTR
1077 004656 001365              BNE     1$          ;BR IF NOT DONE
1078 004660 000207              RTS     PC          ;EXIT
1079
1080
1081 004662 017737 174174 005022 RET14: MOV      @YPOS, 40$
1082 004670 042737 176000 005022      BIC     #176000, 40$
1083 004676 017737 174156 005024      MOV      @XPOS, 41$
1084 004704 042737 176000 005024      BIC     #176000, 41$
1085 004712 005737 005624              TST     SWITCH
1086 004716 001411              BEQ     1$          ;TEST SW
1087 004720 005237 005116      INC     HITCNT      ;BR IF LIGHT PEN FOLLOW
1088 004724 013703 005116      MOV     HITCNT, R3  ;UPDATE LIGHT PEN HIT COUNT
1089 004730 012702 012444      MOV     #FRM168, R2 ;LOAD R3
1090 004734 004737 005400      JSR    PC, KBCHR   ;LOAD ADDRESS
1091 004740 000432              BR     20$         ;CONVERT OCTAL
1092 004742 013703 005024      1$:      MOV     41$, R3    ;BR
1093 004746 012702 012036      MOV     #DLT14A+4, R2 ;LOAD R3
1094 004752 004737 005400      JSR    PC, KBCHR   ;LOAD ADDRESS
1095 004756 013703 005022      MOV     40$, R3    ;LOAD X READOUT
1096 004762 012702 012050      MOV     #DLT14B+4, R2 ;LOAD R3
1097 004766 004737 005400      JSR    PC, KBCHR   ;LOAD ADDRESS
1098 004772 013737 005022 012054      MOV     40$, RAY14B ;LOAD Y READOUT
1099 005000 013737 005024 012052      MOV     41$, RAY14A ;LOAD NEW Y POSITION
1100 005006
1101 005006 012777 000001 174040 10$:      MOV     #1, @DPC   ;LOAD NEW X POSITION
1102 005014 022626              CMP     (SP)+, (SP)+ ;SINGLE STEP THE DISPLAY
1103 005016 000137 005476              JMP
1104
1105 005022 000000      40$:    0
1106 005024 000000      41$:    0
1107

```

```

1108
1109 005026 005001          20$: CLR R1
1110 005030 005002          CLR R2
1111 005032 013700 005024  MOV 41$,R0 ;GET X AXIS
1112 005036 162700 000700  SUB #700,R0 ;GET A BASE ADDRESS
1113 005042 006200          ASR R0
1114 005044 006200          ASR R0
1115 005046 001404          BEQ 30$
1116 005050 062701 000070  21$: ADD #70,R1 ;UPDATE OFFSET
1117 005054 005300          DEC R0
1118 005056 001374          BNE 21$ ;BR UNTIL DONE
1119
1120 005060 013700 005022  30$: MOV 40$,R0 ;GET X AXIS
1121 005064 162700 000500  SUB #500,R0 ;MAKE BASE ADDRESS
1122 005070 006200          ASR R0
1123 005072 006200          ASR R0 ;SHIFT RIGHT
1124 005074 001404          BEQ 32$
1125 005076 062701 000002  31$: ADD #2,R1
1126 005102 005300          DEC R0
1127 005104 001374          BNE 31$
1128 005106 042761 040000 012546 32$: BIC #INTX,BUFFER+10(R1) ;CLEAR THE BIT
1129 005114 000734          BR 10$
1130
1131 005116 000000          HITCNT: 0
  
```

```

1133          :ECHO ROUTINE KEYBOARD TO DISPLAY
1134
1135 005120 104000          FILE17: SCOPE
1136 005122 012700 012536          MOV      #BUFFER,RO          :LOAD RO
1137 005126 012720 173400          ECHOA: MOV      #DSTOP,(0)+      :MOV "DSTOPS"
1138 005132 022700 013536          CMP      #BUFFER+1000,RO      :THRUOUT THE
1139 005136 001373          BNE      ECHOA                :BUFFER
1140 005140 005037 001052          CLR      LOKRB               :HOUSE
1141 005144 005037 001032          CLR      DSAVE               :KEEPING
1142 005150 112737 000060 012527          MOVB    #60,KBOCT-4
1143 005156 112737 000060 012530          MOVB    #60,KBOCT-3          :PRESET READOUT
1144 005164 112737 000060 012531          MOVB    #60,KBOCT-2
1145 005172 112737 000060 012532          MOVB    #60,KBOCT-1
1146 005200 012737 005254 000060          MOV      #RET117,#60        :LOAD KEYBOARD VECTOR
1147 005206 012737 000340 000062          MOV      #340,#62
1148 005214 052777 000100 173570          BIS      #100,#TKS          :ENABLE INTERRUPT
1149 005222 012737 000700 005376          MOV      #700,CHCNT         :LOAD CHAR COUNT
1150 005230 012700 012536          MOV      #BUFFER,RO         :RESET RO
1151 005234 004537 005460          ECHOC: JSR      5,MESG        :EXIT TO DISPLAY A FRAME
1152 005240 000001          |
1153 005242 012452          FRAME17
1154 005244 005737 001052          TST     LOKRB                :USING THE KEYBOARD HEADER
1155 005250 001012          BNE     RET21                 :UPDATE A CHAR?
1156 005252 000770          BR      ECHOC                 :BR IF YES
1157 005254 017701 173534          RET117: MOV     #TKB,R1         :GET A CHAR
1158 005260 042701 177600          BIC     #177600,R1           :MASK
1159 005264 012737 177777 001052          MOV     #-1,LOKRB           :SET (FLAG)
1160 005272 000002          RTI
1161 005274 000000          HALT
1162 005276 005037 001052          RET21: CLR     LOKRB          :CLEAR (FLAG)
1163 005302 022701 000003          CMP     #3,R1                :TEST FOR PC
1164 005306 001002          BNE     RET20                 :BR IF NOT
1165 005310 000137 001456          JMP     STAC                   :RESTART
1166 005314 005337 005376          RET20: DEC     CHCNT           :FINISHED COUNT?
1167 005320 001002          BNE     IS                     :BR IF NOT
1168 005322 000137 005122          JMP     FILE17+2              :RESTART
1169 005326 012702 012533          IS:   MOV     #KBOCT,R2       :LOAD ADDRESS
1170 005332 010103          MOV     R1,R3
1171 005334 004737 005400          JSR     PC,KBCHR              :LOAD THE OCTAL VALUE
1172 005340 005737 001032          TST     DSAVE                 :TEST HIGH/LOW BYTE
1173 005344 001007          BNE     ECHOB                 :SAVE BYTE
1174 005346 110120          MOVB   R1,(RO)+              :SHIFT-IN
1175 005350 112710 000017          MOVB   #17,(RO)              :COMP FLAG
1176 005354 005137 001032          COM     DSAVE                 :BR BACK
1177 005360 000137 005234          JMP     ECHOC                 :SAVE CHAR
1178 005364 110120          ECHOB: MOVB   R1,(0)+         :CLEAR FLAG
1179 005366 005037 001032          CLR     DSAVE                 :BR BACK
1180 005372 000137 005234          JMP     ECHOC
1181
1182 005376 000200          CHCNT: 200
    
