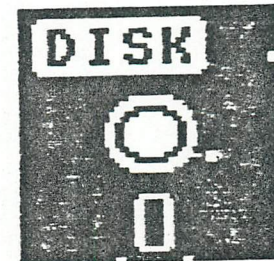
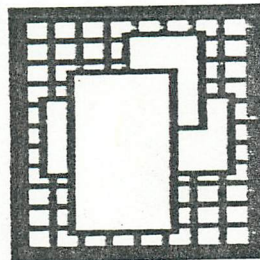
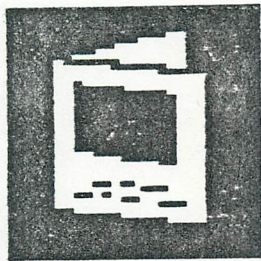
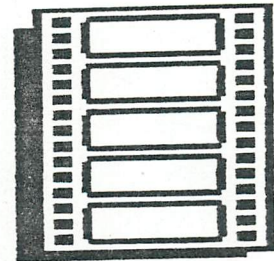
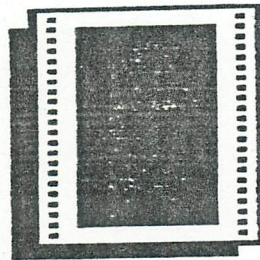
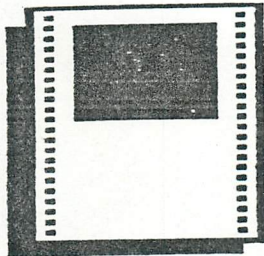
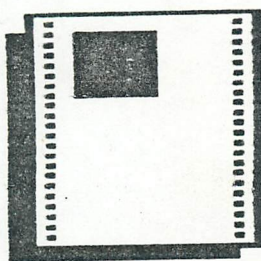


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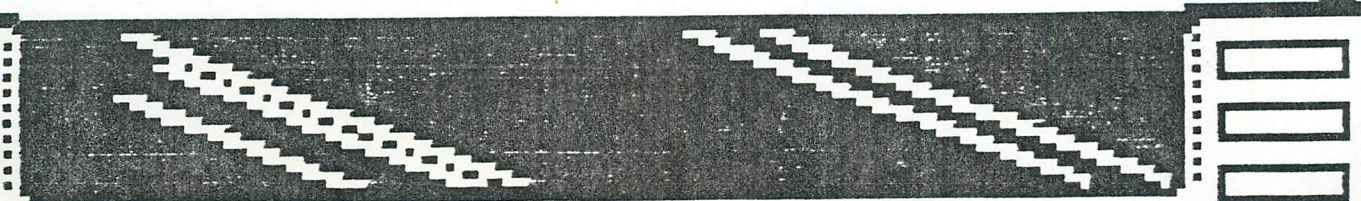


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CREDITS

Programming for HARDCOPY was provided by Scott Smith & Eric White. Graphics and Artwork for HARDCOPY were provided by Eric White.

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MINIMUM REQUIREMENTS

- * 64K COLOR COMPUTER or COLOR COMPUTER II
- * 1 DISK DRIVE with DISK CONTROLLER
- * Proper PRINTER for this version of HARDCOPY

===== STOP =====

Before proceeding any further BACKUP the supplied DISK with the BACKUP command. After performing the BACKUP put the supplied DISK away for archival.

Don't forget to see the section "SETTING THE BAUD RATE" prior to using HARDCOPY

The four DISKS that HARDCOPY uses are:

- (1) HARDCOPY program disk
- (2) GRAPHICOM PART II user fonts disk
- (3) GRAPHICOM format picture disk
- (4) Any disk that contains a HI-RES picture in binary format . Also known as a standard format picture disk (including those PICTURES saved from COCO MAX* using the SCREEN.BIN file).

* COCO MAX is a product of COLORWARE

JOYSTICKS or KEYBOARD

HARDCOPY uses either the KEYBOARD or JOYSTICK input as the main input device. You can switch between the keyboard and joystick input freely and as often as you like. Once selected the input device, keyboard or joystick, will remain selected until you change it except for TYPESETTING in the CARD SHOP which uses only keyboard input. If you have the joystick selected as the input device and go to the "TYPESETTER - CARD SHOP" the joystick will be automatically selected again when you exit the "TYPESETTER - CARD SHOP". When you first run HARDCOPY the right joystick is selected as the default device. If using joystick input, the joystick may be either in the left or right joystick connector as HARDCOPY will sense which joystick has been selected.

It should be noted before proceeding, that if you desire to use joystick input with HARDCOPY, the joystick can be either the self-centering or non self-centering. The type of joystick can be changed by setting a value in the BOOT program. The default joystick type is non self-centering.

