```
0001   .MAIN
01
02                 ;                                        RCSL:   44-RT972
03                 ;                                        AUTHOR: JESPER JOHANSEN
04                 ;                                        EDITED: 75,02,25
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25                 ;                RC3600 CHECKERBOARD V
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51
52                 ;        BINARY TAPE  : 44-RT974
53                 ;        BINARY CARDS : 44-RT975
54                 ;        EBCDIC CARDS : 44-RT973
55
56
57                 ; KEYWORDS: RC3600, CPU 705, TESTPROGRAM
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```
» 0002   .MAIN
01
02
03
04
05
06
07              ;*****************************************************************
08              ;
09              ;
10              ;
11              ; DESCRIPTION: RC3600 CHECKERBOARD V
12              ;
13              ;
14              ; REVISION HISTORY:
15              ;
16              ;       REV.            DATE
17              ;
18              ;
19              ;       00              75.02.25
20              ;
21              ;
22              ;COPYRIGHT (C) A/S REGNECENTRALEN, 1975
23              ; ALL RIGHTS RESERVED.
24              ;*****************************************************************
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```
. 0003   .MAIN
01
02
03                ;                    RC3600 MEMORY CHECKERBOARD V
04
05                ;1.       ABSTRACT
06                ;                    CHECKERBOARD 5 IS A MAINTENANCE PROGRAM
07                ;                    DESIGNED TO PRODUCE WORST CASE NOISE CONDITIONS
08                ;                    ON THE SENSE/INHIBIT WIRES. THE PROGRAM
09                ;                    SHOULD BE RUN TO INSURE PROPER OPERATION OF THE
10                ;                    MEMORY SYSTEM
11
12                ;2.       MACHINE REQUIREMENTS
13                ;                    ANY RC3601D PROCESSOR
14
15                ;3.       SWITCH SETTINGS
16                ;                    STARTING ADDRESS=2
17                ;                    SWITCH 15 (1)  =INHIBIT HALT ON ERROR
18
19                ;4.       OPERATING PROCEDURE
20                ;                    LOAD THE PROGRAM VIA THE BINARY LOADER.
21                ;                    SET SWITCHES TO 000002
22                ;                    PRESS START
23                ;                    THE PROGRAM WILL RUN UNTIL AN ERROR IS DETECTED.
24
25                ;5.       ERROR DESCRIPTION
26                ;                    THE PROGRAM CONTAINS TWO ERROR HALTS. THE FIRST
27                ;                    OF WHICH IS IN THE MEMORY SZE ROUTINE. IF THE
28                ;                    PROGRAM IS UNABLE TO DETERMINE MEMORY SIZE
29                ;                    PROPERLY THE MACHINE WILL HALT WITH C(AC2)
30                ;                    CONTAINING THE FAILING ADDRESS AND C(AC0) THE
31                ;                    FAILED DATA.
32                ;5.1              OTHER ERRORS DETECTED
33                ;                    WILL CAUSE THE TELETYPE BELL TO BE RUNG.
34                ;                    AC3 WILL CONTAIN THE ADRESS OF THE FAILURE
35                ;                    AND AC1 WILL CONTAIN THE WORD IN ERROR.
36                ;                    PRESSING CONTINUE WILL CAUSE THE TEXT TO
37                ;                    BE RESUMED. SETTING SWITCH 15 (1) WILL INHIBIT
38                ;                    THE HALT BUT STILL ALLOW THE BELL TO BE RUNG.
39
```

```
0004   .MAIN
01
02
03              ;6.     PROGRAM DESCRIPTION
04              ;               CHECKERBOARD V GENERATES THE WORST CASE NOISE
05              ;               PATTERN BY A SERIES OF 16 "STA" INSTRUCTIONS
06              ;               STORING EITHER ALL ZEROS OR ALL ONES, WHEN ALL
07              ;               DATA IS STORED THE CHECK CYCLE IS ENTERED, CHEC
08              ;               OF THE ZEROS CONSIST OF 16 "DSZ" INSTRUCTIONS &=
09              ;               COMPLEMENT ALL THE ZEROS TO ONES,
10              ;               THIS IS FOLLOWED BY 16 ISZ INSTRUCTIONS, EACH OF
11              ;               WHICH SHOULD SET MEMORY BACK TO ZEROS AND SKIP
12              ;               IF ALL WAS CORRECT, CHECKING OF ONES
13              ;               IS PERFORMED BY A SERIES OF 16 "ISZ" INSTRUCTIONS
14              ;               EACH OF WHICH SETS MEMORY TO ZEROS AND SKIPS
15              ;               IF ALL BITS ARE CORRECT, A SERIES OF
16              ;               16 DSZ INSTRUCTIONS WILL RESTORE THE ZEROS TO
17              ;               ONES, THE ONES ARE THEN CHECKED VIA "LDA" INSTR
18              ;               THE COMBINATION OF ISZ/DSZ INSTRUCTIONS TO
19              ;               PERFORM BIT CHECKING AND COMPLEMENT FUNCTIONS
20              ;               PERMITS VERY FAST PROGRAAM EXECUTION.