```

```

;UPDATE OCTAL READOUT
1183
1184
1185 005400 042703 176000 KBCHR: BIC #176000,R3
1186 005404 004737 005444 JSR PC,10$ :LOAD BITS
1187 005410 110442 MOVB R4,-(R2) :SAVE BITS
1188 005412 004737 005436 JSR PC,11$ :MOVE BITS
1189 005416 110442 MOVB R4,-(R2) :SAVE BITS
1190 005420 004737 005436 JSR PC,11$ :MOVE BITS
1191 005424 110442 MOVB R4,-(R2) :SAVE BITS
1192 005428 004737 005436 JSR PC,11$
1193 005432 110442 MOVB R4,-(R2)
1194 005434 000207 RTS PC
1195 005436 006003 11$: ROR R3
1196 005440 006003 ROR R3
1197 005442 006003 ROR R3
1198 005444 010304 10$: MOV R3,R4 :LOAD R4
1199 005446 042704 177770 BIC #177770,R4 :MASK BITS
1200 005452 062704 000060 ADD #60,R4 :MAKE A NUMBER
1201 005456 000207 RTS PC
1202
1203 005460 012537 005620 MSG: MOV (5)+,COUNT
1204 005464 012537 005622 MOV (5)+,FILE
1205 005470 013777 005622 173356 MSG: MOV FILE,@DPC ;START DISPLAY
1206 005476 005077 173306 MSGA: CLR @PSW
1207 005502 000001 WAIT
1208 005504 005737 002114 TST KRBD
1209 005510 001025 BNE MSGAB
1210 005512 005337 005620 MSGAA: DEC COUNT
1211 005516 001405 BEQ MSGB
1212 005520 012777 000001 173326 MSG: MOV #1,@DPC ;SINGLE STEP THE DISPLAY
1213 005526 000137 005476 MSGB: JMP MSGA
1214 005532 000240 MSGGB: NOP
1215 005534 005737 002114 TST KRBD
1216 005540 001010 BNE MSGBA
1217 005542 005037 005624 CLR SWITCH
1218 005546 032777 000100 172416 BIT #BIT6,@SWR
1219 005554 001402 BEQ MSGBA
1220 005556 005137 005624 COM SWITCH
1221 005562 000205 MSGBA: RTS S
1222 005564 005737 005624 MSGAB: TST SWITCH
1223 005570 001350 BNE MSGAA
1224 005572 005737 001050 TST CHANGE
1225 005576 001745 BEQ MSGAA
1226 005600 005037 001050 CLR CHANGE
1227 005604 005037 005624 CLR SWITCH
1228 005610 005037 001042 CLR HOLD
1229 005614 000137 001162 JMP SCOPEC
1230 005620 000000 COUNT: 0
1231 005622 000000 FILE: 0
1232 005624 000000 SWITCH: 0

```

1233				
1234	005626	114000		
1235	005630	000000		
1236	005632	001100		
1237	005634	170052		
1238	005636	103124		
1239	005640	017	017	
1240	005642	052107	032055	020060
1241	005650	051117	043440	026524
1242	005656	032064	053440	052111
1243	005664	020110	051126	032061
1244	005672	053040	051511	040525
1245	005700	020114	042524	052123
1246	005706	020040	046474	026504
1247	005714	030461	042055	043504
1248	005722	041524	041455	000076
1249	005730	015	012	012
1250	005733	040	020040	044504
1251	005740	042522	052103	051117
1252	005746	131		
1253	005747	015	012	012
1254	005752	030060	036440	040440
1255	005760	036440	042040	051111
1256	005766	041505	047524	054522
1257	005774	015	012	
1258	005776	030460	036440	041040
1259	006004	036440	042040	052117
1260	006012	051040	050105	040505
1261	006020	044524	044502	044514
1262	006026	054524		
1263	006030	015	012	
1264	006032	031060	036440	041440
1265	006040	036440	050040	047111
1266	006046	052503	044123	047511
1267	006054	020116	047101	020104
1268	006062	042526	052103	051117
1269	006070	041440	051125	040526
1270	006076	052524	042522	036040
1271	006104	020120	051117	054440
1272	006112	047440	043106	042523
1273	006120	020124	042101	027112
1274	006126	076		
1275	006127	015	012	
1276	006131	060	020063	020075
1277	006136	020104	020075	041517
1278	006144	040524	047507	051516
1279	006152	047440	020122	050523
1280	006160	040525	042522	123
1281	006165	015	012	
1282	006167	060	020064	020075
1283	006174	020105	020075	044103
1284	006202	051101	041501	042524
1285	006210	020122	042523	020124
1286	006216	041474	040510	027122
1287	006224	040440	045104	037056
1288	006232	015	012	

```

FRMO: POINT
0
MAXY-277
STATSA!ITALO!SYNOFF!GREEN
CHAR!INT4!LPOFF!BLKOFF!LINED
.BYTE 17,17
.ASCII /GT-40 OR GT-44 WITH VR14 VISUAL TEST <MD-11-DDGTC-C>/

