Title:

# DISC STORAGE MODULE PROGRAM LOAD

Abstract:

The Disc Storage Module Program Load is able to read the first 16
sectors   from the disc into word zero and on. Program load from
magtape and moving head disc is possible too.

## CONTENTS           PAGE

# 1. SCOPE

The Disc Storage Module Program Load is a 32-word program stored in two ROM's which are placed on the CPU-board.

Use following ROM's in the given CPU configuration :

RC3601C models (RC3600 with NOVA 12xx) :

ROM 410    Contains the 32 left bytes and is placed in position 30.

ROM 411    Contains the 32 right bytes and is placed in position 31.

RC3601 D models (RC3600 with NOVA 2) :

ROM 412    Contains the 32 left bytes and is placed in position 135.

ROM 413    Contains the 32 right bytes and is placed in position 136.

RC3603A models

ROM 410    Contains the 32 left bytes and is placed in position 81.

ROM 411    Contains the 32 right bytes and is placed in position 71.

The program is loaded into the core by the procedures given in section 2, and is, when loaded, started in location 0.

The program is designed to use the Disc Storage Module as primary load medium, but can be used to load from magtape or Moving Head Disc too.

## 2.     OPERATING PROCEDURE                                    2.

a.     If the load medium is the Disc Storage Module then
set dataswitch (0) = 0, and dataswitches (1:15) =
don't care.

If the load medium is Magtape or Moving Head Disc
then set dataswitch (0) = 1, dataswitches (1:9) = 0,
and dataswitches (10:15) = appropriate device code.

Before continuation be sure that the Moving Head Disc
is recalibrated and the magtape station is online.

Disc Storage Module need not to be ready as the
program will wait for ready state.

b.     Press RESET, PROGRAM LOAD, on CPU panel if
RC3601 C or RC3600 D models is present.

Or

RESET, AUTO if TCP 701 is present.

Or

LOAD-AUTOLOAD if OCP 302 is present.

Or

AUTOLOAD if OCP 303 is present.

c.     In case of autoload from magtape is unsuccessfull at first
try, caused by buffered offline status, repeat procedure b.

Now the program will be loaded into core and started in location
0.

## 3.    PROGRAMMING CONSIDERATIONS                                3.

a)    When autoload is done from Disc Storage Module,
the ROM program starts transfer of 16 sectors to
memory from location 0.

The read segments must contain a Channel-program
stop command in word 25 (oct.). The stop command
has the value 216B7 + 7 (dec.).

After the transfer status from the Disc Controller is
placed in word (0:2), and the read code must therefore
reserve these locations for status.

During transfer the CPU is looping in location 376-377
(octal) executing instructions :

        DOA 1    20
        JMP      .-1

with AC1 = 0 .

until the disc is ready and later overwritten by the data.

b)    When loading from magtape is done the ROM program
starts transfer of the first block, and during transfer CPU
is looping in location 377 (octal) executing instruction
JMP 377, until overwritten by the data.

c)    When loading from Moving Head Disc ROM program
starts transfer of first 16 sectors on disc.

During transfer CPU is looping in lccation 377 (octal)
executing instruction JMP 377, until disc is ready and
later overwritten by data read.

