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1. DESCRIPTION

1.1 OVERVIEW

Greco Systems' compact CNC MINIFILE is a disk-based part program memory system which eliminates paper tape and interfaces with virtually any NC/CNC control or CAD/CAM system. Originally designed as a replacement for paper tape equipment, and the Minifile has been continually improved to meet requirements for a simple, reliable method to manage part programs for numerically controlled machine tools. As a stand-alone device, the Minifile provides capabilities to greatly enhance machine shop productivity and efficiency.

The Minifile is designed to be versatile, compact, shock resistant and lightweight and is available in portable and rack-mount models.

1.2 PORTABLE MINIFILE DESIGN

1.2.1 Front Panel

The portable Minifile front panel (Fig. 1.2.1-1) contains the floppy diskette slot(s), Liquid Crystal Display (LCD), keypad, and indicator lamps. Indicator lamp functions are described in Table 1.2.1-1.

Figure 1.2.1-1. Portable Minifile Front Panel



Table 1.2.1-1. Front Panel Indicator Functions

Indicator Name	Color	Function
ACTIVITY	Red	Lighted when data is being transmitted or received.
POWER	Green	Lighted when unit On.
FILE OPEN	Red	Flashes when a file is opened for reading or writing.
(None)	Red	Located on the floppy diskette drive; lighted (flashing) when data blocks are being written to, or read from, the diskette

1.2.2 Rear Panel

The rear panel of the portable Minifile (Fig. 1.2.2-1) contains the Channel 0 and Channel 1 connectors, a male plug for line cord connection, an AC Power ON/OFF switch, an air circulating fan (with filter), a fuse holder, and, if specified, the optional Parallel Reader/Punch Emulator (PR/P) connector (Channel 2).

Figure 1.2.2-1. Portable Minifile Rear Panel



1.3 RACK-MOUNT MINIFILE DESIGN

1.3.1 Front Panel

The rack-mount Minifile front panel (Fig. 1.3.1-1) contains the floppy diskette slot(s), Liquid Crystal Display (LCD), Keypad, AC POWER ON/OFF switch, Channel 1 connector, and indicator lamps. Indicator lamp functions are described in Table 1.2.1-1 above.

Figure 1.3.1-1. Rack-mount Minifile Front Panel



1.3.2 Rear Panel

The rear panel of the rack-mounted Minifile (Fig. 1.3.2-1) contains a male plug for line cord connection, an air circulating fan (with filter), a fuse holder, the Channel 0 connector, and, if specified, the optional Parallel Reader/Punch (PR/) connector (Channel 2).

Figure 1.3.2-1. Rack-Mount Minifile Rear Panel

2. INSTALLATION

2.1 OVERVIEW

This section describes receipt inspection procedures, installation and configuration procedures, Minifile initialization, and keypad operation. Any problems encountered while installing and configuring the CNC MINIFILE can be solved by telephoning the Greco Systems' Customer Service Department at (800) 23-GRECO (800-234-7326).

2.2 RECEIPT INSPECTION

Perform the following when removing the Minifile from the shipping carton:

1. Check the shipping carton for damage. If there are any signs of rough handling, save the carton for evidence. If storage is not a problem, it is recommended that the shipping carton and padding be saved in the event the unit needs to be re-shipped.
2. Remove the Minifile from the carton, remove the foam padding, then remove the plastic bag.
3. Check the Minifile for any evidence of physical damage. If there are any signs of damage, notify the carrier.

CAUTION

Do not operate a Minifile that has been damaged in shipment. The Minifile could be further damaged or may damage electrical devices connected to it.

4. Open each floppy disk drive slot hatch and remove the protective insert from each drive by pulling the tab that projects from the drive slot.
5. Install the AC power cord.

2.3 MINIFILE CONFIGURATION

2.3.1 Serial Interface

The Minifile has two bi-directional RS-232-C Serial Interface ports (Channel 0 and Channel 1). However, Channel 1 may be dedicated either to the Editor or to the Network Control Protocol, depending upon the configuration. Both Serial interface connectors are located on the rear panel of the portable Minifile. The rack-mount Minifile has the Channel 0 connector on the rear panel and the Channel 1 connector on the front panel.

2.3.1.1 Serial Interface Installation

Both serial channels conform to the EIA RS-232-C standard. Channel 0 is wired as a modem (DCD) port and has a 25-pin DB25S (female) connector. Channel 1 is wired as a terminal (DTE) port and has a 25-pin DB25P (male) connector. Channel 0 signal definitions are provided in Table 2.3.1.1-1 and Channel 1 signal definitions are provided in Table 2.3.1.1-2.

Table 2.3.1.1-1. Channel 0 (DCE Female) Signals

Pin	Direction	Signal Name	Comments
1	N/A	Protective Ground	---
2	Input	TXD (Transmit Data)	---
3	Output	RXD (Receive Data)	---
4	Input	RTS (Request to Send)	See Note below.
5	Output	CTS (Clear to Send)	Always true (MARK).
6	Output	DSR (Data Set Ready)	Always true (MARK).
7	N/A	SG (Signal Ground)	N/A
8	Output	DCD (Data Carrier Detect)	Always true (MARK).
20	Input	DTR (Data Terminal Ready)	Always ignored.

NOTE

When Protocol 8 or 9 is selected (see Appendix B), the RTX input signal controls data transmission from the Minifile. When it is true (MARK), the Minifile transmits data. With all other protocols the RTS input signal is ignored.

Table 2.3.1.1-2. Channel 1 (DTE Male) Signals

Pin	Direction	Signal Name	Comments
1	N/A	Protective Ground	---
2	Output	TXD (Transmit Data)	---
3	Input	RXD (Receive Data)	---
4	Output	RTS (Request to Send)	Always true (MARK).
5	Input	CTS (Clear to Send)	See Note below.
6	Input	DSR (Data Set Ready)	Always ignored.
7	N/A	SG (Signal Ground)	---
8	Input	DCD (Data Carrier Detect)	See Note below.
20	Output	DTR (Data Terminal Ready)	Always true (MARK).

NOTE

When Protocol 9 is selected (see Appendix B), the CTS input signal controls data transmission from the Minifile. When it is true (MARK), the Minifile transmits data. With all other protocols the CTS and DCD input signals are ignored.

When Protocol 9 is selected, the DCD input controls data recording by the Minifile. When this signal is false (LOW), the Minifile does not record data and the ACTIVITY indicator does not light.

2.3.1.2 Serial Interface Troubleshooting

The RS-232-C is a well-tested standard interface; however, even this interface can cause installation problems. To assist in isolating basic problems on the system a list of steps is provided in Table 2.3.1.2-1. These steps should be performed in sequence and the appropriate Application Note should be used to check all procedures. If the information in

Table 2.3.1.2-1 does not solve the problem, contact the Greco Systems' Customer Service Department.

Table 2.3.1.2-1. RS-232-C Troubleshooting Chart

Problem	Possible Solution
Attempt to read or write a file causes no activity	Ensure the correct channel has been selected. Ensure the correct protocol has been selected. Review the Machine Tool Control (MTC) setup, including parameters, jumpers, connectors, and switch setting.
Minifile or MTC produces communication error.	Ensure the Minifile and the MTC agree on baud rate, data bits, stop bits, and parity. If not, change the Minifile settings to agree with the MTC, even if changes do not agree with the Application Note (please notify the Greco Systems' Customer Service Department of the discrepancy).
MTC produces a parity error.	Ensure the Minifile has the correct parity selection. Ensure the MTC and the Minifile have the same data type (ASCII or EIA).
ACTIVITY indicator is lighted, but the Minifile does not record data.	Ensure that control codes are enabled on the MTC. Ensure the correct channel has been selected. Ensure the Minifile has the correct protocol. Ensure the MTC and Minifile agree on baud rate.

2.3.2 Parallel Interface

The bi-directional Parallel Reader/Punch (PR/P) Interface on the Minifile is designed specifically to replace paper tape readers and punches. The PR/P uses a female 50-pin Telco-type connector for tape reader and tape punch emulation. Interface characteristics such as reader speed, signal timing, and signal polarity are programmed via the keypad (see Section 2.5 for keypad operation). These commands allow simulation of a wide variety of paper tape equipment and other types of equipment such as parallel printers.

Greco Systems supplies adapter cables that provide the connection between the Minifile standard 50-pin parallel port and the tape reader and/or tape punch cable. For some interfaces, the adapter cable incorporates additional electronics to provide special functions such as simulating mechanical reader contacts. The adapter cable makes the Minifile plug-compatible with the reader or punch being replaced, so the installation can be performed by simply unplugging a cable from the reader or punch and plugging it into the end of the adapter cable.

2.3.2.1 Parallel Reader/Punch (PR/P) Installation

The Minifile is normally shipped with a specific Application Note for each reader, punch or reader/punch configuration. This Application Note provides instructions on connecting and configuring the Minifile, as well as setting up the connected device(s). The Application Note also provides the part number for the correct Greco Systems interface cable.

WARNING

Unlike RS-232-C interfaces, the voltages in parallel applications can involve potential shock hazards. If you have any questions, or if something does not appear correct, call Greco Systems' Customer Service Department before installing the system.

A. Tape Reader Emulation

To operate as a paper tape reader:

1. Connect the adapter cable in accordance with the Application Note.
2. Enter the correct parameters from the Application Note for the reader being emulated.
3. Use the **2#** or **7#** command to select the file (see Section 4.4 for command definitions).
4. Transfer the data (upload) to the machine control, or other device, exactly as if a tape reader were being operated.

B. Tape Punch Emulation

To operate as a tape punch:

1. Connect the adapter cable in accordance with the Application Note.
2. Enter the correct parameters from the Application Note for the punch being emulated.
3. Use the **#1** command to define the file (see Section 3, paragraph 3.3.2).
4. Transfer the data (download) to the Minifile. The **ACTIVITY** indicator will be lighted while data are being transferred.
5. After the data transfer has been completed, enter the **Close File (3#)** command to close the file.