.BYTE 15,12,12
.ASCII / DIRECTORY/

.BYTE 15,12,12
.ASCII /00 = A = DIRECTORY/

.BYTE 15,12
.ASCII /01 = B = DOT REPEATIBILITY/

.BYTE 15,12
.ASCII /02 = C = PINCUSHION AND VECTOR CURVATURE <X OR Y OFFSET ADJ.>/

.BYTE 15,12
.ASCII /03 = D = OCTAGONS OR SQUARES/

.BYTE 15,12
.ASCII /04 = E = CHARACTER SET <CHAR. ADJ.>/

.BYTE 15,12

```

# E03

1289	006234	032460	036440	043040
1290	006242	036440	042040	051501
1291	006250	020110	044514	042516
1292	006256	020123	047101	020104
1293	006264	046102	047111	113
1294	006271	015	012	
1295	006273	060	020066	020075
1296	006300	020107	020075	047510
1297	006306	044522	047532	052116
1298	006314	046101	053040	041505
1299	006322	047524	020122	047101
1300	006330	046107	020105	040474
1301	006336	045104	020056	020130
1302	006344	042526	052103	051117
1303	006352	046040	047105	052107
1304	006360	037110		
1305	006362	015	012	
1306	006364	033460	036440	044040
1307	006372	036440	053040	051105
1308	006400	044524	040503	020114
1309	006406	042526	052103	051117
1310	006414	040440	043516	042514
1311	006422	036040	042101	027112
1312	006430	054440	053040	041505
1313	006436	047524	020122	042514
1314	006444	043516	044124	076
1315	006451	015	012	
1316	006453	061	020060	020075
1317	006460	020111	020075	047510
1318	006466	044522	047532	052116
1319	006474	046101	050040	047510
1320	006502	050123	047510	020122
1321	006510	042524	052123	
1322	006514	015	012	
1323	006516	030461	036440	045040
1324	006524	036440	053040	051105
1325	006532	044524	040503	020114
1326	006540	044120	051517	044120
1327	006546	051117	052040	051505
1328	006554	124		
1329	006555	015	012	
1330	006557	061	020062	020075
1331	006564	020113	020075	047111
1332	006572	042524	051516	052111
1333	006600	020131	042514	042526
1334	006606	020114	047101	020104
1335	006614	044514	044107	026524
1336	006622	042520	020116	042524
1337	006630	052123		
1338	006632	015	012	
1339	006634	031461	036440	046040
1340	006642	036440	042440	043504
1341	006650	020105	046106	043501
1342	006656	052040	051505	124
1343	006663	015	012	
1344	006665	061	020064	020075

.ASCII /05 = F = DASH LINES AND BLINK/

.BYTE 15,12  
.ASCII /06 = G = HORIZONTAL VECTOR ANGLE <ADJ. X VECTOR LENGTH>/

.BYTE 15,12  
.ASCII /07 = H = VERTICAL VECTOR ANGLE <ADJ. Y VECTOR LENGTH>/

.BYTE 15,12  
.ASCII /10 = I = HORIZONTAL PHOSPHOR TEST/

.BYTE 15,12  
.ASCII /11 = J = VERTICAL PHOSPHOR TEST/

.BYTE 15,12  
.ASCII /12 = K = INTENSITY LEVEL AND LIGHT-PEN TEST/

.BYTE 15,12  
.ASCII /13 = L = EDGE FLAG TEST/

.BYTE 15,12  
.ASCII /14 = M = SHORT VECTORS AND RELATIVE POINT/

1345	006672	020115	020075	044123
1346	006700	051117	020124	042526
1347	006706	052103	051117	020123
1348	006714	047101	020104	042522
1349	006722	040514	044524	042526
1350	006730	050040	044517	052116
1351	006736	015	012	
1352	006740	032461	036440	047040
1353	006746	036440	043440	040522
1354	006754	044120	046120	052117
1355	006762	052040	051505	124
1356	006767	015	012	
1357	006771	061	020066	020075
1358	006776	020117	020075	044514
1359	007004	044107	020124	042520
1360	007012	020116	047506	046114
1361	007020	053517		
1362	007022	015	012	
1363	007024	033461	036440	050040
1364	007032	036440	045440	054505
1365	007040	047502	051101	020104
1366	007046	041505	047510	052040
1367	007054	051505	124	
1368	007057	015	012	012
1369	007062	020040	052522	047502
1370	007070	052125	052040	020117
1371	007076	042522	040515	047111
1372	007104	047440	020116	044124
1373	007112	020105	040520	052124
1374	007120	051105	116	
1375	007123	015	012	
1376	007125	040	041440	020122
1377	007132	047524	051440	046105
1378	007140	041505	020124	052523
1379	007146	026502	044520	052103
1380	007154	051125	020105	051117
1381	007162	051440	047524	020120
1382	007170	047515	044524	047117
1383	007176	000040		
1384				
1385	007200	173400		
1386	007202	160000		
1387	007204	005626		
1388				
1389	007206			
1390	007206	170052		
1391	007210	116124		
1392	007212	041000		
1393	007214	000600		
1394	007216	040000		
1395	007220	000000		
1396	007222	041000		
1397	007224	000600		
1398	007226	041777		
1399	007230	000000		
1400	007232	041000		

.BYTE 15,12  
.ASCII /15 = N = GRAPHLOT TEST/

.BYTE 15,12  
.ASCII /16 = 0 = LIGHT PEN FOLLOW/

.BYTE 15,12  
.ASCII /17 = P = KEYBOARD ECHO TEST/

.BYTE 15,12,12  
.ASCII / RUBOUT TO REMAIN ON THE PATTERN/

.BYTE 15,12  
.ASCII / CR TO SELECT SUB-PICTURE OR STOP MOTION /

.EVEN  
DSTOP  
DJMP  
FRMEO

FRME1:

STATSA!ITALO!SYNOFF!GREEN  
POINT!INTO!LPOFF!BLKOFF!LINEO  
INTX+1000  
MAXY+1/2  
INTX+0  
0  
INTX+1000  
MAXY+1/2  
INTX+1777  
0  
INTX+1000



1401	007234	000600
1402	007236	041777
1403	007240	001377
1404	007242	041000
1405	007244	000600
1406	007246	040000
1407	007250	001377
1408	007252	164000
1409	007254	164000
1410	007256	164000
1411	007260	164000
1412	007262	164000
1413	007264	164000
1414	007266	164000
1415	007270	173400
1416	007272	160000
1417	007274	007206

MAXY+1/2  
INTX+1777  
MAXY  
INTX+1000  
MAXY+1/2  
INTX  
MAXY  
DNOP  
DNOP  
DNOP  
DNOP  
DNOP  
DNOP  
DNOP  
DSTOP  
DJMP  
FRME1

:FILE 2 <ANALOG TUNE-UP TEST >

1421	007276	116524
1422	007300	000000
1423	007302	000000
1424	007304	170052
1425	007306	110000
1426	007310	041777
1427	007312	000000
1428	007314	040000
1429	007316	001377
1430	007320	061777
1431	007322	000000
1432	007324	040000
1433	007326	021377
1434	007330	041777
1435	007332	020000
1436	007334	060000
1437	007336	001377
1438	007340	061777
1439	007342	020000
1440	007344	060000
1441	007346	021377
1442	007350	041777
1443	007352	001377
1444	007354	061777
1445	007356	021377
1446	007360	001777
1447	007362	000000
1448	007364	061777
1449	007366	001377
1450	007370	041777
1451	007372	021377
1452	007374	173400
1453	007376	160000
1454	007400	007276

FRME2: POINT!INT2!LPOFF!BLKOFF!LINED  
0  
0  
STATSA!ITALD!SYNOFF!GREEN  
LONGV  
INTX!MAXX ; +X, +Y  
0  
INTX ; +X, +Y  
MAXY  
INTX!MINUSX!MAXX ; -X, +Y  
0  
INTX ; +X, -Y  
MINUSY!MAXY  
INTX!MAXX ; +X, -Y  
MINUSY  
INTX!MINUSX ; -X, +Y  
MAXY  
INTX!MINUSX!MAXX ; -X, -Y  
MINUSY  
INTX!MINUSX ; -X, -Y  
MINUSY!MAXY  
INTX!MAXX  
MAXY  
INTX!MINUSX!MAXX  
MINUSX!MAXY  
MAXX  
0  
INTX!MINUSX!MAXX  
MAXY  
INTX!MAXX  
MINUSX!MAXY  
DSTOP  
DJMP  
FRME2

:OCTAGONS

# H03

GT-40/GT-44 WITH VR14 VISUAL DISPLAY TEST MAINDEC-11-DDGTC-C  
DDGTCC.P11 15-SEP-76 00:00

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1457				
1458	007402	117124	FRME3: POINT!INT4!LPOFF!BLKOFF!LINE0	
1459	007404	000774	774	
1460	007406	000564	564	
1461	007410	170052	STATSA!ITALO!SYNOFF!GREEN	
1462	007412	110000	LONGV	;OCTOGON BY LENGTH OF 7
1463	007414	040007	INTX+7	
1464	007416	000000	0	
1465	007420	040007	INTX+7	