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                    ; PROGRAM LOAD, CDC DISC, HKM 77.01.04, REV.77.05.23/1;
                    ;    THIS PROGRAM RESIDES IN 32*2 ROM.
                    ;    IT IS DESIGNED FOR CDC MASS DISC AS PRIMARY LOAD MEDIUM
                    ;    AND USES DIABLO DISC AND MAGTAPE AS SECONDARY LOADS.
                    ;
                    ;    CDC DISC:  SWITCH(0) = 0, SWITCH(1:15) = NOT USED,
                    ;               THE DISC NEED NOT TO BE CONNECTED AND ON-LINE
                    ;               BEFORE LOADING.
                    ;               THE READ DATA MUST CONTAIN AN EXPLICIT STOP COMMA
                    ;               IN WORD 25 (OCTAL) (REF. CHANNEL PROGRAM BELOW).
                    ;               MOREOVER THE STATUS IS PLACED IN WORD(0:2), I.E.
                    ;               THE READ SEGMENT SHOULD NOT CONTAIN INFORMATION
                    ;               IN THESE 3 WORDS.
                    ;
                    ;    DIABLO DISC: SWITCH(0) = 1, SWITCH(1:15) = DEVICE NUMBER.
                    ;                 THE DEVICE MUST BE RECALIBRATED BEFORE LOADING.
                    ;
                    ;    MAGTAPE:   AS FOR DIABLO DISC.
                    ;
        000000      .LOC      0                          ;
                    ;
        071000      .OP1=     DOA      2,0               ; LOAD REGISTER;
        060100      .OP2=     NIOS     0                 ; START HIGH SPEED;
        000020      MDISC=    20                         ; CDC DEVICE NUMBER;
                    ;
00000   070477                READS    2           ;00; Z:= -(READ SWITCHES) - 1;
00001   150123                COMZL    2,2,SNC     ;01; IF Z(0) = 1 ;S(0) = 0; THEN
00002   000026                JMP      SECUN       ;02;BEGIN ;CDC LOAD;
00003   126400                SUB      1,1         ;03;   CLEAR(DISC DRIVE0);
00004   065020      .DOA:     DOA      1,MDISC     ;04;
00005   024013                LDA      1,AHEAD     ;05;
00006   066020                DOB      1,MDISC     ;06;   SEND(CHANNEL PROG, HEAD ADDRESS);
00007   024004                LDA      1,.DOA      ;07;   WORD(376):=
00010   046037                STA@     1,.377      ;10;            DOA  1,MDISC;
00011   024025                LDA      1,.START    ;11;   ; CONST(377):= 376 ;
00012   000035                JMP      N377        ;12;   GOTO SET 'WAIT-JMP';

        000012      .RDX      10                         ;
                    ; CHANNEL PROGRAM AREA FOR CDC PROGRAM LOAD:
00013   000020      AHEAD:    A00                  ;13; HEAD OF CHANNEL PROGRAM;
00014   000000                0                    ;14; NOT USED;
00015   000000      ASEEK:    0          ;DUMMY    ;15; CYLINDER = 0;
00016   000000                0          ;DUMMY    ;16; HEAD<8+SECTOR = 0;
00017   154002      A01:      216B7+2              ;17; SEEK;
00020   000017      A00:      A01        ;DUMMY    ;20; ADDRESS OF CHANNEL PROGRAM(DRIVE 0)
00021   000015                ASEEK                ;21;   ADDR(SEEK PARAMETERS);
00022   154001                216B7+1              ;22; READ DATA;
00023   020000                512*16               ;23;   BYTECOUNT = 512*16 = 16 SECTORS;
00024   000000                0                    ;24;   WORD ADDRESS = 0; ADDR(STATUS);
                    ;          ; AFTER INPUT, THE DISC CONTROLLER
                    ;             WILL DELIVER THE STATUS INFORMATIO
                    ;             INTO AN AREA OF 3 WORDS WHICH
                    ;             ADDRESS IS IN WORD(24); WORD(0:2)
                    ;          216B7+7              ;25; STOP ;OPERATION MUST BE CONTAINED
                    ;             IN THE READ SEGMENT AT EXACTLY
                    ;             THIS POSITION;
00025   000004      .START:   1B13                 ;25; COMMAND(START);
                    ;          END ;CDC LOAD; ELSE
```

```
              000010    .RDX    8                    ;
              000000    SECUN:                       ;      BEGIN !SECUNDARY LOAD DEVICES!
     00026    151240              MOVOR    2,2        ;26;   REPEAT
     00027    010033    LOOP:     ISZ      OP1        ;27;      INCR(DOA);
     00030    010034              ISZ      OP2        ;30;      INCR(NIOS);
     00031    151404              INC      2,2,SZR    ;31;      INCR(Z);
     00032    000027              JMP      LOOP       ;32;   UNTIL Z = 0;
     00033    070777    OP1:      .OP1-1              ;33;   "DOA 2 0" - 1;
     00034    060077    OP2:      .OP2-1              ;34;   "NIOS  0" - 1;
     00035    030037    N377:     LDA      2,.377     ;35;   LAST WORD OF SEGMENT AREA:=
     00036    050377    ..        STA      2,377      ;36;      JMP  .+0 !JMP  .-1 IN CASE
     00037    000377    .377:     JMP      377        ;37;      OF CDC DISC LOAD!
                                                      ;      GOTO WAIT DATA;
                                                      ;   END !SECUNDARY LOAD DEVICES!
                        .END                          ;
```