2.3.2.2 PR/P Troubleshooting

The PR/P Interface has been thoroughly tested; however, there can be interface problems during installation. One of the most common problems is caused by attempting to replace a malfunctioning reader, punch, or reader/punch with a Minifile. If the problem is not corrected, the same problem that affected the previous operation may affect the Minifile.

Other common problems are listed in Table 2.3.2.2-1. In this table, the **80#** command (Parallel Switch Register) is frequently listed as the possible solution. The format for the argument for this command is the following 16-bit entry:

16				1
0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	

The meaning of the bits depends upon the setting of the Parallel Switch Register (**80#** command) mode.

If the Possible Solution in Table 2.3.2.2-1 does not solve the problem, call Greco Systems' Customer Service Department.

Table 2.3.2.2-1. PR/P Troubleshooting Chart

Problem	Possible Solution
ACTIVITY indicator does not light.	Ensure the Minifile parameters are correct. Ensure the cabling is correct and fully seated. Ensure the MTC setup is functioning correctly. Ensure the MTC is being operated exactly as if a paper tape reader/punch is connected.
ACTIVITY indicator lights, and stays lighted, when a file is opened.	Close the file, reset the controller, then reopen the file. Change Bit 10 of the 80# command so it reverses its present state.
ACTIVITY indicator lights when read is started, but does not go out. There is no noticeable data transmission.	Change Bits 3 and 13 of the 80# command. Try all possible combinations. Check the data with paper tape for proper start, stop and rewind codes.
When a file is opened, the FILE OPEN indicator lights and stays lighted, rather than flash.	Enter the 82# command and ensure it shows the correct speed. If there is no recommended speed, set the speed within the 100-300 range.
ACTIVITY indicator flashes when a read is initiated, goes off, and there is no error reported by the host system.	Enter the 80# command. If Bit 2 is a zero, change the bit to a one.

2.4 MINIFILE INITIALIZATION

2.4.1 Energizing The Minifile

WARNING

Do not remove the Minifile's cover, as a potential shock hazard is present.

Perform the following:

1. Plug in the Minifile to the appropriate AC outlet, preferably on the MTC AC Circuit Panel outlet.
2. Turn the AC POWER switch to ON.

2.4.2 Start-Up Message

When the Minifile is turned on, the ACTIVITY, FILE OPEN, and diskette drive indicators will momentarily light (red), the POWER indicator will light (green), and the display will read:

GRECO SYSTEMS xy
CNC-200 V02.82

The “xy” in this display indicates the enabled options.

If the space occupied by the “x” is:

- | | | |
|--------------|---|-------------------------------------------------------------------------------|
| N | - | The Network Control Protocol is enabled (separate documentation is provided). |
| E | - | The Editor is enabled (separate documentation is provided). |
| Blank | - | The Network Control protocol and the Editor are not enabled. |

If the space occupied by the “y” is:

- | | | |
|--------------|---|----------------------------------------------------------------------------|
| H | - | The Host Control Protocol is enabled (separate documentation is provided). |
| Blank | - | The Host Control Protocol is not enabled. |

The keypad (Fig.2.5-1) provided:

- The numbers required to specify the commands;
- The Enter Key (# - pound sign), used to enter the commands; and
- The Erase Key (* -asterisk), used to either erase commands before the pound sign enters them or to cancel entered commands.

Figure 2.5-1. Minifile Keypad

For example, to change the baud rate parameter for Channel 0 to 9600 from its previous setting, the following three keys would be pressed on the keypad:

43#

Most of the commands entered require further information, called an “argument.” When an argument is required, the Minifile displays a short line at the bottom of the display screen and waits for entry of the required information. For example, after entering the “43#” above to select the baud rate parameter for Channel 0, the following would be entered to set the new baud rate:

9600#

3. OPERATION

3.1 OVERVIEW

This section describes the compatibility of the Minifile with the Disk Operating System (DOS), floppy diskette information, diskette formatting, and file creation.

This section also provides a numerical listing of all the commands used by the Minifile, followed by an explanation of the commands.

3.2 DOS COMPATIBILITY

The DOS system used by the Minifile –AT is compatible with the IBM-AT, and the Minifile –XT is compatible with the IBM-XT (see Table 3.2-1 for diskette compatibility). The Floppy diskette format used by the Minifile models –XT, -3, -AT, and –S2 are compatible with IBM or MicroSoft DOS 360FK, 720FK, 1.2M and 1.44M formats respectively.

The Minifile uses double-sided floppy diskettes with a soft sector format. To acquire maximum density diskettes that have been tested for formatting capabilities, contact the Greco Systems' Customer Service Department at 9800) 23-GRECO (800-234-7326).

CAUTION

Ensure the correct diskette is used for the Minifile model. The wrong diskette type can cause serious read and/or write problems.

Table 3.2-1. Minifile Diskette Characteristics

Model	Tracks/ Side	Tracks/ Side	Formatted Diskette Capacity	Paper Tape	Remarks
P-XT	40	48	360 KB	3,000'	5.25" diskette (9 sectors – double sided, double density); IBM-XT compatible.
P-3	80	134	720 KB	6,000'	3.5" diskette (9 sectors – double sided, double density), IBM compatible
P-AT	80	96	1.2 MB	10,000'	5.25" diskette (156 sectors – double sided, high density), IBM-AT compatible.
P-S2	80	135	1.44 MB	12,000'	3.5" diskette (18 sectors – double sided, high density), IBM PS/2 compatible.

There are certain criteria to remember when preparing Minifile data on an IBM computer:

1. Use the standard IBM directory structure without subdirectories. Therefore, do not use the **MKDIR** command.
2. To name a volume from the computer, use /V with the **FORMAT** command for example:

FORMAT (a:)/V

3. File names are required; Extensions, up to three letters, are optional. Both can be alphanumeric, but the alphabetic characters must be in upper case. For example:

MACH01

4. The Minifile supports text and binary files. Text files use standard ASCII, but without NUL (null) characters. Binary files close when that number of characters have been read. Text files close when that number of the SUB (substitute) character is read. The Minifile assumes all files other than those with the .BIN extension are Text files.

With text files (any file without the .BIN extension), the Minifile reads the number of characters within the text file and directory then counts the characters as the file is read. The Minifile stops reading when that number is reached or the SUB character is read, whichever comes first. When writing or reading a text file without an extension, the Minifile adds the .TXT extension to the file name if Text File Type is enabled or will add the .BIN extension if Text File Type is disabled. Text files contain 7-bit data, usually limited to the ASCII characters, **CR**, **LF**, and **SUB**.

Binary files can contain any combination of 8-bit data, making up to 256 possible characters. Since binary files do not use the SUB character to mark the EOF (End Of File), the Minifile exclusively uses the character count from the directory to know when to stop reading

3.3 DISK FORMATTING AND FILE CREATION USING THE MINIFILE

3.3.1 Formatting A Diskette

A new diskette must be formatted before it can be used. Formatting organizes the storage locations and writes data onto the diskette, including the directory and the volume label.

CAUTION

If a diskette containing data is reformatted, all data stored on the diskette will be lost.

To format a diskette, perform the following:

1. Install the diskette to be formatted in the active drive.
2. Enter the following via the keypad (see 3.6.4):

91#

3. Enter a volume name. For example:

123#

The diskette drive indicator lamp will be lighted until the formatting is completed. **Do not** enter any other commands via the keypad while the diskette is being formatted.

3.3.2 Creating A File

To create a file with an alphanumeric name, perform the following:

1. Set the keypad to allow alphabetic characters by entering the following via the keypad (see 3.8.12):

71#

2. Enter the following via the keypad (see 3.5.1):

1#

3. Enter a file name. For example, to enter **MACH01**, enter the following via the keypad (see 3.8.12):

221012170001#

Where:	22 = M
	10 = A
	12 = C
	17 = H
	00 = 0
	01 = 1

NOTE

When the first digit of the two-digit entry is pressed, nothing will be displayed on the LCD. When the second digit is pressed, the alphanumeric equivalent will be displayed on the LCD. For the above example, the letter "M" would be entered as "22" with the first "2" not being displayed and the second "2" causing the letter "M" to be displayed on the LCD; then the letter "A" would be entered as "10" with the "1" not being displayed and the "0" causing the letter "A" to be displayed on the LCD following the "M," etc.

If the file opens properly, the FILE OPEN indicator will flash.

To close the file, enter the following via the keypad (see 3.5.3):

3#

3.4 MINIFILE COMMANDS OVERVIEW

The commands used by the Minifile are organized into group:

- File Commands (Section 3.5).
- Diskette Commands (Section 3.6).
- Parameter Commands (Section 3.7).
- Special purpose Commands (SPC) (Section 3.8).
- Minifile Plus (MF Plus) Commands (Section 3.9)
- Net Commands (explained in the Versa-Net or Greco-Net Operator's Manual, as applicable).

Table 3.4-1 provides a listing of all the commands used by the Minifile.

