List of Software Versions
FUP 1.1

1720A

Instrument Controller

File Utility User Manual

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INTRODUCTION

The File Utility Program (FUP) is a machine-language utility program on the System Disk with the file name FUP.CIL. It gives the user control over files on floppy disks and on the optional electronic disk. The flexible structure of FUP also provides other useful capabilities. The examples provided in this section illustrate only some of the ways this multi-purpose tool can be used.

CONVENTIONS USED IN THIS MANUAL

The following paragraphs describe conventions used in this manual. Individual sections of this manual may define additional conventions.

Command Definitions

Each 1720A command is defined in a standard format that allows a maximum of 80 characters in any command line.

- The command is named on a title line.
- A syntax diagram or syntax statement follows the title line.
- The command definition follows the syntax diagram or syntax statement.

    1. The body of the command definition is a short paragraph that describes the basic function of that command.
    2. Amplifying information is separated by item and organized in a top down outline format similar to this description.
    3. A cross-reference to any associated information or documents ends the command definition.

Syntax Diagrams

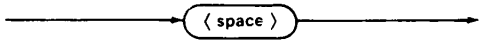
Syntax diagrams define correct spelling, punctuation, and sequence of words, symbols, and expressions for system and utility commands. The following guidelines define proper use of these diagrams:

- Any path through a diagram starting from the left that does not run contrary to an arrowhead forms a legitimate command construct. The text accompanying the diagram explains legal usage.

- Boldface words in a circular enclosure are to be entered exactly as shown. Example:

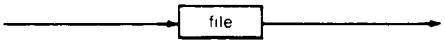
- Key entries with names, such as ESC or RETURN, are shown in a box with rounded corners. Example:

- A required space character entry is always shown as:

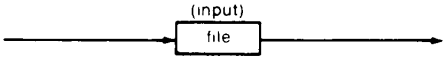


- Control character entries are shown in circular enclosures within angle brackets. The representation CTRL/ means to hold the CTRL key depressed while typing the character that follows. Example:

- Lower case words enclosed in a box represent other information to be supplied.



- Words outside the path of the diagram, usually in parentheses, provide supplementary information. These words are normally not part of the definition of the statement. Example:

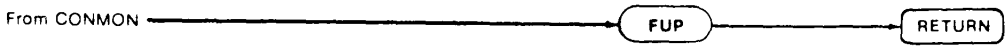


Notation Conventions

There are several notation conventions used in the text and in the examples.

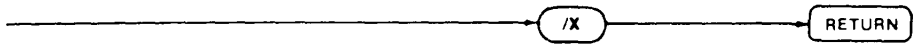
- **<XX> is understood to mean press key XX.**
  1. **<cr> is understood to mean a carriage return (the RETURN key).**
  2. **<lf> is understood to mean line feed.**
- **[xxx] is understood to mean that xxx is an optional input.**
- **{xxx} is understood to mean that xxx is a required input.**

ENTERING THE FILE UTILITY



FUP is accessible through CONMON by typing FUP.

EXITING THE FILE UTILTIY



FUP may be exited at any time by entering /X in response to the FUP prompt *.

USING THE FILE UTILTIY

FUP displays the message:

```
FUP(time)(date)
File Utility Progrm Version <x.y>

*
```

NOTE

Verify that the version number <x.y> is the same as on the front of this manual. If it is not, contact a Fluke Customer Service Center for advice.