To select the joystick as the new input device when the keyboard is currently selected, press the "FIRE BUTTON" on the joystick when at the MAIN MENU or any SUB-MENU. To select the keyboard as the new input device when the joystick is currently selected, press the "SPACE BAR" from the MAIN MENU or any SUB-MENU. Only switch input devices from the MAIN MENU or a SUB-MENU. DO NOT try to select a new input device while a picture is being displayed or is being worked on by the HARDCOPY programs.

If using the joystick as the input device, pushing the joystick up or away from you will cause the HARDCOPY cursor or select block to move in an upward direction. Pressing the joystick down or towards you will cause the cursor or select block to move down. Movement of the joystick left or right will cause the cursor or select block to move in the corresponding direction. The joystick "FIRE BUTTON" is used to actually perform the selected function.

For keyboard input the up, down, left, and right keys perform the same functions as the corresponding joystick movement. The "SPACE BAR" is used in place of the "FIRE BUTTON" for keyboard input.

For the remainder of the documentation we will assume the joystick as the input device selected.

When switching input devices a tone will be produced indicating that the device switch has taken place. This is a unique tone and is different from the "ABORT TONE" discussed later in the documentation.

ABORT

Almost any option can be aborted once selected by pressing and holding the "FIRE BUTTON" until you hear 3 tones.

ABORT WHILE PRINTING

To abort while printing press the <BREAK> key. After printing the current line, HARDCOPY will return control back to the SUB-MENU that selected the print option.

FORM FEED & LINE FEED

To send a FORM FEED to the printer from any print SUB-MENU press the <F> key. To send a LINE FEED to the printer from any print SUB-MENU press the <L> key.

CURSORS, SELECT BLOCKS, and WINDOWS

The HARDCOPY cursor is seen on SUB-MENUS and is represented by a small black and white hand with a pointing finger. Use the joystick to position the cursor to the desired sub-function and press the "FIRE BUTTON" to select that sub-function. When TYPESETTING in the CARD SHOP the cursor is defined as a blinking box, the size of which is determined by the height and width of the characters.

Select blocks are used throughout HARDCOPY for a variety of functions. Their main use is to define a portion of a picture to be worked on by some function. They are also used on the MAIN select screen for MAIN function select and on the DISK directory screen when working with a GRAPHICOM format disk.

Windows can best be described as variable select blocks the size of which are set by you within each function.

TO STOP PRINTING

Pressing any key on the keyboard while printing will HALT printing until another key is pressed.

COMMON OPTIONS

The following options are seen on the various SUB-MENUS and are described here.

RETURN TO MENU

This option will return control to the previous MENU.

LOOK AT SCREEN - VIEW PICTURE

These two options will display the current picture in the HARDCOPY work area.

PMODE - CHANGE DISPLAY MODE

Use the joystick with the "FIRE BUTTON" to toggle through the four possible PMODEs that HARDCOPY is capable of working in.

MODE COLOR B&W

Selects whether HARDCOPY will process the HI-RES pixels as individual black & white pixels or colored pixel pairs (red, blue, white, or black). Use the "FIRE BUTTON" to toggle between the two modes. In the COLOR MODE HARDCOPY processes the pixels as pairs and produces a shaded area on the printer 4 DOTS wide by 2 DOTS high for every 2 DOTS that would have been printed in the B&W mode. HARDCOPY will not produce a COLOR (shaded) printout with a 1X1 pixel resolution as it takes several pixels to produce the proper shading to give the COLOR affect.

POSITIVE PRINT

Same as 'POSITIVE' in the photographic sense, black prints as black, white as white, etc.

NEGATIVE PRINT

Opposite of 'POSITIVE PRINT', white prints as black, black as white, etc.

CHANGING DISKS

From time to time depending on the functions selected and the number of disk drives in use, HARDCOPY will display a message to change or insert various disks. Follow the directions and press the "FIRE BUTTON". In the following messages the program will replace the x with a valid drive number. Some of the various messages are:

Please insert STANDARD-FORMAT
picture disk into drive x

Please insert GRAPHICOM
picture disk into drive x

Please insert HARDCOPY
program disk into drive x

ERROR MESSAGES

If HARDCOPY senses an ERROR condition on the disk it will produce a series of tones and display an information message associated with the error. Take the appropriate corrective action and proceed.

PICTURE FORMATS

All pictures that HARDCOPY works with are HI-RES (PMODE 4) pictures. Each picture occupies a total of 6144 bytes on disk or in memory. The pictures to be loaded with HARDCOPY may be either in a binary file on disk or on a GRAPHICOM format disk.