Table 3.4-1. Numerical Commands List

Command	#Command Name	Group
1#	Define File	File
2#	Select File (by File Number)	File
3#	Close File	File
4#	Free Blocks	Diskette
5#	Directory	Diskette
6#	Volume ID	Diskette
7#	Select File (by File Label)	File
8#	Forward Search	SPC
9#	Reverse Search	SPC
10#	Cancel Redirection	Net*
20#	Copy File (by File Number)	File
21#	Copy File (by File Name)	File
22#	Save Parameters from Disk	Parameter
23#	Restore Parameters from Disk	Parameter
30#	Network Communications	MF Plus
31#	Editor Function	MF Plus
32#	Network Default Drive	MF Plus
33#	Editor Default Drive	MF Plus
40#	Display Parameters	Parameter
41#	Reset Parameters	Parameter
42#	Store Parameters	Parameter
43#	Channel 0 Baud Rate	Parameter
44#	Channel 1 Baud Rate	Parameter
45#	Channel 0 Parity	Parameter
46#	Channel 0 Protocol	Parameter
47#	Channel 0 Protocol	Parameter
48#	Channel 1 Protocol	Parameter
49#	Active Channel	Parameter
50#	Enter Date	SPC
51#	Text File type	Parameter
52#	LF Output	Parameter
53#	EIA Conversion	Parameter
54#	Select Drive	SPC/MF Plus
55#	LF to CR Conversion	Parameter
56#	Parallel Looping Option	SPC
57#	Channel 0 Auto Enable	Parameter
58#	Channel 1 Auto Enable	Parameter
59#	LCD Adjustment	SPC

Command	#Command Name	Group
60#	PROM ID Display	SPC
61#	Channel 0 Stop Bits	Parameter
62#	Channel 1 Stop Bits	Parameter
63#	Protocol PROM Version	MF Plus
65#	Channel 0 Data Bits	Parameter
66#	Channel 1 Data Bits	Parameter
67#	Nulls in Text File	SPC
68#	Mazak Conversational Terminator	SPC
69#	Serial Search	SPC
70#	Numeric Input Character	SPC
71#	Alphanumeric Input	SPC
72#	Parallel Port Leader/Trailer Character	SPC
73#	Reset	SPC
74#	Part Program Pre-Display	SPC
75#	Part Program Display	SPC
80#	Parallel Switch Register	SPC
82#	Parallel Reader Speed	SPC
84#	Parallel Configuration Register	SPC
85#	Parts.Job Download Request	Net*
86#	Parts.Job Upload Request	Net*
87#	Download Request	Net*
88#	Upload Request	Net*
89#	Device.Job File Redirection	Net*
91#	Format Diskette	Diskette
92#	Re-initialize Volume	Diskette
96#	Verify Diskette	Diskette
98#	Delete File (by File Number)	File
99#	Delete File (by File Label)	File

* -Refer to the Versa-Net or Greco-Net Operator's Manual, as appropriate.

3.5 FILE COMMANDS

The File Commands are used to record, read, transmit, and delete diskette files.

3.5.1 1# - Define File

Purpose: To open and name a file for recording.

Display: DEFINE FILE:

Argument: File name (without an extension of up to eight alphabetic, numeric, or alphanumeric characters)

The Minifile appends the extension **.TXT** if Text File Type (see 3.7.13) is enabled. It appends the extension **.BIN** if Text File Type is disabled.

3.5.2 2# - Select File (by File Number)

Purpose: To open a file by file number for transmission.

Display: SELECT FILE:

Argument: Entry number that designates the file's position in the directory.

3.5.3 3# - Close File

Purpose: To manually close a file.

Display: CLOSE FILE:

Argument: No argument required, but do not enter another command until this operation is completed.

3.5.4 7# - Select File (by File Name)

Purpose: To open a file by file name for transmission.

Display: SELECT FILE:

Argument: The file name (without an extension) as it appears in the directory; an extension is automatically assumed.

The extension of the file name on the diskette must be **.BIN** or **.TXT**. The Minifile looks for the entered file name with one of these extensions, depending upon the currently selected file type as determined by the **51#** command. If Text File Type (see 3.7.13) is enabled, the Minifile looks for the file name with the extension **.TXT**. If the Text File Type is disabled, the Minifile looks for the file name with the extension **.BIN**.

3.5.5 20# - Copy File (by File Number)

Purpose: To copy a file to a diskette by file number (for the dual-drive Minifile only).

Display: COPY FILE:

Argument: The file number as it appears in the directory. The file number of the file being copied to diskette will be displayed. The diskette drive indicator lamps will flash until the copying is completed. **Do not** enter any other commands via the keypad while the file is being copied.

3.5.6 21# - Copy File (by File Name)

Purpose: To copy a file to a diskette by file name (for the dual-drive Minifile only).

Display: COPY FILE:

Argument: The file name as it appears in the directory (include extension, if any). The file name of the file being copied to the diskette will be displayed. The diskette drive indicator lamps will flash until the copying is completed. **Do not** enter any other commands via the keypad while the file is being copied.

3.5.7 98# - Delete File (by File Number)

Purpose: To delete a file (except read-only) by file number from the diskette. This command should not be entered when performing alphanumeric input, as the file number can be the numerical equivalent of the entered alphabetic.

Display: DELETE FILE:

Argument: The entry number that designates the file's position in the directory

3.5.8 99# - Delete File (by File Name)

Purpose: To delete a file (except read-only) by file name from the diskette.

Display: DELETE FILE:

Argument: The file name (without an extension) as it appears in the directory; an extension is automatically assumed.

The extension of the file name on the diskette must be **.BIN** or **.TXT**. The Minifile looks for the entered file name with one of these extensions, depending upon the currently selected file type as determined by the **51#** command. If Text File Type (see 3.7.13) is enabled, the Minifile looks for the file name with the extension **.TXT**. If the Text File Type is disabled, the Minifile looks for the file name with the extension **.BIN**.

3.6 DISKETTE COMMANDS

The Diskette Commands are used to format and verify diskettes, as well as display their attributes.

3.6.1 4# - Free Blocks

Purpose: To display the total number of blocks and the total number of unused blocks on a diskette.

Display: FREE BLOCKS, the VOLUME NAME then,
after calculations, TOTAL NNN and UNUSED NNN

Argument: No argument required.

3.6.2 5# - Directory

Purpose: To display the diskette file directory.

Display: DIRECTORY, followed by the first file's information:

- Entry number that designates the file's position in the directory.
- Date entered.
- Number of blocks in the file.
- File name.

To display the same information for the next file, press the Enter Key (#).
The entry number is used to identify the file using the **2#**, **20#** and **98#**
commands.

Argument: No argument required.

3.6.3 6# - Volume Identification

Purpose: To display the diskette volume name and the number of files on the diskette.

Display: VOLUME ID, the name of the volume, then FILES:
followed by the number of files in the volume.

Argument: No argument required.

3.6.4 91# - Format Diskette

Purpose: To format a new diskette, or to reformat a used diskette, to read and write
data.

Display: VOLUME NAME:

Argument: Volume name of up to 11 alphabetic, numeric, or alphanumeric characters,
without spaces.

3.6.5 92# - Re-initialize Volume

Purpose: To re-initialize a volume by erasing the directory and re-naming the volume.
Old data is no longer accessible, but the volume is ready for new data storage.

Display: VOLUME NAME:

Argument: Volume name of up to 11 alphabetic, numeric, or alphanumeric characters,
without spaces.

3.6.6 96# - Verify Disk

- Purpose:** To verify the readability of the diskette by performing a read check on all the blocks. The display to the left of READ is the block number being read; to the right of READ is the number of read failures; and to the right of SEEK is the number of seek failures. If no value appears after READ or SEEK, then there have been 0 failures. The Minifile performs this non-destructive test once then displays the results. The Minifile must be reset with a Reset command (73# -0 see 3.8.12) to leave this command.
- Display:** VERIFY DISK, then READ
SEEK
- Argument:** No argument required.

3.7 PARAMETER COMMANDS

The Parameter Commands configure the Minifile to communicate with a host system. Refer to the Application Note supplied with the Minifile before using these commands.

3.7.1 22# - Verify Disk

- Purpose:** To write the active parameters to a diskette. Very useful with the portable Minifile if there are numerous devices which use different parameters.
- Display:** SAVE PARM FILE:
- Argument:** file number or name (without extension). Minifile adds the extension **.MFP** to the file. The diskette drive indicator lamp will be lighted until the copying is completed. **Do not** enter any other commands via the keypad while the file is being copied.

3.7.2 23# - Restore Parameters from Disk

- Purpose:** To set the active parameters by reading the parameters from the diskette. Very useful with the portable Minifile if there are numerous devices which use different parameters.
- Display:** RESTORE PARM FILE:
- Argument:** No argument required. After the selected channel is displayed, press the Enter Key (#) to sequence through the remaining active parameters.

3.7.3 40# - Display Parameters

- Purpose:** To display the present operating parameters for the selected channel.
- Display:** DISPLAY PARAMS
- Argument:** No argument required. After the selected channel is displayed, press the Enter Key (#) to sequence through the remaining active parameters.
-

3.7.4 41# - Reset Parameters

Purpose: To reset the system to the parameters in non-volatile memory.

Display: RESET PARAM

Argument: No argument required. The display returns to the initial Power On display.

3.7.5 42# - Store Parameters

Purpose: To store operating parameters in non-volatile memory.

Display: STORING PARAMS

Argument: No argument required. **Do not** enter any other commands until the above display clears.

3.7.6 43# - Channel 0 Baud Rate

Purpose: To display or change the Channel 0 baud rate.

Commands: 43## = displays the current parameter setting.
43# = selects parameter for setting.

Display: CHANNEL 0 BAUD

Argument: To make a change, enter one of the following:

50#	600#	2000#
75#	750#	2400#
110#	1000#	3000#
135#	1200#	3600#
150#	1500#	4800#
300#	1800#	7200#
		9600#

To display the present value, and to change the value, enter the command and argument in sequence.

3.7.7 44# - Channel 1 Baud Rate

Purpose: To display or change the Channel 1 baud rate.

Commands: 44## = displays the current parameter setting.
44# = selects parameter for setting.

Display: CHANNEL 1 BAUD

Argument: See 3.7.6 Argument.

3.7.8 45# - Channel 0 Parity

Purpose: To display or change the present parity value for Channel 0.

Commands: 45## = displays the current parameter setting.

45# = selects parameter for setting.

Display: CHN0 0=N 1=0 2=E

3=M 4=S:

Argument: To make a change, enter one of the following:

0# for No parity

1# for Odd Parity

2# for Even Parity

3# for Mark (sets the eighth bit)

4# for Space (clears the eighth bit)

To display the present value, and to change the value, enter the command and argument in sequence.

3.7.9 46# - Channel 1 Parity

Purpose: To display or change the present parity value for Channel 1.

Commands: 46## = displays the current parameter setting.

46# = selects parameter for setting.

Display: CHN1 0=N 1=0 2=E

3=M 4=S:

Argument: See 3.7.8 Argument.

3.7.10 47# - Channel 0 Protocol

Purpose: To display or change the protocol selection for Channel 0.

