Burroughs

Education Bulletin

B 1990-SP/ B 1990-DP MAC II Floppy Disc
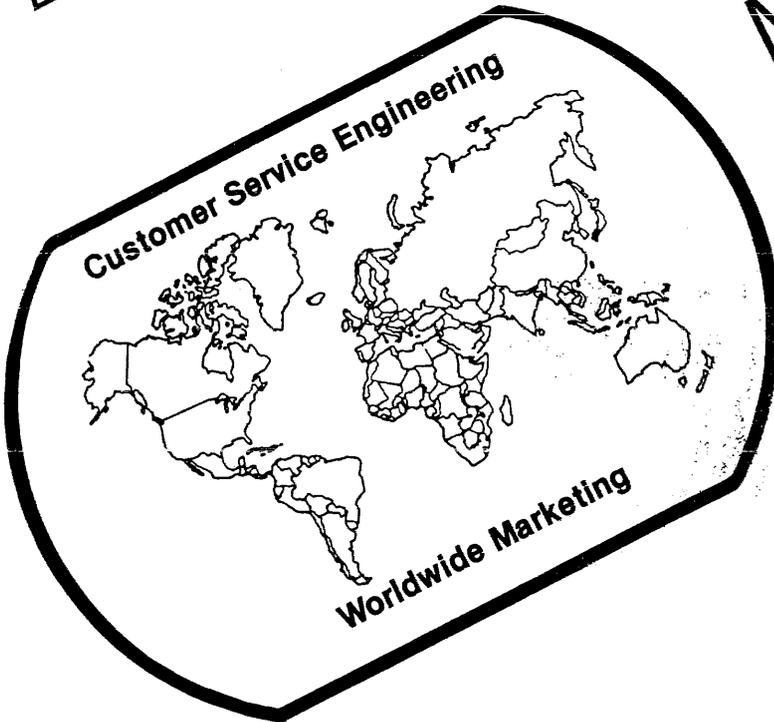
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B 1990-SP/B 1990-DP MAC II FLOPPY DISK

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PURPOSE

The purpose of this Education Bulletin is to provide information on the MAC II floppy disk to FEs/CSEs who have maintenance responsibility for B 1990 systems. The operation, installation, and maintenance of the MAC II floppy disk is covered in this bulletin. This bulletin is all that is required to update a B 1990 trained engineer to support the MAC II floppy disk.

MAINTENANCE PHILOSOPHY

Card/unit replacement is the maintenance philosophy for the MAC II floppy disk. This is the same maintenance philosophy as the B 1990 system.

PRODUCT DESCRIPTION

The B 1990 Maintenance Access Card model II (MAC II) floppy disk is replacing the cassette tape drive located on the front panel of the B 1990 system main cabinet. The drive uses 5 1/4", double-sided, double-density, floppy disk media with 800 Kilobyte capacity.

The MAC II is available to B 1990 users only. An upgrade kit will allow a currently installed B 1990 system to be converted to floppy disk.

The floppy disk drive is used to load standalone diagnostic tests, standalone utilities such as cold/start, and the system initialization program CLEAR/START. The MAC II floppy disk is transparent to system software. The disk appears as a console cassette unit, not an I/O cassette, to the system software. It is available on CMS and native mode systems. The minimum system software level for floppy disk is 12.0 native mode and 3.5 CMS.

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One of the advantages realized in converting to floppy disk is an approximate 6:1 reduction in the loading time of the utilities and tests. Another advantage of this design is the reduction in the number of cassette tapes being distributed to the field.

- Diagnostic requires 10 cassette tapes per system
- Native mode software requires 6 cassette tapes per system
- CMS software requires 4 cassette tapes per system

With MAC II disk all programs reside on 4 floppy disks: two for diagnostic tests, one for native mode software programs, and one for CMS software programs.

At this time the MAC II floppy disk does not have write capability. It can only be used to load. However, duplicate disk can be created using the ET 2000. Refer to B 1000 system support letter #48 for more information..

SOFT CONSOLE DIFFERENCES

The CSE and operator soft console menu displays have changed slightly with the use of floppy disk and several new commands have been added.