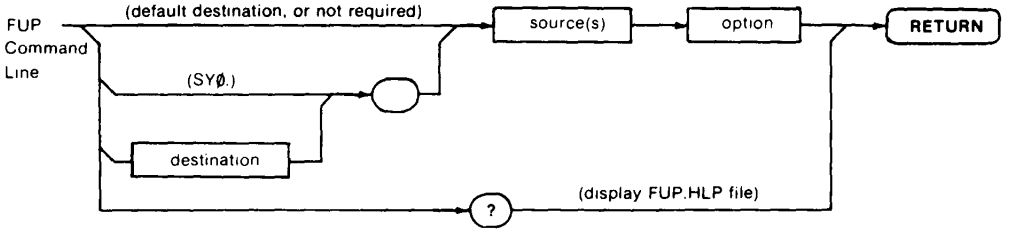
FUP Command Structure

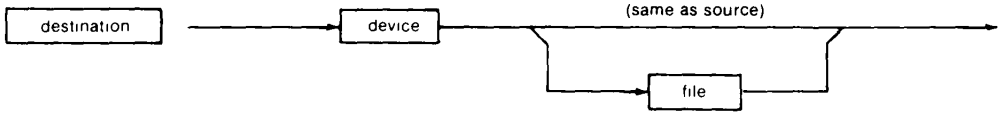
A FUP command sets up a communication channel between a specified destination device or file, and one or more source devices or files. A variety of command options are available for specific additional actions.

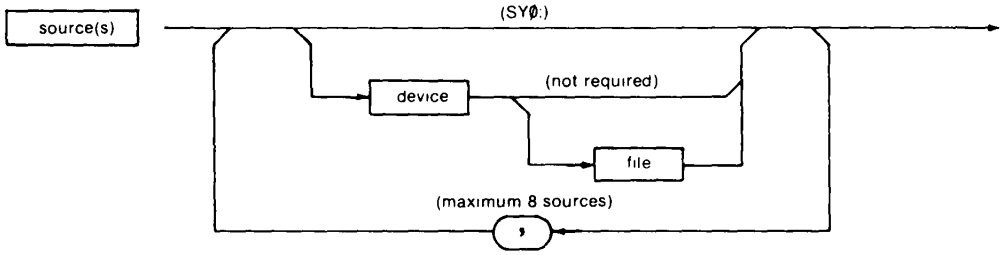
- Each command line must contain only one FUP command.
- Both upper and lower case entries are accepted.

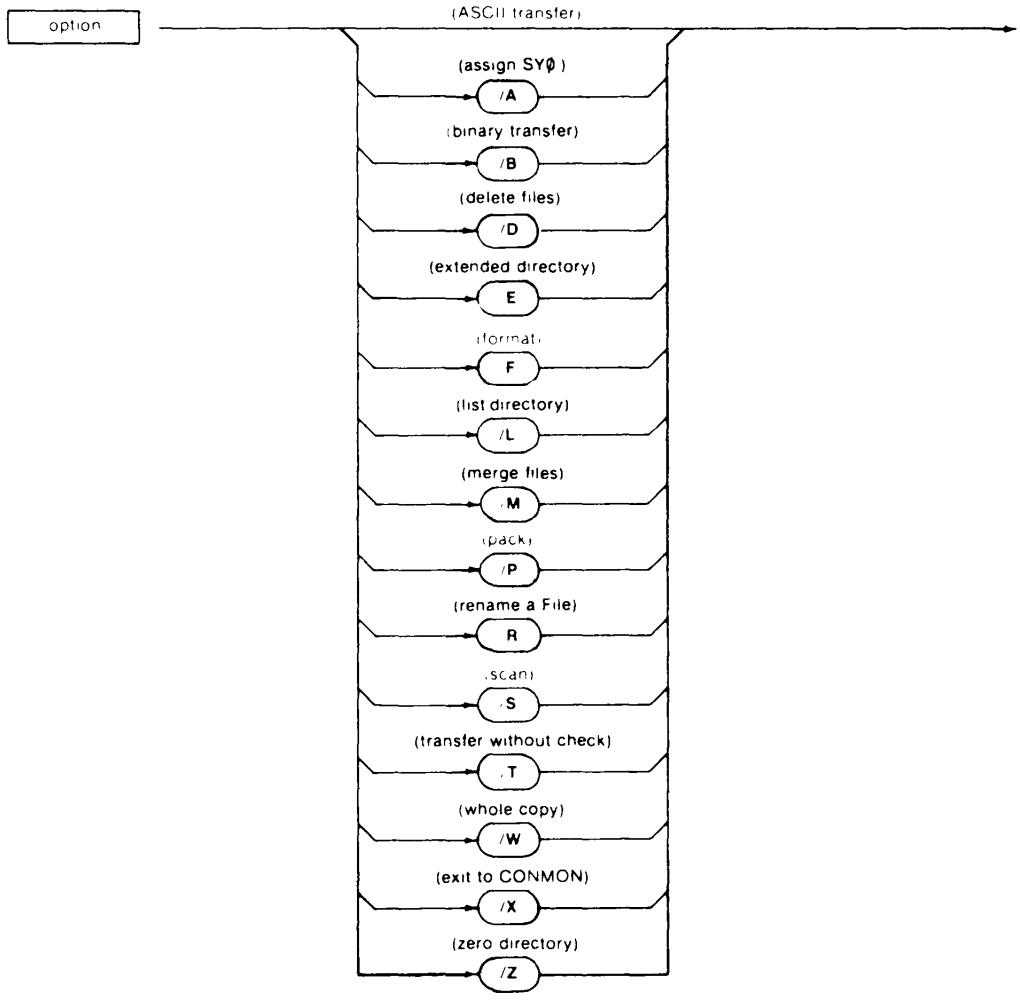
- Commands become effective when the command line is terminated by <cr>.
- The pseudo-device MM0: (main memory) can be used in FUP as temporary file storage for copying without the optional electronic disk.
- All FUP commands may be automated through command files.