A GRAPHICOM format disk is specially formatted for use with the original GRAPHICOM (from CHESHIRE CAT), GRAPHICOM PART II, or now HARDCOPY. HARDCOPY should have no problem loading any picture disk created with the original GRAPHICOM.

It should be noted that HARDCOPY checks to insure that a picture to be loaded is really a picture and not just a binary file. Some other graphics editor/processor programs write binary picture files to disk that are not always correct and for this reason HARDCOPY will NOT load an incorrectly formatted picture.

HARDCOPY is capable of LOADING and PROCESSING previously saved PICTURES from COCO MAX. At this time only the 6144 byte images from COCO MAX (SCREEN.BIN) can be processed by HARDCOPY.

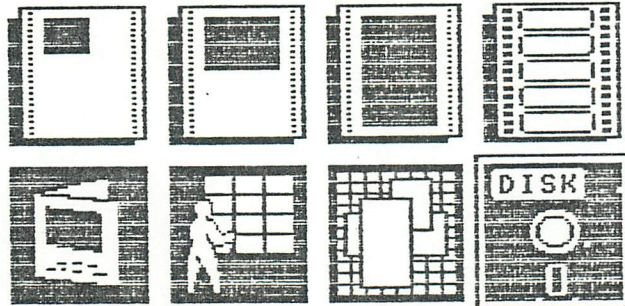
USING HARDCOPY

To run HARDCOPY place the HARDCOPY program disk in drive 0 and type RUN"BOOT"<ENTER>. After a short time the HARDCOPY start-up picture will appear. At this time press the reset button on the computer until the upper left hand corner of the picture is red then press any key on the keyboard. The MAIN function menu will appear next. At this time you can select the joystick as the input device if using the joystick.

DO NOT remove the HARDCOPY program disk from the drive at any time unless instructed to do so by the program. Most main functions have at least one additional module to load from the program disk as the main functions are selected. For multiple drive users the HARDCOPY program disk and the picture disk may be designated to be on separate drives with the use of the "DISK ACCESS" sub-menu.

HARDCOPY

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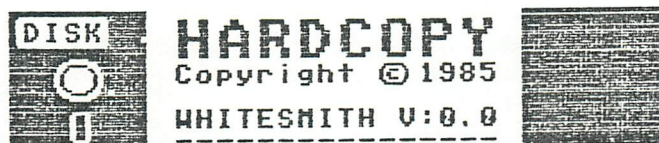
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From the MAIN SELECT MENU select the function desired. The eight MAIN FUNCTIONS available are:

- 1 X 1 PRINT (1/4 PAGE)
- 2 X 2 PRINT (1/2 PAGE)
- FULL PRINT
- LABEL PRINT
- CARD SHOP
- POSTER
- SPECIAL EFFECTS
- DISK ACCESS

DISK ACCESS

Select the DISK ACCESS function from the main menu by moving the select block to the lower right hand corner and press the "FIRE BUTTON". After the selection is made the following SUB-MENU will appear:



```
RETURN TO MAIN HARDCOPY MENU
DISK ACCESS (LOAD/VIEW)
DISPLAY PRINTOUT SCREEN
FORMAT: STANDARD GRAPHICOM
HARDCOPY DRIVE NO. 0 1 2 3
PICTURE DRIVE NO. 0 1 2 3
CHANGE DISPLAY MODE  
A WALK AROUND THE COCO GALLERY
```

Select the desired option with the cursor and "FIRE BUTTON"

DISK ACCESS - SUB FUNCTIONS

PREVIOUS MENU - return to the main select menu

ACCESS (LOAD/VIEW) - selects the DISK I/O screen for loading, saving, viewing, and killing pictures on disk.

DISPLAY WORK SCREEN - displays the current picture in the HARDCOPY work area

FORMAT: STANDARD GRAPHICOM - toggles between standard and original GRAPHICOM format picture disks. Pressing the "FIRE BUTTON" will alternately black hi-light the format selected. Use the standard format for COCO MAX pictures.

HARDCOPY DRIVE NO. 0 1 2 3 - sets the drive for the HARDCOPY program disk. Pressing the "FIRE BUTTON" will black hi-light the format selected. The default drive is 0

PICTURE DRIVE NO. 0 1 2 3 - sets the drive for the picture or data files. Pressing the "FIRE BUTTON" will black hi-light the format selected. The default drive is 0

CHANGE DISPLAY MODE - sets the PMODE for pictures being used. Select 1 of the 4 pmodes as desired. The default is the normal HI-RES

A WALK AROUND THE COCO GALLERY - Displays all of the pictures on the disk selected as the picture disk. Keep pressing the "FIRE BUTTON" to display the next picture until all have been displayed from the disk. Control will return to this sub-menu when all of the pictures have been displayed. Use the "ABORT" function to exit the GALLERY at any time.