Operator display

Shown in Figure 1 is the operator menu soft panel display. The highlighted items are those that are new for systems with floppy disk. A brief description of each new item is included at the bottom of this illustration. Detailed information can be found in the SOFT CONSOLE section of the SMG.

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```
--------------------------------------------------------------------------
COMMAND >

 Mode. .Switches. .Display

NORMAL MASTER: A  REG S16
SONLY  SLAVE: OFF STK S24
CONLY  REMOTE:OFF CK  S39
DISK   SINGLE:OFF CSE MAC
FROZEN INTRPT:OFF OPR DIR
DISK: pack-name /file-name    SLAVE:ABSENT      MASTER:HALTED      ERROR

                   B 1990 SINGLE PROCESSOR SYSTEM
                   ------------------------------

  TO INITIATE OPERATING SYSTEM:1) Place Floppy System Disk in Drive
                               2) Set System Disk Drive to RUN.(main disk)
                               3) Type MTR "CLRSTRT" GO on COMMAND line
                                  and push XMT.

  TO TOGGLE STATE OF SWITCH    :Type name of switch and push XMT.
  TO CHANGE DISPLAY PAGE       :Type name of page and push XMT.

  OPERATOR INFORMATION REGISTERS:

             T = HHHHHH    X = HHHHHH    PERM = .....H   A = HHHHHH
             L = HHHHHH    Y = HHHHHH    PERP = .....H   LR = HHHHHH
```

DISK   Indicates that the system is in disk
                            mode and is loading a program from
                            floppy disk.

DIR   Displays the floppy disk directory.

DISK: Displays the name of the most recently
<"disk-name"/file-name>   loaded file on the floppy disk. This
                            is the disk reference file name.

    Figure 1. Operator Menu Soft Panel Display in HALT State

CSE Display

Figure 2 illustrates the CSE menu and "REG" soft panel display which also has new items added for floppy disk. The descriptions provided for the CSE display cover items not displayed in the operator menu.

```
----------------------------------------------------------------------
COMMAND >                                        <

   Mode. .Switches. .Display ..Reads.. ....Writes...... ......Actions......

NORMAL MASTER: A  REG S16   SRnn:addr  SWnn:addr=values CLEAR RESET UNLOAD
SONLY  SLAVE: OFF STK S24   CR:addr     CW:addr=values  MTR  CLRELOG NOTEXT
CONLY  REMOTE:OFF CK  S39   BACK or -  REGISTER=data    CCLR STEP    RUN GO
DISK   SINGLE:OFF CSE MAC   NEXT or +  ALLREGS=data     RC   SCREEN  HTEST
FROZEN INTRPT:OFF OPR DIR   RDTEXT       TEXT characters LOAD AUTO [ON/OFF]
DISK: pack-name /file-name      SLAVE:ABSENT    MASTER:HALTED    ERROR

