File Connection Documentation Manual

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INTRODUCTION

The File Connection from Flagstaff
Engineering consists of a set of data
conversion programs that allows the user
to exchange data files between the IBM PC
and other systems using 8" diskettes.

The major systems supported by the file
connection programs are IBM Exchange
diskettes, CP/M, and Digital Equipment.
PC-DOS file manipulation and editing
programs are also included.

Supplement program sets that support
Allen-Bradley Numerical Control, Rolm,
Honeywell, Intel ISIS, and other systems
are available from Flagstaff Engineering
at an additional charge.

PROGRAM NAMING CONVENTIONS

File Connection program names use specific
abbreviations to indicate function and
system type.

System abbreviations are:

IBM   IBM Host System formats .
CPM   CP/M Systems.
DEC   Digital Equipment Systems.

Function abbreviations are:

XXXFMT   Format a diskette with specific file exchange parameters.

XXX8TO5   Transfer files from an 8 inch diskette to a PC-DOS volume.

XXX5TO8   Transfer files from a DOS volume to an 8 inch diskette.

XXXTOYYY   Transfer files from system format XXX to system format YYY.

SYSTEM REQUIREMENTS

The File Connection requires the following minimum system configuration:

1.   IBM PC, PC/XT, or PC/AT computer.

2.   Flagstaff Engineering "DISKETTE CONNECTION" 8 inch diskette drive system.

3.   Flagstaff Engineering "DISKETTE CONNECTION" I/O device driver. (See the System Installation Guide and Diagnostic and Utility Manual for more information.)

To load File Connection programs, use the
standard PC-DOS load command syntax:

        A:PROGRAM NAME

In the program operation sections of the
manual, keyboard entries are indicated by
bracketed characters.

        [ENTER] equals the enter key.
        [Y] equals the Y key.

File Connection programs may be aborted at
any time by pressing [CTRL] [C].
Occasionally, the Control-C sequence may
not successfully terminate the program.
If this occurs, press [CTRL] [BREAK] to
end the program.

File Connection program documentation is
arranged in the following format:

        1.   Program Name.
        2.   Use.
        3.   Miscellaneous Notes.
        4.   Description.
        5.   Operation.
        6.   Defaults.
        7.   Destructive/Nondestructive
        8.   Sample Program Run

File Connection programs may be copied to
and executed from any diskette or hard
disk volume desired.

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SECTION I

IBM 8" EXCHANGE DISKETTE
FORMATTING AND TRANSFER UTILITIES

INTRODUCTION

IBM format conversion programs allow the
user to format 8 inch diskettes, copy
files from 8 inch formats to 5 inch DOS
formats, and copy files from 5 inch DOS
formats to 8 inch IBM formats.

IBM DISKETTE FORMATS

Various formats are used on IBM host
computers. The file connection programs
are designed to work with IBM data
exchange formats. A brief description of
these formats follow.

IBM data exchange formats fall under one
of four types. The format types are:

        Basic Data Exchange
        Type H Data Exchange
        Type E Data Exchange
        Type I Data Exchange

BASIC DATA EXCHANGE Format requirements.

1.   Exchange type indicator must be blank
      (data set label position 44).

2.   Single or double sided diskette.

3.   Records are of fixed length,
      unblocked, and unspanned.

4.   The physical record length is 128
      bytes.

(Basic Data Exchange cont.)

5.   Data set identifier (data set label
        positions 6 through 22) is no longer
        than eight positions.

6.   Single sided diskettes must be
        initialized with physically
        sequential records. Volume label
        positions 77 and 78 may be specified
        blank or 01.

6.1   Have basic exchange data sets on
        tracks 1 through 73 only.

7.   Double sided diskettes must be
        initialized with physically
        sequential records. Volume label
        positions 77 and 78 may be specified
        as blank or 01 through 13.

7.1   Have basic exchange data sets on
        cylinders 1 through 74

8.   Diskettes containing basic exchange
        data sets cannot use alternate
        physical record relocation.

TYPE H DATA EXCHANGE Format requirements.

1.   Diskette must be double density,
        double sided.

2.   The exchange type indicator must be
        set to an H (data set label position
        44).

3.   Records are of fixed length,
        unblocked, and unspanned.

4.   Maximum record length of 256 bytes.

(Type H exchange cont.)

5.   Physical record length is 256 bytes.

6.   Data set identifier (data set label
      positions 6 through 22) is no longer
      than eight positions.

7.   Diskettes may be initialized with
      physically nonsequential records.
      Volume label positions 77 and 78 are
      space or 01 through 13.

8.   Diskettes containing Type H exchange
      data sets cannot use alternate
      physical record relocation.

TYPE E GENERAL EXCHANGE Format
requirements.

1.   Type E exchange data sets require
      that the using system examine each
      field in the header label. None of
      these fields can be assumed or
      summarized.

2.   The exchange type indicator must be
      an E (data set label position 44).

3.   On output, all supported fields must
      contain values that accurately
      describe the data set, and all
      unsupported fields must contain space
      characters.

4.   On input, all supported fields must
      be checked to accurately determine
      the attributes of the data set.

TYPE I DATA EXCHANGE Format requirements.

1. The exchange type indicator must be
    set to an I (data set label position
    44).

2. Records are of fixed length, blocked,
    and spanned.

3. The data set is organized
    sequentially.

4. Data set identifier (data set label
    positions 6 through 22) is no longer
    than eight positions and has at least
    one non-space character.

5. The block size must always be set
    equal to the physical record length.

6. Diskettes containing Type I exchange
    data sets must have defective records
    relocated sequentially or the data
    set must be ended.

IBM 8" DISKETTE HDR1 FORMAT.

File Connection conversion programs
display the HDR1 labels of files on 8" IBM
formatted diskettes. The standard IBM
display format for an HDR1 label is:

Byte   Description

1-4   Header Number.
5   Always blank.
6-22   Data Set Label.
23-27 Maximum characters per block.

(HDR1 Label cont.)

28	Record indicator (blank=unblocked and, unspanned. R=blocked and spanned, B=blocked but unspanned, S= unblocked but spanned.).
29-33	Beginning extent of first data sector expressed as CCHSS.
34	Physical record length (blank= 128 bytes, 1=256 bytes, 2=512 bytes, 3=1024 bytes).
35-39	Ending Extent expressed as CCHSS.
40	Record block format.
41	Bypass indicator.
42	Security indicator (non-blank character indicates restricted access).
43	Write protect (P indicates read only).
44	Diskette Format Type E, H, I, or blank (a blank indicates a a Basic Data Exchange diskette).
45	Multi-volume indicator (blank= data set complete, C=data set is continued, L=last diskette for a continued data set).
46-47	Volume sequence number.
48-53	Creation date.
54-57	Record length (blanks= record length equals block length).
58-62	Starting position offset for blocked records.
63-66	Reserved.
67-72	Expiration date(999999 indicates data set will never expire).
73	Verify indicator.
74	Data set organization (blank or S = sequential organization).
75-79	End of data expressed as CCHSS.
80	Reserved (positions 81-128 are padded and will not appear).

STANDARD IBM 8 INCH FORMATS

Standard formats for various IBM machines
are given below. The sector size and
sectors-per-track numbers are given in
bytes.

```
S/D = SIDES/DENSITY
S   = SINGLE
D   = DOUBLE
SS  = SECTOR SIZE
S/T = SECTORS PER TRACK
TC  = TOTAL CAPACITY
S/D = SIDES/DENSITY
```

S/D	SS	S/T	TC	MACHINE TYPE
SS	128	26	242,944	Most machines.
SS	256	15	284,160	3601-S1-S38
SS	512	8	903,104	S1-S32-S34-S38
DD	256	26	985,088	S34-S38-8100
DD	512	15	1,136,640	S38
DD	1024	8	1,212,416	S34-S38

IBM CONVERSION TIPS:

IBM systems use 8" IBM diskettes in
various formats. A specific 8" diskette
format is usually required by a particular
IBM system. To convert files from the IBM
PC to 8" diskettes capable of being read
by the target IBM machine, the 8" diskette
MUST be formatted to a Data Exchange Type
that is supported by the target machine.

(CONVERSION TIPS cont.)

The quickest way to determine the correct
format for conversion is to format an 8"
diskette on the target machine, and then
write a test file to the 8" diskette.

Place the 8" diskette in the Flagstaff
Engineering 8" diskette drive and load the
IBM8TO5 program. The program will
identify the diskette format and display
the HDR1 labels of data files on the
diskette. The HDR1 label indicators will
identify the exact Data Exchange Format
required by the target machine.

The HDR1 label should be written down or
prir i and then saved for future use.
The information contained in the HDR1
label may then be used to select the
appropriate options when diskettes are
formatted with the IBMFMT program, or DOS
files are copied to 8" diskettes with the
IBM5TO8 program.

Refer to the section on Exchange Formats
and HDR1 label indicators to determine
exactly how the 8" diskette should be
formatted. This will alleviate problems
that may occur when attempting to create
invalid formats such as blocked and
spanned Basic Data Exchange Format
diskettes, which by IBM standards, does
not conform with the definitions of a
Basic Data Exchange diskette.

Conversions are trouble free when the
appropriate 8" diskette format is used.

USE:

Format an 8 inch 1, 2, or 2D IBM diskette
for use with an IBM system.

DESCRIPTION:

IBMFMT is designed to format an IBM
Diskette Type 1 (single sided, single
density), Type 2 (double sided, single
density), or Type 2D (double sided, double
density) for use with IBM systems. The
program provides formatting options for
number of sides, sector size, and density.

The program includes an EBCDIC/ASCII
option. All IBM type 8" diskettes
use EBCDIC character codes, but other
systems may use ASCII codes provided by
this option.

The program will prompt the user for the
formatting options, and then format an 8
inch diskette as required. The diskette
is formatted one cylinder at a time.
After each cylinder is written, a read
verify is performed. After five read
verifies fail, the program will display a
diskette error message and end the
formatting operation.

The program will not assign alternate
cylinders, since a diskette that contains
alternate cylinders is of marginal
reliability and should not be used.

Regardless of the format parameters used
to format the diskette, an EBCDIC "E"
character will be written to position 44
of the data set label position. The "E"
character identifies the diskette as an
IBM Type E General Exchange diskette.
This data set identifier is updated to one
of the four IBM exchange types when data
is written to the diskette using the
IBM5TO8 program.

OPERATION:

Load IBMFMT. On completion of the program
load, a program description message will
be displayed. The program will prompt the
user to insert a blank diskette into the 8
inch drive and enter the number of the
drive unit in use.

Insert a blank diskette into the drive and
enter the appropriate drive unit number,
or select drive 1 by pressing the [ENTER]
key.

The program will then prompt the user to
enter a volume label of no more than six
characters.

Enter a volume label of up to six
characters and press [ENTER]. If the
[ENTER] key is pressed without entering a
volume label, the diskette will be
formatted with a blank volume label.
The program will prompt the user to enter
the number of sides to format.

Enter a [2] for a double sided diskette,
or a [1] for single sided formatting (a
double sided diskette can be formatted as
a single sided diskette if desired).

The program will prompt the user to select
single or double density.

Enter a [D] for double density formatting
or an [A] for single density formatting (a
double density diskette can be formatted
as a single density diskette if desired.)

The program will prompt the user to enter
the sector size.

Enter a [1] for 128 byte sectors, a [2]
for 256 byte sectors, a [3] for 512 byte
sectors, or a [4] to select 1024 byte
sectors (for more information on sector
size requirements for IBM Exchange
formats, refer to the IBM Diskette Formats
section of this manual.)

The program will prompt the user to select
IBM or non-IBM formatting.

Enter a [Y] to select IBM formatting with
characters in EBCDIC. Enter a [N] if the
diskette is to used with an 8 inch
diskette system that requires ASCII
characters. The program will format the
diskette. After formatting is complete, a
message will be displayed with the number
of temporary read errors that occurred,
and the diskette status.

The program will prompt the user to format
another diskette.

Enter a [Y] to format another diskette, or
enter a [N] to end the format program.

DEFAULTS:

Drive number: [ENTER] = Drive 1.
Volume label: [ENTER] = Blank Volume
                Label.
Sides: [ENTER] = Single sided.
Density: [ENTER] = Single Density.
Sector Size: [ENTER] = 128 byte sectors.
IBM Format: [ENTER] = Yes
End Program: [ENTER] = Yes

DESTRUCTIVE/NONDESTRUCTIVE:

IBMFMT WILL DESTROY ALL DATA ON THE
DISKETTE BEING FORMATTED.