DISK ACCESS - SUB-MENU - BINARY



HALLOW /PIC	EXTERN /PIC
X-PAD /PIC	INDIAN /PIC
SOLARHAT /PIC	GIRLPOOL /PIC
COCOFILE /PIC	BIKE /PIC
HEART /PIC	SANDY /PIC
WATERDRP /PIC	CAR308GT /PIC
PENCIL /PIC	CAMERA /PIC
PENCUT /PIC	HANDS /PIC
SHUTTLE /PIC	HOT COCO /PIC
BLACK 2 /PIC	COLORMAG /PIC
	ROCKMAN /PIC
	CORVETTE /PIC

This menu is the actual DISK ACCESS I/O menu which loads and views pictures.

MENU - return to previous menu

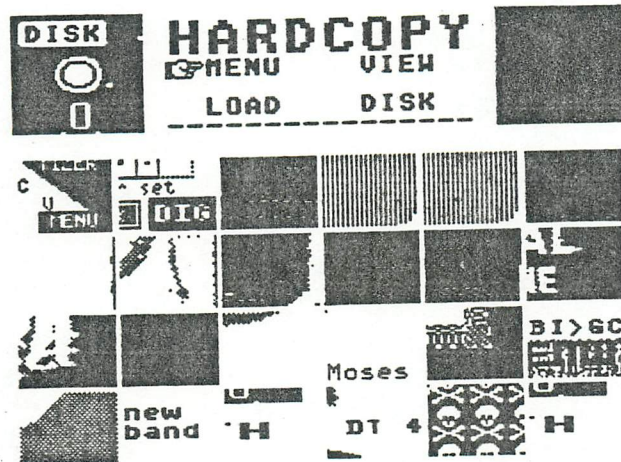
LOAD - after selection move the cursor to the desired picture file to be loaded and press the "FIRE BUTTON"

VIEW - after selection move the cursor to the desired PICTURE to display and press the "FIRE BUTTON" to display that picture. Press the "FIRE BUTTON" again after the picture is displayed to return to the SUB-MENU

DISK - select this option to re-read the disk directory. This option is used if you have changed picture disks. Do not change picture disks without selecting this option after the new disk has been put into the drive

EXIT - use this option to exit from the directory portion of this SUB-MENU and return to the top of the SUB-MENU

DISK ACCESS SUB-MENU original GRAPHICOM



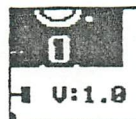
This is the disk directory SUB-MENU of an original GRAPHICOM picture disk. All functions are the same as the BINARY disk except a select block is used instead of a cursor to select the pictures. Use the ABORT sequence to exit the directory portion in place of the EXIT option.

1 BY 1 PRINT (1/4 PAGE)

The 1 BY 1 print is used to print a HI-RES picture with a resolution of 1 printer DOT for every display DOT in the HI-RES picture. Since this is a 1 BY 1 print, the COLOR option even though on the SUB-MENU will not function. Remember, to get the COLOR effect (shading) it requires several printer DOT POSITIONS for every picture DOT.



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RETURN TO MENU
LOOK AT SCREEN
PMODE
MODE COLOR
POSITIVE PRINT
NEGATIVE PRINT

RETURN TO MENU - returns to MAIN MENU

LOOK AT SCREEN - display current picture that is in the HARDCOPY work area.

PMODE - mode selection

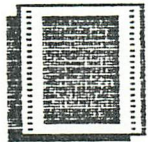
MODE COLOR B&W - selects black & white or COLOR (shading) mode

POSITIVE PRINT - starts printing in the positive mode

NEGATIVE PRINT - starts printing in the negative mode

3 BY 3 PRINT (FULL PAGE)

The 3 BY 3 options are the same as the 2 BY 2 and 1 BY 1 options except 3 DOTS are printed horizontal and vertical for every pixel on the screen in the B&W mode. In the COLOR mode the appropriate shading pattern is printed for the corresponding pixels. The picture is printed 90 degrees rotated.



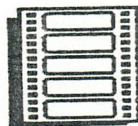
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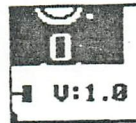
RETURN TO MENU
LOOK AT SCREEN
PMODE
MODE COLOR
POSITIVE PRINT
NEGATIVE PRINT

LABEL PRINT

The LABEL PRINT function will enable a portion of a HI-RES screen to be printed to LABELS. HARDCOPY is set to print to standard 3 1/2" X 15/16" pinfeed labels. When the POSITIVE or NEGATIVE print option is selected a SELECT block will appear over the HI-RES picture in the HARDCOPY work area. Move the SELECT block with the joystick, up or down, to position the block around the portion of the picture that is to be printed on the labels. When the desired portion of the picture is positioned within the block press the "FIRE" button to begin printing. 1 to 255 labels may be printed at a time.