TA=.....H   FU=.....H     X=HHHHH    SUM=HHHHH  S0A=HHHHH  S0B=HHHHH
TB=.....H   FT=.....H     Y=HHHHH   CMPX=HHHHH  S1A=HHHHH  S1B=HHHHH
TC=.....H   FLC=.....H    T=HHHHH   CMPY=HHHHH  S2A=HHHHH  S2B=HHHHH
TD=.....H   FLD=.....H    L=HHHHH   XANY=HHHHH  S3A=HHHHH  S3B=HHHHH
TE=.....H   FLE=.....H    A=.HHHHH  XEOY=HHHHH  S4A=HHHHH  S4B=HHHHH
TF=.....H   FLF=.....H   "M"=..HHHH MSKX=HHHHH  S5A=HHHHH  S5B=HHHHH
CA=.....H  BICN=.....H    BR=HHHHH  MSKY=HHHHH  S6A=HHHHH  S6B=HHHHH
CB=.....H  FLCN=.....H    LR=HHHHH  XORY=HHHHH  S7A=HHHHH  S7B=HHHHH
LA=.....H  NULL=HHHHH     FA=HHHHH  DIFF=HHHHH  S8A=HHHHH  S8B=HHHHH
LB=.....H  RSVD=HHHHH     FB=HHHHH  MAXS=HH0000 S9A=HHHHH  S9B=HHHHH
LC=.....H  PERM=.....H    FL=..HHHH NULL=HHHHH S10A=HHHHH S10B=HHHHH
LD=.....H  PERP=.....H   TAS=HHHHH   "U"=..HHHH S11A=HHHHH S11B=HHHHH
LE=.....H  XYCN=.....H    CP=....HH NULL=HHHHH S12A=HHHHH S12B=HHHHH
LF=.....H  XYST=.....H  NULL=HHHHH  DATA=HHHHH S13A=HHHHH S13B=HHHHH
CC=.....H  INCN=.....H  "CNS"=HHHHH "CMND"=HHHHH S14A=HHHHH S14B=HHHHH
CD=.....H  MSSW=.....H  TIME=HHHHH  NULL=HHHHH S15A=HHHHH S15B=HHHHH
```

LOAD "<file-name>"   Reads the first sector of the selected file into RAM on the MAC II card.

AUTO "<file-name>" [ON/OFF]   Changes the disk reference file used by the MTR and LOAD commands. If the ON variant is selected, an MTR "<file-name>" GO is executed automatically after power on. The <file- name> used by the MTR GO command is the floppy disk reference file name.

UNLOAD   Restores the floppy disk heads to the first record on disk.

HTEST   Modified to indicate the testing of the H10 card which is required for floppy disk.

Figure 2. CSE Menu Soft Panel Display

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Command Syntax

Since several programs are stored on each floppy disk, the command syntax to load and execute a program has changed slightly. As an example, to load and execute the CLEAR/START program the syntax is:

    MTR "<file-name>" GO

    MTR "CLRSTART" GO

The load process and execution is the same as a CLEAR/START from cassette. If no file name is given, the system will substitute the disk reference file name. The same syntax is used to load and execute MTRs.

File names for the programs on disk are limited to eight characters. Thus, it is advisable to obtain a directory listing of the files on disk first. This will allow you to enter the correct file name in your MTR or any other command syntax.

The floppy disk provides the ability to automatically perform system initialization after power on. Use the AUTO option, enter the following:

    AUTO "CLRSTART" ON

After power on the system will automatically issue an MTR GO using CLRSTRT as the file. Thus, after a power on, the next operator intervention will be after the CLEAR/START to enter the date and time.

DISK DUPLICATION

Since the MAC II floppy disk does not have write capability, you must use an ET 2000 to create backup system and MTR floppies. The process is very simple and does not require ET 2000 training.

There are a few minimum hardware and software requirements for the ET 2000. They are as follows:

    - MS-DOS version 2.11
    - ET 2000
    - Two TP 424 floppy disk drives

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Following are instructions on booting up the ET 2000, formatting the floppy disk, and duplicating floppy disk. They are intended as a guide to familiarize you with the procedures. Refer to the ET 2000 System Software Operation Guide for current information when performing these procedures.

Booting Up the ET 2000

Following is the procedure to boot up the ET 2000:

1. Power off all units.

2. Open all drive doors and remove disks.

3. Power on the video display; the switch is located on under the left-front corner.

    The system will respond with NO DISKETTE PRESENT OR DRIVE DOOR OPEN, STRIKE ANY KEY TO RETRY

4. Power on the disk drive unit; the switch is located at the rear of the unit.

5. Insert the ET-SYSTEM (MS-DOS) disk into drive A (the left drive), with the label facing left and the notch on the bottom, then close the door.

6. Depress any key (space bar).

    The system is now booting system software. When this process is complete, the system will display information such as MS-DOS version level, firmware revision level, and RAM size. The last item displayed is ENTER NEW DATE.

7. Enter date <return>.

    The system will display ENTER NEW TIME.

8. Enter time <return>.

9. Depress any key (space bar).

The system will display A>, which indicates the system software is on drive A and is ready for command input.

<return> indicates that the return key must be depressed. The return key has the symbol shown below on it.