SAMPLE RUN:

A>   [IBMFMT] [ENTER]

FORMAT 8" IBM DISKETTE PROGRAM
COPYRIGHT FLAGSTAFF ENGINEERING X/XX/XX
** MAKE SURE THE DISKETTE IS CORRECT SINCE
ALL DATA IS ERASED **

INSERT BLANK 8" DISKETTE - ENTER
DRIVE (1/2) WHEN READY.? [1] [ENTER]

ENTER VOLUME LABEL NAME
(1-6) CHARACTERS)? [MYDISK] [ENTER]

ENTER NUMBER OF SIDES YOU
WANT TO FORMAT (1/2)? [2] [ENTER]

ENTER SINGLE OR
DOUBLE DENSITY (S/D)? [D] [ENTER]

DO YOU WANT TO FORMAT FOR USE
ON AN IBM SYSTEM (Y/N)? [Y] [ENTER]

```
WRITING 8" CYL=XX HEAD=X SECTOR=XX
GOOD OPERATION
VERIFY 8" CYL=XX HEAD=X SECTOR=XX
GOOD OPERATION

FORMATTING IS COMPLETED - 00 TEMPORARY
READ ERRORS - DISKETTE IS OK

DO YOU WANT TO FORMAT ANOTHER
DISKETTE (N/Y)?  [ENTER]
A>
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IBM8TO5.EXE

USE:

Copy a data file from an IBM Exchange
Format diskette to a PC-DOS file. IBM8TO5
can also be used to identify the exchange
format of an 8 inch IBM diskette.

DESCRIPTION:

The IBM8TO5 program is designed to copy
data files from 8 inch IBM Exchange Format
diskettes to PC-DOS files. The exchange
types supported are Basic Data Exchange,
Type H, Type E, and Type I. The first
operation that the program performs is a
diskette format check. The program will
identify the number of sides, density
type, and sector size of the 8 inch
diskette and display the information. The
program also displays the first 19 HDR1
labels found on the diskette.

Since the program can be ended after this
display, IBM8TO5 functions as a utility
program to identify diskette formats.
If the program cannot identify the 8 inch
diskette format, a message will be
displayed that says the diskette cannot be
copied.

The program copies data files from the 8"
diskette by header number. The file
extents found in the HDR1 label are used
to locate the data file. A single file
may be copied or the entire diskette may
be copied.

Multi-volume diskettes may be copied with
IBM8TO5.

For each 8" diskette sector read, the
program will write from 1 to 16 DOS
records. The program can copy either
unblocked, or blocked-spanned records.

PC-DOS files are written in ASCII. EBCDIC
to ASCII conversion is supported by the
program, but no provision is currently
make for excluding fields that contain
binary or packed decimal numbers. If data
files containing binary or packed decimal
numbers are to be copied to a DOS file,
the 8" diskette file should be copied with
NO translation. The program DFILE.EXE may
then be used to translate the various
fields into ASCII alphanumerics or other
field types as required by specific
applications. (For more information on
DFILE.EXE, see Section IV, DOS FILE
REFORMATTING.)

On 8 inch IBM diskettes used on system 34
and system 36, a special record called the
FORMAT1 Label is written at the beginning
of each file. The FORMAT1 Label contains
the copy parameter used by the IBM System
when the file was saved on the diskette.
The program will automatically skip over
the Format1 label when the file is being
copied.

DOS File Considerations -

IBM8TO5 will copy an 8 inch file to any
DOS volume, including a hard disk.

DOS files use ASCII characters, so
normally the user should select EBCDIC to
ASCII conversion for the copy operation.

DOS files are normally written with a
carriage return and line feed as the last
two characters of a record. The program
supports an option that writes these two
characters at the end of each record.
This option should be selected if the data
file on the DOS volume is going to be
accessed by commercial programs that run
on the IBM-PC.

The 8 inch IBM file will be copied to any
DOS path and file name specified by the
user. If A DOS file name is not
specified, the program will use the 8
character name in the IBM HDR1 label of
the 8 inch file with an extension of
".IBM" added. If the 8 inch file to be
copied was named "TESTFILE", the DOS file
created by the copy operation would appear
in the DOS directory as "TESTFILE.IBM".

All control and special characters found
in the 8 inch file name will appear as an
"@" character in the DOS file name.

If the user specifies a DOS file name that
already exists on the DOS volume, the user
will be prompted to verify overwriting the
target file. If the prompt is answered
with a [Y], the DOS file will be deleted,
and then recreated by the copy operation.

The program performs the copy operation by
first reading an entire 8" diskette
sector, and then writing from 1 to 16, 128
byte DOS records. If the file being
copied is a multi-volume file, the user
will be prompted to insert the next
multi-volume 8" diskette after the first
8" diskette has been read. The prompts
will continue until the last 8" diskette
in the series has been copied.

OPERATION:

Load IBM8TO5.EXE. On completion of the
program load, a program description
message will be displayed. The program
will then prompt the user to enter a DOS
file name for an EBCDIC to ASCII
translation table. An internal table is
provided in the program, but this prompt
allows use of a custom table when needed.

Press [ENTER] to select the default
internal translation table. The program
will prompt the user to insert an 8"
diskette into the drive, and enter the
drive number of the unit selected.

Insert the 8" IBM diskette into the drive
and select the appropriate drive address
by entering a [1] or [2], or select drive
[1] by pressing [ENTER].

The program will display bytes per sector,
density type, and number of sides of the
8" diskette. The program will then
display a 19 HDR1 labels from the
directory of files on the 8" diskette. The
program will prompt the user to enter the
number of the file to be copied.

Enter a number from 1 to 71 to select the
file to be copied. The user may also
select to copy ALL files on the 8"
diskette by entering a [99].

The program will prompt the user to enter
the DOS file name to be copied to in
standard DOS syntax i.e,

DEVICE ID:FILE NAME.EXT

Enter the DOS file name to be used, or
press [ENTER] to select the HDR1 label
file name with ".IBM" as the extension.

The program will display a prompt to add
a carriage return and line feed to the end
of each record written to the DOS file.
Enter a [Y] to add a carriage return and
line feed, or enter an [N] to copy the 8"
files exactly as written.

The program will prompt the user to select
EBCDIC to ASCII conversion.

Enter a [Y] to select ASCII to EBCDIC
conversion, or enter an [N] to write data
to the DOS file exactly as read.

The program will copy the 8" IBM file
selected to the DOS volume specified. The
program will then display a message that
the copy is complete, the number of the
file copied, and the number of records
copied. The directory of the files on the
8 inch diskette will be displayed and the
user will be prompted to select another
file to copy.

Enter the file number to be copied, or
press enter to exit the copy operation and
end the program.

DEFAULTS:

Translate Tbl: [ENTER] = Internal table.
Drive Number: [ENTER] = Drive 1.
File Number: [ENTER] = Return to Enter
               Diskette prompt.
Add CR/LF: [ENTER] = Add CR/LF to
               record.
EBCDIC-ASCII: [ENTER] = Convert data from
               EBCDIC to ASCII characters.
Continue Copy: [ENTER] = End program.

DESTRUCTIVE/NONDESTRUCTIVE:

IBM8TO5 will not destroy data on·the 8
inch source diskette, however, IF THE
TARGET FILE NAME ALREADY EXISTS ON THE DOS
VOLUME, ALL ORIGINAL DATA IN THE DOS FILE
WILL BE DESTROYED BY THE COPY OPERATION.

SAMPLE RUN:

A> [IBM8TO5] [ENTER]

COPY 8" IBM TO 5" DOS DISKETTE PROGRAM
COPYRIGHT FLAGSTAFF ENGINEERING X/XX/XX

ENTER DOS FILENAME FOR EBCDIC - ASCII
TABLE - PRESS ENTER FOR DEFAULT: [ENTER]

INSERT 8" IBM DISKETTE -
ENTER DRIVE (1/2) WHEN READY.? [ENTER]

READING 8" CYL=05 HEAD=0 SECTOR=01
GOOD OPERATION
DISKETTE IS 128 BYTE SECTOR - SINGLE
DENSITY - SINGLE SIDE

```
READING 8" CYL=00 HEAD=0 SECTOR=08
GOOD OPERATION
**DIRECTORY OF FILES ON 8" IBM DISKETTE**
HD01TESTFILE 0128 01001 01009 999999 01010
ENTER 8"FILE NUMBER (1-71/99=ALL) FOR COPY
PRESS ENTER IF NONE?  [1] [ENTER]

ENTER DOS FILE NAME FOR COPY -
PRESS ENTER TO USE HDR1 NAME?  [ENTER]

DO YOU WANT TO ADD A CR-LINE FEED
WHEN SAVING EACH RECORD (Y.N)?  [Y]

DO YOU WANT EBCDIC TO ASCII
CONVERSION (Y/N)?  [ENTER]