Commands: 47## = displays the current parameter setting.

47# = selects parameter for setting.

Display: CHAN 0 PROTOCOL

Argument: To make a change, enter one of the following:

0# = No protocol

1# = X/On X/Off

2# = Bridgeport Editor Port

3# = Bridgeport DNC Loader

4# = Bridgeport Easy Link

5# = RS-491, Level II, Slave

6# = Heidenhain

7# = Punch/Reader

8# = Synchronous Reader

9# = RS-491, Level I

10# = Fanuc

11# = Heidenhain Block

12# = FAPT

13# = HECC 80

14# = RS-491, Level II, Master

15# = Hitachi Seiki

16# = Mazak Conversational

17# = Punch/Reader Master

18# = X/On X/Off II

19# = TLM

20# = Sharnoa Remote

21# = Fanuc Cassette

22# = Mazak Cassette

23# = Acramatic

24# = Host System (optional)

To display the present value, and to change the value, enter the command and argument in sequence.

3.7.11 48# - Channel 1 Protocol

Purpose: To display or change the protocol selection for Channel 1.

Commands: 48## = displays the current parameter setting.
48# = selects parameter for setting.

Display: CHAN 1 PROTOCOL

Argument: See 3.7.10 Argument.

3.7.12 49# - Active Channel

Purpose: To display or change the channel used to transmit and receive data.

Commands: 49## = displays the current parameter setting.
49# = selects parameter for setting.

Display: SELECTED CHANNEL

Argument: To change, enter one of the following:

0#
1#
2# (if configured)

To display the present value, and to change the value, enter the command and argument in sequence.

3.7.13 51# - Text File Type

Purpose: To display or change the file type. The file type can be binary (.BIN) or text (.TXT). The Minifile Editor requires a text file.

Commands: 51## = displays the current parameter setting.
51# = selects parameter for setting.

Display: TEXT 0 = DIS 1=EBL

Argument: To make a change, enter one of the following:

0# = Disable the text file capability.
1# = Enable the text file capability.

To display the present value, and to change the value, enter the command argument in sequence.

3.7.14 52# - Line Feed Output

Purpose: To transmit or strip the LF (Line Feed) character after a CR (Carriage Return) has been transmitted (this command affects text type files only).

When CR and LF are both present in the file, 52# and 55# have the effect shown in Table 3.7.14-1 during output. Enabled/Enabled results in both being sent.

Table 3.7.14.1 Valid 52# and 55# Relationships

52#	55#	Activity
Disabled	Disabled	CR is transmitted. LF is not transmitted.
Enabled	Disabled	CR is transmitted. LF is transmitted.
Disabled	Enabled	CR is not transmitted. LF is transmitted.
Enabled	Enabled	Not applicable.

Commands: 52## = displays the current parameter setting.
52# = selects parameter for setting.

Display: LF 0 = DIS 1 = EBL

Argument: To control LF transmission, enter one of the following:

0# = Disabled.
1# = Enabled.

To display the present value, and to change the value, enter the command and argument in sequence.

3.7.15 53# - EIA Conversion

Purpose: To convert data from EIA code to ASCII code when recording and to convert data from ASCII code to EIA code when transmitting.

Commands: 53## = displays the current parameter setting.
53# = selects parameter for setting.

Display: EIA 0 = DIS 1=EBL

Argument: To make a change, enter one of the following:

0# = Disabled.
1# = Enabled.

To display the present value, and to change the value, enter the command and argument in sequence.

3.7.16 55# - LF to CR Conversion

Purpose: To append a CR (Carriage Return) character to each LF (Line Feed) character when the Minifile writes a file to diskette.

Used to write an ASCII Text file, where the LF is the EOB or EOL character and the CR is not received. Also used to communicate with an IBM-XT or – AT.

Commands: 55## = displays the current parameter setting.
55# = selects parameter for setting.

Display: LFCR 0 = DIS 1 = EBL

Argument: To make a change, enter one of the following:

0# = Disabled.
1# = Enabled.

To display the present value, and to change the value, enter the command and argument in sequence.

3.7.17 57# - Channel 0 Auto Enable

Purpose: To permit any Channel 0 protocol to operate in the hardware as well as software handshake mode.

Commands: 57## = displays the current parameter setting.
57# = selects parameter for setting.

Display: CHAN0 AUTO ENABLE
0 = DIS 1 = EBL

Argument: To make a change, enter one of the following:

0# = Disabled.
1# = Enabled.

To display the present value, and to change the value, enter the command and argument in sequence.

In the Data In Mode (Write), the Channel 0 CTS (Clear To Send) line is always true and Auto Enable has no effect (see the individual protocol specifications in Appendix B).

In the Data Out Mode (Read), the host system can control data flow with the RTS (Request To Send) signal as well as ASCII characters DC1 DC3.

3.7.18 58# - Channel 1 Auto Enable

Purpose: To permit any Channel 1 protocol to operate in the hardware as well as software handshake mode.

Commands: 58## = displays the current parameter setting.
58# = selects parameter for setting.

Display: CHAN1 AUTO ENABLE
0 = DIS 1 = EBL

Argument: To make a change, enter one of the following:
0# = Disabled.
1# = Enabled.

To display the present value, and to change the value, enter the command and argument in sequence.

In the Data In Mode (Write), Channel 1 waits to receive data (Auto Enable has no effect).

In the Data Out Mode (Read), data out takes the CTS (Clear To Send) signal true as well as any software handshake for the Minifile to send ASCII character DC3. CTS false will stop transmission.

3.7.19 61# - Channel 0 Stop Bits

Purpose: To display or change the amount of stop bits for Channel 0.

Commands: 61## = displays the current parameter setting.
61# = selects parameter for setting.

Display: CH0 STP BT 1 = ONE
2 = TWO, 3 = 1.5:

Argument: To make a change, enter one of the following:
1# = 1
2# = 2
3# = 1.5

To display the present value, and to change the value, enter the command and argument in sequence.

3.7.20 62# - Channel 1 Stop Bits

Purpose: To display or change the amount of stop bits for Channel 1.

Commands: 62## = displays the current parameter setting.
62# = selects parameter for setting.

Display: CH1 STP BT 1 = ONE
2 = TWO, 3 = 1.5:

Argument: See 3.7.7.19 Argument.

3.7.21 65# - Channel 0 Data Bits

Purpose: To display or change the amount of data bits per character for Channel 0.

Commands: 65## = displays the current parameter setting.

65# = selects parameter for setting.

Display: CH0 DATA BITS
5, 6, 7 OR 8:

Argument: To make a change, enter one of the following:

5# = 5 data bits.

6# = 6 data bits.

7# = 7 data bits.

8# = 8 data bits.

To display the present value, and to change the value, enter the command and argument in sequence.

3.7.22 **66# - Channel 1 Data Bits**

Purpose: To display or change the amount of data bits per character for Channel 1.

Commands: **66##** = displays the current parameter setting.
66# = selects parameter for setting.

Display: CH1 DATA BITS
5, 6, 7 OR 8:

Argument: See 3.7.21 Argument.

3.8 **SPECIAL PURPOSE COMMANDS**

This section describes the Special Purpose Commands available on the Minifile.

3.8.1 **8# - Forward Search**

Purpose: To perform a forward search of an open file for a line beginning with the user-entered character string. To use this command the Channel 2 (parallel port) must be the active channel.

Display: One of the following:

PARALLEL PORT NOT SELECTED
SELECT FILE NOT OPEN
SEARCH FWD

After entering a string of up to 16 characters at the SEARCH FWD prompt, the following is displayed.

SEARCHING FOR (string)

Then one of the following:

FOUND (string)
UNABLE TO FIND (string)

Argument: Enter up to 16 characters, including spaces. The characters **must** be at the beginning of a line. The Minifile automatically changes to the alphanumeric input mode, then reverts to the numeric input mode at the end of the search.

If UNABLE TO FIND is displayed, the pointer position will not change. The UNABLE TO FIND display may be due either to the string not being present forward of the present position or due to an incorrect input.

3.8.2 9# - Reverse Search

Purpose: To perform a reverse search of a pen file for a line beginning with the user-entered character string. To use this command the Channel 2 (parallel port) must be the active channel.

Display: One of the following:

PARALLEL PORT NOT SELECTED
SELECT FILE NOT OPEN
SEARCH REV

After entering a string of up to 16 characters at the SEARCH REV prompt, the following is displayed.

SEARCHING FOR (string)

Then one of the following:

FOUND (string)
UNABLE TO FIND (string)

Argument: Enter up to 16 characters, including spaces. The characters **must** be at the beginning of a line. The Minifile automatically changes to the alphanumeric input mode, then reverts to the numeric input mode at the end of the search.

If UNABLE TO FIND is displayed, the pointer position will not change. The UNABLE TO FIND display may be due either to the string not being present to the reverse of the present position or due to an incorrect input.

3.8.3 50# - Date

Purpose: To display or change the current date.

Commands: 50## = displays the current setting.
50# = selects function for setting.

Display: DATE

Argument: To make a change, enter the date in the DDMMYY format. For example, 4 May 1990 would be 040590.

3.8.4 54# - Select Drive

Purpose: To display or select a diskette drive in a dual-drive configuration.

Commands: 54## = displays the current setting.
54# = selects function for setting.

Display: SELECT DRIVE:

Argument: To make a change enter one of the following:

0# = Drive 0 Enabled.
1# = Drive 1 Enabled.
2# = Drive 2 Enabled (for Minifile Plus; Drive 1 is not used
– See Section 3.9)

Drive 0 is the top diskette drive; Drive 1 or 2 is the bottom diskette drive.
Single drive units must always be set to 0#.

To display the present value, and to change the value, enter the command and argument in sequence.

3.8.5 56# - Parallel Looping Option

Purpose: To allow a file to be transmitted repeatedly until it is closed with a Close File command (3#).

Commands: 56## = displays the current setting.
56# = selects function for setting.

Display: PARALLEL LOOPING
0 = DIS, 1=EBL

Argument: To make a change, enter one of the following:

0# = Disabled.
1# = Enabled.