The following syntax diagrams define the structure of FUP commands:

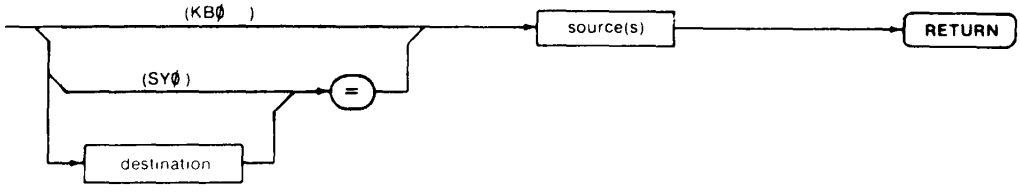








ASCII Transfer (no option)



A FUP command without a specified option sets up an ASCII communication channel between the specified destination and source(s).

- Up to eight sources may be specified.
- Transfer of a <CTRL/Z>, ASCII character number 26, identifies the end of each source. Transfer then proceeds with the next source on the list, or terminates.

- When the destination is a named file, each source overlays the previous one. The resulting destination file contains only the last specified source. To merge multiple files, refer to the discussion of the FUP /M option.

- When the destination is a file device (MF0:, ED0:, or MM0:) and no destination file name is specified, the names of the source files are used. If any source is not a file device (no name can be identified), the resulting destination file will have no name. (See the Floppy Disk Operating System User Manual for a discussion of the no-name file.)

- When the source is a file device and a source file is not specified, the source device is searched for a no-name file.

- Once a system device is specified in the source list, that device is assumed until a different device is specified.

CAUTION

If an existing file is specified as destination, it will be deleted without warning and replaced by information from the specified source.

The examples given below show the variety of ways in which this FUP command construct is useful. A short description precedes each example.

In the following example, the display (KB0:) is specified as destination, and T44.BAS on the floppy disk (MF0:) as source. This displays the file. Use Page Mode if the file is longer than 16 lines.

```
KB0:=MF0:T44.BAS<cr>
```

The following example is equivalent to the previous one if the floppy disk is the System Device. The use of defaults eliminates 13 of the 17 keystrokes.

```
T44<cr>
```

The following example copies PROGRM.38 from the floppy disk into temporary storage in main memory using the same file name.

```
MM0:=MF0:PROGRM.38<cr>
```