21
22              ;7.     MISC
23              ;               BECAUSE OF THE NATURE OF THE TEST, THE WORD
24              ;               IN ERROR MAY NOT ACCURATELY DESCRIBE THE FAILED
25              ;               BIT.
26
```

```
0005   .MAIN
01
02
03          000002 .LOC 2
04
05  00002 030035 SIZE:   LDA     2,K377          ;SIZE OF MEMORY
06  00003 151400         INC     2,2
07  00004 151112         MOVLR   2,2,SZC
08  00005 000021         JMP     SIZE1
09  00006 025000         LDA     1,0,2
10  00007 051000         STA     2,0,2
11  00010 021000         LDA     0,0,2
12  00011 045000         STA     1,0,2
13  00012 112415         SUBR    0,2,SNR
14  00013 000003         JMP      SIZE+1
15  00014 024032         LDA     1,K1777
16  00015 100014         COMR    0,0,SZR         ;MEMORY FAILURE IN SIZE
17  00016 101005         MOV     0,0,SNR         ;ROUTINE, C(AC2)=ADDRESS
18  00017 133414         ANDR    1,2,SZR         ;C(AC2)=CORRECT
19  00020 063077 E1:     HALT                       ;C(AC0)=ERROR WORD
20
21  00021 151220 SIZE1:  MOVZR   2,2
22  00022 151220         MOVZR   2,2
23  00023 151220         MOVZR   2,2
24  00024 151220         MOVZR   2,2
25  00025 151220         MOVZR   2,2             ;DIVIDE BY 32,
26  00026 024042         LDA      1,K14
27  00027 132400         SUB     1,2
28  00030 050033         STA     2,MEMBK
29  00031 000047         JMP     FILL
30
```

```
0006   .MAIN
01
02
03 00032 001777 K1777:  1777
04 00033 000000 MEMBK:  0
05 00034 000000 FTEM:   0
06 00035 000377 K377:   377
07 00036 000421 ADR:    PEND            ;FIRST LOCATION IN PATTERN
08 00037 000000 PATT:   0               ;PATTERN
09 00040 000020 K20:    20
10 00041 000007 K7:     7
11 00042 000014 K14:    14
12 00043 000137 KCKZ1:  CKZ1+2
13 00044 000200 KCONE:  CONE+2
14 00045 000260 KCON2:  CONE2+2
15 00046 000000 ERET:   0
16
17 00047 034033 FILL:   LDA     3,MEMBK         ;FILL MEMORY WITH PATTERN
18 00050 054034         STA     3,FTEM
19 00051 034035         LDA     3,K377
20 00052 030036         LDA     2,ADR
21 00053 024040         LDA     1,K20
22 00054 020037         LDA     0,PATT
23 00055 101020         MOVZ    0,0
24
25 00056 041000 F2:     STA     0,0,2           ;STORE 16 TIMES
26 00057 041001         STA     0,1,2
27 00060 041002         STA     0,2,2
28 00061 041003         STA     0,3,2
29 00062 041004         STA     0,4,2
30 00063 041005         STA     0,5,2
31 00064 041006         STA     0,6,2
32 00065 041007         STA     0,7,2
33 00066 041010         STA     0,10,2
34 00067 041011         STA     0,11,2
35 00070 041012         STA     0,12,2
36 00071 041013         STA     0,13,2
37 00072 041014         STA     0,14,2
38 00073 041015         STA     0,15,2
39 00074 041016         STA     0,16,2
40 00075 041017         STA     0,17,2
41 00076 133000         ADD     1,2
42 00077 100062         COMC 0,0,SZC
43 00100 000056         JMP     F2
44
45 00101 157415 F3:     ANDA    2,3,SNR
46 00102 100000         COM     0,0
47 00103 014034         DSZ     FTEM
48 00104 000056         JMP     F2
```

```
0007   .MAIN
01 00105 034033 C:      LDA 3,MEMBK             ;CHECK MEMORY DATA
02 00106 175120         MOVZL 3,3
03 00107 054034         STA 3,FTEM
04 00110 034035         LDA 3,K377
05 00111 030036         LDA 2,ADR
06 00112 020037         LDA 0,PATT
07 00113 101004 CO:     MOV 0,0,SZR
08 00114 000176         JMP CONE                ;CHECK ONES....