1466	007422	000007	7	
1467	007424	040000	INTX	
1468	007426	000007	7	
1469	007430	060007	INTX!MINUSX+7	
1470	007432	000007	7	
1471	007434	060007	INTX!MINUSX+7	
1472	007436	000000	0	
1473	007440	060007	INTX!MINUSX+7	
1474	007442	020007	MINUSX+7	
1475	007444	040000	INTX	
1476	007446	020007	MINUSX+7	
1477	007450	040007	INTX+7	
1478	007452	020007	MINUSX+7	
1479	007454	114000	POINT	
1480	007456	000770	770	
1481	007460	000550	550	
1482	007462	110000	LONGV	;OCTOGON BY LENGTH OF 17
1483	007464	040017	INTX+17	
1484	007466	000000	0	
1485	007470	040017	INTX+17	
1486	007472	000017	17	
1487	007474	040000	INTX	
1488	007476	000017	17	
1489	007500	060017	INTX!MINUSX+17	
1490	007502	000017	17	
1491	007504	060017	INTX!MINUSX+17	
1492	007506	000000	0	
1493	007510	060017	INTX!MINUSX+17	
1494	007512	020017	MINUSX+17	
1495	007514	040000	INTX	
1496	007516	020017	MINUSX+17	
1497	007520	040017	INTX+17	
1498	007522	020017	MINUSX+17	
1499	007524	114000	POINT	
1500	007526	000760	760	
1501	007530	000520	520	
1502	007532	110000	LONGV	;OCTOGON BY LENGTH OF 37
1503	007534	040037	INTX+37	
1504	007536	000000	0	
1505	007540	040037	INTX+37	
1506	007542	000037	37	
1507	007544	040000	INTX	
1508	007546	000037	37	
1509	007550	060037	INTX!MINUSX+37	
1510	007552	000037	37	
1511	007554	060037	INTX!MINUSX+37	
1512	007556	000000	0	

1513	007560	060037	INTX!MINUSX+37	
1514	007562	020037	MINUSX+37	
1515	007564	040000	INTX	
1516	007566	020037	MINUSX+37	
1517	007570	040037	INTX+37	
1518	007572	020037	MINUSX+37	
1519	007574	114000	POINT	
1520	007576	000740	740	
1521	007600	000440	440	
1522	007602	110000	LONGV	;OCTOGON BY LENGTH OF 77
1523	007604	040077	INTX+77	
1524	007606	000000	0	
1525	007610	040077	INTX+77	
1526	007612	000077	77	
1527	007614	040000	INTX	
1528	007616	000077	77	
1529	007620	060077	INTX!MINUSX+77	
1530	007622	000077	77	
1531	007624	060077	INTX!MINUSX+77	
1532	007626	000000	0	
1533	007630	060077	INTX!MINUSX+77	
1534	007632	020077	MINUSX+77	
1535	007634	040000	INTX	
1536	007636	020077	MINUSX+77	
1537	007640	040077	INTX+77	
1538	007642	020077	MINUSX+77	
1539	007644	114000	POINT	
1540	007646	000700	700	
1541	007650	000300	300	
1542	007652	110000	LONGV	;OCTOGON BY LENGTH OF 177
1543	007654	040177	INTX+177	
1544	007656	000000	0	
1545	007660	040177	INTX+177	
1546	007662	000177	177	
1547	007664	040000	INTX	
1548	007666	000177	177	
1549	007670	060177	INTX!MINUSX+177	
1550	007672	000177	177	
1551	007674	060177	INTX!MINUSX+177	
1552	007676	000000	0	
1553	007700	060177	INTX!MINUSX+177	
1554	007702	020177	MINUSX+177	
1555	007704	040000	INTX	
1556	007706	020177	MINUSX+177	
1557	007710	040177	INTX+177	
1558	007712	020177	MINUSX+177	
1559	007714	114000	POINT	
1560	007716	000600	600	
1561	007720	000000	0	
1562	007722	110000	LONGV	;OCTOGON BY LENGTH OF 377
1563	007724	040377	INTX+377	
1564	007726	000000	0	
1565	007730	040377	INTX+377	
1566	007732	000377	377	
1567	007734	040000	INTX	
1568	007736	000377	377	

1569 007740 060377  
 1570 007742 000377  
 1571 007744 060377  
 1572 007746 000000  
 1573 007750 060377  
 1574 007752 020377  
 1575 007754 040000  
 1576 007756 020377  
 1577 007760 040377  
 1578 007762 020377  
 1579 007764 173400  
 1580 007766 160000  
 1581 007770 007402  
 1582  
 1583  
 1584 007772 117124  
 1585 007774 001000  
 1586 007776 000600  
 1587 010000 170052  
 1588  
 1589  
 1590 010002 110000  
 1591 010004 040007  
 1592 010006 000000  
 1593 010010 040000  
 1594 010012 000007  
 1595 010014 060007  
 1596 010016 000000  
 1597 010020 040000  
 1598 010022 020007  
 1599 010024 020004  
 1600 010026 020004  
 1601  
 1602 010030 110000  
 1603 010032 040017  
 1604 010034 000000  
 1605 010036 040000  
 1606 010040 000017  
 1607 010042 060017  
 1608 010044 000000  
 1609 010046 040000  
 1610 010050 020017  
 1611 010052 020007  
 1612 010054 020007  
 1613  
 1614 010056 110000  
 1615 010060 040037  
 1616 010062 000000  
 1617 010064 040000  
 1618 010066 000037  
 1619 010070 060037  
 1620 010072 000000  
 1621 010074 040000  
 1622 010076 020037  
 1623 010100 020017  
 1624 010102 020017

INTX!MINUSX+377  
 377  
 INTX!MINUSX+377  
 0  
 INTX!MINUSX+377  
 MINUSX+377  
 INTX  
 MINUSX+377  
 INTX+377  
 MINUSX+377  
 DSTOP  
 DJMP  
 FRME3  
 ;SQUARES 7,17,37,77,177,377,777 WIDE  
 FRME3A: POINT!INT4!LPOFF!BLKOFF!LINED ; BY 7  
 1000  
 600  
 STATSA!ITALO!SYNOFF!GREEN  
 Q=7  
 R=4  
 LONGV ;BY 7 AND 4  
 INTX+7  
 0  
 INTX  
 7  
 INTX!MINUSX+7  
 0  
 INTX  
 MINUSX+7  
 MINUSX+4  
 MINUSX+4  
 .LIST  
 LONGV ;BY 17 AND 7  
 INTX+17  
 0  
 INTX  
 17  
 INTX!MINUSX+17  
 0  
 INTX  
 MINUSX+17  
 MINUSX+7  
 MINUSX+7  
 .LIST  
 LONGV ;BY 37 AND 17  
 INTX+37  
 0  
 INTX  
 37  
 INTX!MINUSX+37  
 0  
 INTX  
 MINUSX+37  
 MINUSX+17  
 MINUSX+17

1625  
1626 010104 110000  
1627 010106 040077  
1628 010110 000000  
1629 010112 040000  
1630 010114 000077  
1631 010116 060077  
1632 010120 000000  
1633 010122 040000  
1634 010124 020077  
1635 010126 020037  
1636 010130 020037  
1637  
1638 010132 110000  
1639 010134 040177  
1640 010136 000000  
1641 010140 040000  
1642 010142 000177  
1643 010144 060177  
1644 010146 000000  
1645 010150 040000  
1646 010152 020177  
1647 010154 020077  
1648 010156 020077  
1649  
1650 010160 110000  
1651 010162 040377  
1652 010164 000000  
1653 010166 040000  
1654 010170 000377  
1655 010172 060377  
1656 010174 000000  
1657 010176 040000  
1658 010200 020377  
1659 010202 020177  
1660 010204 020177  
1661  
1662 010206 110000  
1663 010210 040777  
1664 010212 000000  
1665 010214 040000  
1666 010216 000777  
1667 010220 060777  
1668 010222 000000  
1669 010224 040000  
1670 010226 020777  
1671 010230 020377  
1672 010232 020377  
1673  
1674 010234 173400  
1675 010236 160000  
1676 010240 007772  
1677  
1678  
1679  
1680 010242 117000

.LIST  
LONGV ;BY 77 AND 37  
INTX+77  
0  
INTX  
77  
INTX!MINUSX+77  
0  
INTX  
MINUSX+77  
MINUSX+37  
MINUSX+37  
.LIST  
LONGV ;BY 177 AND 77  
INTX+177  
0  
INTX  
177  
INTX!MINUSX+177  
0  
INTX  
MINUSX+177  
MINUSX+77  
MINUSX+77  
.LIST  
LONGV ;BY 377 AND 177  
INTX+377  
0  
INTX  
377  
INTX!MINUSX+377  
0  
INTX  
MINUSX+377  
MINUSX+177  
MINUSX+177  
.LIST  
LONGV ;BY 777 AND 377  
INTX+777  
0  
INTX  
777  
INTX!MINUSX+777  
0  
INTX  
MINUSX+777  
MINUSX+377  
MINUSX+377  
.LIST  
DSTOP  
DJMP  
FRME3A  
;DASH LINE TEST  
FRME5: POINT!INT4

1681	010244	000000			0
1682	010246	001000			1000
1683	010250	174400			STATSB!SIZED
1684	010252	170052			STATSA!ITALO!SYNOFF!GREEN
1685	010254	100004			CHAR!LINED