The following example completes the copy operation started above, after exchanging floppy disks. PROGRM 38 is copied onto the floppy disk (MF0:) from temporary storage in main memory (MM0:) using the same file name.

```
MF0:=MM0:PROGRM.38<cr>
```

The following example produces a duplicate copy of TEST.C41 on the System Device under the name TEMP.BAS.

```
TEMP=TEST.C41<cr>
```

In the following example, a file named MEMO.23 is created on the floppy disk (MF0:) from keyboard (KB0:) inputs. A <CTRL/Z> input is used to terminate the file.

```
MF0:MEMO.23=KB0:<cr>
```

The following example transfers ASCII data to the device, such as a printer, connected to RS-232 serial port 2 (KB2:) from keyboard (KB0:) inputs. A <CTRL/Z> input terminates this mode.

```
KB2:=KB0:<cr>
```

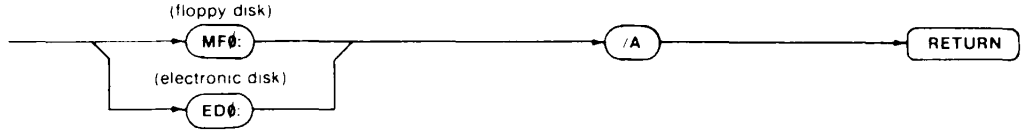
The following example sends to the device connected to Serial Port 1 a copy of TEST.M6 on the System Device.

```
KB1:=TEST.M6<cr>
```

The following example sends to the device connected to serial port 2, copies of TEST.Q4 on the System Device, and TEST.Q3 and TEST.Q2 from the floppy disk (MF0:). Note that MF0: is not specified for TEST.Q2 since it was previously specified.

```
KB2:=TEST.Q4,MF0:TEST.Q3,TEST.Q2<cr>
```

Assign the System Device (/A)

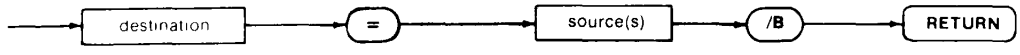


The /A FUP command option is used to assign the default file device, called the System Device. Refer to the FDOS manual for information on the System Device.

The following example assigns the optional electronic disk as System Device.

```
ED0:/A<cr>
```

Binary Transfer (/B)



The /B FUP command option is used to transfer data that contains binary code. This includes system and utility software files, lexical form BASIC programs (.BAL extension), and virtual array files.

- Up to eight source files may be specified.
- When the destination is a named file, the resulting filw will contain only the last specified source file. Binary files cannot be merged.

- When the destination is a file device (MF0:, ED0:, or MM0:) and no destination file name is specified, the names of the source files are used.

- Once a system device is specified in the source list, that device is assumed until a different device is specified.

CAUTION

If an existing file is specified as destination, it will be deleted without warning and replaced by the source file.

The following example transfers the virtual array file T4.DAT from the electronic disk (ED0:) onto the floppy disk (MF0:). A date-coded name is assigned to the file copy by this transfer.

```
MF0:220981.T4D=ED0:T4.DAT/B<cr>
```

The following example transfers some system and utility software files into temporary storage in main memory.

```
MM0:=FDOS.SYS,CONMON.SYS,SET.CIL,FUP.CIL/B<cr>
```

The following example completes the copy operation started above after exchanging floppy disks. The files in temporary storage in main memory (MM0:) are copied onto the floppy disk (MF0:) using the same file names.

```
MF0:=MM0:FDOS.SYS,CONMON.SYS,SET.CIL,FUP.CIL/B<cr>
```

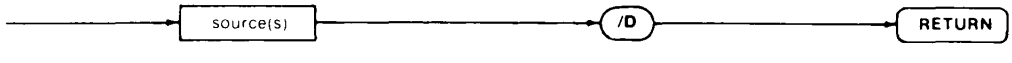
NOTE

A new disk must be formatted (/F option) before copying onto it.