With 56# 1#, when the Minifile reads the SUB character, it automatically moves to the beginning of the file. When rewind tape commands are used in end-of-program codes, this parameter should be disabled. When the Minifile comes to the end of a text file, the trailer and leader characters are transmitted, then the file starts over. For binary files, the last character of the file is constantly transmitted until the file repositions to start.

To display the present value, and to change the value, enter the command and argument in sequence.

3.8.6 59# - LCD Adjustment

Purpose: To change the viewing angle of the LCD.

Commands: 59## = displays the current setting.
59# = selects function for setting.

Display: LCD
ADJUSTMENT:

Argument: Once the parameter is displayed, the Enter Key (#) is pressed to cycle through the available settings in ascending order, starting with the current value. The presently stored parameter will be displayed upon first pressing the Enter Key (#). The available settings are 0 through 15 and, after reaching 15, the next displayed value is 0. The selected value should be stored with the Store Parameters command (42#). The asterisk (*) may be used to cease the adjustment and end the command.

3.8.7 60# - PROM ID Display

Purpose: To verify the checksum value of the Minifile firmware.

Display: PROM CODE: (nnnnn)

Argument: No argument required. The value "(nnnnn)" indicates the five-character PROM Code.

3.8.8 67# - Nulls in Text File

Purpose: To allow the recording of null characters onto the diskette.

Commands: 67## = displays the current setting.
67# = selects function for setting.

Display: NULL IN TXT FILE
0 = DIS 1 = EBL

Argument: To make a change, enter one of the following:

0# = Disabled.
1# = Enabled.

When enabled, null characters sent to the Minifile will be recorded onto the diskette. When disabled (the default), the null characters are removed prior to the recording data onto the diskette. The TEXT FILE TYPE command (51#) (see 3.7.13) must be enabled for this command to apply.

To display the present value, and to change the value, enter the command and argument in sequence.

3.8.9 68# - Mazak Conversational Terminator

Purpose: To set the Minifile to wait for either one or two terminators at the end of each command packet. This command only applies if Protocol 16# is active (see Appendix B).

Commands: 68## = displays the current setting.
68# = selects function for setting.

Display: SINGLE MAZAK EOT
0 = DIS 1 = EBL

Argument: To specify two terminators (the default), enter 0#. To specify one terminator, enter 1#

3.8.10 69# - Serial Search

Purpose: To make a forward search to output the contents of a file, beginning with the user-entered string. This command must be entered before the file is opened.

Display: SERIAL SEARCH:

Argument: To make the search, enter up to 16 alphanumeric characters directly after the colon, then open the file with the **2#** or **7#** command. This command can only work on Channel 0 or Channel 1.
Three error messages can be displayed:

PARALLEL PORT ENABLED if Channel 2 is selected;
FILE ALREADY OPEN if this command is entered after the file has been opened; or
NO SUBJECT FOR SEARCH if a second pound sign (#) is entered without a string.

3.8.11 70# - Numeric Input

Purpose: To set the keypad to allow numeric entries.

Display: NUMERIC INPUT

Argument: No argument required.

3.8.12 71# - Alphanumeric Input

Purpose: To set the keypad to allow alphabetic entries.

Display: ALPHA INPUT

Argument: All entries must have two numerals. Numeric entries 0 through 9 are input as 00 through 09. Alpha entries A through z are input as 10 through 35. Other available characters are input as 36 through 58 [all numbers above 58 print a diagonal slash (/)]. Table 3.8.12-1 lists the acceptable entries.

Table 3.8.12-1. Alphanumeric Entries

Character	Entry	Character	Entry	Character	Entry
0	00	K	20	_	40
1	01	L	21	*	41
2	02	M	22	~	42
3	03	N	23	&	43
4	04	O	24	#	44
5	05	P	25	@	45
6	06	Q	26	!	46
7	07	R	27	%	47
8	08	S	28	'	48
9	09	T	29	(49

Character	Entry	Character	Entry	Character	Entry
A	10	U	30)	50
B	11	V	31	- (dash)	51
C	12	W	32	{	52
D	13	X	33	}	53
E	14	Y	34	?	54
F	15	Z	35	\$	55
G	16	. (period)	36	: (colon)	56
H	17		37	, (comma)	57
I	18	<	38	(space)	58
J	19	>	39		

3.8.13 72# - Parallel Port Leader/Trailer Character

Purpose: To select the character that will be output through the Parallel Port before and after a Text Type File.

Commands: 72## = displays the current setting.
72# = selects function for setting.

Display: CH2 LDR/TRLR
0 = NUL 1 = SPACE:

Argument: To select a null character (=00H), enter 0#; to select a space character (=20H), enter 1#.

The space character will be converted to the EIA equivalent if EIA Conversion is enabled. The default leader/trailer characters are null with EIA Conversion disabled; space when enabled.

3.8.14 73# - Reset

Purpose: To re-initialize the system to the Power On state.

Display: R E S E T

Argument: No argument required.

3.8.15 74# - Part Program Pre-Display

Purpose: To display the line being processed and up to five data lines that are to follow the present line of the part program display. If the Minifile does not have an Editor, INVALID COMMAND will be displayed.

Commands: 74## = displays the current setting.
74# = selects function for setting.

Display: COMM PRE-DISPLAY
0 TO 5:

Argument: To make a change, enter one of the following:

- 0#** = Only the present line being processed will be displayed.
- 1#** = The present line and the following line will be displayed.
- 2#** = The present line and the following two lines will be displayed.
- 3#** = The present line and the following three lines will be displayed.
- 4#** = The present line and the following four lines will be displayed.
- 5#** = The present line and the following five lines will be displayed.

To display the present value, and to change the value, enter the command and argument in sequence.

3.8.16 75# - Part Program Display

Purpose: To display the data being transmitted from the active COMM channel. If the Minifile does not have an Editor, INVALID COMMAND will be displayed.

Commands: **75##** = displays the current setting.
75# = selects function for setting.

Display: PART PRGRM DSPLY
DIS = 1,EBL = 1:

Argument: To make a change, enter one of the following:

- 0#** = Disabled (No Display).
- 1#** = Enabled (Display).

If the Minifile is configured with the Editor option, a file is output simultaneously to the Editor monitor as it is transmitted from the COMM Channel.

To display the present value, and to change the value, enter the command and argument in sequence.

3.8.17 80# - Parallel Switch Register

Purpose: To display or change the Parallel Switch Register 16-bit setting (see the Application Note for specific information).

Commands: **80##** = displays the current setting.
80# = selects function for setting.

Display: SWITCH REG 0

Argument: To display the present value, and to change the value, enter the command and argument in sequence.

3.8.18 82# - Parallel Reader Speed

Purpose: To display or change the parallel reader speed (see the Application Note for specific information).

Commands: 82## = displays the current setting.
82# = selects function for setting.

Display: READER SPEED

Argument: Any whole number, 15 to 1000 inclusive.

To display the present value, and to change the value, enter the command and argument in sequence.

3.8.19 84# - Parallel Configuration Register (future use)

Purpose: To display or change the Parallel Configuration Register (See the Application Note for specific information; when not specified, the setting should be all zeros).

Commands: 84## = displays the current setting.
84# = selects function for setting.

Display: CONFIG REGISTER

Argument: To display the present value, and to change the value, enter the command and argument in sequence.

3.9 MINIFILE PLUS COMMANDS

3.9.1 30# - Network Communications

Purpose: To display or change the active Network port.

Commands: 30## = displays the current setting.
30# = selects function for setting.

Display: NETWRK 0 = N 1 = CH0
2 = CH1

Argument: To make a change, enter one of the following:

0# = None (Disabled).
1# = Channel 0 Network Port Enabled
2# = Channel 1 Network Port Enabled.

To display the present value, and to change the value, enter the command and argument in sequence.

3.9.2 31# - Editor Function

Purpose: To display or change the port the Editor will use.

Commands: 31## = displays the current setting.
31# = selects function for setting.

Display: EDITOR 0 = N 1 = CH0
2 = CH1

Argument: To make a change, enter one of the following:

0# = None (Disabled).
1# = Channel 0 Port Enabled
2# = Channel 1 Port Enabled.

To display the present value, and to change the value, enter the command and argument in sequence.

3.9.3 32# - Network Default Drive

Purpose: To display or change the default drive for the Network function (the drive that will be accessed whenever the network requests a disk function).

Commands: 32## = displays the current setting.
32# = selects function for setting.

Display: NETWORK DRIVE:

Argument: The Minifile Plus has an option for a RAM disk drive, designated Drive 2. The floppy drives maintain the same drive specifications as before (i.e., 0 and 1) but since the Minifile Plus can have only two drives, the selections are Drives 0 and 1 **or** Drives 0 and 2.

To make a change, enter one of the following:

0# = Drive 0 Enabled as the Default Drive.
1# = Drive 1 Enabled as the Default Drive.
2# = Drive 2 Enabled as the Default Drive.

To display the present value, and to change the value, enter the command and argument in sequence.

3.9.4 33# - Editor Default Drive

Purpose: To display or change the default drive for the Editor function (the drive that will be accessed whenever a drive is not specified in a command statement).

Commands: 33## = displays the current setting.
33# = selects function for setting.

Display: EDITOR DRIVE:

Argument: The Minifile Plus has an option for a RAM disk drive, designated Drive 2. The floppy drives maintain the same drive specifications as before (i.e., 0 and 1) but since the Minifile Plus can have only two drives, the selections are Drives 0 and 1 **or** Drives 0 and 2.

To make a change, enter one of the following:

0# = Drive 0 Enabled as the Default Drive.
1# = Drive 1 Enabled as the Default Drive.
2# = Drive 2 Enabled as the Default Drive.

To display the present value, and to change the value, enter the command and argument in sequence.

3.9.5 54# - Select Drive

Purpose: To display or select the diskette drive in a dual-drive configuration used for Machine Tool communications and keypad commands.