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RETURN TO MENU
LOOK AT SCREEN
Pmode
OF LABELS
POSITIVE PRINT
NEGATIVE PRINT

RETURN TO MENU - returns to MAIN MENU

LOOK AT SCREEN - display current picture that is in the HARDCOPY work area.

Pmode - mode selection

OF LABELS - position the cursor to this option to select the number of labels to print. After positioning the cursor to this option press and hold the "FIRE" button, then move the joystick, up or down, to decrease or increase the number of labels to print. Release the "FIRE" button when the desired # of labels has been selected.

CARD SHOP - SUB-MENU.



TYPESET → FRONT OF CARD
CHARACTER SIZE: H=2 x W=4
DRAW MODE: AND OR EOR **OPAQUE**
CHARACTER SET: ASCII
TYPE COLOR: **ON**
ROTATE TYPE: **QWAZXSWXZ**
MIRROR TYPE: **ABCEFEHILKJMN**
FINISHED TYPING ON THE CARD

TYPESET - after selection of the other various options this will place HARDCOPY into the CARDSHOP TYPESETTER. The first time thru, this option will display "FRONT OF CARD". The text entered for FRONT OF CARD will appear on the front of the card. The second time thru the "INSIDE OF CARD" will be displayed and will enable the typesetter to set text on the inside of the card.

CHARACTER SIZE - this option will set the size of the characters used in the typesetter. A 1 X 1 size will produce a character 8 pixels wide by 8 pixels high. To change the size place the cursor next to this option and press and hold the "FIRE" button, then use the joystick, to change the values. The height is changed by the up or down movement of the joystick, while the width is changed by the left or right movement of the joystick. Release the "FIRE" button when finished.

DRAW MODE - the DRAW MODE enables the method by which the characters will be placed on the picture with the typesetter. The first 3 options will perform a LOGICAL of the character onto picture with the logic of the option selected. The last option, OPAQUE, will place the character onto the screen at the current cursor position regardless of what is already there.

CHARACTER SET - selects one of 2 character sets, either "SYSTEM" or "ASCII". These are normal GRAPHICOM PART II character sets which are LOADM in the "BOOT" program of HARDCOPY.

TYPE COLOR - toggles between white on black characters or black on white characters

ROTATE TYPE - toggles the rotation of the type

MIRROR TYPE - toggles the selection of the type to produce a mirror image rather than standard non-mirrored

FINISHED TYPING ON THE CARD - this option will tell HARDCOPY that you are finished with the typesetting of the card and are ready to print. Control will be passed back to the previous menu. When back on the previous menu select either POSITIVE PRINT or NEGATIVE PRINT to produce the card.

The card will be printed in such a manner that you will be required to remove it from the printer and FOLD it to actually make it into the GREETING CARD.

POSTER PRINTING

The POSTER PRINTING option is used to produce a HI-RES picture into a poster with sizes up to approximately (20) 8 1/2 x 11 pages wide by (9) 8 1/2 x 11 pages long. The size is determined by selecting a scale for each pixel. This scale can be from 1 by 1 to 1 by 41 depending upon the widow size. By selecting the "DEFINE WINDOW" option a portion of the HI-RES picture can be selected for "POSTER PRINTING" rather than the entire picture. The size of the window will affect the maximum size of the poster.

Please note that a very large poster can take up to an hour or more to produce. Consult your printer manual for the maximum recommended continuous "DOT GRAPHICS" printing time period. Do not let your print head become overheated from excessive "DOT GRAPHICS" printing.



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RETURN TO MENU
DEFINE WINDOW
MOVE WINDOW
MODE COLOR
PMODE
SCALE 1 = 1x1
POSITIVE PRINT
NEGATIVE PRINT

RETURN TO MENU - returns to MAIN MENU

DEFINE WINDOW - displays the HI-RES picture in the HARDCOPY work area and with the joystick enables a portion of the picture to be selected for printing. After the picture is displayed use the joystick to locate the upper left hand corner of the portion of the picture you will be printing. Press the "FIRE" button when the proper position is found. This locks the upper left corner. Now move the joystick to set the lower right hand corner. As you move the joystick you will notice the portion of the picture that will print will be surrounded by a "WINDOW". When the proper position is found for the lower right hand corner press the "FIRE" button to lock the "WINDOW".

MOVE WINDOW - with the use of the joystick enables movement of a previously defined window. Use the "ABORT" function to terminate the "MOVE WINDOW" function.