READING 8" CYL=01 HEAD=0 SECTOR=01
GOOD OPERATION
FILE#01 COPY IS COMPLETED -
00009 RECORDS WERE COPIED

**DIRECTORY OF FILES ON 8" IBM DISKETTE**
HD01 TESTFILE
0128 01001 01009 0000 999999 01010

DO YOU WANT TO COPY
FROM ANOTHER DISKETTE (N/Y) [ENTER]
A>
```

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USE:

Copy a PC DOS file to an IBM 8" diskette.

NOTES: IBM5TO8 can copy to any of the
first 19 files on an IBM 8" diskette.
Large files may be copied to multi-volume
diskettes, but the 8" diskettes must be
formatted before using IBM5TO8.

DESCRIPTION:

The IBM5TO8 program is designed to copy
DOS files from and valid DOS volume to an
8" IBM exchange type diskette. The
exchange types supported are Basic Data
Exchange, Type H, Type E, and Type I.

The program will identify the number of
sides, density type, and sector size of
the 8" diskette and display the
information. The program also displays
the first 19 HDR1 labels found on the
diskette. If the 8" diskette format
cannot be determined, the program will
display a message stating the diskette
cannot be copied to.

The program copies files from a DOS volume
by file name. The eight character DOS
file name will used as the file name in
the IBM HDR1 label on the 8" diskette.

Large DOS files must be copied to
Multi-volume 8" diskettes. The program
will prompt the user to mount the next
diskette in the volume after the first 8"
diskette has been filled.

A FORMAT1 label option is supported for 8"
IBM diskettes that will be used on IBM
Systems/34, and 36. If the option is
selected, the FORMAT1 label will be
written at the beginning of each file on
the 8" diskette.

The program also supports creation of
extended headers for System 34/36
diskettes. The program prompts for
creating system name. This prompt should
be answered by typing IBMSYSTEM34 if the
8" diskette will be read on an S/34. If
the [Enter] key is pressed without
entering a system type, the program
defaults to an S/36 extended header. The
extended headers are ignored on IBM 370's,
etc.

When creating files for Type E Exchange
diskettes, DOS files are automatically
copied to the 8" diskette as blocked
records.

When creating files for Type E and Type I
Exchange diskettes, the program will
prompt the the user to enter the IBM
destination file type. The default is
type 01 which is a copy file.

An option is supported by the program to
erase the 8" file directory before the
copy operation has been started. This
option erases ALL files on the diskette,
so this option should be used with care.

DOS File Considerations -

DOS files use ASCII characters. Most IBM
files use EBCDIC characters, so normally
ASCII to EBCDIC conversion should be
selected for the copy operation.

DOS file records may be of variable or
fixed length, and range from 128 to 1024
bytes in size. Each record of a DOS file
will usually be terminated with a carriage
return- line feed.

IBM5TO8 will copy the C/R-L/F at the end
of each DOS record to the 8" file. The
C/R-L/F characters may be removed by
selecting the variable length record
option.

An example would be a DOS record
containing 96 bytes of data followed by
the C/R-L/F characters. If the variable
record option is selected, and then a
record length of 96 is entered, the
program will copy up to 96 bytes before
starting a new record. When a C/R-L/F is
encountered, the program assumes end of
record and does not transfer the C/R-L/F
to the 8" file as data.

OPERATION:

Load IBM5TO8. On completion of the
program load, a program description
message will be displayed. The program
will then prompt the user to enter the
creating system name.

Enter [IBMSYSTEM34] followed by [ENTER] to
select a System/34 for the destination
machine. Press [ENTER] without specifying
a system type to select a System/36 or
other IBM system as the destination
machine.

The program will prompt the user to enter
the DOS file name for an ASCII to EBCDIC
translation table.

Press [ENTER] to select the internal
translation table, or enter the DOS file
name for a user created translation table.

The program will prompt the user to insert
an 8 inch diskette into the drive, and
enter the drive number of the unit
selected.

Insert the 8 inch IBM diskette into the
drive and select the appropriate drive
address by entering a [1] or [2], or
select drive [1] by pressing [ENTER].

The program will display bytes per sector,
density type, and number of sides of the 8
inch diskette. The program will then
display a directory of files on the 8 inch
diskette as a list of up to 19 HDR labels.

The program will display a message
indicating the file number and starting
extent of any new file copied to the 8"
diskette.

The program will prompt the user to erase
the 8" diskette file directory.

Press [Y] and then [ENTER] to erase ALL
entries on the 8" diskette, or press [N]
and then [ENTER] to leave the directory
entries intact.

The user will then be prompted to enter
the name of the DOS file to be copied.

Enter the DOS volume and file name in
standard DOS syntax, i.e.,
VOL. ID:FILE NAME.EXT

If [ENTER] is pressed without typing a
Vol. ID and file name, the program will
exit the copy routine and prompt the user
to exit the program or copy to another
diskette.

The program will prompt the user to enter
the IBM Data Exchange Type to use on the
8" diskette. Enter an H, E, or I to
select Type H, Type E, or Type I Data
Exchange format. Basic Data Exchange
format may be selected by pressing
[ENTER].

If Data Exchange Type E or Data Exchange
Type I is selected, the program will
automatically create blocked records in
the 8" diskette file during the copy
operation. The program will also prompt
the user for the destination file type.

Press [ENTER] to select a file type of 01
(copy file), or enter a number from 1 to
14.

The program will prompt the user to select
fixed or variable length DOS records.

Enter [V] to select variable length
records, or enter [F] or press [ENTER] to
select fixed length records.

The program will prompt the user to enter
the length of records in the DOS file to
be copied.

Select 128 byte records (a standard DOS
record is 128 bytes) by pressing [ENTER],
or type a value from 4 to 1024 followed by
[ENTER] to indicate record length.

The program will prompt the user to select
ASCII to EBCDIC conversion.

Press [Y] or [ENTER] to select ASCII to
EBCDIC character conversion, or press [N]
if the conversion is not required.

If The Data Exchange Type selected for the
8" diskette file is Exchange Type E, the
program will prompt the user to select
inclusion of a FORMAT1 data label in the
first sector of the 8" diskette file.

If the 8" diskette will be accessed by an
S/34 or S/36, and the file type is a copy
file, Press [Y] TO include the FORMAT1
label. If a FORMAT1 label is not
required, press [N] or [ENTER].

The program will begin the copy operation
and display an information line indication
write and read verify operations to
Cylinder, Head, and Sector numbers of the
8" diskette. On completion of the copy
operation, the program will display an
information line indicating the copy is
complete and the number of records copied.

The 8" file directory will then be
displayed and the user will be prompted to
copy another file.

If the file size exceeded the capacity of
the 8" diskette, the user will be prompted
to insert the next diskette volume of a
multi-volume set.

Insert the the next 8" diskette and press
[ENTER] to continue the copy operation.
The program may be terminated at this
point by pressing [CTRL] [C].

The program will prompt the user to erase
the 8" diskette file directory.

Press [Y] and then [ENTER] to erase ALL
entries on the 8" diskette. This prompt
must be answered with [Y] to continue the
multi-volume copy operation.

The program will continue to prompt for
and copy to multi-volume diskettes until
the copy operation is complete.

The program will prompt the user to copy
to another 8" diskette.

Press [N] or [ENTER] to end the program,
or press [Y] to copy another file or copy
to a new 8" diskette.

DEFAULTS:

Creating System: [ENTER] = IBMSYSTEM36
Translate table: [ENTER] = Internal
                    table.
Drive Number: [ENTER] = Drive 1.
Erase Directory: [ENTER] = No.
DOS File Name: [ENTER] = Exit copy and
                    prompt for new diskette.
Exchange Type: [ENTER] = Basic Data
                    Exchange.
File type: [ENTER] = 01 (copy
file).
Fixed or
Variable records: [ENTER] = Fixed records.
DOS Record Size: [ENTER] = 128 bytes.
ASCII to EBCDIC: [ENTER] = Yes.
FORMAT1 Label: [ENTER] = No.
Continue Copy: [ENTER] = End program.

```
A>IBM5TO8  [ENTER]

COPY PC-DOS FILE TO
8" IBM DISKETTE PROGRAM

ENTER CREATING SYSTEM NAME
(DEFAULT=IBMSYSTEM36)?  [ENTER]

ENTER DOS FILE NAME FOR ASCII-EBCDIC TABLE
- PRESS ENTER FOR DEFAULT?  [ENTER]

INSERT 8" IBM DISKETTE-
ENTER DRIVE (1/2) WHEN READY.?  [ENTER]

READING 8" CYL=05 HEAD=0 SECTOR=01
DISKETTE IS 128 BYTE/SECTOR -
SINGLE DENSITY - SINGLE SIDE

READING 8" CYL=00 HEAD=0 SECTOR=09
LISTING OF FILES IN 8"DIRECTORY
HD01 DATA09    128 01001 73026  E    01001

DO YOU WANT TO ERASE THE 8" DISKETTE FILE
DIRECTORY (N/Y)?  [ENTER]

NEW FILE WILL BE #01 STARTING AT
01001 ON THE 8"DISKETTE
ENTER DOS FILE NAME FOR COPY B:NAME.EXT -
PRESS ENTER IF NONE  [A:TESTFILE.DOC]

ENTER DISKETTE DATA
EXCHANGE TYPE (B/H,E,I)?  [B]

ENTER IBM FILE TYPE (01-14/01=COPYFILE=
DEFAULT)?  [ENTER]
(prompt issued on E/I exchange Type only)

DOES THE DOS FILE USE FIXED OR VARIABLE
LENGTH RECORDS (F/V)?  [ENTER]
```

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```
ENTER FIXED LENGTH DOS RECORD SIZE IN
BYTES (128/4-1024)?  [128] [ENTER]

DO YOU WANT ASCII TO EBCDIC
CONVERSION (Y/N)?  [Y] [ENTER]

DO YOU WANT TO CREATE
A FORMAT1 DATA LABEL (N/Y)?  [ENTER]
(prompt issued on E/I exchange Type only)

WRITING 8" CYL=XX HEAD=X SECTOR=XX
GOOD OPERATION
READING 8" CYL=XX HEAD=X SECTOR=XX
GOOD OPERATION

FILE COPY IS COMPLETED -
0009 RECORDS WERE COPIED

LISTING OF FILES IN 8" IBM DIRECTORY
HD01 TESTFILE
0128 01001 01009 E 999999 01010

NEW FILE WILL BE #02 STARTING AT
01010 ON THE 8" DISKETTE

ENTER DOS FILE NAME FOR COPY B:NAME.EXT -
PRESS ENTER IF NONE?  [ENTER]

DO YOU WANT TO COPY TO
ANOTHER 8"DISKETTE  (N/Y)?  [ENTER]
A>
```

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USE:

Copy System/23 Datamaster type 04 data
files and type 05 source files to IBM
PC-DOS file.

NOTES: DMA8TO5 will only copy Type 04 and
Type 05 files. Type 09 files cannot be
copied, however, Type 09 files can be
saved on the S/23 as source files by
executing a "SAVE FILENAME, A" command on
the S/23.

DESCRIPTION:

The DMA8TO5 program is designed to copy
S/23 Type 04 and Type 05 files from a
standard 8 inch Datamaster diskette to any
valid DOS volume.

The S/23 Datamaster diskette may be single
sided/single density, double sided/single
density, or double sided/double density.
The data files may contain records of
fixed length, variable length, or fixed
length with a control byte.

Files copied from the S/23 diskette may be
saved over a new file name on the DOS
volume, or use the first eight characters
of the original directory entry names.
The DOS file created by the copy operation
will be written with a carriage return and
line feed character at the end of each
data record.

OPERATION:

Load DMA8TO5. On completion of the
program load, a program description
message will be displayed. The program
will then prompt the user to insert an 8
inch diskette into the drive, and enter
the drive number of the unit selected.

Insert the 8 inch S/23 diskette into the
drive and select the appropriate drive
address by entering a [1] or [2], or
select drive [1] by pressing [ENTER].

The program will display a directory of
files on the 8 inch diskette as a list of
file names with a file number assigned to
each file.

The user will then be prompted to enter
the name of the S/23 file to be copied.

Enter the directory file number of the
S/23 file to be copied, or enter 99 to
copy all Type 04 and Type 05 files on the
diskette. (If only the [ENTER] key is
pressed, the copy operation will be exited
and the program will prompt the user to
copy from another S/23 diskette.)

After a file number has been entered, the
program will prompt the user to enter the
DOS file name to copy the S/23 file to.
(Single file copy only. When the option
is selected to copy all files, the file
names will be the same as indicated in the
S/23 directory.)

Enter the DOS file name to copy the S/23
file to, or press [ENTER] to use the
default directory entry name.

The program will prompt the user to select
EBCDIC to ASCII conversion.

Press [Y] or [ENTER] to select EBCDIC to
ASCII character conversion, or press [N]
if the conversion is not required.

The program will begin the copy operation.
On completion of the copy operation, the
program will display an information line
indicating the copy is complete and the
number of records copied.

The 8" file directory will be re-displayed
and the user will be prompted to copy more
files from the directory.

Press [ENTER] to exit the copy operation,
or enter a file number to copy another
file.

After copying is completed the program
will prompt the user to copy from another
S/23 diskette.

Enter a [Y] to copy from another diskette,
or press [ENTER] to end the program.

DEFAULTS:

Drive Number: [ENTER] = Drive 1.
S/23 FILE NUMBER: [ENTER] = Exit copy
                    function.
DOS File Name: [ENTER] = S/23 directory
                    file name.
EBCDIC to ASCII: [ENTER] = Yes.
Continue Copy: [ENTER] = End program.

SAMPLE RUN:

A>DMA8TO5 [ENTER]

COPY 8" IBM S/23 DATAMASTER
DISKETTE PROGRAM

ENTER FILE NAME FOR TRANSLATE
TABLE (EBCTOASC.TBL)? [ENTER]

INSERT 8" S/23 DISKETTE-
ENTER DRIVE (1/2) WHEN READY.? [ENTER]

DIRECTORY OF FILES ON S/23 DISKETTE
01-TEST.DAT   02-ACCT.DAT   03-ADDR.SEQ
04-ADD1.SEQ   05-ACT2.DAT
DISKETTE IS 128 BYTE/SECTOR -

ENTER S/23 FILE NUMBER (1-96/99=ALL) FOR
COPY - PRESS ENTER IF NONE? [1] [ENTER]

ENTER DOS FILE NAME FOR COPY - PRESS ENTER
TO USE HDR1 NAME? [ENTER]

DO YOU WANT TO TRANSLATE
EBCDIC TO ASCII (Y/N)? [ENTER]

FILE #01 TESTDAT.DMA COPY IS COMPLETED -
XXXXX RECORDS WERE WRITTEN

DIRECTORY OF FILES ON S/23 DISKETTE
01-TEST.DAT   02-ACCT.DAT   03-ADDR.SEQ
04-ADD1.SEQ   05-ACT2.DAT

ENTER S/23 FILE NUMBER (1-96/99=ALL) FOR
COPY - PRESS ENTER IF NONE? [1] [ENTER]

DO YOU WANT TO COPY FROM ANOTHER S/23
DISKETTE (N/Y)? [ENTER]

C>

SECTION II

CP/M DISKETTE
FORMATTING AND TRANSFER UTILITIES

CPM SUPPORT

CPM format conversion programs allow the
user to format 8 inch CP/M diskettes, copy
files from 8 inch CP/M formats to 5 inch
DOS formats, and copy files from 5 inch
DOS formats to 8 inch CP/M formats.

Programs are also included to provide file
transfer between IBM PC CP/M-86 5 1/4 inch
diskette files and IBM PC-DOS files.

CP/M DISKETTE FORMATS

Various diskette formats are used on CP/M
8 inch systems. The file connection
programs are designed to work with both
single sided and double sided diskettes
formatted as single or double density.

Regardless of sides or density, 8 inch
CP/M diskettes contain 77 cylinders. The
system boot loader is located on cylinder
00 and the data is written on cylinders 01
through 74. Bad diskette tracks are
assigned to alternate tracks on cylinders
75 through 76.