1686	010256	017	017		.BYTE 17,17
1687	010260	047523	044514	020104	.ASCII /SOLID /
1688	010266	020040	020040		
1689	010272	110004			LONGV!LINED
1690	010274	040400			40400
1691	010276	000000			0
1692	010300	000400			400
1693	010302	000000			0
1694	010304	110030			LONGV!BLKON
1695	010306	040400			40400
1696	010310	000000			0
1697	010312	100020			CHAR!BLKOFF
1698	010314	015	012	012	.BYTE 15,12,12,12,12,12
1699	010317	012	012	012	
1700	010322	040504	044123	044440	.ASCII /DASH I /
1701	010330	020040	020040		
1702	010334	110005			LONGV!LINE1
1703	010336	040400			40400
1704	010340	000000			0
1705	010342	000400			400
1706	010344	000000			0
1707	010346	110030			LONGV!BLKON
1708	010350	040400			40400
1709	010352	000000			0
1710	010354	100020			CHAR!BLKOFF
1711	010356	015	012	012	.BYTE 15,12,12,12,12,12
1712	010361	012	012	012	
1713	010364	040504	044123	044440	.ASCII /DASH II /
1714	010372	020111	020040		
1715	010376	110006			LONGV!LINE2
1716	010400	040400			40400
1717	010402	000000			0
1718	010404	000400			400
1719	010406	000000			0
1720	010410	110030			LONGV!BLKON
1721	010412	040400			40400
1722	010414	000000			0
1723	010416	100020			CHAR!BLKOFF
1724	010420	015	012	012	.BYTE 15,12,12,12,12,12
1725	010423	012	012	012	
1726	010426	040504	044123	044440	.ASCII /DASH III /
1727	010434	044511	020040		
1728	010440	110007			LONGV!LINE3
1729	010442	040400			40400
1730	010444	000000			0
1731	010446	000400			400
1732	010450	000000			0
1733	010452	110030			LONGV!BLKON
1734	010454	040400			40400
1735	010456	000000			0
1736	010460	110024			LONGV!BLKOFF!LINED

1737	010462	000000	0
1738	010464	000000	0
1739	010466	173400	DSTOP
1740	010470	160000	DJMP
1741	010472	010242	FRME5
1742			
1743			;VECTOR LENGTH TEST <FILE 6 AND 7>
1744			
1745	010474	114000	FRME6: POINT
1746	010476	001777	MAXX
1747	010500	000000	0
1748	010502	170052	STATSA!ITALO!SYNOFF!GREEN
1749	010504	113724	LONGV!INT7!LPOFF!BLKOFF!LINED
1750	010506	040000	INTX
1751	010510	001377	MAXY
1752	010512	114000	POINT
1753	010514	000000	0
1754	010516	001377	MAXY
1755	010520	110000	LONGV
1756	010522	041777	INTX!MAXX
1757	010524	000000	0
1758	010526	173400	DSTOP
1759	010530	114000	FRME6A: POINT
1760	010532	000000	0
1761	010534	000000	0
1762	010536	110000	LONGV
1763	010540	000000	DELT6: 0
1764	010542	000000	DELT6: 0
1765	010544	173400	DSTOP
1766	010546	160000	DJMP
1767	010550	010530	FRME6A
1768			
1769			
1770			;PHOSPHOR TEST
1771			
1772	010552	114000	FRME10: POINT
1773	010554	000000	DELT7: 0
1774	010556	000000	0
1775	010560	170052	STATSA!ITALO!SYNOFF!GREEN
1776	010562	113724	DFI10A: LONGV!INT7!LPOFF!BLKOFF!LINED
1777	010564	040000	INTX
1778	010566	001377	MAXY
1779	010570	000002	2
1780	010572	000000	0
1781	010574	040000	INTX
1782	010576	021377	MINUSY!MAXY
1783	010600	000002	2
1784	010602	000000	0
1785	010604	173400	DSTOP
1786	010606	160000	DJMP
1787	010610	010562	DFI10A
1788			
1789			;PHOSPHOR TEST
1790			
1791	010612	114000	FRME11: POINT
1792	010614	000000	0

1793 010616 000000  
 1794 010620 170052  
 1795 010622 113724  
 1796 010624 041777  
 1797 010626 000000  
 1798 010630 000000  
 1799 010632 000002  
 1800 010634 061777  
 1801 010636 000000  
 1802 010640 000000  
 1803 010642 000002  
 1804 010644 173400  
 1805 010646 160000  
 1806 010650 010622  
 1807  
 1808 010652 117604  
 1809 010654 000000  
 1810 010656 000000  
 1811 010660 110000  
 1812 010662 041777  
 1813 010664 000000  
 1814 010666 040000  
 1815 010670 001377  
 1816 010672 061777  
 1817 010674 000000  
 1818 010676 040000  
 1819 010700 021377  
 1820 010702 173400  
 1821 010704 160000  
 1822 010706 010652  
 1823  
 1824  
 1825  
 1826 010710 114164  
 1827 010712 000000  
 1828 010714 001200  
 1829 010716 170252  
 1830 010720 103600  
 1831 010722 017  
 1832 010724 047111  
 1833 010732 052111  
 1834 010740 020040  
 1835 010742 110000  
 1836 010744 041000  
 1837 010746 000000  
 1838 010750 130000  
 1839 010752 057600  
 1840 010754 103400  
 1841 010756 015  
 1842 010761 012  
 1843 010762 047111  
 1844 010770 052111  
 1845 010776 020040  
 1846 011000 110000  
 1847 011002 041000  
 1848 011004 000000

017 017  
 042524 051516  
 020131 020067  
 012 012  
 042524 051516  
 020131 020066

DELTY7: 0  
 DF111C: STATSA!ITALO!SYNOFF!GREEN  
 LONGV!INT7!LPOFF!BLKOFF!LINEO  
 INTX!MAXX  
 0  
 0  
 2  
 INTX!MINUSX!MAXX  
 0  
 0  
 2  
 DSTOP  
 DJMP  
 DF111C  
 FRM10: POINT!INT7!LINEO  
 0  
 0  
 LONGV  
 INTX!MAXX  
 0  
 INTX  
 MAXY  
 INTX!MINUSX!MAXX  
 0  
 INTX  
 MINUSX!MAXY  
 DSTOP  
 DJMP  
 FRM10  
 ;INTENSITY TEST  
 FRME12: POINT!LINEO!LPON!BLKOFF  
 0  
 1200  
 SYN12: STATSA!LPLITE!SYNOFF!ITALO!GREEN  
 CHAR!INT7  
 .BYTE 17,17  
 .ASCII /INTENSITY 7 /  
 LONGV  
 41000  
 0  
 RELATV  
 57600  
 CHAR!INT6  
 .BYTE 15,12,12,12  
 .ASCII /INTENSITY 6 /  
 LONGV  
 41000  
 0



1894	0111006	130000			RELATV
1895	0111010	057600			57600
1896	0111012	103200			CHAR!INT5
1897	0111014	015	012	012	.BYTE 15,12,12,12
1898	0111017	012			
1899	0111020	047111	042524	051516	.ASCII /INTENSITY 5 /
1900	0111022	052111	020131	020065	
1901	0111024	020040			
1902	0111036	110000			LONGV
1903	0111040	041000			41000
1904	0111044	000000			0
1905	0111046	130000			RELATV
1906	0111050	057600			57600
1907	0111052	103000			CHAR!INT4
1908	0111055	015	012	012	.BYTE 15,12,12,12
1909	0111058	012			
1910	0111061	047111	042524	051516	.ASCII /INTENSITY 4 /
1911	0111064	052111	020131	020064	
1912	0111072	020040			
1913	0111074	110000			LONGV
1914	0111076	041000			41000
1915	0111100	000000			0
1916	0111102	130000			RELATV
1917	0111104	057600			57600
1918	0111106	102600			CHAR!INT3
1919	0111110	015	012	012	.BYTE 15,12,12,12
1920	0111113	012			
1921	0111114	047111	042524	051516	.ASCII /INTENSITY 3 /
1922	0111122	052111	020131	020063	
1923	0111130	020040			
1924	0111132	110000			LONGV
1925	0111134	041000			41000
1926	0111136	000000			0
1927	0111140	130000			RELATV
1928	0111142	057600			57600
1929	0111144	102400			CHAR!INT2
1930	0111146	015	012	012	.BYTE 15,12,12,12
1931	0111151	012			
1932	0111152	047111	042524	051516	.ASCII /INTENSITY 2 /
1933	0111160	052111	020131	020062	
1934	0111166	020040			
1935	0111170	110000			LONGV
1936	0111172	041000			41000
1937	0111174	000000			0
1938	0111176	130000			RELATV
1939	011200	057600			57600
1940	011202	102200			CHAR!INT1
1941	011204	015	012	012	.BYTE 15,12,12,12
1942	011207	012			
1943	011210	047111	042524	051516	.ASCII /INTENSITY 1 /
1944	011216	052111	020131	020061	
1945	011224	020040			
1946	011226	110000			LONGV
1947	011230	041000			41000
1948	011232	000000			0
1949	011234	130000			RELATV

C04