NOTE

Be sure that a new System Disk created through FUP has compatible system and utility software files. Compatible version numbers are identified in the front of published Fluke manuals and manual addendums. Failure to observe this will produce unpredictable results for which Fluke cannot provide analytical, diagnostic, or other software support, except for identifi- cation of compatible combinations.

Deleting Files (/D)



The /D FUP command option is used to delete specified files.

- **Up to eight files may be deleted at once.**

- A single command may delete files from more than one file device.
- Deleting a file leaves a gap in the file structure. Refer to the Pack (/P) command option.
- When no file is specified, the no-name file is deleted.

The following example deletes the file TEST6.BAS from the System Device.

```
TEST6.BAS/D<cr>
```

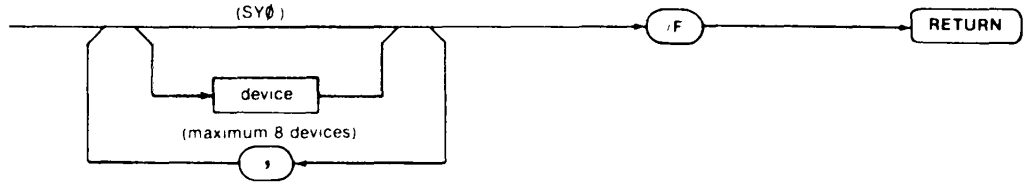
The following example deletes the BASIC Interpreter system software file from temporary storage in main memory to make room for other files.

```
MM0:BASIC.CIL/D<cr>
```

The following example deletes the user program TEST.16 and the virtual array file T16.DAT from the floppy disk (MF0:). Note that MF0: is only specified once.

```
MF0:TEST.16,T16.DAT/D<cr>
```

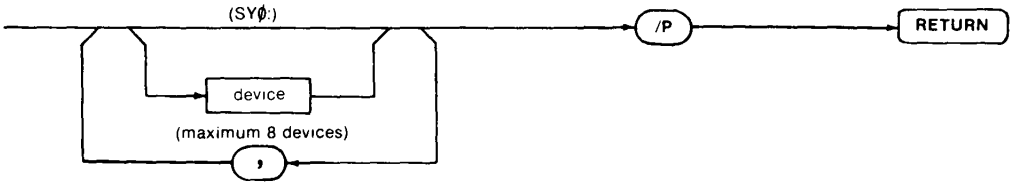
Format, Verify, and Zero File Device(s) (/F)



The /F FUP command option is used to prepare a floppy or electronic disk to receive files. Formatting is the process of writing identifying codes and standard data patterns throughout the disk in a defined format. Each data block is verified for data integrity during formatting. A message is displayed if a block requires one or more retries, or is unusable. A file directory is then set up in proper format with all entries set to zero.

- Because formatting deletes all files from the specified device, FUP requests an affirmative before proceeding. Entries accepted as affirmative are YES, Y, yes, and y.
- The affirmative response must be on a separate line. The affirmative response is required even when /F is used in a command file.
- Formatting a floppy disk (MF0:) also causes the pseudo-device main memory (MM0:) to be zeroed, which deletes any files that were in temporary storage.
- The electronic disk must be formatted before use.
- The main memory temporary storage (MM0:) does not require formatting before use.

Packing a File Device (/P)



The /P FUP command option is used to restructure a file device so that the unused areas left by file deletions are collected into a contiguous area at the end of the file structure.

- Since files are contiguous, packing often makes room for a file that previously would not fit.
- The extended list (/E option) shows whether packing will be of benefit.
- Packing has no effect on the integrity or size of files.

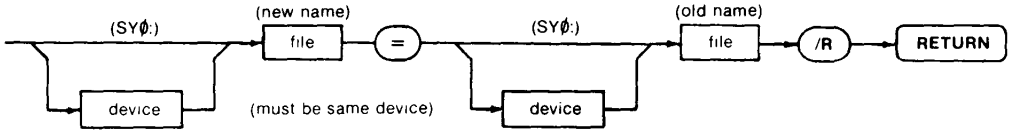
The following example packs the System Device:

```
/P<cr>
```

The following example packs the electronic disk and the floppy disk:

```
ED0:,MF0:/P<cr>
```

Renaming a File (/R)



The /R FUP command option is used to rename a file.