MODE COLOR B&W - selects black & white or COLOR (shading) mode

PMODE - mode selection

SCALE - selects the size of the poster. To change the "SCALE" use the joystick to position the cursor at this option. After positioning of the cursor press and hold the "FIRE" button while moving the joystick up or down to increase or decrease the scale. The number on the left side of the "EQUAL SIGN" (=) is the actual scale factor. A scale of 1 indicates that 1 printer dot will print horizontal and vertical for each pixel in the HI-RES picture. A scale of 6 would indicate that 6 printer dots will print horizontal and vertical for each pixel in the HI-RES picture. The two numbers on the right of the "EQUAL SIGN" indicate the number of 8 1/2 x 11 pages that will be necessary to print the entire picture with the scale selected. These two numbers will change as the scale is changed to always give an indication of the number of pages that will be printed. A scale of 1 = 1x1 indicates 1 dot position for every pixel and it will fit on 1 page. A scale of 45 = 9x9 indicates 45 dot positions for every pixel and it will fit on 819 pages (91 * 9).

NOTE

Depending upon window size selected, not all scales will be valid at all times.

POSITIVE PRINT - starts printing in the positive mode

NEGATIVE PRINT - starts printing in the negative mode

DEFINE SHADES - allows the user to define the 4 x 2 shade patterns used in "COLOR" printing. Selection of this option will bring up another sub-menu. This sub-menu will contain the actual shade patterns plus a "RETURN TO MENU" and a "RESET TO DEFAULT" sub-option. Select the shade to change with the cursor and press the "FIRE" button. To change a pixel within the pattern block position the cursor with the joystick and push the "FIRE" button to change the color from black to white or white to black. Use the "ABORT" function to exit the pattern block. Use the "RETURN TO MENU" sub-option to return to the previous menu.

The pattern blocks refer to either the black, blue, red, or white HI-RES color on the screen. The pattern within the block is the dot pattern that will be printed for each pixel on the screen when the "COLOR" mode is selected.

DEFINE WINDOW - displays the HI-RES picture in the HARDCOPY work area and with the joystick enables a portion of the picture to be selected for printing. After the picture is displayed use the joystick to locate the upper left hand corner, of the portion, of the picture you will be printing. Press the "FIRE" button when the proper position is found. This locks the upper left corner. Now move the joystick to set the lower right hand corner. As you move the joystick you will notice a portion of the picture will be surrounded by a "WINDOW". When the proper position is found for the lower right hand corner press the "FIRE" button to lock the "WINDOW".

MOVE WINDOW - with the use of the joystick enables movement of a previously defined window. Use the "ABORT" function to terminate the "MOVE WINDOW" option.

ROTATE PRINT - will enable the printout to be rotated 90 degrees when printed. This allows larger printouts, banners, and when incorporated with the X-FLIP and Y-FLIP can rotate 180 and 270 degrees as well.

LEFT TAB - number of GRAPHIC SPACES padded between the left margin and the GRAPHIC printout. Can be used for centering or fine positioning of the printout. RANGE=(0-32767)

X-MIN - leftmost inclusive column in window (must be less than X-MAX) RANGE=(0-254)

X-MAX - rightmost inclusive column in window (must be greater than X-MIN) RANGE=(1-255)

X-SIZE - width of each printed dot in printer pixels (must be greater than zero) RANGE=(1-45)

X-PITCH - horizontal space between printed screen pixels RANGE=(0-45)

X-FILL - when ON, if X-PITCH is non-zero, X-PITCH will be black RANGE=(ON OFF)

X-FLIP - when ON, mirrors the printout in the X direction RANGE=(ON OFF)

Y-MIN - uppermost inclusive row in window (must be less than Y-MAX) RANGE=(0-190)

Y-MAX - lowermost inclusive dot in window (must be greater than Y-MIN) RANGE=(1-191)

Y-SIZE - height of each printed dot in printer pixels (must be non-zero) RANGE=(1-45)

Y-PITCH - vertical space between printed screen pixels RANGE=(0-45)

Y-FILL - when ON, if Y-PITCH is non-zero, Y-PITCH will be black RANGE=(ON OFF)

Y-FLIP - when ON, mirrors the printout in the Y direction RANGE=(ON OFF)

NOTE

The "DEFINE WINDOW" function sets the X-MIN, X-MAX, Y-MIN, and Y-MAX parameters automatically. Banners can be generated by windowing in on a line or two of text, then selecting "ROTATE PRINT" and increasing the X-SIZE and Y-SIZE to some large number. It is usually advisable to use some PITCH with FILL set to OFF, this keeps the printer from continuously striking the ribbon on long uninterrupted black areas.

CUSTOMIZING HARDCOPY

The BASIC program "BOOT" contains the default values that "HARDCOPY" uses for various FUNCTION set-ups. To change the default follow the directions under each set-up.