```

19005 011236 057600
19006 011240 102000
19007 011244 015
19008 011248 012
19009 011252 047.11
19010 011256 052111
19011 011260 020040
19012 011264 110000
19013 011268 041000
19014 011272 000000
19015 011276 130000
19016 011280 057600
19017 011284 164000
19018 011300 164000
19019 011304 164000
19020 011308 164000
19021 011312 164000
19022 011316 164000
19023 011320 164000
19024 011324 117100
19025 011328 001500
19026 011332 001200
19027 011336 100000
19028 011340 044514
19029 011344 042520
19030 011350 000124
19031 011352 173400
19032 011354 160000
19033 011356 010710
19034 011360 117124
19035 011362 000000
19036 011364 000000
19037 011366 170052
19038 011370 100000
19039 011372 017
19040 011374 110000
19041 011376 041777
19042 011400 000000
19043 011402 040000
19044 011404 001377
19045 011406 061777
19046 011410 000000
19047 011412 040000
19048 011414 021377
19049 011416 114000
19050 011420 000100
19051 011422 000300

```

```

012 012
042524 051516
020131 020060

```

```

044107 020124
020116 044510

```

017

```

57600
CHAR!INTO
.BYTE 15,12,12,12
.ASCII /INTENSITY 0 /

```

```

LONGV
41000
0
RELATV
57600
DNOP
DNOP
DNOP
DNOP
DNOP
DNOP
DNOP
DNOP
DNOP
DNOP
DNOP
DNOP
DNOP
DNOP
DNOP
DNOP

```

```

RAYLPA: DSTOP
DNOP
DNOP

```

```

DFI12A: POINT!INT4!LPOFF
1500
LPPNT: 1200
CHAR
.ASCIIZ /LIGHT PEN HIT/

```

```

.EVEN
DSTOP
DJMP
FRME12

```

:EDGE FILE

```

FRME13: POINT!INT4!LPOFF!BLKOFF!LINE0

```

```

0
0
STATSA!ITALO!SYNOFF!GREEN
CHAR
.BYTE 17,17
LONGV
INTX!MAXX
0
INTX
MAXY
INTX!MINUSX!MAXX
0
INTX
MINUSY!MAXY
POINT
100
300

```

:LEFT SIDE

```

1961 01144 110000
1962 01144 040000
1963 01144 000400
1964 01144 060200
1965 01144 000000
1966 01144 040000
1967 01144 020400
1968 01144 040200
1969 01144 000000
1970 01144 114000
1971 01144 000200
1972 01144 001300
1973 01144 110000
1974 01144 040400
1975 01144 000000
1976 01144 040000
1977 01144 000200
1978 01144 060400
1979 01144 000000
1980 01144 040000
1981 01144 020200
1982 01144 114000
1983 01150 001700
1984 01150 001100
1985 01150 110000
1986 01150 040000
1987 01151 020400
1988 01151 040200
1989 01151 000000
1990 01151 040000
1991 01152 000400
1992 01152 060200
1993 01152 000000
1994 01152 114000
1995 01153 001600
1996 01153 000100
1997 01153 110000
1998 01153 060400
1999 01154 000000
2000 01154 040000
2001 01154 020200
2002 01154 040400
2003 01155 000000
2004 01155 040000
2005 01155 000200
2006 01155 114000
2007 01156 001777
2008 01156 000400
2009 01156 110000
2010 01156 000020
2011 01157 000000
2012 01157 100000
2013 01157 015
2014 01157 114000
2015 01160 000000
2016 01160 000500

```

101