The Editor format disk (FOR) and create directory (CRE) commands now require that a disk drive be specified in the command statement, along with a volume name. For example:

FOR D2:TEST or CRE D1:TEST

The Editor will not allow these commands if any files are open in the Network or Machine Tool communications.

Commands: 54### = displays the current setting.
54# = selects function for setting.

Display: SELECT DRIVE:

Argument: The Minifile Plus has an option for a RAM disk drive, designated Drive 2. The floppy drives maintain the same drive specifications as before (i.e., 0 and 1) but since the Minifile Plus can have only two drives, the selections are Drives 0 and 1 or Drives 0 and 2.

To make a change, enter one of the following:

0# = Drive 0 Enabled as the Default Drive.
1# = Drive 1 Enabled as the Default Drive.
2# = Drive 2 Enabled as the Default Drive.

To display the present value, and to change the value, enter the command and argument in sequence.

3.9.6 63# - Protocol PROM Version

Purpose: To display or change the Minifile Plus PROM version.

Display: PROTOCOL PROM
VERSION NN.NN

Argument: No argument required. The “NN.NN” indicates the version number.

To display the present value, and to change the value, enter the command and argument in sequence.

The Minifile Plus has a separate PROM for the serial protocols which was incorporated to allow the user to acquire additional protocols or a special protocol to allow upgrades without changing the basic operation of the Minifile.

APPENDIX A - SPECIFICATIONS

A1. PHYSICAL CONFIGURATION

A.	Size:		
		Portable:	5.25"H X 10"W X 10.5"D (13.33cm X 25.4cm X 26.67cm)
		Rack-Mount	5.25"H X 19.0"W X 8.75"D (13.33cm X 48.26cm X 22.22cm)
B.	Weight:		
		Portable:	12 lbs (5.44 kg)
		Rack-Mount	11 lbs (5.0 kg)
C.	Display:		32 alphanumeric LCD
D.	Keyboard:		3 X 4 character keypad; 0-9, #, * characters
E.	Number of Drives:		One standard, one optional
F.	Recording Medium:		3.5" diskette; 5.25" diskette
G.	Storage Capacity:		
		P-XT:	3,000' of tape (360 KB)
		P-3:	6,000' of tape (720 KB)
		P-AT:	10,000' of tape (1.2 MB)
		PS/2:	12,000' of tape (1.44 MB)
		P-27:	23,000 of tape (2.7 MB)

A2. INPUT POWER

A.	Voltage:	90 to 264 VAC
B.	Frequency:	47 to 63 Hz
C.	Amperage:	0.5 A

A3. ONLINE STATISTICS

A.	MTBF:	10,000 operating hours
B.	MTTR:	60 minutes

A4. ENVIRONMENT

A.	Operating Temperature:	50°F to 115°F (10°C to 46.1°C)
B.	Shipping Temperature:	40°F to 144°F (4.4°C to 62.2°C)
C.	Storage Temperature:	-8°F to 117°F (-22.2°C to 47.2°C)
D.	Relative Humidity:	20% to 80%
E.	Maximum Wet Bulb:	78°F (25.5°C)

A5. DATA CHARACTERISTICS

A.	Data Types:	ASCII, Binary, EIA/ASCII Conversion
B.	Stop Bits:	1, 1.5, or 2
C.	Data Bits:	5, 6, 7, or 8
D.	Serial Baud Rates:	50, 75, 110, 135, 150, 300, 600, 750, 1000, 1200, 1500, 1800, 2000, 2400, 3000, 3600, 4800, 7200, or 9600 BPS
E.	Parity:	None, Odd, Even Mark, or Space
F.	Error Rates:	
	Soft:	Recovered internally
	Hard (Read):	1 per 1-trillion bits

A6. INTERFACES

A.	RS-232-C	
	Connectors:	DB25S (female) serial modem port (DCE) DB25P (male) serial terminal port (DTE)
	Baud Rates, Stop Bits, Data Bits, Parity:	See A5.
	Protocols:	No Protocol; X/On X/Off; Bridgeport Editor Port; Bridgeport DNC Loader; Bridgeport Easy Link; RS-491, Level II, Slave; Heidenhain; Punch/Reader; Synchronous Reader; RS-491, Level I; Fanuc; Heidenhain Block; FAPT; HECC-80; RS-491, level II, Master; Hitachi Seiki; Mazak Conversational; Punch/Reader master; X/On X/Off II; TLM; Sharnoa Remote; Fanuc Cassette; Mazak Cassette; Acramatic
B.	Parallel Reader/Punch (PR/P):	
	Connector	50-pin Telco-type (female)
	Function:	Tape reader and tape punch emulation
	Character Rate:	15 to 1000 cps
	Characteristic:	8-bit parallel data

APPENDIX B - PROTOCOLS

B1. OVERVIEW

This Appendix describes the protocols available on the Minifile, including the argument used to call the protocol when command **47#** or **48#** are used (see Section 3) and the default options automatically called in by the protocol. The available protocols are listed numerically according to the ascending call numbers.

B2. MINIFILE PROTOCOLS

Protocol	Argument
No Protocol	0#
X/On X/Off	1#
Bridgeport Editor Port	2#
Bridgeport DNC Loader	3#
Bridgeport Easy Link	4#
RS-491, Level II, Slave	5#
Heidenhain	6#
Punch/Reader	7#
Synchronous Reader	8#
RS-491, Level I	9#
Fanuc	10#
Heidenhain Block	11#
FAPT	12#
HECC-80	13#
RS-491, Level II, Master	14#
Hitachi Seiki	15#
Mazak Conversational	16#
Punch Reader/Master	17#
X/On X/Off II	18#
TLM	19#
Sharno Remote	20#
Fanuc Cassette	21#
Mazak Cassette	22#
Acramatic	23#
Host System (Optional)	24#

B3. PROTOCOL SELECTION

In order to enter or change a protocol for Channel 0, **47#** must be used (see Section 3, paragraph 3.7.10); for Channel 1, **48#** must be used (see Section 3, paragraph 3.7.11).

B3.1 0# - No Protocol

- Receive Data:** The Minifile waits to receive data from the host system. No ASCII character is required. When the transfer is completed, the file must be closed with the Close File command (**3#**).
- Transmit Data:** The Minifile transmits data as soon as the file is opened. No ASCII character is required.
- Parameter Defaults:** No Parity; Text (ASCII) File Type Enabled; Line Feed Output, EIA Conversion and LF to CR Conversion Disabled; 8 Data Bits; 2 Stop Bits.

B3.2 1# - X/On X/Off

- Receive Data:** The Minifile waits to receive data from the host system. No ASCII character is required. Once the transfer is completed, the file must be closed with the Close File command (**3#**).
- Transmit Data:** The Minifile transmits data as soon as the file is opened. No ASCII character is required. The host system can suspend the data transfer by transmitting the ASCII character DC3, and then resume data transmission with a DC1.
- Parameter Defaults:** Even Parity; Text (ASCII) File Type Enabled; Line Feed Output, EIA Conversion, and LF to CR Conversion Disabled; 7 Data Bits; 2 Stop Bits.

B3.3 2# - Bridgeport Editor Port

(Specifications available from Bridgeport Machines, Inc.)

- Parameter Defaults:** No Parity; Text (ASCII) File Type Enabled; Line Feed Output, EIA Conversion, and LF to CR Conversion Disabled; 8 Data Bits; 2 Stop Bits.

B3.4 3# - Bridgeport DNC Loader

(Specifications available from Bridgeport Machines, Inc.)

- Parameter Defaults:** No Parity; Text (ASCII) File Type Enabled; Line Feed Output, EIA Conversion, and LF to CR Conversion Disabled; 8 Data Bits; 2 Stop Bits.
-

B3.5 4# - Bridgeport Easy Link

(Specifications available from Bridgeport Machines, Inc.)

Parameter Defaults: Even Parity; Text (ASCII) File Type Enabled; Line Feed Output, EIA Conversion, and LF to CR Conversion Disabled; 7 Data Bits; 2 Stop Bits.

B3.6 5# - RS-491, Level II, Slave

Receive Data: When the ASCII character DC2 is received from the host system, the Minifile transmits the ASCII character DC1 to indicate it is ready to receive data. When the transfer is completed, the host system may send an ASCII EOT (End of Transmission) followed by a DC4. The Minifile then transmits a DC3 and closes the file. If the host system cannot send an EOT and a DC4, then the Close File Command (3#) must be used.

Transmit Data: When the Minifile receives the ASCII Character DC1 from the host system, it transmits the data, preceded by null characters, and followed by more null characters and an EOT. The host system can suspend the data transfer by transmitting the ASCII character DC3, and then resume data transmission with a DC1.

Parameter Defaults: Even Parity; Text (ASCII) File Type and Line Feed Output Enabled; EIA Conversion and LF to CR Conversion Disabled; 7 Data Bits; 2 Stop Bits.

B3.7 6# - Heidenhain

Receive Data: The Minifile waits to receive data from the host system. No ASCII character is required. Once the transfer is completed, the host system may send an ASCII ETX to close the file. If the host system cannot send an ETX, the file must be closed with the Close File command (3#).

Transmit Data: When the Minifile receives the ASCII character DC1 from the host system, the Minifile transmits data. The host system can suspend the data transfer by transmitting an ASCII character DC3, and then resume data transmission with a DC1. When the transmission is completed, the Minifile transmits an EOT and closes the file.

Parameter Defaults: Even Parity; Text (ASCII) File Type and Line Feed Output Enabled; EIA Conversion and LF to CR Conversion Disabled; 7 Data Bits; 2 Stop Bits.

B3.8 7# - Punch/Reader

Receive Data: When the ASCII character DC2 is received from the host system, the Minifile starts recording data. The ASCII character DC4 is sent to stop the Minifile recording until another DC2 is sent. This DC2/DC4

combination serves as a Punch On/Punch Off. Once the transmission is completed, the file must be closed by entering the Close File command (3#).

Transmit Data: When the Minifile receives the ASCII character DC1 from the host system, the Minifile transmits data preceded by nulls. The host system can suspend the data transfer by transmitting an ASCII character DC3, and then resume data transmission with a DC1. When the transmission is completed, the Minifile transmits null characters (blank spaces) and closes the file.