- Renaming has no effect on the size or location of a file. Renaming operates only on the file directory.
- An error message is displayed if the file devices specified for the new and old file names do not match.
- The no-name file is assumed when a file name is not given.
- For convenience, the utility programs SET, FUP, TIME and the BASIC language interpreter can be renamed S, F, T and B, respectively.

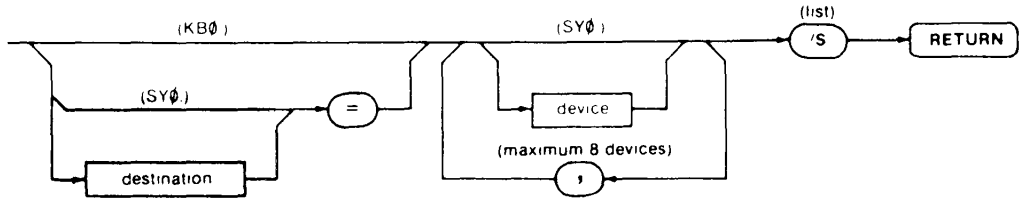
The following example renames the file TEST4.BAS on the System Device to PROG.T4:

```
PROG.T4=TEST4/R<cr>
```

The following example assigns the name FILE84.T26 to a file on the electronic disk that previously has no name:

```
EDO:FILE84.T26=EDO:/R<cr>
```

Scanning For Bad Blocks (/S)



The /S FUP command option is used to scan a file-structured device for bad blocks. Each block is read and a check character is generated. It is then compared with the check character recorded with the block. Result messages are sent to the specified destination.

- Results of the scan are displayed when no destination is specified.
- Scanning a device has no effect on the integrity or location of files.

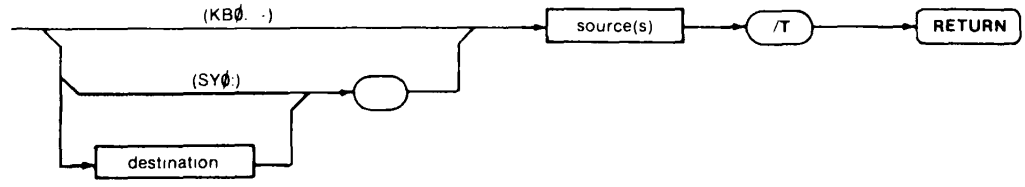
The following example performs a scan of the System Device:

```
/S<cr>
```

The following example scans the floppy disk (MF0:) and sends the results of the scan to serial port 2 (KB2:):

```
KB2:=MF0:/S<cr>
```

Transferring ASCII files Without Error Checks (/T)



The /T FUP command option is used to inhibit the checking for device error and for end-of-file code (<CTRL/Z>) during an ASCII file transfer.

- Except for inhibiting error checks, this command is identical to the no-option FUP command described in this section.
- If an end-of-file code is missing, it will be added to the end of the destination file.
- If a data block check-character fails, causing a device error, the error condition is ignored and the block is transferred unchanged.
- Source files are left unchanged.

The following example will display the file TEST6.BAS from the System Device, including any incorrect data and regardless of a file terminator:

```
TEST6/T<cr>
```

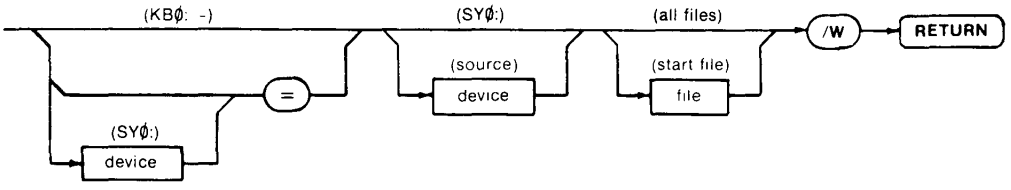
The following example creates a back-up copy on the floppy disk (MF0:) of the System Device file TEST.44 which is suspected to contain an error:

```
MF0:BACKUP.T44=TEST.44/T<cr>
```