```

LONGV
INTX
400
INTX!MINUSX+200
0
INTX
MINUSY+400
INTX+200
0
POINT
200
MAXY+1-100
LONGV
INTX+400
0
INTX
200
INTX!MINUSX+400
0
INTX
MINUSY+200
POINT
1700
MAXY+1-300
LONGV
INTX
MINUSY+400
INTX+200
0
INTX
400
INTX!MINUSX+200
0
POINT
1600
100
LONGV
INTX!MINUSX+400
0
INTX
MINUSY+200
INTX+400
0
INTX
200
POINT
MAXX
400
LONGV
20
0
CHAR
.BYTE 15.101
POINT
0
500

```

;TOP SIDE

;RIGHT SIDE

;BOTTOM SIDE

;"CR" AND AN "A"

E04

0000000017	011604	110000
0000000018	011606	020012
0000000019	011610	000000
0000000020	011612	100000
0000000021	011614	040
0000000022	011616	164000
0000000023	011620	164000
0000000024	011622	173400
0000000025	011624	164000
0000000026	011626	164000
0000000027	011630	160000
0000000028	011632	011360

102

LONGV  
MINUSX+12  
0  
CHAR  
.BYTE 40,102 ;"SPACE" AND AN "B"  
DNOP  
DNOP  
DSTOP  
DNOP  
DNOP  
DJMP  
FRME13

2030  
2031  
2032 011634 170052  
2033 011636 117124  
2034 011640 000000  
2035 011642 000000  
2036 011644 104000  
2037 011646 056200  
2038 011650 056271  
2039 011652 040071  
2040 011654 076271  
2041 011656 076200  
2042 011660 076371  
2043 011662 040171  
2044 011664 056371  
2045 011666 020504  
2046 011670 164000  
2047 011672 164000  
2048 011674 130000  
2049 011676 057000  
2050 011700 057074  
2051 011702 040074  
2052 011704 077074  
2053 011706 077000  
2054 011710 077174  
2055 011712 040174  
2056 011714 057174  
2057 011716 020504  
2058 011720 164000  
2059 011722 164000  
2060 011724 104000  
2061 011726 057600  
2062 011730 057677  
2063 011732 040077  
2064 011734 077677  
2065 011736 077600  
2066 011740 077777  
2067 011742 040177  
2068 011744 057777  
2069 011746 020504  
2070 011750 164000  
2071 011752 164000  
2072 011754 173400  
2073 011756 160000  
2074 011760 011634

FRME14: STATSA!ITALD!SYNOFF!GREEN  
POINT!INT4!BLKOFF!LPOFF!LINEO  
FRM14A: 0  
FRM14B: 0  
SHORTV  
INTX+16200  
INTX+16200+71  
INTX+71  
INTX!MINUSX+16200+71  
INTX!MINUSX+16200  
INTX!MINUSX+16200+MINSUY+71  
INTX+MINSUY+71  
INTX+16200+MINSUY+71  
20504  
DNOP  
DNOP  
RELATV  
INTX+17000  
INTX+17000+74  
INTX+74  
INTX!MINUSX+17000+74  
INTX!MINUSX+17000  
INTX!MINUSX+17000+MINSUY+74  
INTX+MINSUY+74  
INTX+17000+MINSUY+74  
20504  
DNOP  
DNOP  
SHORTV  
INTX+17600  
INTX+17600+77  
INTX+77  
INTX!MINUSX+17600+77  
INTX!MINUSX+17600  
INTX!MINUSX+17600+MINSUY+77  
INTX+MINSUY+77  
INTX+17600+MINSUY+77  
20504  
DNOP  
DNOP  
DSTOP  
DJMP  
FRME14

G04

GT-40/GT-44 WITH VR14 VISUAL DISPLAY TEST MAINDEC-11-DDGTC-C  
DDGTCC.P11 15-SEP-76 00:00

MACY11 27(1006) 05-NOV-76 12:20 PAGE 46

2075  
2076 011762 117724  
2077 011764 000000  
2078 011766 001200  
2079 011770 170052  
2080 011772 100000  
2081 011774 017 017  
2082 011776 044514 044107 020124  
2083 012004 042520 020116 047506  
2084 012012 046114 053517 052040  
2085 012020 051505 020124  
2086 012024 015 012 012  
2087 012027 130 020075  
2088 012032 030061 030060  
2089 012036 015 012 012  
2090 012041 131 020075  
2091 012044 033060 030060  
2092 012050 114140  
2093 012052 001000  
2094 012054 000600  
2095 012056 164000  
2096 012060 164000  
2097 012062 130000  
2098 012064 074000  
2099 012066 041000  
2100 012070 041000  
2101 012072 041000  
2102 012074 041000  
2103 012076 041000  
2104 012100 041000  
2105 012102 041000  
2106 012104 041000  
2107 012106 041000  
2108 012110 041000  
2109 012112 041000  
2110 012114 041000  
2111 012116 041000  
2112 012120 041000  
2113 012122 041000  
2114 012124 041000  
2115 012126 041000  
2116 012130 041000  
2117 012132 041000  
2118 012134 041000  
2119 012136 041000  
2120 012140 041000  
2121 012142 041000  
2122 012144 041000  
2123 012146 164000  
2124 012150 164000  
2125 012152 164000  
2126 012154 164000  
2127 012156 164000  
2128 012160 164000  
2129 012162 164000  
2130 012164 164000

FRME16: POINT!INT7!LPOFF!BLKOFF!LINED

0  
MAXY-177  
STATSA!ITALO!SYNOFF!GREEN  
CHAR  
.BYTE 17,17  
.ASCII /LIGHT PEN FOLLOW TEST /

DLT14A: .BYTE 15,12,12

.ASCII /X= /

DLT14A: .ASCII /1000/

.BYTE 15,12,12

DLT14B: .ASCII /Y= /

.ASCII /0600/

POINT!LPON

RAY14A: 1000

RAY14B: 600

DNOP

DNOP

RELATV

TAB16A: INTX!MINUSX+14000

INTX+1000

INTX+1000

INTX+1000

INTX+1000

INTX+1000

INTX+1000

INTX+1000

INTX+1000

INTX+1000

INTX+1000

INTX+1000

INTX+1000

INTX+1000

INTX+1000

INTX+1000

INTX+1000

INTX+1000

INTX+1000

INTX+1000

INTX+1000

INTX+1000

INTX+1000

INTX+1000

INTX+1000

DNOP

DNOP

DNOP

DNOP

DNOP

DNOP

DNOP

DNOP

2131 012166 164000  
 2132 012170 164000  
 2133 012172 130000  
 2134 012174 034000  
 2135 012176 040160  
 2136 012200 040004  
 2137 012202 040004  
 2138 012204 040004  
 2139 012206 040004  
 2140 012210 040004  
 2141 012212 040004  
 2142 012214 040004  
 2143 012216 040004  
 2144 012220 040004  
 2145 012222 040004  
 2146 012224 040004  
 2147 012226 040004  
 2148 012230 040004  
 2149 012232 040004  
 2150 012234 040004  
 2151 012236 040004  
 2152 012240 040004  
 2153 012242 040004  
 2154 012244 040004  
 2155 012246 040004  
 2156 012250 040004  
 2157 012252 040004  
 2158 012254 040004  
 2159 012256 040004  
 2160 012260 164000  
 2161 012262 164000  
 2162 012264 164000  
 2163 012266 164000  
 2164 012270 164000  
 2165 012272 164000  
 2166 012274 164000  
 2167 012276 164000  
 2168 012300 110000  
 2169 012302 000000  
 2170 012304 000077  
 2171 012306 040160  
 2172 012310 020160  
 2173 012312 060160  
 2174 012314 020160  
 2175 012316 060160  
 2176 012320 000160  
 2177 012322 040160  
 2178 012324 000160  
 2179 012326 000200  
 2180 012330 000200  
 2181 012332 164000  
 2182 012334 164000  
 2183 012336 164000  
 2184 012340 164000  
 2185 012342 173400  
 2186 012344 160000

DNOP  
 DNOP  
 RELATV  
 MINUSX+14000  
 TAB16B: INTX!MINSUY+60  
 INTX+4  
 INTX+4  
 INTX+4  
 INTX+4  
 INTX+4  
 INTX+4  
 INTX+4  
 INTX+4  
 INTX+4  
 INTX+4  
 INTX+4  
 INTX+4  
 INTX+4  
 INTX+4  
 INTX+4  
 INTX+4  
 INTX+4  
 INTX+4  
 INTX+4  
 INTX+4  
 DNOP  
 DNOP  
 DNOP  
 DNOP  
 DNOP  
 DNOP  
 DNOP  
 DNOP  
 LONGV  
 0  
 77  
 PNT16A: INTX+160  
 MINUSX+160  
 PNT16B: INTX!MINUSX+160  
 MINUSX+160  
 PNT16C: INTX!MINUSX+160  
 160  
 PNT16D: INTX+160  
 160  
 .WORD 200  
 .WORD 200  
 DNOP  
 DNOP  
 DNOP  
 DNOP  
 DSTOP  
 DJMP