Parameter Defaults: Even Parity; Text (ASCII) File Type and Line Feed Output Enabled; EIA Conversion and LF to CR Conversion Disabled; 7 Data Bits; 2 Stop Bits.

B3.9 8# - Synchronous Reader

(This protocol is for Channel 0 use exclusively.)

Receive Data: The Minifile waits to receive data from the host system. No ASCII character is required. Once the transfer is completed, the file must be closed by entering the Close File command (3#).

Transmit Data: When the host system sets REQUEST TO SEND to the active (high) state, the Minifile can transmit a data character. The REQUEST TO SEND must be set to high each time a character is sent to the host system.

Parameter Defaults: Even Parity; Text (ASCII) File Type and Line Feed Output Enabled; EIA Conversion and LF to CR Conversion Disabled; 7 Data Bits; 2 Stop Bits.

B3.10 9# - RS-491, Level I

Receive Data: If Channel 0 is active, the host system does not send an ASCII character, so the Minifile waits until data are sent. If Channel 1 is active, data is recorded when the DATA CARRIER DETECT is in the active (high) state. Once the transmission is completed, the file must be closed by entering the Close File command (3#).

Transmit Data: The Minifile can transmit data when the REQUEST TO SEND (for Channel 0) or the CLEAR TO SEND (for Channel 1) is set to high. The host system releases the high signal whenever it needs to halt transmission. If the transition starts while a character is being sent, the Minifile completes the character transfer.

Parameter Defaults: Even Parity; Text (ASCII) File Type and Line Feed Output Enabled; EIA Conversion and LF to CR Conversion Disabled; 7 Data Bits; 2 Stop Bits.

B3.11 10# - Fanuc

Receive Data: When the ASCII character DC2 is received from the host system, the Minifile starts recording data. When the transmission has been completed, the host system may send an ASCII character DC4 to close the file. If the host system cannot send a DC4, the file must be closed by entering the Close File command (**3#**).

Transmit Data: When the host system transmits an ASCII character DC1, the Minifile starts transmitting data preceded by nulls. The host system can suspend the data transfer by transmitting an ASCII character DC3, and then resume data transmission with a DC1. The Minifile transmits null characters (blank spaces) to show the transmission has been completed.

Parameter Defaults: Even Parity; Text (ASCII) File Type Enabled; Line Feed Output and EIA Conversion Disabled; LF to CR Conversion Enabled; 7 Data Bits; 2 Stop Bits.

B3.12 11# - Heidenhain Block

(This information is proprietary.)

Parameter Defaults: Even Parity; Text (ASCII) File Type Enabled; Line Feed Output, EIA Conversion and LF to CR Conversion Disabled; 7 Data Bits; 2 Stop Bits.

B3.13 12# - FAPT

(This information is proprietary.)

Parameter Defaults: No Parity; Text (ASCII) File Type; Line Feed Output, EIA Conversion and LF to CR Conversion Disabled; 8 Data Bits; 2 Stop Bits.

B3.14 13# - Heidenhain Block

(This information is proprietary.)

Parameter Defaults: Even Parity; Text (ASCII) File Type and Line Feed Output Enabled; EIA Conversion and LF to CR Conversion Disabled; 7 Data Bits; 2 Stop Bits.

B3.15 14# - RS-491, Level II, Master

Receive Data: When the Minifile transmits the ASCII character DC1, it starts recording data. When the transmission is completed, the file must be closed by entering the Close File command (**3#**).

Transmit Data: The Minifile transmits the ASCII character DC2. When the host system transmits the ASCII character DC1, the Minifile begins transmitting data. The host system can suspend the data transfer by transmitting the ASCII character DC3, and then resume transmission with a DCf1. At the end of transmission the Minifile transmits an ASCII character EOT followed by a DC4 to close the file.

Parameter Defaults: Even Parity; Text (ASCII) File Type and Line Feed Output Enabled; EIA Conversion and LF to CR Conversion Disabled; 7 Data Bits; 2 Stop Bits.

B3.16 15# - Hitachi Seiki

(This information is proprietary.)

Parameter Defaults: No Parity; Text (ASCII) File Type; Line Feed Output and EIA Conversion and LF to CR Conversion Disabled; 8 Data Bits; 2 Stop Bits.

B3.17 16# - Mazak Conversational

(This information is proprietary.)

Parameter Defaults: No Parity; Text (ASCII) File Type; Line Feed Output, EIA Conversion and LF to CR Conversion Disabled; 8 Data Bits; 2 Stop Bits.

B3.18 17# - Punch/Reader Master

Receive Data: The Minifile initiates transmission by sending ASCII character DC1 to the host system. If fifty consecutive null characters are received, the Minifile sends ASCII character DC3 and closes the file. Otherwise, the Close file command (3#) must be used.

Transmit Data: The Minifile transmits ASCII character DC2 to the host system. The host system then transmits ASCII character DC1 to start transmission. The host system can suspend the data transmission by sending ASCII character DC3, and then resume transmission by sending a DC1. The Minifile signals the transmission is completed with ASCII character DC4.

Parameter Defaults: Even Parity; Text (ASCII) File Type and Line Feed Output Enabled; EIA Conversion and LF to CR Conversion Disabled; 7 Data Bits; 2 Stop Bits.

B3.19 18# - X/On X/Off II

Receive Data: The Minifile waits to receive data from the host system. No ASCII character is required. When the transfer has been completed, the file must be closed with the Close File command (3#).

Transmit Data: The Minifile transmits ASCII character DC1, then transmits data. The host system can suspend the data transfer by transmitting the ASCII character DC3, and then resume data transmission with a DC1.

Parameter Defaults: Even Parity; Text (ASCII) File Type Enabled; Line Feed Output, EIA Conversion and LF to CR Conversion Disabled; 7 Data Bits; 2 Stop Bits.

B3.20 19# - TLM

(This information is proprietary.)

Parameter Defaults: No Parity; Text (ASCII) File Type and LF Output Enabled; EIA Conversion Disabled; and LF to CR Conversion Enabled; 8 Data Bits; 2 Stop Bits.

B3.21 20# - Sharnoa Remote

(This information is proprietary.)

Parameter Defaults: Even Parity; Text (ASCII) File Type and LF Output Enabled; EIA Conversion and LF to CR Conversion Disabled; 7 Data Bits; 2 Stop Bits.

B3.22 21# - Fanuc Cassette

(This information is proprietary.)

Parameter Defaults: Even Parity; Text (ASCII) File Type Enabled; LF Output and EIA Conversion Disabled; LF to CR Conversion Enabled; 7 Data Bits; 2 Stop Bits.

B3.23 22# - Mazak Cassette

(This information is proprietary.)

Parameter Defaults: No Parity; No Text (ASCII) File; Line Feed Output, EIA Conversion and LF to CR Conversion Disabled; 8 Data Bits; 2 Stop Bits.

B3.24 23# - Mazak Cassette

(This information is proprietary.)

Parameter Defaults: No Parity; Text (ASCII) File Type Enabled; Line Feed Output, EIA Conversion and LF to CR Conversion Disabled; 8 Data Bits; 2 Stop Bits.

B3.25 Host System (Optional)

The Minifile must be configured with the Host Control Protocol for this selection. If so configured, see the Host Control Protocol Operator's Manual provided with the system.

APPENDIX C – ERROR MESSAGES

C1. OVERVIEW

This Appendix lists and explains the error message presently available on the Minifile.

C2. ERROR MESSAGES AND THEIR MEANINGS

C2.1 COMM ERROR

The Minifile detected a framing error when receiving data. Usually a baud rate, data bit, parity bit, or stop bit error.

C2.2 DATA OVERRUN

Serial data overran the available buffer space. Usually caused by too many soft seek errors that extend latency.

C2.3 DEFINED FILE ALREADY EXISTS

An attempt was made to create a file with the same name as an existing file.

C2.4 DIRECTORY FAILURE

The Minifile is unable to read the directory. Usually the diskette is not properly formatted, or data on the diskette has been lost.

C2.5 DISK READ ERROR

The Minifile attempted to read a block four times without success.

C2.6 DISK TIMEOUT

Diskette operation was not completed in time. Usually means there is no diskette in the drive or the incorrect drive was selected (see the **54#** command in Section 3).

C2.7 END OF MEDIUM

The diskette had no room available for the transmitted data.

C2.8 FILE DOES NOT EXIST

A non-existent file was requested by directory file name. Must contain the **.TXT** extension if the **51#** command is enabled; the **.BIN** extension if the **51#** command is disabled (see Section 3.)

C2.9 FILE OPEN

A command was issued while the file was open.

C2.10 INVALID COMMAND

The Minifile did not recognize the command.

C2.11 INVALID DATE ENTERED

The entered date did not conform to the day (01-31) and/or month (01-12) range.

C2.12 INVALID DATE FORMAT DDMMYY

The date was entered with an invalid format (not two numerals each for the day, month, and year.)

C2.13 INVALID FILE NUMBER ENTERED

A non-existent file was requested by directory file number.

C2.14 INVLAID VALUE ENTERED

An invalid argument was entered for a command.

C2.15 READ-ONLY FILE

The Minifile attempted to delete a read-only file (set by the DOS ATTRIB command.)

C2.16 SYSTEM NOT CONFIGURED

The stored parameters were lost or not saved in non-volatile memory (enter **42#** to continue.)

C2.17 THE DIRECTORY IS FULL

The maximum number of files are already written to the diskette.

C2.18 TRACK SEEK ERROR

The Minifile attempted to verify the track position four times without success.

C2.19 WRITE PROTECT

The Minifile attempted to write to a write-protected diskette.

APPENDIX D – MAINTENANCE AND SERVICE

D1. OVERVIEW

The following procedures cover the basic maintenance to support the Minifile's MTBF, MTTR, and Greco System's in-warranty and out-of-warranty service. Field repair to the Minifile is **not** recommended. Rather, a Return Material Authorization (RMA) number should be acquired from Greco Systems (see the RETURN MATERIAL AUTHORIZATION procedures in the front of the manual.)