Data tracks are formatted with different
sizes and numbers of sectors. The
standard formats are given below. (The
sector size and sectors-per-track numbers
are given in bytes.

DY = DENSITY
SS= SECTOR SIZE
S/T = SECTORS PER TRACK
TC = TOTAL CAPACITY
SD = SINGLE DENSITY
DD = DOUBLE DENSITY

DY	SS	S/T	TC	MACHINE TYPE
SD	128	26	242,944	Universal CP/M.
SD	256	15	284,160	Fairly common.
SD	512	8	303,104	Rare.
DD	256	26	985,088	Very Common.
DD	512	15	1,136,640	Rare.
DD	1024	8	1,212,416	Rare.

On all CP/M diskettes, cylinder 0, head 0
is always formatted as 128 byte sectors in
single density. The remaining tracks on
the diskette are formatted with the
selected density and sector size. When
the first CP/M data file is written on the
diskette, the file directory entry is
usually recorded starting on cylinder 2,
head 0. Some systems start the directory
on cylinder 1 and others use cylinder 6.
Each directory contains information on the
file name, the file location, and its
size.

CP/M CONVERSION TIPS:

The file connection CP/M transfer programs
require the user to answer various prompts
on the CP/M system format of the 8 inch
diskettes. To properly use the programs,
the answers to these prompts should be
known before the programs are executed.
The four format prompts are:

1.   Skew factor
2.   Directory cylinder
3.   Records per CP/M blocks
4.   Blocks in the directory

These parameters are usually described in
the system manual for the particular
system that created the diskettes.

The system manual should be used to find
the correct values.

If a system manual is not available for
the system that created the 8 inch
diskette being used, the DISPLAY8 program
from the Flagstaff Engineering Utility/8
distribution diskette can be used to
display various sectors of the 8 inch CP/M
diskette.

SKEW FACTOR-

Sectors are not written to sequentially on
a CP/M system diskette. Sectors on a
specific track will be written to based on
an offset value which is added to the
sector number of the last sector used.
This is referred to as Sector Skew Factor.
If the skew factor for a given diskette is
6, sector 1 will be the first sector used
to write data to. The next sector used
will be sector 7, then 13, 19, 25, 5, 11,
17 etc., until the entire track is filled.

If the sector count results in a sector
already in use, the count is incremented
by one to the next sequential sector.

The standard skew factor for 128 byte
single density sectors is 6. Most double
density diskettes use a skew factor of 3.

Sector skew factor is difficult to
determine by viewing diskette data with
the DISPLAY8 program, but it can be done.
The user should look for a large file that
spans more then one sector. If the data
at the end of the sector breaks in the
middle of a string or other observable
sequence, following sequential sectors may
be displayed until the sector is found

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that contains the continuation of the
data. The first sector number may then be
subtracted from the second sector number
to arrive at the skew factor.

DIRECTORY CYLINDER-

The CP/M diskette directory will normally
appear on cylinder 1, 2 or 6. Each
directory entry consists of a 32 byte
entry. The first byte of the entry is 00
for an active file. The next eleven bytes
of the entry is an eight byte file name
followed by a three byte file type
(extension). If the directory cylinder for
a particular 8 inch CP/M diskette is
unknown, it can be easily found using the
DISPLAY8 program. Load DISPLAY8 and
display cylinder, head and sector 01001.
If a series of 32 byte entries are not
found, then display CCHSS 02001. Again,
if the directory is not found, then
display 06001.

CP/M RECORDS PER BLOCK and CP/M BLOCKS IN
DIRECTORY -

A CP/M record is defined as 128 bytes of
data. CP/M systems define files in terms
of CP/M records. CP/M diskettes are
divided into physical blocks of 8, 16, 32,
and 64 CP/M records.

On a single sided, single density diskette
with 128 byte sectors, each sector would
be the equivalent of a CP/M record. If
the diskette used 8 records per block with
2 blocks in the directory, 16 sectors
would be reserved for directory entries.
Data files would start at the 17th sector
(the beginning of the 3rd block).

In a 32 byte CP/M directory entry,
position twelve through fifteen (beginning
from zero) indicate the number of CP/M
records used for that entry. The last 16
bytes of the directory entry indicate
which blocks have been allocated for the
entry. The block indicators will always
be a value greater than 01 hex. Positions
containing 00 are not allocated.

A large file can span several directory
entries since the number of records per
block limits the total number of records
used by a single directory entry.

To determine the number of records per
block on a CP/M diskette, display the
first directory entry of a file using the
program DISPLAY8. Count the number of
positions (number of blocks allocated) in
the last 16 bytes of the entry that
contain a hex value greater than 01.

To determine the total number of records
for the entry, multiply the value of
position twelve in the directory entry by
128, and then add the value in position
fifteen (the values displayed by DISPLAY8
are hexadecimal values and must be
converted to decimal).

Divide the total number of records by the
total number of blocks allocated. If the
result is not a valid records-per-block
value of 8, 16, 32, or 64, raise the
result to the next greater
records-per-block value (8.432 or 12.333
would be raised to 16).

An example CP/M entry would appear as:

```
Position  00 01 02 03 04........12....15
Hex Value 00 50 49 50 20........00....16

Position  16 17 18 19 20........29 30 31
Hex Value 1A 1B 1C 00 00........00 00 00
```

Multiply the value in position twelve (0)
by 128 and then add the value in position
fifteen (16 hex equals decimal value 22).
The result is 22 total records. Positions
16, 17, and 18 have values greater then
hex 01 so three blocks have been
allocated. Divide 22 by 3, and the result
is 7.333. The number is not a valid
records-per-block value, so it should be
raised to the next greater valid value of
8. The diskette uses 8 records per block
to store data.

USE:

Format an 8 inch 1, 2, or 2D IBM diskette
for use with an CP/M system.

DESCRIPTION:

CPMFMT is designed to format an IBM
Diskette ·Type 1 (single sided, single
density), Type 2 (double sided, single
density), or Type 2D (double sided, double
density) for use with 8 inch diskette CP/M
systems. The program provides formatting
options for number of sides, sector size,
and density.

The program will prompt the user for the
formatting options, and then format an 8
inch diskette as required. The diskette
is formatted one cylinder at a time.
After each cylinder is written, a read
verify is performed. After five read
verifies fail, the program will display a
diskette error message and end the
formatting operation.

The program will not assign alternate
cylinders, since a diskette that contains
alternate cylinders is of marginal
reliability and should not be used.

OPERATION:

Load CPMFMT. On completion of the program
load, a program description message will
be displayed. The program will prompt the
user to insert a blank diskette into the 8
inch drive and enter the number of the
drive unit in use.

Insert a blank diskette into the drive and
enter the appropriate drive unit number,
or select drive 1 by pressing the [ENTER]
key.

The program will prompt the user to enter
the number of sides to format.

Enter a [2] for a double sided diskette,
or a [1] for single sided formatting (a
double sided diskette can be formatted as
a single sided diskette if desired).

The program will prompt the user to select
single or double density.

Enter a [D] for double density formatting
or an [S] for single density formatting (a
double density diskette can be formatted
as a single density diskette if desired.)

The program will prompt the user to enter
the sector size.

Enter a [1] for 128 byte sectors, a [2]
for 256 byte sectors, a [3] for 512 byte
sectors, or a [4] to select 1024 byte
sectors (for more information on sector
size requirements for CP/M formats, refer
to the CP/M Diskette Formats section of
this manual.)

The program will format the diskette.
After formatting is complete, a message
will be displayed with the number of
temporary read errors that occurred, and
the diskette status.

The program will prompt the user to format
another diskette.

Enter a [Y] to format another diskette, or
enter a [N] to end the format program.

DEFAULTS:

Drive number: [ENTER] = Drive 1.
Sides: [ENTER] = Single sided.
Density: [ENTER] = Single Density.
Sector Size: [ENTER] = 128 byte sectors.
End Program: [ENTER] = Yes

DESTRUCTIVE/NONDESTRUCTIVE:

CPMFMT WILL DESTROY ALL DATA ON THE
DISKETTE BEING FORMATTED.

SAMPLE RUN:

A> [CPMFMT] [ENTER]

FORMAT 8" CP/M DISKETTE PROGRAM
COPYRIGHT FLAGSTAFF ENGINEERING 9/5/84
** MAKE SURE THE DISKETTE IS CORRECT SINCE
ALL DATA IS ERASED **

INSERT BLANK 8" DISKETTE - ENTER
DRIVE (1/2) WHEN READY.? [1] [ENTER]

ENTER NUMBER OF SIDES YOU
WANT TO FORMAT (1/2)? [1]

ENTER SINGLE OR DOUBLE DENSITY (S/D)? [S]

```
WRITING 8" CYL=XX HEAD=X SECTOR=XX
GOOD OPERATION
VERIFY 8" CYL=XX HEAD=X SECTOR=XX
GOOD OPERATION

FORMATTING IS COMPLETED - 00 TEMPORARY
READ ERRORS - DISKETTE IS OK

DO YOU WANT TO FORMAT ANOTHER
DISKETTE (N/Y)?  [ENTER]
A>
```

USE:

Copy a data file from an 8 inch CP/M
diskette to a PC-DOS file.

DESCRIPTION:

The CPM8TO5 program is designed to copy
data files from 8 inch CP/M format
diskettes to PC-DOS files. The first
operation that the program performs is a
diskette format check. The program will
identify the number of sides, density
type, and sector size of the 8 inch
diskette and display the information.

Since the program can be ended after this
display, CPM8TO5 functions as a utility
program to identify diskette formats.
If the program cannot identify the 8 inch
diskette format, a message will be
displayed that says the diskette cannot be
copied.

The program requires that the user enter
several CP/M diskette parameters to
determine the logical layout of the
diskette. These parameters are:

   1. Skew Factor
   2. CP/M directory Cylinder
   3. CP/M Records Per Block
   4. CP/M Blocks In Directory

These parameters are described in the
section on CP/M Conversion Tips.

The program copies data files from the 8"
diskette by file number.

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The file pointers in the directory entries
are used to located the data file. A
single file may be copied or the entire
diskette may be copied. Up to 256 files
may be copied from the CP/M diskette.

The CP/M files will be written to DOS
files as 128 byte records. The file name
a specific CP/M file is written to will
have the same file name and extension as
displayed in the CP/M directory.

CPM8TO5 will copy an 8 inch file to any
DOS volume, including a hard disk.

If the CP/M file name already exists on
the DOS volume, the DOS file will be
deleted, and then recreated by the copy
operation.

OPERATION:

Load CPM8TO5. On completion of the
program load, a program description
message will be displayed. The program
will prompt the user to insert an 8 inch
diskette into the drive, and enter the
drive number of the unit selected.

Insert the 8 inch CP/M diskette into the
drive and select the appropriate drive
address by entering a [1] or [2], or
select drive [1] by pressing [ENTER].

The program will display bytes per sector,
density type, and number of sides of the 8
inch diskette. The program will then
prompt the user for the CP/M sector skew
factor.

Enter a skew factor from 1 to 16 or press
[ENTER] to select a skew factor of 6.

The program will prompt the user for the
CP/M directory cylinder.

Enter a cylinder number from 1 to 9, or
press [ENTER] to select cylinder 1.

The program will prompt the user to enter
the number of CP/M records per block.

Enter 8, 16, 32, or 64 records per block,
or press [ENTER] to select 8 records per
block.

The program will prompt the user to enter
the number of blocks in the CP/M
directory.

Enter a number from 1 to 9, or press
[ENTER] to select 2 blocks in the
directory.

The program will read the CP/M diskette
directory and display a list of the
directory entries as file names preceded
by a file number. The program will prompt
the user to enter the number of the file
to be copied.

Enter a number from 1 to 256 to select the
file to be copied. The user may also
select to copy ALL files on the 8 inch
diskette by entering a [999]. If the
option to copy all files is selected, the
program will prompt the user to enter the
starting file number for the copy
operation. This allows copying a range of
files from file n to the last file.

If [ENTER] is pressed without entering a
file number, the program will exit the
copy operation and prompt the user to copy
from another CP/M diskette. Another
diskette can be loaded at this point, or
the program can be ended by pressing
[ENTER].

The program will copy the 8 inch CP/M file
selected to the DOS volume that CPM8TO5
was loaded from. The program will then
display a message that the copy is
complete, the number of the file copied,
and the number of records copied. The
directory of the files on the 8 inch
diskette will be displayed and the user
will be prompted to select another file to
copy.