The following example copies three files from the electronic disk, which has been assigned as System Device, onto the floppy disk (MF0:) for back-up purposes using the same file names:

```
MF0:=TEST1,TEST2,TEST3/T<cr>
```

Whole Copying a File Device (/W)



The /W FUP command option is used to transfer some or all of the files on a file device at one time using a single command. This option simplifies the task of duplicating a floppy disk, whether or not an optional electronic disk is available.

- The source and destination devices may be the floppy disk (MF0:), the main memory temporary storage (MM0:), or the optional electronic disk (ED0:). They must however be different.

- To duplicate all or part of a floppy disk, first copy files into MM0: or ED0:, insert a formatted disk, and copy from MM0: or ED0: onto the floppy disk (MF0:). More than one pass may be required, especially when using MM0:.

- An electronic disk is needed to create a back-up floppy disk whenever any single file size exceeds the size of MM0:, approximately 85 blocks (42K bytes). This is because the copy process works only with complete files. A two-module electronic disk is needed to create a back-up floppy disk whenever any single-file size exceeds 254 blocks (130,048 bytes).

- Files are copies in the sequence they appear on the source device directory. Copying starts at the beginning of the directory or at the specified start file.

- Binary and ASCII files may be copied within the same command.

- If the destination device already has files on it, the files copied from the source device are added. If this results in two files on the destination device with the same name, the existing file is deleted and replaced with the one copied from the source device.

- During the copy process, the names of the files being copied are displayed. If at any time the destination device does not have room for the next file to be copied, the process stops with all files complete and properly terminated. It is possible to see where the process stopped by looking at the display.

- The Whole Copy process can be properly terminated before all files are copied on the source device by typing <CTRL/C> during the copy of the last file desired. The file copy in progress will be completed before the operation stops.

- If <CTRL/P> is used to terminate a whole copy, the file copy in progress is aborted and the resulting partial file is closed.

The following example begins a whole copy into main memory temporary storage (MM0:) of the files on the floppy disk (MF0:). The display should be noted for the last file copied, in the event a second pass is required.

```
MM0:=MF0:/W<cr>
```

After noting the last file copied, insert a disk that has previously been formatted (see the /F option). The following example then copies the files onto the floppy disk (MF0:) that were in main memory temporary storage (MM0:).

```
MF0:=MM0:/W<cr>
```

NOTE

Formatting a disk deletes the files in main memory temporary file storage.

If a second pass is needed, the main memory temporary storage must first be zeroed (see the /Z option) to make room for additional files. Then if a check of the directory of the original disk (see the /L option) shows the next file to be copied is CTEST.H29, the following example will resume whole copying with that file:

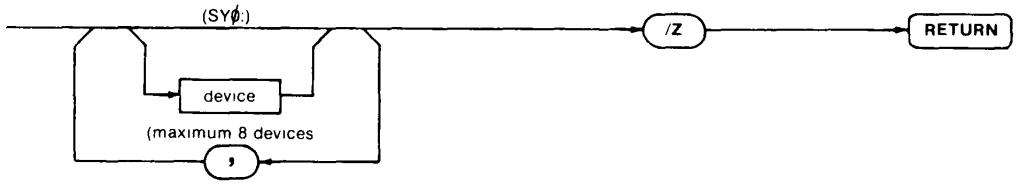
```
MM0:=MF0:CTEST.H29/W<cr>
```

After completing a second pass of copying files into main memory (MM0:), the new disk is reinserted. The following example then copies files onto the floppy disk (MF0:) from main memory temporary storage (MM0:) adding them after the files that are already in place:

```
MF0:=MM0:/W<cr>
```

Use of the optional electronic disk (ED0:) in place of main memory temporary storage (MM0:) will normally speed up the process since its greater capacity will reduce the number of passes. Disk duplication using a two-module electronic disk is always a single-pass operation because the electronic disk capacity is then greater than the floppy disk.