PRINTER BAUD RATE

The variable BD is set to a default value of 1 in line 140. This value sets the printer BAUD rate to 9600 BAUD. If you desire a different BAUD rate change this variable to the proper value and resave the BOOT program.

CHARACTER SETS

HARDCOPY uses 1 character set for the MENU'S (HOME/SYS) and 1 additional character set for use in the TYPESETTER of the CARD SHOP. DO NOT change the character set used for the MENU'S. The 1 additional supplied character set (ASCII/SET) can be changed to any other GRAPHICOM II character set as desired. To use a different character set change the file name in line 270 of the BOOT program to the proper name and resave the BOOT program.

JOYSTICK TYPE

HARDCOPY can use either analog (non self-centering) or switch type (self-centering) joysticks. As delivered HARDCOPY is set up to use the switch type joystick. To change to analog joystick change the POKE in line 635 from a value of 0 to a value of 255 and resave the BOOT program.

HARDCOPY PRINT DRIVER

Due to the differences between print density, dot spacing, number of vertical dots in the print head, and control codes for the different printers, each version of HARDCOPY contains a custom driver for a particular printer or printer group. Also many of the HARDCOPY modules contain special code for each type of printer. For the above reasons it was impossible to enable each copy of HARDCOPY to support more than one printer or printer group.

Some printers when used with HARDCOPY (EPSON MX-80 in particular) will produce a picture that prints out of proportion with the HI-RES picture. This is caused by the inability of the printer to produce HI-RESOLUTION DOT GRAPHICS with the same horizontal and vertical spacing. Most of the inconvenience caused by this PRINTER FAULT can be corrected by using the "SPECIAL EFFECTS" function or by using a GRAPHICS package such as GRAPHICOM PART II to either "STRETCH" or "SHRINK" the picture prior to printing.

All of the HARDCOPY routines assume that for every DOT printed horizontal, 1 will be printed vertical.

NOTE FOR MX-80 USERS

We have found that by using the "SPECIAL EFFECTS" function with the picture rotated 90 degrees and printed 2 pixels on the X and 1 on the Y that the picture will print as close to proportional as most other printers in the normal mode. Also 3 pixels on the X and 2 on the Y, without rotation, will produce a close to proportional print.

USERCALL

The USERCALL is provided for those purchasers of HARDCOPY that desire to do printouts directly from their own BASIC programs. USERCALL is provided on your HARDCOPY program disk and is named USERCALL.BIN. This machine language program contains most of the routines necessary to produce your own GRAPHIC printouts.

USERCALL.BIN must reside in high BASIC memory and is not relocatable. You must provide sufficient RAM above BASIC for the module with the use of a CLEAR 200,&H7400 statement in the beginning of your BASIC program. You may set the value 200 in the CLEAR statement to any other value you may require.

Insert the following statement into your BASIC program after the CLEAR statement:

```
LOADM"USERCALL.BIN":EXEC
```

This statement will load the USERCALL program and set up USR9 for calling. DO NOT use a DEFUSR9 in your program as USERCALL will set it up for itself. Before doing any printouts remember to set the proper BAUD rate for your printer.

The GRAPHIC picture you desire to printout MUST reside in memory beginning at HEX E00 and the proper BASIC PMODE statement has to be executed prior to calling (USR9) the USERCALL module.

There are 10 required and 4 optional variables that you must pass from your BASIC program to USERCALL. The method for passing these parameters is with the use of the USR9(STATUS) for the required variables and USR9(128) for the optional variables. The SYNTAX for these two USR calls will be different from the normal SYNTAX you would normally use with a USR.

A good working knowledge of the "SPECIAL EFFECTS" section of HARDCOPY will help minimize problems when using the USERCALL.

USERCALL USR9(STATUS) SYNTAX

```
U=USR9(STATUS),XMIN,XMAX,XSIZE,XPITCH,YMIN,YMAX,YSIZE,  
YPITCH,LTAB
```

All of the variable names (ie. XMIN,XMAX,....) should be made equal to a variable name that follows normal BASIC SYNTAX (ie. A1, A2, A3,

PARAMETER VALUES

STATUS - VALUE 0 TO 127

The least most 7 BITS of this parameter are used to set ON or OFF the following options:

XMIRR - BIT 0

0 = Do not mirror the printout in the X direction
1 = Mirror the printout in the X direction

YMIRR - BIT 1

0 = Do not mirror the printout in the Y direction
1 = Mirror the printout in the Y direction

XFILL - BIT 2

0 = X FILL OFF
1 = X FILL ON

YFILL - BIT 3

0 = Y FILL OFF
1 = Y FILL ON

ROT90D - BIT 4

- 0 = Do not rotate the printout 90 degrees
- 1 = Rotate the printout 90 degrees

BW/COLOR - BIT 5

- 0 = Black & white printout - process each individual pixel
- 1 = Process pixel pairs and give "COLOR EFFECT" with shading patterns