Enter the file number to be copied, or
press enter to exit the copy operation.

DEFAULTS:

Drive Number: [ENTER] = Drive 1.
Skew Factor: [ENTER] = 6
Directory Cylinder: [ENTER] = 2
Records per Block   [ENTER] = 8
Directory Blocks: [ENTER] = 2
File Number: [ENTER] = Return to
                       Enter Diskette prompt.
Continue Copy: [ENTER] = End program.

DESTRUCTIVE/NONDESTRUCTIVE:

CPM8TO5 will not destroy data on the 8
inch source diskette, however, IF THE
TARGET FILE NAME ALREADY EXISTS ON THE DOS
VOLUME, ALL ORIGINAL DATA IN THE DOS FILE
WILL BE DESTROYED BY THE COPY OPERATION.

```
SAMPLE RUN:

A>  [CPM8TO5] [ENTER]

COPY 8" CP/M TO 5" DOS DISKETTE PROGRAM
COPYRIGHT FLAGSTAFF ENGINEERING 6/1/85

INSERT 8" CP/M DISKETTE -
ENTER DRIVE (1/2) WHEN READY.?  [ENTER]

DISKETTE IS 128 BYTE SECTOR - SINGLE
DENSITY - SINGLE SIDE        .

ENTER CP/M SECTOR SKEW
FACTOR (6/1-9)?  [ENTER]

ENTER CP/M DIRECTORY CYLINDER
NUMBER (2/1-9)?  [ENTER]

ENTER NUMBER OF CP/M RECORDS PER BLOCK
(8/16,32,64)?  [ENTER]

ENTER NUMBER OF CP/M BLOCKS IN
DIRECTORY (2/1-9)? [ENTER]

**DIRECTORY OF FILES ON 8" CP/M DISKETTE**
FILE  NAME         RECS  FILE NAME        RECS
001-TEST.ASM    0233  002-HELP.TXT    0074
003-ARCDATA.DBF 0132  004-HELP.BAK    0074

ENTER CP/M FILE FOR COPY (1-256/999=ALL) -
PRESS ENTER IF NONE? [999] [ENTER]

ENTER STARTING CP/M FILE NUMBER FOR COPY
ALL (1/1-256)? [3] [ENTER]

COPY OF #003 ARCDATA .DBF IS COMPLETED
 - 132 RECORDS WERE COPIED
COPY OF #004 HELP    .BAK IS COMPLETED
 - 74 RECORDS WERE COPIED
PRESS ENTER TO USE HDR1 NAME?  [ENTER]


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```

```
**DIRECTORY OF FILES ON 8" CP/M DISKETTE**
FILE  NAME        RECS   FILE NAME        RECS
001-TEST.ASM      0233   002-HELP.TXT     0074
003-ARCDATA.DBF 0132   004-HELP.BAK     0074

ENTER CP/M FILE FOR COPY (1-256/999=ALL) -
PRESS ENTER IF NONE?  [ENTER]

DO YOU WANT TO COPY FROM
ANOTHER CP/M DISKETTE (N/Y)?  [ENTER]
A>
```

USE:

Copy a PC DOS file to any CP/M 8"diskette.

DESCRIPTION:

The CPM5TO8 program is designed to copy
DOS files from any valid DOS volume to a
8" CP/M diskette.

The program will identify the number of
sides, density type, and sector size of
the 8" diskette and display the
information. If the 8" diskette format
cannot be determined, the program will
display a message stating the diskette
cannot be copied.

The program copies a file from a DOS
volume by file name. The eight character
DOS file name will used as the file name
in the CP/M directory entry on the 8"
diskette.

An option is supported by the program to
erase the 8" file directory after a copy
operation has been completed. This option
should be used to delete all old files
from the CP/M diskette before copying to
it.

OPERATION:

Load CPM5TO8. On completion of the
program load, a program description
message will be displayed. The program
will then prompt the user to insert an 8
inch diskette into the drive, and enter
the drive number of the unit selected.

Insert the 8 inch CP/M diskette into the
drive and select the appropriate drive
address by entering a [1] or [2], or
select drive [1] by pressing [ENTER].

The program will display bytes per sector,
density type, and number of sides of the 8
inch diskette. The program will then
prompt the user for the CP/M sector skew
factor.

Enter a skew factor from 1 to 16 or press
[ENTER] to select a skew factor of 6.

The program will prompt the user for the
CP/M directory cylinder.

·Enter a cylinder number from 1 to 9, or
press [ENTER] to select cylinder 1.

The program will prompt the user to enter
the number of CP/M records per block.

Enter 8, 16, 32, or 64 records per block,
or press [ENTER] to select 8 records per
block.

The program will prompt the user to enter
the number of blocks in the CP/M
directory.

Enter a number from 1 to 9, or press
[ENTER] to select 2 blocks in the
directory.

The program will read the CP/M diskette
directory and display a list of the
directory entries as file names preceded
by a file number.

The program will display a message
indicating the file number and starting
extent of any new file copied to the 8"
diskette.

The program will prompt the user to erase
the CP/M directory.

Press [N] or [ENTER] to continue the
program, or [Y] to erase the directory.
If the erase option is selected, all files
on the CP/M diskette will be erased, so
extreme caution should be used when
selecting this option.

The user will then be prompted to enter
the name of the DOS file to be copied.

Enter the DOS volume and file name in
standard DOS syntax, i.e.,

VOL. ID:FILE NAME.EXT

If [ENTER] is pressed without typing a
Vol. ID and file name, the program will
exit the copy routine and prompt the user
to exit the program or copy to another
diskette.

The program will begin the copy operation
and display an information line indicating
write and read verify operations to
Cylinder, Head, and Sector numbers of the
8" diskette. On completion of the copy
operation, the program will display an
information line indicating the copy is
complete and the number of records copied.

The program will prompt the user to copy
to another 8" diskette or exit the
program.

Press [N] or [ENTER] to end the program,
or press [Y] to copy another file or copy
to a new 8" diskette.

DEFAULTS:

Drive Number: [ENTER] = Drive 1.
Skew Factor: [ENTER] = 6
Directory Cylinder: [ENTER] = 2
Records per Block   [ENTER] = 8
Directory Blocks: [ENTER] = 2
DOS File Name: [ENTER] = Exit copy
                       and prompt for new
                       diskette.
Continue Copy: [ENTER] = End program.

SAMPLE RUN:

A>CPM5TO8 [ENTER]

COPY 8" CP/M TO 5" DOS DISKETTE PROGRAM
COPYRIGHT FLAGSTAFF ENGINEERING 6/1/85

INSERT 8" CP/M DISKETTE -
ENTER DRIVE (1/2) WHEN READY.? [ENTER]

DISKETTE IS 128 BYTE SECTOR - SINGLE
DENSITY - SINGLE SIDE

ENTER CP/M SECTOR SKEW
FACTOR (6/1-9)? [ENTER]

ENTER CP/M DIRECTORY CYLINDER
NUMBER (2/1-9)? [ENTER]

ENTER NUMBER OF CP/M RECORDS PER BLOCK
(8/16,32,64)? [ENTER]

ENTER NUMBER OF CP/M BLOCKS IN
DIRECTORY (2/1-9)? [ENTER]

```
**DIRECTORY OF FILES ON 8" CP/M DISKETTE**
FILE  NAME        RECS  FILE NAME        RECS
001-TEST.ASM      0233  002-HELP.TXT     0074
003-ARCDATA.DBF  0132  004-HELP.BAK     0074
XXXX CP/M BLOCKS IS THE
TOTAL DISKETTE CAPACITY

NEW FILE WILL BE #05 STARTING AT
BLOCK XX ON THE 8" DISKETTE

DO YOU WANT TO ERASE THE 8" CP/M FILE
DIRECTORY (N/Y)  [ENTER]

ENTER DOS FILE NAME FOR COPY B:NAME.EXT -
PRESS ENTER IF NONE  [A:TESTFILE.DOC]

FILE COPY IS COMPLETED
XXXX RECORDS WERE COPIED

**DIRECTORY OF FILES ON 8" CP/M DISKETTE**
FILE  NAME        RECS  FILE NAME        RECS
001-TEST.ASM      0233  002-HELP.TXT     0074
003-ARCDATA.DBF  0132  004-HELP.BAK     0074
005-TESTFILE.DOC 0045
XXXX CP/M BLOCKS IS THE
TOTAL DISKETTE CAPACITY

NEW FILE WILL BE #06 STARTING AT
BLOCK XX ON THE 8" DISKETTE

DO YOU WANT TO ERASE THE 8" CP/M FILE
DIRECTORY (N/Y)  [ENTER]

ENTER DOS FILE NAME FOR COPY B:NAME.EXT -
PRESS ENTER IF NONE  [ENTER]

DO YOU WANT TO COPY TO ANOTHER CP/M
DISKETTE (N/Y)?  [ENTER]
C>
```

USE:

Copy a PC CP/M-86 5 1/4 inch diskette file
to a PC-DOS file.

DESCRIPTION:

The CPMTODOS program is designed to copy
CP/M-86 files to DOS files on PC/XT/AT
systems that run both PC-DOS and CP/M-86.
The files are copied as is without any
type of conversion.

OPERATION:

Load CPMTODOS. On completion of the
program load, a program description
message will be displayed. The program
will then prompt the user to insert the 5
1/4 inch CP/M-86 diskette into a drive and
enter the DOS drive letter of the drive
being used.

Insert the CP/M-86 diskette and press [A]
for DOS drive A, or press [B] or [ENTER]
to select DOS drive B.

The program will prompt the user to enter
the DOS destination drive for the files to
be copied to.

Enter a letter from A to G, or press
[ENTER] to select DOS drive A.

The program will read the CP/M diskette
directory and display a list of the
directory entries as file names preceded
by a file number. The program will prompt
the user to enter the number of the file
to be copied.

Enter a number from 1 to 64 to select the
file to be copied. The user may also
select to copy ALL files on the 8 inch
diskette by entering a [99].

If [ENTER] is pressed without entering a
file number, the program will exit the
copy operation and prompt the user to copy
from another CP/M diskette. Another
diskette can be loaded at this point, or
the program can be ended by pressing
[ENTER].

The program will copy the CP/M-86 file to
the DOS volume selected by the user. The
program will then display a message that
the copy is complete, the number of the
file copied, and the number of records
copied. The directory of the files on the
CP/M-86 diskette will be displayed and the
user will be prompted to select another
file to copy.

Enter the file number to be copied, or
press enter to exit the copy operation.

When the copy operation is ended, the
program will prompt the user to copy from
another CP/M diskette.

Press [Y] to copy from another diskette,
or press [N] or enter to end the program.

DEFAULTS:

Drive Number: [ENTER] = Drive B.
Destination Drive
Number: [ENTER] = Drive A.
File Number: [ENTER] = Exit copy
                       routine.
Continue Copy: [ENTER] = End program.

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DESTRUCTIVE/NONDESTRUCTIVE:

CPMTODOS will not destroy data on the
CP/M-86source diskette, however, IF THE
TARGET FILE NAME ALREADY EXISTS ON THE DOS
VOLUME, ALL ORIGINAL DATA IN THE DOS FILE
WILL BE DESTROYED BY THE COPY OPERATION.

SAMPLE RUN:

A> [CPMTODOS] [ENTER]

COPY 5" CP/M TO 5" DOS DISKETTE PROGRAM
COPYRIGHT FLAGSTAFF ENGINEERING 6/21/83

INSERT 5" CP/M DISKETTE -
ENTER DRIVE (B/A) WHEN READY.? [ENTER]

ENTER DESTINATION DOS DRIVE (A/B-G)? [C]
[ENTER]

LISTING OF FILES IN 5" CP/M DIRECTORY

001-TEST.ASM   0233
002-HELP.TXT   0074
003-ARCDATA.DBF 0132
004-HELP.BAK   0074

ENTER CP/M FILE FOR COPY (1-64/99=ALL) -
PRESS ENTER IF NONE? [3] [ENTER]

COPY OF #003 ARCDATA .DBF IS COMPLETED
 - 132 RECORDS WERE COPIED

LISTING OF FILES IN 5" CP/M DIRECTORY

001-TEST.ASM   0233
002-HELP.TXT   0074
003-ARCDATA.DBF 0132
004-HELP.BAK   0074

```
ENTER CP/M FILE FOR COPY (1-64/99=ALL) -
PRESS ENTER IF NONE?  [ENTER]