```

187 012346 011762
188
189 012350 117724
190 012352 000000
191 012354 001200
192 012356 170052
193 012360 100000
194 012362 017 017
195 012364 044514 044107 020124
196 012372 042520 020116 044506
197 012400 046105 020104 043117
198 012406 053040 042511 020127
199 012414 015 012 012
200 012417 116 046525 042502
201 012424 020122 043117 044040
202 012432 052111 020123 020075
203 012440 030060 030060
204 012444 173400
205 012446 160000
206 012450 012350
208 012452 114124
209 012454 000000
210 012456 001200
211 012460 170052
212 012462 103000
213 012464 017 017
214 012466 042513 041131 040517
215 012474 042122 042440 044103
216 012502 020117 042524 052123
217 012510 000
218 012511 015 012 012
219 012514 044103 051101 047440
220 012522 052103 036440 040
221 012527 000 000 000
222 012532 000
223 012533 015 012 012
224 012536 164000
225
226
227 000001

```

```

FRME16
FRM16A: POINT!INT7!LPOFF!BLKOFF!LINED
0
MAXY-177
STATSA!ITALD!SYNOFF!GREEN
CHAR
.BYTE 17,17
.ASCII /LIGHT PEN FIELD OF VIEW /

.BYTE 15,12,12
.ASCII /NUMBER OF HITS = 0000/

FRM16B: DSTOP
DJMP
FRM16A

FRME17: POINT!LPOFF!BLKOFF!LINED
0
MAXY-177
STATSA!ITALD!SYNOFF!GREEN
CHAR!INT4
.BYTE 17,17
.ASCIIZ /KEYBOARD ECHO TEST/

.BYTE 15,12,12
.ASCII /CHAR'OCT = /

.BYTE 0,0,0,0
KBOCT: .BYTE 15,12,12

BUFFER: DNOP

.END

```

;MUST BE JUST BEFORE THE BUFFER





K04

D7F	003502	879#							
ECHOA	005126	1136#	1138						
ECHOB	005364	1172#	1177#						
ECHOC	005234	1150#	1155	1176	1179				
ERRVEC=	000004	378#	548	549*	556*				
FILE	005622	1204*	1205	1231#					
FILE0	002116	468	542	612#	1015				
FILE1	002130	469	619#						
FILE10	003370	476	851#						
FILE11	003444	477	868#						
FILE12	003520	478	886#						
FILE13	003662	479	913#						
FILE14	003674	480	920#						
FILE15	004154	481	967	973#					
FILE16	004410	482	1022#	1061					
FILE17	005120	483	1134#	1167					
FILE2	002142	470	626#						
FILE2A	002342	655	663#						
FILE2B	002350	664#	675						
FILE2C	002370	665	671#						
FILE2D	002400	669	674#						
FILE3	002406	471	679#						
FILE3A	002416	681#	687	694					
FILE3B	002444	682	690#						
FILE4	002462	472	688	700#					
FILE4A	003014	724	771#						
FILE5	003072	473	784	790#					
FILE6	003104	474	797#						
FILE7	003236	475	824#						
FILLA	002764	757#	760						
FILLIT	002760	740	744	756#					
FIL14A	004002	932	941#						
FLE12A	003544	890#	901						
FLE12B	003562	891	894#						
FLE12C	003570	893	895#						
FLE12D	003654	899	908#						
FRME0	005626	615	1234#	1387					
FRME1	007206	622	1389#	1417					
FRME10	010552	855	1772#						
FRME11	010612	872	1791#						
FRME12	010710	897	1826#	1939					
FRME13	011360	916	1943#	2028					
FRME14	011634	946	951	956	961	2032#	2074		
FRME16	011762	1044	2076#	2187					
FRME17	012452	1152	2208#						
FRME2	007276	673	1421#	1454					
FRME3	007402	685	1458#	1581					
FRME3A	007772	692	1584#	1676					
FRME5	010242	793	1680#	1741					
FRME6	010474	806	833	1745#					
FRME6A	010530	809	836	1759#	1767				
FRM10	010652	858	875	1808#	1822				
FRM14A	011640	942*	947*	952*	957*	2034#			
FRM14B	011642	943*	948*	953*	958*	2035#			
FRM16A	012350	1049	2189#	2206					
FRM16B	012444	1036*	1037*	1089	2204#				







TAB168	012176	2135#									
TIMEVT	001074	440#	567*								
TKB	001014	408#	579	1156							
TKS	001012	407#	562*	1147*							
TIMEVT1	001076	441#	567*	568*							
TSAVE	001044	420#	533*	579*	580*	581	584*	586	588	593	605*
XPOS	001060	431#	1083								
YPOS	001060	432#	903	1081							
=	012540	383#	385#	389#	393#	397#	400#	572			



005

GT-40/GT-44 WITH VRI4 VISUAL DISPLAY TEST MAINDEC-11-DDGTC-C MACY11 27(1006) 05-NOV-76 12:20 PAGE 59  
DDGTCC.P11 15-SEP-76 00:00 CROSS REFERENCE TABLE -- MACRO NAMES

.SAVE 18  
.SUB 18  
.SUB 18  
.SUB 18  
.CO 18  
.M 18  
.SUP 18  
.TRAP 18  
.TYPE 18  
.TYPE 18  
.TYPE 18  
.TYPE 18  
.40CA 18  
.1170 18

. ABS. 012540 000

ERRORS DETECTED: 0  
DEFAULT GLOBALS GENERATED: 0

DDGTCC.BIN, DDGTCC.SEG/CRF/SOL/NL:TOC=DDGTCC.SML, DDGTCC.P11  
RUN-TIME: 24 30 2 SECONDS  
RUN-TIME RATIO: 173/57=3.0  
CORE USED: 33K (65 PAGES)



E05

Spooler runtime 7 Seconds, 35 KCS, 178 disk reads, 3 disk writes, 55 pages

~~XX~~ Date 02-Dec-76 09:39:12 Monitor IPC-0 602 (600) mSDos

XX0000000011111111111111111111111111111110  
0000000011111111112222222222333333333334444444444455555555556666666666777777777788888888889999999999000000000011111111122222222223333333