```
          |
     <----
```

Disk Formatting

The B 1990 floppy disk use the same sector formatting as the ET 2000. Following are the procedures for disk formatting:

1. Enter the syntax shown below:

   FORMAT B: <return>

   This will cause the system to format the disk on drive B (the right drive).

   System will respond with INSERT DOS DISK IN DRIVE A AND STRIKE ANY KEY WHEN READY. If DOS disk is not ready in drive A.

2. Depress any key to continue (space bar).

   System will respond with INSERT NEW DISKETTE FOR DRIVE B: and STRIKE ANY KEY WHEN READY.

3. Insert new disk in drive B and depress any key (space bar).

   System will respond with VOLUME LABEL (11 CHARACTERS, ENTER FOR NONE)?

4. A label is not required so depress <return> to enter none.

   The formatting process will begin now. When complete, the system will display the number of bad sectors, the total disk space, and the total available disk space. The last item displayed is FORMAT ANOTHER (Y/N).

5. Depress N to terminate program.

   System displays the MS-DOS system prompt A>. You can now enter a new command.

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Copying The Disk

The disk is now ready for duplication. DISKCOPY is used to perform the copy instead the COPY program. This is because the files on the MAC II floppy disk are in a specific order, with the file SYS0.SYS being placed in the directory prior to any other files. DISKCOPY will copy the files in that order, however the COPY does not guarantee the order the files are copied in. The duplication process is very simple and the following procedures apply:

1. Enter the syntax shown below:

    DISKCOPY A: B:

    Program will copy the files from the disk in drive A to the disk in drive B.

    System responds with INSERT TARGET SOURCE DISK IN DRIVE A and STRIKE ANY KEY WHEN READY.

2. Remove DOS disk from drive and insert the B 1990 disk you wish to copy. Depress any key (space bar).

    System responds with INSERT FORMATTED TARGET DISK IN DRIVE B and STRIKE ANY KEY WHEN READY.

3. Insert the formatted disk in drive B. Depress any key (space bar).

    The copy process now begins. The program does not report the name of the files it has copied. It will report that the copying is complete by displaying COPY ANOTHER? (Y/N)?

4.. Enter N to terminate the program.

    The copy process is complete.

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INSTALLATION

MAC II floppy disk installation involves upgrading existing cassette equipped systems to floppy disk equipped systems. All future systems from Liege will come with floppy disk installed. Upgrading is achieved using a B 1965/cabinet-12 or B 1995/cabinet-12 upgrade kit. Each kit contains step by step instructions for hardware installation. These instructions should be followed whenever you are performing a system upgrade.

The upgrade requires the replacement of the cassette drive and its mounting hardware with the 5 1/4 floppy disk drive and its mounting hardware. Power for the disk drive has to be brought in from the backplane, thus a new power cable is needed. A new data and control interface cable is necessary to operate the drive. This requires a change to the interconnect board. A new interconnect board is included in the kit. The H9 card, which communicates with the cassette must be replaced with an H10 card. The H10 card contains the logic necessary to communicate with the floppy disk. In the case of dual processors two H10 cards are required: one for the master system and one for the slave system.

Once the installation process is complete, insert a system or maintenance floppy in the drive and power on the system. The H card self-test should pass, indicating basic confidence in the drive. Further testing of drive and H card can be achieved by loading and executing CLEAR/START or a maintenance program.

```
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            H10 MAINTENANCE PROCESSOR SELF-TEST SUMMARY

                        PROCESSOR  A/B


Test Number and Name            Result
- - - - - - - - - - - - - -     - - - - - - - - - - - - - - - - - - - - -
   *  1     ROM                 00000000
   *  2     RAM                 00000000
   *  3     CLOCK               00000000
      4     MPPI                00000000
      5     USART               00000000
      6     DISK                00000000
      7     LOGIC A             00000000
      8     LOGIC B             00000000
      9     LOGIC C             00000000
   *  A     CPU CLEAR           00000000
      B     MEX ECHO            00000000   00000000   00000000
      C     IO ECHO             00000000   00000000   00000000
      D     INTERRUPT           00000000


   * Failures in these tests may invalidate succeeding results

- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
```

Figure 3. H10 Self-test Result Display