DO YOU WANT TO COPY FROM
ANOTHER CP/M DISKETTE (N/Y)?  [ENTER]
A>
```

USE:

Copy a PC-DOS file to a PC CP/M-86 5 1/4 inch diskette file.

DESCRIPTION:

The DOSTOCPM program is designed to copy DOS files to CP/M-86 files on PC/XT/AT systems that run both PC-DOS and CP/M-86. The files are copied as is without any type of conversion.

OPERATION:

Load DOSTOCPM. On completion of the program load, a program description message will be displayed. The program will then prompt the user to insert the 5 1/4 inch CP/M-86 diskette into a drive and enter the DOS drive letter of the drive being used.

Insert the CP/M-86 diskette and press [A] for DOS drive A, or press [B] or [ENTER] to select DOS drive B.

.The program will read the CP/M diskette directory and display a list of the directory entries as file names preceded by a file number. The program will display the file number and beginning block number that will be used when a file is copied to the CP/M diskette. The program will then prompt the user to erase the CP/M directory.

Press [Y] to erase all files on the CP/M diskette, or press [N] or [ENTER] to leave the existing CP/M files on the diskette.

The program will prompt the user to enter
the DOS file name to be copied to the CP/M
diskette.

Enter the file name using standard DOS
syntax: Volume ID:File Name.Extension

If [ENTER] is pressed without entering a
file name, the program will exit the copy
operation and prompt the user to copy to
another CP/M diskette. Another diskette
can be loaded at this point, or the
program can be ended by pressing [ENTER].

The program will copy the DOS file
selected by the user to the CP/M diskette.
The program will then display a message
that the copy is complete, and the number
of records copied. The directory of the
files on the CP/M-86 diskette will be
displayed and the user will be prompted to
copy another DOS file to the diskette.

·Enter the DOS file name to be copied, or
press enter to exit the copy operation.

When the copy operation is ended, the
program will prompt the user to copy to
another CP/M diskette.

Press [Y] to copy to another CP/M
diskette, or press [N] or enter to end the
program.

DEFAULTS:

Drive Number: [ENTER] = Drive B.
Erase Directory: [ENTER] = No.
DOS File Name: [ENTER] = Exit copy
                     routine.
Continue Copy: [ENTER] = End program.

DESTRUCTIVE/NONDESTRUCTIVE:

DOSTOCPM will not destroy data on the DOS
source volume, however, IF THE TARGET FILE
NAME ALREADY EXISTS ON THE CP/M-86
DIRECTORY, ALL ORIGINAL DATA IN THE
CP/M-86 FILE WILL BE OVERWRITTEN AND
DESTROYED BY THE COPY OPERATION.

SAMPLE RUN:

A> [DOSTOCPM] [ENTER]

COPY 5" DOS TO 5" CP/M DISKETTE PROGRAM
COPYRIGHT FLAGSTAFF ENGINEERING 6/21/83

INSERT 5" CP/M DISKETTE -
ENTER DRIVE (B/A) WHEN READY.? [ENTER]

LISTING OF FILES IN 5" CP/M DIRECTORY

001-TEST.ASM   0233
002-HELP.TXT   0074
003-ARCDATA.DBF 0132
004-HELP.BAK   0074

NEW FILE WILL BE #05 STARTING AT BLOCK XX
ON THE 5" CP/M DISKETTE

DO YOU WANT TO ERASE THE 5" CP/M FILE
DIRECTORY (N/Y)? [ENTER]

ENTER DOS FILE NAME FOR COPY B:NAME.EXT -
PRESS ENTER IF NONE? [A:ABC.DOC] [ENTER]

FILE COPY IS COMPLETED -
0002 RECORDS WERE COPIED

```
**LISTING OF FILES IN 5" CP/M DIRECTORY**

001-TEST.ASM      0233
002-HELP.TXT      0074
003-ARCDATA.DBF 0132
004-HELP.BAK      0074
005-ABC.DOC       0002


NEW FILE WILL BE #06 STARTING AT BLOCK XX
ON THE 5" CP/M DISKETTE

DO YOU WANT TO ERASE THE 5" CP/M FILE
DIRECTORY (N/Y)?   [ENTER]

ENTER DOS FILE NAME FOR COPY B:NAME.EXT -
PRESS ENTER IF NONE? [ENTER]

DO YOU WANT TO COPY FROM
ANOTHER CP/M DISKETTE (N/Y)?   [ENTER]
A>
```

SECTION III

DEC 8 INCH DISKETTE
TRANSFER UTILITIES

DEC SUPPORT

DEC conversion programs allow the user to
copy files from 8 inch DEC formats to 5
inch DOS formats, and to copy files from 5
inch DOS formats to 8 inch DEC formats.

The programs are designed to work with
RX01-RT11 single sided, single density
diskettes with 128 byte sectors.

The programs do not support double
density, double sided 8 inch diskettes.

USE:

Copy a data file from an 8 inch DEC RX01
single density diskette to a PC-DOS file.

NOTES:

DEC8TO5 will only copy from a single
sided, single density diskette with 128
byte sectors. The files to be copied MUST
use the RT-11 file directory and be
permanent types.

DESCRIPTION:

The DEC8TO5 program is designed to copy
data files from 8 inch DEC RX01 format
diskettes to PC-DOS files. The first
operation that the program performs is a
diskette format check. The program will
identify the number of sides, density
type, and sector size of the 8 inch
diskette.

If the diskette format is other than
single sided, single density, a message
will be displayed that says the diskette
cannot be copied.

The file pointers in the directory entries
are used to locate the data files. A
single file may be copied or the entire
diskette may be copied. Up to 96 files
may be copied from the DEC diskette.

The DEC files will be written to DOS files
as 128 byte records.

DEC8TO5 will copy an 8 inch file to any
DOS volume, including a hard disk.

If the DEC file name is used as the DOS
file name, and file name already exists on
the DOS volume, the DOS file will be
deleted, and then recreated by the copy
operation.

OPERATION:

Load DEC8TO5. On completion of the
program load, a program description
message will be displayed. The program
will prompt the user to insert an 8 inch
diskette into the drive, and enter the
drive number of the unit selected.

Insert the 8 inch DEC diskette into the
drive and select the appropriate drive
address by entering a [1] or [2], or
select drive [1] by pressing [ENTER].

The program will check the format of the 8
inch diskette and display a list of the
directory entries as file names preceded
by a file number. If more than 96 files
exist on the diskette, the program will
display a message that the directory table
is full, and that only 96 files can be
copied.

The program will prompt the user to enter
the number of the file to be copied.

Enter a number from 1 to 96 to select the file to be copied. The user may also select to copy all files on the 8 inch diskette (up to 96) by entering a [99]. If [ENTER] is pressed without entering a file number, the program will exit the copy operation and prompt the user to copy from another DEC diskette. Another diskette can be loaded at this point, or the program can be ended by pressing [ENTER].

When a single file number is selected to copy, the program will prompt the user to enter the DOS file name to copy the DEC file to.

Enter a file name in standard DOS syntax:

   Volume:File name.Extension

or press [ENTER] to use the DEC file name.

The program will copy the 8 inch DEC file selected to the DOS volume. The program will then display a message that the copy is complete, the number of the file copied, and the number of blocks copied.

The directory of the files on the 8 inch diskette will be displayed and the user will be prompted to select another file to copy.

Enter the file number to be copied, or press enter to exit the copy operation.

DEFAULTS:

Drive Number: [ENTER] = Drive 1.
File Number: [ENTER] = Return to
                     Enter Diskette prompt.
DOS File Name: [ENTER] = DEC file
                     name.
Continue Copy: [ENTER] = End program.

DESTRUCTIVE/NONDESTRUCTIVE:

DEC8TO5 will not destroy data on the 8
inch source diskette, however, IF THE
TARGET FILE NAME ALREADY EXISTS ON THE DOS
VOLUME, ALL ORIGINAL DATA IN THE DOS FILE
WILL BE DESTROYED BY THE COPY OPERATION.

SAMPLE RUN:

A> [DEC8TO5] [ENTER]

COPY DEC RX01-RT11 DISKETTE FILE TO IBM
 C-DOS FILE PROGRAM
COPYRIGHT FLAGSTAFF ENGINEERING 10/4/83

INSERT 8" DEC DISKETTE -
ENTER DRIVE (1/2) WHEN READY.? [ENTER]

DISKETTE IS 128 BYTE SECTOR - SINGLE
DENSITY - SINGLE SIDE

        DEC RT-11 FILE DIRECTORY

FILE NAME   BLOCKS
001-TEST1   00033
002-TEST2   00132

ENTER DEC FILE NUMBER (1-96/99=ALL) -
PRESS ENTER IF NONE? [99] [ENTER]

COPY OF FILE #01 TEST1 IS COMPLETED -
 0033 BLOCKS WERE WRITTEN

```
COPY OF FILE #02 TEST2 IS COMPLETED -
00132 BLOCKS WERE WRITTEN

      DEC RT-11 FILE DIRECTORY

FILE   NAME       BLOCKS
001-TEST1           00033
002-TEST2           00132

ENTER DEC FILE NUMBER (1-96/99=ALL) -
PRESS ENTER IF NONE?  [ENTER]

DO YOU WANT TO COPY FROM
ANOTHER DEC DISKETTE (N/Y)?  [ENTER]
A>
```

USE:

Copy a PC-DOS file to DEC 8" RX01 single
density diskette.

NOTES:

DEC5TO8 will only copy to a single sided,
single density diskette with 128 byte
sectors. The files copied will use the
RT-11 file directory and be permanent
types.

DESCRIPTION:

The DEC5TO8 program is designed to copy
PC-DOS files to an 8 inch DEC RX01 format
diskette. The first operation that the
program performs is a diskette format
check. The program will identify the
number of sides, density type, and sector
size of the 8 inch diskette.

If the diskette format is other than
single sided, single density, a message
will be displayed that says the diskette
cannot be copied.

The program copies a file from a DOS
volume by file name. The eight character
DOS file name will used as the file name
in the DEC directory entry on the 8"
diskette.

OPERATION:

Load DEC5TO8. On completion of the
program load, a program description
message will be displayed.

The program will then prompt the user to
insert an 8 inch diskette into the drive,
and enter the drive number of the unit
selected.

Insert the 8 inch DEC diskette into the
drive and select the appropriate drive
address by entering a [1] or [2], or
select drive [1] by pressing [ENTER].

The program will read the DEC diskette
directory and display a list of the
directory entries as file names preceded
by a file number.

The user will then be prompted to enter
the name of the DOS file to be copied.

Enter the DOS volume and file name in
standard DOS syntax, i.e.,

VOL. ID:FILE NAME.EXT

If [ENTER] is pressed without typing a
Vol. ID and file name, the program will
exit the copy routine and prompt the user
to exit the program or copy to another
diskette.

The program will begin the copy operation
and display an information line indicating
write and read verify operations to
Cylinder, Head, and Sector numbers of the
8" diskette. On completion of the copy
operation, the program will display an
information line indicating the copy is
complete and the number of records copied.

The program will prompt the user to copy
to another 8" diskette or exit the
program.

Press [N] or [ENTER] to end the program,
or press [Y] to copy another file or copy
to a new 8" diskette.

DEFAULTS:

Drive Number: [ENTER] = Drive 1.
DOS File Name: [ENTER] = Exit copy
                     and prompt for new
                     diskette.
Continue Copy: [ENTER] = End program.

SAMPLE RUN:

A>DEC5TO8   [ENTER]

COPY IBM PC-DOS FILE TO DEC RX01-RT11
DISKETTE FILE PROGRAM
COPYRIGHT FLAGSTAFF ENGINEERING 10/4/83

INSERT 8" DEC DISKETTE -
ENTER DRIVE (1/2) WHEN READY.?   [ENTER]

        DEC RT-11 FILE DIRECTORY

FILE NAME   BLOCKS
001-TEST1   00033
002-TEST2   00132

ENTER NAME OF FILE TO
BE COPIED: [TEST.DATA] [ENTER]

COPY OF TEST.DATA IS COMPLETED -
00020 BLOCKS WERE WRITTEN

        DEC RT-11 FILE DIRECTORY

FILE NAME   BLOCKS
001-TEST1   00033
002-TEST2   00132
003-TEST.DATA   00020

```
ENTER NAME OF FILE TO BE COPIED:  [ENTER]