WARNING

Do not remove the Minifile's cover, as a potential shock hazard is present. If the Minifile cover must be removed, the AC power must be disconnected prior to opening the unit.

D2. BASIC MAINTENANCE

The main areas to be maintained on the Minifile are the exterior of the unit, the read/write heads on the diskette drives, and the filter on the air circulating fan.

D2.1 Minifile Exterior Maintenance

Perform the following:

1. Prepare a solution of clean water and a mild liquid detergent.
2. Dampen, but do not wet, a clean, lint-free cloth with the cleaning solution.
3. Carefully clean the outer surfaces, making certain no dampness seeps into the interior of the unit.
4. Go over the same area with a fresh, dampened (detergent- and lint-free) cloth to remove the remaining dirt and detergent.
5. Dry the unit with a clean, dry, lint-free cloth.
6. Without disassembling the unit, remove dirt and dust from accessible interior surfaces with low-pressure vacuuming.

D2.2 Floppy Diskette Drive Read/Write Head Maintenance

Clean the Read/Write heads of the floppy diskette drives with the Greco System's Head Cleaning Kit, Part #957-001 for 3.5" diskettes or Part #957-005 for 5.25" diskettes. Cleaning intervals are dependent upon the amount of contamination in the area but, at minimum, the Read/Write heads should be cleaned each time there is a sequence of repeated read errors.

To use the kit, perform the following:

1. Insert the proper element into the Minifile's diskette drive slot.
2. Enter the **96#** command.
3. Wait approximately three minutes.
4. End the cleaning cycle with the **73#** command.

5. Remove the element from the Minifile's diskette drive slot.

D2.3 Air Filter Maintenance

Perform the following:

1. Inspect the fan air filter every week for contamination (inspect the filter daily if the Minifile is used in a contaminated area.)
2. When contamination could restrict air flow, remove the filter by gently prying off the black plastic baffle (do **not** remove any screws.)
3. Clean the filter with a solution of clean water and a mild liquid detergent.
4. Thoroughly rinse the filter in clean water.
5. Thoroughly air or blow dry the filter.
6. If the air filter requires replacement, use a Greco Systems' Part #935-002 filter.
7. Place the filter in the Minifile filter assembly, then press the baffle back into position.

D3. MINIFILE SERVICE

D3.1 Servicing Recommendations

Field repair to the Minifile is **not** recommended. The best service can be obtained by returning the Minifile to Greco Systems. When the unit is still under warranty the Minifile must, in most cases, be returned to Greco Systems if the warranty is to be honored (see the RETURN MATERIAL AUTHORIZATION procedures in the front of the manual.)

D3.2 Minifile Repackaging Procedures

To return a Minifile for service it should be packaged as follows, as in-transit damage is not covered by Greco Systems:

1. Remove the power cord and all data cables, then seal the power cord and cables in a clean plastic bag (it is not necessary to return the power cord unless a problem with the cord is suspected.)
2. Re-insert the Read/Write Head protector that came with each drive. The protector should be slipped carefully into the diskette drive slot and locked in place to protect the Read/Write Heads from vibration or shock.
3. Enclose the unit in a clean plastic bag and tape the bag closed to prevent contamination by the packing materials.
4. Tape the bag with the cables, etc., to the top of the bagged unit.
5. Place the padding around the unit.

NOTE

If the original Minifile shipping Container and padding are available, perform steps 5 and 6. If the original Minifile shipping container and padding are **not** available, perform steps 7 and 8.

6. Place the unit in the original shipping container.
7. Tape a piece of cardboard completely around the bagged unit to protect all surfaces.

8. Place the unit in the center of a strong shipping container with at least six inches of loose styrofoam-type pellets on each side of the unit.
9. Place the paperwork, including the RMA number and all pertinent information, in a separate plastic bag. Ensure the information is placed within the unit away from the walls of the carton so the information cannot be cut when the carton is opened.
10. Seal the carton with strong packing tape and mark **FRAGILE** on all sides.
11. Mark the RMA number on the shipping label.
12. Ensure the carton is sufficiently insured to cover all costs in the event the unit is damaged or lost.
13. Contact Greco Systems for address to ship the carton by prepaid freight.

APPENDIX E – GLOSSARY OF TERMS

E1. OVERVIEW

The terms listed in this Appendix are commonly used with the Minifile.

E2. TERMS AND THEIR DEFINITIONS

E2.1 Argument

A variable that gives a Command (see below) the information needed to perform an operation.

E2.2 ASCII (American Standard Code for Information Interchange) Code

A 7-bit code of alphanumeric and control characters.

E2.3 Baud

The data transmission rate in bits per second.

E2.4 Bit

A binary digit; either a one or a zero.

E2.5 CNC (Computer Numerical Control)

The use of computers for machine tool control. This technology makes available programmable host/control interfaces, extended memory storage, editing capabilities, and Distributed Numerical Control (see DNC.)

E2.6 Command

An instruction to the Minifile.

E2.7 CR (Carriage Return)

An ASCII character usually combined with a LF Character (see below) to mark the end of a line. The CR causes a printer or display screen to move its left-most position.

E2.8 Data Bits

Ones and/or zeros that are grouped to form a character.

E2.9 DCE (Data Communications Equipment)

One of the two hardware interfaces resulting from the RS-232-C standard (also see DTE.)

E2.10 DNC (Distributed Numerical Control; also, Direct Numerical Control)

Distributed Numerical Control: Communications technology that connects CNC machine tools to a central computer to control and distribute part programs.

Direct Numerical Control: Incremental loading of a part program into a machine tool during a machining process.

E2.11 DTE (Data Terminal Equipment)

One of the two hardware interfaces resulting from the RS-232-C standard (also see DCE.)

E2.12 EIA (Electronic Industries Association) Code

An NC/CNC industry standard for the data format of part programs (RS-244.)

E2.13 Enter Key

The pound sign (#) key located on the Minifile keypad.

E2.14 Erase Key

The asterisk (*) key located on the Minifile keypad.

E2.15 File

A group of data specified by an alphabetic, numeric, or alphanumeric file name.

E2.16 Formatting

The organizing of storage locations on a medium, such as a hard disk, floppy diskette, or magnetic tape.

E2.17 LF (Line Feed)

An ASCII character which is usually combined with a CR character (see above) to mark the end of a line. The LF causes a printer or display screen to advance to the next line.

E2.18 NC (Numerical Control)

A device that controls the machining of a part using numerically coded programs. A method of coding the positioning and contouring techniques involved in machining.

E2.19 Parallel Interface

The link between (two devices in which the data and control signals (bits) for each character are transmitted simultaneously on separate lines.)

E2.20 Parity

A method of data transmission error checking.

E2.21 Pointer

The Minifile firmware method of keeping track of the specific file location presently being used.

E2.22 Protocol

The rules for data transmission between two computers or devices.

E2.23 RS-232-C

An EIA standard defining the electrical and hardware characteristics for data transmission between the DCE and DTE interface.

E2.24 Serial Interface

The link between two devices in which the data and control signals (bits) for each character are transmitted in sequence over the same line.

E2.25 Stop Bits

Bits used to signal the end of the serial transmission of a character.

F. EIA/ASCII/ISO CONVERSION CHART

F1. OVERVIEW

The EIA/ASCII/ISO Conversion Chart in this Appendix can be used to convert EIA codes. This chart may also be used to convert ISO paper tape codes. The non-listed ASCII characters!,",*,;,.,? And the ASCII control codes are converted to EIA Code spaces (see 10 Hex.)

F2. EIA/ASCII/ISO CONVERSION CHART

Character	EIA Code (Hex.)	ASCII Code (Hex.)	ISO Code* (Hex.)	Remarks/Use
(space)	10	20	A0	
\$	80	24	24	EOB IN EIA
%	5B	25	A5	EOR – Rewind Stop in ASCII
+	70	2B	2B	
,	3B	2C	N/A	(Comma)
-	40	2D	2D	(Minus)
.	6B	2E	2E	(Period)
/	31	2F	AF	
0	20	30	30	
1	01	31	B1	
2	02	32	B2	
3	13	33	33	
4	04	34	B4	
5	15	35	35	
6	16	36	36	
7	07	37	B7	
8	08	38	B8	
9	19	30	39	
=	0B	3D	BD	EOR – Rewind Stop in EIA
A	61	41	41	
B	62	42	42	
C	73	43	C3	
D	64	44	44	
E	75	45	C5	
F	76	46	C6	
G	67	47	47	

Character	EIA Code (Hex.)	ASCII Code (Hex.)	ISO Code* (Hex.)	Remarks/Use
H	68	48	48	
I	79	49	C9	
J	51	4A	CA	
K	52	4B	4B	
L	43	4C	CC	
M	54	4D	4D	
N	45	4E	4E	
O	46***	4F	CF	
P	57	50	50	
Q	58	51	D1	
R	49	52	D2	
S	32	53	53	
T	23	54	D4	
U	34	55	55	
V	25	54	56	
W	26	57	D7	
X	37	58	D8	
Y	38	59	59	
Z	29	5A	5A	
CR	80	0D	8D	(Carriage Return) EOB in EIA
LF	****	0A	0A	(Line Feed) EOB in ASCII (ISO)
HT	33	09	09	(Tab)
BS	2A	08	88	(Backspace)
&	0E	26	A6	
(7C	28	28	
)	71	29	A9	
:	10	3A	3A	
@	6D	40	C0	

* ISO Code is ASCII Code with even parity (bit 8 as the parity bit.) Since ASCII is defined as a 7-bit code, "ASCII" punched paper tapes are actually using ISO Code (an 8-bit code.)

** Converted only on output. If EIA Conversion is enabled, the Minifile records an ASCII CR (0D Hex.) if it receives an EIA value of 80 Hex.

*** If EIA Conversion is enabled, the Minifile records an ASCII: (colon – 3A Hex.) if it receives an EIA value of 46 hex.

**** No EIA equivalent.