09
10 00115 015000 CKZ:    DSZ 0,2                 ;CHECK ZEROS.....
11 00116 015001         DSZ 1,2                 ;COMP ZEROS TO ONES.
12 00117 015002         DSZ 2,2
13 00120 015003         DSZ 3,2
14 00121 015004         DSZ 4,2
15 00122 015005         DSZ 5,2
16 00123 015006         DSZ 6,2
17 00124 015007         DSZ 7,2
18 00125 015010         DSZ 10,2
19 00126 015011         DSZ 11,2
20 00127 015012         DSZ 12,2
21 00130 015013         DSZ 13,2
22 00131 015014         DSZ 14,2
23 00132 015015         DSZ 15,2
24 00133 015016         DSZ 16,2
25 00134 015017         DSZ 17,2
26 00135 011000 CKZ1:   ISZ 0,2                 ;RESTORE THE ONES BACK
27 00136 004350         JSR ERZ                 ;TO ZEROS AND CHECK.
28 00137 011001         ISZ 1,2
29 00140 004350         JSR ERZ
30 00141 011002         ISZ 2,2
31 00142 004350         JSR ERZ
32 00143 011003         ISZ 3,2
33 00144 004350         JSR ERZ
34 00145 011004         ISZ 4,2
35 00146 004350         JSR ERZ
36 00147 011005         ISZ 5,2
37 00150 004350         JSR ERZ
38 00151 011006         ISZ 6,2
39 00152 004350         JSR ERZ
40 00153 011007         ISZ 7,2
41 00154 004350         JSR ERZ
42 00155 011010         ISZ 10,2
43 00156 004350         JSR ERZ
44 00157 011011         ISZ 11,2
45 00160 004350         JSR ERZ
46 00161 011012         ISZ 12,2
47 00162 004350         JSR ERZ
48 00163 011013         ISZ 13,2
49 00164 004350         JSR ERZ
50 00165 011014         ISZ 14,2
51 00166 004350         JSR ERZ
52 00167 011015         ISZ 15,2
53 00170 004350         JSR ERZ
54 00171 011016         ISZ 16,2
55 00172 004350         JSR ERZ
56 00173 011017         ISZ 17,2
57 00174 004350         JSR ERZ
58 00175 000336         JMP CE1
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```
0008   .MAIN
01
02 00176 011000 CONE:   ISZ 0,2          ;CHECK ONES AND COMP
03 00177 004352         JSR ERO          ;BACK TO ZEROS
04 00200 011001         ISZ 1,2
05 00201 004352         JSR ERO
06 00202 011002         ISZ 2,2
07 00203 004352         JSR ERO
08 00204 011003         ISZ 3,2
09 00205 004352         JSR ERO
10 00206 011004         ISZ 4,2
11 00207 004352         JSR ERO
12 00210 011005         ISZ 5,2
13 00211 004352         JSR ERO
14 00212 011006         ISZ 6,2
15 00213 004352         JSR ERO
16 00214 011007         ISZ 7,2
17 00215 004352         JSR ERO
18 00216 011010         ISZ 10,2
19 00217 004352         JSR ERO
20 00220 011011         ISZ 11,2
21 00221 004352         JSR ERO
22 00222 011012         ISZ 12,2
23 00223 004352         JSR ERO
24 00224 011013         ISZ 13,2
25 00225 004352         JSR ERO
26 00226 011014         ISZ 14,2
27 00227 004352         JSR ERO
28 00230 011015         ISZ 15,2
29 00231 004352         JSR ERO
30 00232 011016         ISZ 16,2
31 00233 004352         JSR ERO
32 00234 011017         ISZ 17,2
33 00235 004352         JSR ERO
34
35 00236 015000 CONE1:  DSZ 0,2          ;RECOMP THE ZEROS
36 00237 015001         DSZ 1,2
37 00240 015002         DSZ 2,2
38 00241 015003         DSZ 3,2
39 00242 015004         DSZ 4,2
40 00243 015005         DSZ 5,2
41 00244 015006         DSZ 6,2
42 00245 015007         DSZ 7,2
43 00246 015010         DSZ 10,2
44 00247 015011         DSZ 11,2
45 00250 015012         DSZ 12,2
46 00251 015013         DSZ 13,2
47 00252 015014         DSZ 14,2
48 00253 015015         DSZ 15,2
49 00254 015016         DSZ 16,2
50 00255 015017         DSZ 17,2
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```
0009   .MAIN
01
02 00256 025000 CONE2:  LDA 1,0,2       ;FINAL CHECK.....