POS/NEG - BIT 6

- 0 = Positive print
- 1 = Negative print

BIT 7 is always 0

To set the STATUS variable to its proper value it will be necessary to do some bit manipulation of a single byte. The following table lists the value of each bit:

BIT NUMBER	VALUE
0	1
1	2
2	4
3	8
4	16
5	32
6	64
7	128

To arrive at the proper value for STATUS start out with STATUS equal to 0 and add the proper value from the table above for each bit that is ON (set to 1). As an example let us assume we desire STATUS to have the options of XMIRR OFF, YMIRR ON, XFILL OFF, YFILL OFF, ROT90D ON, COLOR ON, and POSITIVE PRINT. Starting out with STATUS equal to 0 add 0 for BIT 0 (XMIRR OFF), add 2 for BIT 1 (YMIRR ON), add 0 for BIT 2 (XFILL OFF), add 0 for BIT 3 (YFILL OFF), add 16 for BIT 4 (ROT90D ON), add 32 for BIT 5 (COLOR ON), and add 64 for BIT 6 (POSITIVE PRINT). The final total is 114. To set the above options, STATUS should be made equal to 114.

For a definition of the other parameters and their possible values refer to the "SPECIAL EFFECTS" section of the HARDCOPY documentation except for YMAX.

The YMAX maximum value can be 384 to allow a full "COCO MAX" screen to be printed with the USERCALL method.

USERCALL USR9(128)

USR9(128) is used to set the 4 bytes of the "COLOR EFFECT" shading. Only use this USR if you desire to change the value of the 4 bytes. A description of the "COLOR EFFECT" can be found in another section of this manual.

USR9(128) SYNTAX

U=USR9(128),BPO,BP1,BP2,BP3

Use valid BASIC variable names for BPO, BP1, BP2, and BP3. These variables can contain a value from 1 thru 255.

BPO - Shading for BLACK on the screen

BP1 - Shading for HUE1 on the screen

BP2 - Shading for HUE2 on the screen

BP3 - Shading for WHITE on the screen

These values correspond to the BIT positions of the shading patterns for the associated screen color. The USERCALL module will process each value as a 1 byte numeric number. Try using the color shading option within "SPECIAL EFFECTS" to see how these values can be used. A value of 0 in the color shading parameter will cause nothing to print for a pixel pair if "COLOR MODE" (STATUS BIT 5 = 1) is ON and positive print is ON. Whereas a value of 255 will cause all printing for that pixel pair to print. You should experiment with different values to select the proper shading. The default values for HARDCOPY are:

BLACK = 255

HUE1 = 165

HUE2 = 130

WHITE = 0

The "COLOR EFFECT" shading bytes are used to determine the shading pattern for each of the 4 HI-RES colors that could appear within a GRAPHIC picture. Each color on the screen is processed as 2 pixels and is reproduced to the printer as a 4 dot wide by 2 dot high printout depending on XSIZE and YSIZE. They will always be directly proportional to 4 by 2.

Bits 0 thru 3 control the bottom 4 dots and bits 4 thru 7 control the top 4 dots.

If you are going to change any of the shading bytes execute the BASIC line that contains the USR9(128) before the one that contains the USR9(STATUS).

To actually do the printing set all the proper values for USR9(STATUS) and execute the BASIC line that contains the USR9(STATUS). If everything is set properly your printer should begin the printing of the GRAPHICS printout. As this is a direct call to a complex set of GRAPHICS routines, incorrect or invalid data in the parameters can cause the computer to produce unpredictable results.

COMMON ERRORS FROM THE USERCALL

The USERCALL module can produce a BASIC error on the line that the USR9 is on for any one of the following reasons. The error will appear as if it were a standard BASIC error.

SYNTAX

Too few or too many variables have been included with the USR9

OVERFLOW

A variable contains a number that is too large for that variable

FUNCTION CALL

The USERCALL module is not installed or is installed incorrectly. Could also be caused by a DEFUSR9 in your program. A failure to EXEC USERCALL after installing could also cause this error.

For all of these errors carefully check how you installed USERCALL, the SYNTAX you are using on the USR9, and the value of the variables.

Proficient use of the USERCALL module will only occur for experienced programmers and those purchasers of HARDCOPY willing to take the time to learn it thoroughly. The use of USERCALL assumes some GRAPHICS knowledge and familiarity with BASIC, EXTENDED COLOR BASIC, and DOS.

USERCALL is provided AS IS and additional technical support will be provided thru the mail on a time available basis ONLY.