DO YOU WANT TO COPY TO ANOTHER
DEC DISKETTE (N/Y)?  [ENTER]
A>
```

SECTION IV

DOS FILE FORMATTING AND EDITING UTILITIES

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USE:

Copy a single large DOS file into a set of
smaller multiple files on disk or diskette.

DESCRIPTION:

DCOPY is a utility program designed to copy a
segment of an existing DOS file to a separate
file, or to copy a large DOS file into several
smaller files.

The program allows a large DOS file to be
copied to multiple 5 1/4 inch diskettes when
the original file size exceeds the capacity of
a single 5 1/4 inch diskette. Large files may
also be split up to allow transfer of file
segments to 8 inch diskettes.

Files may be copied to and from any valid DOS
volume and file name. The record length may be
set by the operator to any logical record
length required. Any number of records may be
copied to the target file.

OPERATION:

Load DCOPY. On completion of the program load,
a program description message will be
displayed. The program will then prompt the
user to enter a source DOS volume and file name
to copy from.

Enter the file name using standard DOS syntax:

VOLUME ID:FILE NAME.EXT

The program will then prompt the user for
logical record size. The logical record can be
any number that does not exceed the total

number of characters in the file. Enter the
record size or select variable sized records by
pressing the [ENTER] key.

The program will then prompt the user to enter
a target DOS volume and file name to copy to.

Enter the file name using standard DOS syntax:

VOLUME ID:FILE NAME.EXT

The program will prompt the user for the number
of records to be transferred.

Press the [ENTER] key to copy all records in
the file, or enter the number of records
required to reside in the target file.

The program will copy the indicated number of
records into the target file, and then display
the number of records transferred.

The user will be prompted to mount a new
volume.

If copying to a 5 1/4 inch diskette, place the
next diskette in the drive and press the
[ENTER] key. If copying to files on hard disk,
press the [ENTER] key to continue.

The program will then prompt the user to enter
a target DOS volume and file name to copy to.

Enter the file name using standard DOS syntax
or select the previously entered output file
name by pressing the [ENTER] key.

The program will prompt the user for the number
of records to be transferred.

Press the [ENTER] key to copy all records in
the file, or enter the number of records
required to reside in the target file.

The program will copy the indicated number of
records into the target file, and then display
the number of records transferred. If the
complete input file has been transferred, a
message will be displayed indicating the total
number of records copied from the input file to
the multiple output files.

The user will be prompted to mount a new volume
if the copy operation is not complete.

When the copy operation is complete, the user
will be prompted to enter a new input file
name.

Enter a DOS volume and file name, or press the
[ENTER] key to end the program.

SAMPLE RUN:

C> [DCOPY] [ENTER]

THIS PROGRAM WILL COPY A SINGLE INPUT DOS FILE
INTO MULTIPLE OUTPUT FILES.

ENTER INPUT FILE NAME: [C:TEST]

ENTER RECORD LENGTH (CR=VARIABLE): [ENTER]

ENTER OUTPUT FILE NAME (CR=SAME AS
PREVIOUS OUTPUT): [A:TEST1.DOC]

ENTER RECORDS TO TRANSFER (CR=ALL): [100]

00100 RECORDS COPIED TO OUTPUT FILE.
OUTPUT FILE COMPLETE. MOUNT NEW VOLUME,
PRESS ANY KEY...   [ENTER]

```
ENTER OUTPUT FILE NAME (CR=SAME AS
PREVIOUS OUTPUT): [A:TEST2.DOC]

ENTER RECORDS TO TRANSFER (CR=ALL): [ENTER]

00200 RECORDS COPIED TO OUTPUT FILE.
COPY COMPLETE 00300 TOTAL RECORDS COPIED.

ENTER INPUT FILE NAME: [ENTER]
C>
```

USE:

Display and edit an IBM PC-DOS file.

DESCRIPTION:

DFILE is a utility program designed for
displaying and editing an existing PC-DOS file.
A file may be displayed using any logical
record desired by the user. Records are
displayed as hexadecimal values with both
EBCDIC and ASCII translations displayed for
each value. Records may be edited (patched)
using Hex, ASCII, or EBCDIC characters.

When the program is loaded, a '>' prompt will
appear on the screen. The following command
entries are supported:

CR (Enter key)   Display next record.

nnnn   Display record number nnnn.

SA xxxxxx   Search for ASCII string
                      xxxxxx.

SE xxxxxx   Search for EBCDIC string
                      xxxxxx.

SX xx xx xx   Search for hexadecimal
                      string xx xx xx.

PA xxxx yyyyy   Patch record number plus
                      displacement with ASCII,
                      EBCDIC, or Hex values.
                      XX XX XX = Hex digits.
                      'xxxxx'= ASCII characters.
                      "xxxxx"= EBCDIC characters.

C   Cancel display.

OPERATION:

Load DFILE. On completion of the program load,
a program description message will be
displayed. The program will then prompt the
user to enter a DOS volume and file name to
display.

Enter the file name using standard DOS syntax:

VOLUME ID:FILE NAME.EXT

The program will then prompt the user for
logical record size. The logical record can be
any number that does not exceed the total
number of characters in the file. Enter the
record size or select the default size of 16
bytes by pressing the [ENTER] key.

The program will display the command prompt ">"
and wait for input. Press the [ENTER] key to
begin displaying the file at record number
0000, or enter any of the command prompts
described in the program description section.

If a record number is entered, 128 bytes of
data will be displayed as lines of 16 bytes
each. The data is displayed by record number
and offset from byte zero of the record. The
data is displayed as hexadecimal values, with
an ASCII translation to the left of the
display. Directly under the ASCII translation
is an EBCDIC translation of the same data.

Selected records may be displayed and patched,
or a "C" may be entered to cancel the display
and then display another file.

.

```
SAMPLE RUN:

C> [DFILE] [ENTER]

DUMP A DOS FILE AND TRANSLATE TO ASCII AND
EBCDIC.

FILE NAME TO DUMP: [RFTOASC.TBL] [ENTER]
LOGICAL RECORD SIZE: [ENTER]
FILE SIZE IS 00002 RECORDS PLUS 00000 BYTES
LONG.
> [ENTER]
0000 0000 40 40 40 .........40 40 !00......0!
                                  !           !
     0016 40 40 40 .........40 40 !00......0!
                                  !           !
     0032  .   .   . .........  .   . !...........!
      .     .   .   . .........  .   ...........
      .     .   .   . .........  .   ...........
     0112 30 90 40 .........3D 22 !0.0......="!
                                  !..       ..!
> [0001] [ENTER]
0001 0000 30 61 62 .........40 F1 !0ab.....0q!
                                  !./...... 1 !
     0016 F2 6A 6B..........92 24 !rjk........!
                                  !2.,......k.!
     0032  .   .   . .........  .   . !...........!
      .     .   .   . .........  .   ...........
      .     .   .   . .........  .   ...........
     0112 30 31 32 .........40 40 !012......0!
                                  !.........  !
> [PA 0001 02] [ENTER]