03 00257 124014         COMA 1,1,SZR
04 00260 004374         JSR ERL
05 00261 025001         LDA 1,1,2
06 00262 124014         COMA 1,1,SZR
07 00263 004374         JSR ERL
08 00264 025002         LDA 1,2,2
09 00265 124014         COMA 1,1,SZR
10 00266 004374         JSR ERL
11 00267 025003         LDA 1,3,2
12 00270 124014         COMA 1,1,SZR
13 00271 004374         JSR ERL
14 00272 025004         LDA 1,4,2
15 00273 124014         COMA 1,1,SZR
16 00274 004374         JSR ERL
17 00275 025005         LDA 1,5,2
18 00276 124014         COMA 1,1,SZR
19 00277 004374         JSR ERL
20 00300 025006         LDA 1,6,2
21 00301 124014         COMA 1,1,SZR
22 00302 004374         JSR ERL
23 00303 025007         LDA 1,7,2
24 00304 124014         COMA 1,1,SZR
25 00305 004374         JSR ERL
26 00306 025010         LDA 1,10,2
27 00307 124014         COMA 1,1,SZR
28 00310 004374         JSR ERL
29 00311 025011         LDA 1,11,2
30 00312 124014         COMA 1,1,SZR
31 00313 004374         JSR ERL
32 00314 025012         LDA 1,12,2
33 00315 124014         COMA 1,1,SZR
34 00316 004374         JSR ERL
35 00317 025013         LDA 1,13,2
36 00320 124014         COMA 1,1,SZR
37 00321 004374         JSR ERL
38 00322 025014         LDA 1,14,2
39 00323 124014         COMA 1,1,SZR
40 00324 004374         JSR ERL
41 00325 025015         LDA 1,15,2
42 00326 124014         COMA 1,1,SZR
43 00327 004374         JSR ERL
44 00330 025016         LDA 1,16,2
45 00331 124014         COMA 1,1,SZR
46 00332 004374         JSR ERL
47 00333 025017         LDA 1,17,2
48 00334 124014         COMA 1,1,SZR
49 00335 004374         JSR ERL
```

```
0010   .MAIN
01
02 00336 024040 CE1:    LDA 1,K20        ;UPDATE ADDRESS,
03 00337 133000          ADD 1,2
04 00340 157414          ANDZ 2,3,SZR
05 00341 100000          COM 0,0
06 00342 014034          DSZ FTEM
07 00343 000113          JMP CO
08 00344 020037          LDA 0,PATT
09 00345 100000          COM 0,0
10 00346 040037          STA 0,PATT
11 00347 000047          JMP FILL
12
13 00350 024043 ERZ:     LDA 1,KCKZ1              ;ERROR ON ZERO,...
14 00351 125001          MOV 1,1 SKP
15 00352 024044 ERO:     LDA 1,KCONE
16 00353 054046          STA 3,ERET
17 00354 136640          SUBOR 1,3
18 00355 157000 ERXX:    ADD 2,3
19 00356 064477          READS   1
20 00357 125200          MOVR    1,1
21 00360 024041          LDA     1,K7
22 00361 063411          SKPBN   TTO
23 00362 065111          DOAS     1,TTO
24 00363 054373          STA 3,SUSAV
25 00364 004415          JSR ALARM
26 00365 034373          LDA 3,SUSAV
27 00366 025400          LDA     1,0,3            ;C(AC1)=WORD IN ERROR
28 00367 101013          MOVZ    0,0,SNC          ;C(AC3)=ADDRESS
29 00370 063077          HALT
30 00371 034035          LDA 3,K377
31 00372 002046          JMP @ERET
32 00373 000000 SUSAV:   0
33
34 00374 054046 ERL:     STA 3,ERET
35 00375 025775          LDA 1,-3,3
36 00376 034035          LDA 3,K377
37 00377 137400          AND 1,3
38 00400 000355          JMP ERXX
39
40       000032          ,DUSR ALM=32
41 00401 054414 ALARM:   STA 3,,HERR
42 00402 034414          LDA 3,BIT4
43 00403 075032          DOA 3,ALM
44 00404 014413          DSZ ,CNT
45 00405 000404          JMP ,RTUR
46 00406 176420          SUBZ 3,3
47 00407 075032          DOA 3,ALM
48 00410 000402          JMP .+2
49 00411 034407 ,RTUR:   LDA 3,C1
50 00412 054405          STA 3,,CNT
51 00413 034402          LDA 3,,HERR
52 00414 001400          JMP 0,3
53 00415 000000 ,HERR:   0
54 00416 004000 BIT4:    1B4
55 00417 000001 ,CNT:    1
56 00420 000001 C1:      1
57 00421 000421 PEND:    .                ;FIRST LOCATION IN PATTERN
58              ,END
```