Zeroing a File Directory (/Z)



The /Z FUP command option is used to zero the directory of one or more file devices.

- Because zeroing deletes all files from the specified device, FUP will request an affirmative before proceeding. Entries accepted as affirmative are YES, Y, yes, and y.

- The afffirmative response must be on a separate line. It is required even when /Z is used in a command file.

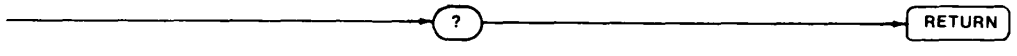
The following example zeroes the main memory temporary storage area to make room for additional files:

```
MM0:/Z<cr>
```

The following example zeros the electronic disk (ED0:) and main memory temporary storage (MM0:).

```
ED0:,MM0:/Z<cr>
```

The FUP Help File (?)



An entry of ? given at any time in respones to FUP prompt * causes the file FUP.HLP to be displayed. As supplied on the System Disk, this file is a one-screen summary of FUP commands options with examples.

- The FUP help file is a convenient quick reference of FUP command options.

- The message "?Help file not available" is displayed when the file FUP.HLP is not found.

FILE UTILITY ERROR MESSAGES

FUP provides error messages that aid the user in recognizing faulty command inputs. Table 1 summarizes and defines these errors.

FILE UTILITY COMMAND SUMMARY

Table 2 summarizes FUP command options for quick reference.

Table 1. File Utility Error Messages

MESSAGE	MEANING
?Device Error	A non-recoverable error was detected during transfer to or from the floppy disk or the electronic disk. This also occurs when writing on an unformatted new floppy or electronic disk.
?Device not ready	The floppy disk is not ready. This usually means that the disk is not inserted, or the disk drive door is not shut.
?Devices do not match	A rename was attempted for files not on the same device.
?File already exists	A rename was attempted using a file name already in use.
?File not found	The file could not be found on the device specified. This is usually caused by mispelling, although the wrong device may have been specified.
?Help file not available	A ? was entered and the file FUP.HLP could not be located on the System Device.
?Illegal option	The command option selected was not recognized. This is usually caused by typing errors.
?No end-of-file	An ASCII source file was not terminated with a CTRL/Z.
?No room for user on device	A copy or merge operation was attempted, but the resulting file would not fit on the specified device.
?Not a valid device	A Device was specified that is not on the list of recognized devices at the beginning of this section. This is usually caused by misspelling.
?Not a valid file name	A file name is the command contains too many characters other than letters, numbers, spaces, or $ signs.

Table 1. File Utility Error Messages (continued)

MESSAGE	MEANING
?System error	This error should not occur under normal use. It indicates an error in FDOS or FUP. The user should make an accurate report detailing the conditions under which the error occurred and contact a Fluke Service Center.
?Syntax error	The form of the command input does not amtch the requirements of a FUP command. This is normally caused by typing errors.
?Too many files	More than eight source files were specified.
?Write protected	A write operation was attempted on the floppy disk, but it has a write protect tab. Either the wrong disk is inserted or the protection tab has to be removed.

Table 2. FUP Command Options

OPTION	MEANING
(omitted)	ASCII File or Data Transfer
/A	Assign the System Device
/B	Binary File Copy
/D	Delete File(s)
/E	Extended Directory List
/F	Format, Verify, and Zero File Device(s)
/L	List Directory
/M	Merge ASCII Files
/P	Pack File Device(s)
/R	Rename a File
/S	Scan File Device for Bad Blocks

Table 2. FUP Command Options (continued)

OPTION	MEANING
/T	Transfer File(s) Without Error Check
/W	Whole Copy, Device to Device
/X	Exit FUP to CONMON
/Z	Zero File Directory