0002 62 b/.: ['this'] [ENTER]
0006 66 f/.: [ENTER]
RECORD UPDATED
```

```
> [0000] [ENTER]
0000 0000 40 40 74 68 69 73.40 40  !@this...@!
                                   !.........!
     0016 40 40 40 .........40 40  !@@......@!
                                   !         !
     0032  .   .   . .......... .   . !..........!
           .   .   . .......... .   . ..........
           .   .   . .......... .   .. ..........
     0112 30 90 40 .........3D 22  !0.@......="!
                                   !..       ..!
> [C] [ENTER]
FILE NAME TO DUMP: [ENTER]
C>
```

DOS RECORD REFORMATTING UTILITY

DFORM is a utility program designed to reformat
and copy records from one DOS file to another.
Fields may be moved from one a position in the
original record to a new position in the target
record. Fields may be translated from EBCDIC
to ASCII, or from ASCII to EBCDIC. The
following types of numeric fields may be
defined as input or output:

1. Zoned decimal.
2. Numeric character with leading
   sign character.
3. Numeric character with trailing
   sign character.
4. Numeric character with trailing
   'CR' for negative fields.
5. Numeric character with trailing
   'DB' for negative fields.
6. Packed decimal with the sign in
   the low order nibble of the field.
7. Binary with most significant byte
   first.
8. Binary with least significant byte
   first.

The ASCII to EBCDIC and the EBCDIC to ASCII
translation may be done using the standard
tables provided in the program or customized
tables may be loaded from disk files when the
program is run.

When DFORM is loaded and run, field
translations are specified by various
parameters. The translation parameters may be
entered as responses to the program prompts, or
may be entered into a parameter input file
(ASCII text file).

· When translation parameters are contained in an
ASCII file, the file can be submitted to the
program using DOS redirection of input at
program load time.

Redirection of input from a parameter file
would be as follows:

C>DFORM <CONTROL.FIL

where C> is the DOS system prompt, DFORM is the
name of the program being loaded, and
CONTROL.FIL is the translation parameter file.

The above example would cause the statements
contained in CONTROL.FIL to be used as the
input statements to DFORM. This method is
recommended if extensive reformatting is to be
done or if the same reformatting job has to be
done on a regular basis. See the IBM DOS
manual for details on redirection of standard
input.

Parameter files may be built using the DOS copy
function and specifying CON: as input and a
disk file as output or by using any simple text
editor such as WordStar in non-document mode,
etc.

A sample control file might appear as follows:

HF080F096 C:OLDFILE.DAT A:NEWFILE.DAT
SEE020 /AZ/
ME001070001
F P071005 L071010
I 081 /PAST DUE/

This parameter file would use a file named
OLDFILE.DAT on DOS volume C containing 80 byte
fixed length records as input. DFORM would
create a output file called NEWFILE.DAT on DOS
volume A with fixed records of 96 bytes.

The output file would contain only records from
the input file with the EBCDIC string 'AZ' at
position 20. Data from position 1 through 70
would be translated from EBCDIC to ASCII in the
output records. A packed decimal value
represented in 5 bytes starting at position 71
of the input record would be translated into 10
ASCII alphanumeric characters starting at
position 71 in the output records. Finally,
the ASCII string 'PAST DUE' would be written in
the output records starting at position 81.

PARAMETER CONTROL STATEMENT DEFINITIONS

Translation parameters are submitted to the
DFORM program as control statements in the
following format: Cxxxx

Where C is an uppercase command parameter
(Table, Field, Move, Insert, etc.) and xxxx is
a lower case field parameter.

The control statements are used to define the
input and output files and the field
reformatting which is to take place.

In the statement formats below, command
parameters are indicated by uppercase letters.
Lower case letters represent fields in the
statement to be replaced by operator
specifications as described below each
statement.

1. Ta d:name.ext

(Translation table for ASCII to EBCDIC and
EBCDIC to ASCII conversions). This statement
defines optional ASCII to EBCDIC translation
and EBCDIC to ASCII translation tables.

The first 256 bytes found in 'd:name.ext' will
be used as a 256 byte translation table. This
statement is optional. If it is not submitted,
the standard translation tables contained in
the program is used. The fields in the
statement are defined as follows:

a -   This specifies the type of
      translation table being accessed. Values
      may be as follows:

      'A' - ASCII TO EBCDIC translation table.

      'E' - EBCDIC to ASCII translation table.

d -   Input data file. This is the name of
      the optional translation table to use.

Example:

TE C:RFTOASC.TBL

The control statement example indicates that
all EBCDIC to ASCII conversions done by the
DFORM program will use a translation table
called RFTOASC.TBL on DOS volume C.

2.   Habbbcddd d:namein.ext d:nameout.ext

(File definition header) This statement
defines the input and output files and
specifies the type and length of records in
each. This statement is required and must
precede all other control statements except the
TA and/or TE statements. The fields in this
statement are defined as follows:

a - Input record format. It must be 'F'
    for fixed length or 'V' for variable
    length records. Variable specifies that
    the input records are delimited by CR-LF.

bbb - The input record length. This is
    the maximum length if the input format is
    defined as variable.

c - Output record format. It must be 'F'
    for fixed length or 'V' for variable
    length records. If variable is specified,
    the output records will still all be the
    same length however a CR-LF will be added
    to the end of each record. This is in
    ADDITION to the specified output record
    length.

ddd - Output record length. See comments
    on variable length records above.

d:namein.ext - This is the name of the
    input data file.

d:nameout.ext - This is the name of the
    output data file.

Example:

HV096F128 C:OLDFILE.DAT A:NEWFILE.DAT

The control statement example indicates a file
definition header where the input file is named
OLDFILE.DAT and exists on DOS volume C. The
input file records are variable length with a
maximum length of 96 bytes. The output file
will be generated as NEWFILE.DAT on DOS volume
A and contain fixed length records 128 bytes in
length.

The following statements are all optional and
may be submitted in any order. Note that for
each record converted, they are executed in the
order in which they are submitted. For
example, the first statement could be a
character or hex fill statement to format the
entire output record, then following statements
could overlay specific fields with data
converted or moved from the input record.
Locations specified within input and output
records are relative to one.

3. Cabbbcccd

(Character fill an output field) This
statement us used to character fill positions
in the output record. The fields in this
statement are defined as follows:

a -   Type of translation. Values may be
      as follows:

      Blank - No translation. Out put will be
      ASCII characters.

      'A'   - Translate the fill character to
      EBCDIC.

bbb - Beginning position in the output record
to start filling.

ccc - Number of positions to fill.

d - The fill character to use.

Example:

CA081010#

The control statement example indicates that
the output RECORDS will contain the EBCDIC
character '#' at position 81 through 90.

4.   X bbbcccdd

(Hex value fill an output field) This
statement is similar to (4) above except that
the fill byte is specified in hexadecimal and
translation is not allowed. The fields in this
statement are defined as follows:

bbb - Beginning position in the output record
      to start filling.

ccc - Number of positions to fill.

dd - The hex value to fill with.

Example:

X 08101040

The control statement example indicates that
each record in the output file will contain the
hex value 40 at position 81 through 90 (10
bytes).

5.   Mabbbcccddd

(Move a field from input to output) This
statement will move a field from the input
record to the output record and optionally
translate it. The fields in this statement are
defined as follows:

a -   Type of translation. Values may be
      as follows:

      Blank - No translation will be done.

      'A' - ASCII to EBCDIC translation.

      'E' - EBCDIC to ASCII translation.

bbb - The beginning position in the input
     record to move the data from.

ccc - The number of bytes to be moved.

ddd - The beginning position in the output
     record to move the data to.

Example:

ME040010080

The control statement example indicates that 10
bytes beginning at position 40 in the input
record will be moved to the output record
starting at position 80 and converted from
EBCDIC to ASCII.

6.   Iabbb c---------------c
(Insert a literal string in the output) This
statement may be used to insert a literal
character string into the output record. Fields
in this statement are defined as follows:

a - Type of translation. Values are:

     Blank - No translation. The output string
     will be ASCII.

     'A'   - The output string will be
     translated to EBCDIC.

bbb - The beginning position to insert the
     string in the output record.

c - The delimiter character. The character in
this position (7th) in the statement is taken
as the delimiter and the same character must be
used to terminate the character string. The
string may be up to sixty (60) characters long.

Example:

 A030 \ADDRESS\

The control statement example indicates that
the ASCII character string ADDRESS will be
inserted into the output record starting at
position 30.

7.   Sabccc d-------------d (or) ee ee ee

(Select input records) This statement may be
used to select only specified records from the
input file. All records not selected will not
be transferred. The fields in this statement
are defined as follows:

a - Must be Select on string equal (E),
     or string not equal (N).

ᔓ - Type of string specified.

     Blank - ASCII string will be compared to
     the input record.

     E - EBCDIC string will be compared to the
     input record.

     X - Bytes to be compared are specified in
     hex.

c - The beginning position in the input
     record that is to be compared.

d - The delimiter character for an ASCII
     or EBCDIC string. The character in this
     position (8th) in the statement is taken
     as the delimiter and the same character
     must be used to terminate the character
     string. The string may be up to sixty
     (60) characters long.

e - If type of string is specified as hex
     (b=x), then the string to be compared
     is specified as a series of up to 24
     bytes starting in position 8. Each
     byte is specified as two hex digits
     with one space between each of the
     bytes specified.

Example:

SE 020 /AZ/

The control statement example indicates that
all records from the input file that contain
the ASCII string AZ (equal) starting in
position 20, will be transferred to the output
file. No other records will be transferred.

8. Dabccc d-------------d (or) ee ee ee

(Delete input records) This statement may be
used to delete specified records from the input
file. All records deleted will not be
transferred. The fields in this statement are
defined as follows:

a - Must be Delete on string equal (E),
     or string not equal (N).

b - Type of string specified.

     Blank - ASCII string will be compared to
     the input record.

     E - EBCDIC string will be compared to the
     input record.

     X - Bytes to be compared are specified in
     hex.

c - The beginning position in the input
    record that is to be compared.

d - The delimiter character for an ASCII
    or EBCDIC string. The character in this
    position (8th) in the statement is taken
    as the delimiter and the same character
    must be used to terminate the character
    string. The string may be up to sixty
    (60) characters long.

e - If type of string is specified as hex
    (b=x), then the string to be compared is
    specified as a series of up to 24 bytes
    starting in position 8. Each byte is
    specified as two hex digits with one space
    between each of the bytes specified.

Example:

DE 020 /CA/

The control statement example indicates that
all records from the input file that contain
the ASCII string CA (equal) starting in
position 20 will NOT be transferred to the
output file. All other records will be
transferred.

(Notes on Select/Delete Statements)

If select and delete statements are specified,
each input record is tested by the statements
in the order in which the statements are
entered. Once a record has been deleted (or
not selected) by a statement it is immediately
dropped and is not checked further. The Select
'equal' and Delete 'not equal' perform the same
functions, as do the Select 'not equal' and
Delete 'equal'. Both statements are supported
because in certain circumstances one or the
other form may be more easily understood.

9.   Uabbbcccdeee

(Expand input field to hex ASCII) This
statement will expand each byte of the input
field into two ASCII characters from 0 to F
representing   the hex   value of the byte.
Hence the output field length is always exactly
twice the length of the input field.

a - Type of translation to be performed
     on the input field before it is converted
     to hex representation.

     Blank - No translation

     E - EBCDIC to ASCII translation is
     performed.

     A - ASCII to EBCDIC translation is
     performed.

bbb - The beginning location of the field
      in the input record.

ccc - The length of the input field. The
      output will be twice this long.

d - The type of translation to be
     performed on the output characters after
     conversion.

     Blank - No translation.   Output is ASCII
     characters.

     A - ASCII to EBCDIC translation is
     performed. Output is EBCDIC characters.

eee - Beginning location of the field in
      the output record. Output length it
      automatically twice the input length.

EXAMPLE:

UE030005 045

The control statement example indicates that a
5 byte field beginning at position 20 in the
input record will be translated from EBCDIC to
ASCII. The five ASCII characters will be
unpacked into hexadecimal values represented by
two ASCII characters and written to the output
record starting at position 45.

10. Fabcccdddefggghhh

(Convert a numeric field from input to output)
This is a numeric field translation statement.
It is used to convert one type of numeric field
in the input record into a different type of
numeric field in the output record. The fields
in this statement are defined as follows:

> a - Type of translation to be performed on
> the input field BEFORE it is converted.
> This will not normally be needed. See
> information below on the input expected by
> the program for the type of input field
> you are specifying. Values may be as
> follows:
>
> Blank - No translation.
>
> 'A' - The input field will be translated
> from ASCII to EBCDIC before numeric
> evaluation.
>
> 'E' - The input field will be translated
> from EBCDIC to ASCII before numeric
> evaluation.

b - Type of numeric input field. See
     description of field types below.

ccc - Beginning position in the input
      record for the input field.

ddd - Length of the input numeric field.

e - Type of translation to be performed
      on the output field AFTER conversion.
      This will not normally be needed. See
      information below on the output generated
      by the program for the type of output
      field you are specifying. Values may be
      as follows:

      Blank - No translation.

      'A' - The output will be translated from
      ASCII to EBCDIC after conversion.

      'E' - The output will be translated from
      EBCDIC to ASCII after conversion.

f - Type of numeric output field. See
      description of field types below.

ggg - Beginning position to place the
      converted field in the output record.

hhh - Length of the output field.

Example:

F P005010 L080020

The control statement example indicates that a
packed decimal field of 10 bytes starting at
position 05 in the input record will be
transferred to the output record as 20 ASCII
alphanumeric characters starting at position
80.

NUMERIC FIELD SPECIFICATIONS

The following types of numeric fields are supported. The letter code to the left is the field type to use in the 'F' statement above to specify the type of input and output numeric fields for a conversion. When specified as input these formats are expected by the program and when specified as output these formats will be generated by the program.

Z - Zoned decimal. EBCDIC characters with a possible zone over the low order digit to specify the sign. A hex 'D' zone specifies a negative number. The normal positive zone is hex 'C' or hex 'F'. The maximum length is fifteen (15) digits.

L - ASCII numeric characters with a possible leading + or - sign. The sign character may be preceded by blanks in the input field and the lack of a (-) sign is taken to mean a positive number. On output the first position of the field will be either blank or (-) and the digit positions will be left zero filled. Maximum total length is sixteen (16) bytes.

T - ASCII numeric characters with a possible trailing + or - sign. The lack of a (-) sign is taken to mean a positive number. On output the last position of the field will either be blank or (-) and the digit positions will be left zero filled. The maximum total length is sixteen (16) bytes.

C - ASCII numeric characters with a possible trailing 'CR' in the last two positions for negative numbers. The lack of a trailing 'CR' is taken to mean a positive number. On output, the last two positions will be either blank or 'CR'. The maximum total length is seventeen (17) bytes.

G - ASCII numeric characters with a possible
trailing 'DB' in the last two positions for
negative numbers. The lack of a trailing 'DB'
is taken to mean a positive number. On output
the last two positions will be either blank or
'DB'. The maximum total length is seventeen
(17) bytes.

P - Packed decimal. One decimal digit per
nibble with a sign in the lowest order nibble.
The negative sign is a hex 'D' and the positive
sign is normally a hex 'C' or 'F'. The maximum
length is 8 bytes which is fifteen (15) decimal
digits.

B - Binary with the most significant byte
first and least significant byte last. The
maximum length is eight (8) bytes.

R - Binary with the least significant byte
first and the most significant byte last. This
is the most common format for binary fields in
microcomputers. The maximum length is eight
(8) bytes.

ERROR STATEMENTS

If an error is detected on an input control
statement, then the following message is
displayed and the program is aborted:

   nn ERROR ON CONTROL STATEMENT. SEE
   DOCUMENTATION. PROGRAM ABORTED.

The message error numbers (nn) are defined as
follows.

01 - The second position of a translation table
(T) statement is not 'A' or 'E'.

02 - The first statement, or the first
statement after the 'T' statement(s), is not a
file definition ('H') statement.

03 - On an 'I' statement no trailing delimiter
was found within 60 characters.

04 - The first character of the statement is
not a valid statement type.

05 - On an 'H' statement the input file type is
not 'F'or 'V'.

06 - On an 'H' statement the output file type
is not 'F' or 'V'.

07 - On an 'H' statement the input file record
length is invalid.

08 - On an 'H' statement the output file record
length is invalid.

09 - On an 'F' statement the input field
translation is not blank, 'A', or 'E'.

10 - On an 'F' statement the input field type
was not recognized.

11 - On an 'F' statement the input field length
was too long.

12 - On an 'F' statement the input field length
was zero.

13 - On an 'F' statement the input field
extends beyond the end of the record.

14 - On an 'F' statement the output field
translation is not blank, 'A', or 'E'.

15 - On an 'F' statement the output field type
was not recognized.

16 - On on 'F' statement the output field
length was too long.

17 - On an 'F' statement the output field
length was zero.

18 - On an 'F' statement the output field
extends beyond the end of the record.

19 - On an 'C' statement the translation is not
blank or 'A'.

20 - On an 'C' statement the fill extends
beyond the end of the record.

21 - On an 'I' statement the translation is not
blank or 'A'.

22 - On an 'I' statement the specified
character string extends beyond the end of the
record.

23 - On an 'M' statement the translation type
is not blank, 'A', or 'E'.

24 - On an 'M' statement the input field
extends beyond the end of the record.

25 - On an 'M' statement the output field
extends beyond the end of the record.

26 - On an 'X' statement the translate field is
not blank.

27 - On an 'X' statement the fill extends
beyond the end of the record.

28 - On an S/D statement the compare type is
not E or N.

29 - On an S/D statement the string does not (completely) fall within the specified input record.

30 - On an S/D statement the string length is invalid (0).

31 - On an S/D statement the string type is not E, X, or blank.

32 - On an S/D statement the hex string contains invalid hex characters.

33 - On a U statement the input translation is not blank A or E.

34 - On a U statement the input field location/length is incorrect.

35 - On a U statement the output translation is not blank or A.

36 - On a U statement the output field location is incorrect.