VersaWriter
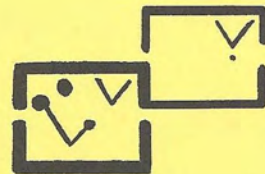
REFERENCE MANUAL

Versa Computing, Inc.
Newbury Park, Ca. 91320

ATARI

VERSAWRITER

REFERENCE MANUAL

TABLE OF CONTENTS

INTRODUCTION

VersaWriter is a digitizer drawing board and software system that allows quick entry of graphics information on the Atari High-Resolution (High-Res) or Medium-Resolution (Med-Res) graphics screen. The digitizer is designed to exceed the accuracy of the High-Res screen at 30 thousandths of an inch. The digitizing rate is designed to meet the needs of a human operator at 30 thousandths of a second. The useful drawing area is 8 inches by 12.5 inches.

Place your original drawing, chart or diagram under the transparent mylar sheet. Trace the lines of your drawing by moving the digitizer pointer over the original. Your drawing is reproduced on the TV screen in either full or split screen mode. In addition, you can fill in closed areas with color, change the background or drawing colors, draw with a variable size brush, add text to high-resolution pictures and more.

VersaWriter commands are usually one letter mnemonics entered by pressing the appropriate key on the ATARI Personal Computer keyboard. Prompt messages are liberally embedded within the program to guide the user throughout all drawing phases. While VersaWriter is easy to use, it should be remembered that it is a tool. A thorough reading of the following document, and a little practice and experimentation, is required to become fully familiar with all its functions.

INSTALLATION

1. Underpacking

Remove VersaWriter from it's box by sliding the edge carriers upward. This can best be done by grasping the bottom of the drawing board and pulling up to release one carrier. Save carriers and box for the unlikely event that you may need to return your VersaWriter for repair. The drawing arm should now move freely over the board. Look at figure 1 and make sure that the elbow is to the left. Always keep the arms to the left as shown and avoid exceeding the maximum angles indicated.

Top

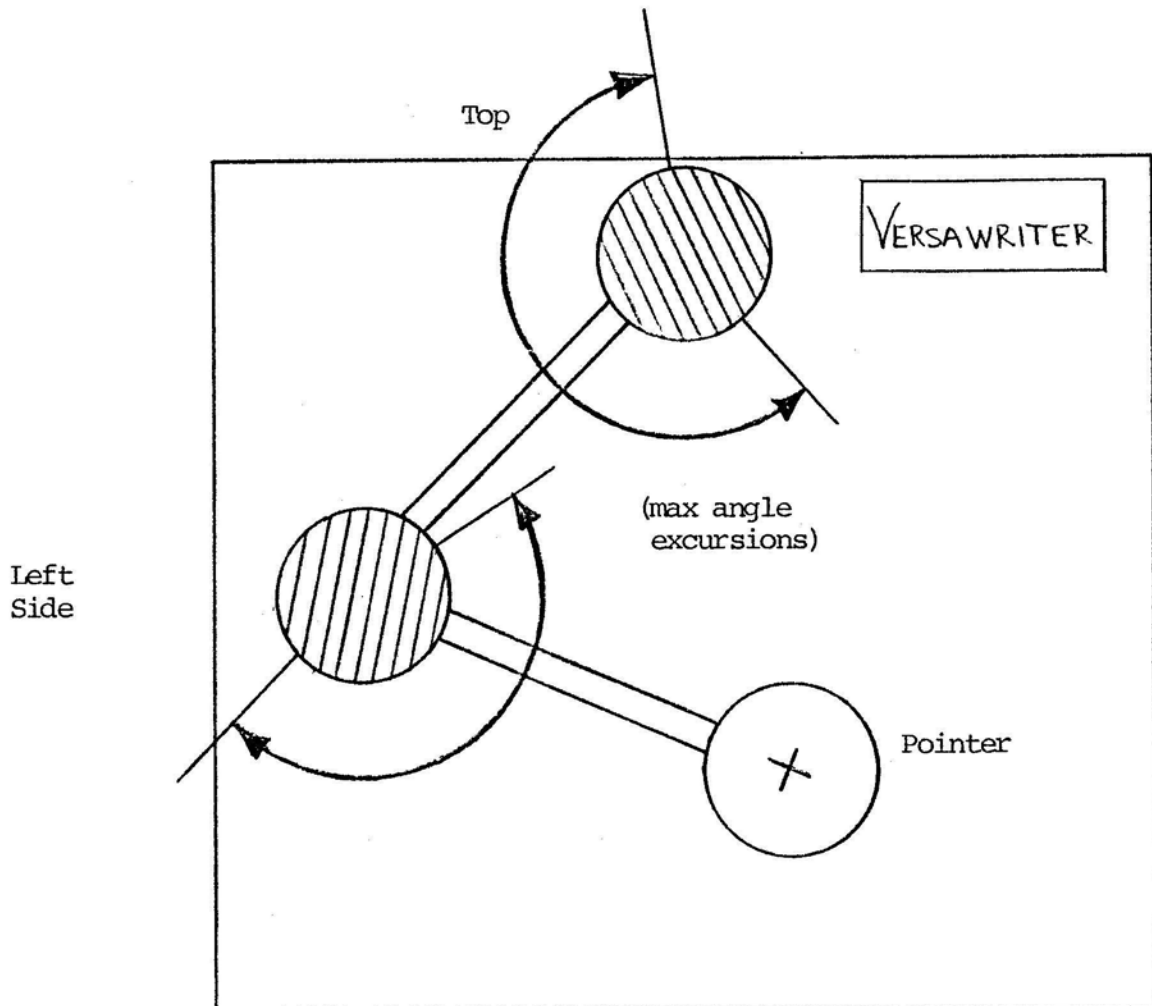VersaWriter

(max angle
excursions)

Left
Side

Pointer

Figure 1 Maximum Movement of Drawing Arms

2. Contents of VersaWriter Drawing Package

The VersaWriter drawing package consists of:

1. VersaWriter drawing board with attached interface unit.
2. VersaWriter software.
3. Reference Manual with Owner Registration Card.
4. Calibration Chart and drawing sample.

3. Care of VersaWriter

Your VersaWriter is a simple sturdy device that takes a minumum of care. Note the restrictions on maximum movement in Figure 1. The mylar overlay may become scratched after extended use and can easily be replaced. Mylar can be purchased from an office supplies or stationery store and 10" x 12" pieces can be cut for you. The VersaWriter can be cleaned by using alcohol and a soft cloth. In normal use, the VersaWriter should last indefinitely.

4. Warranty

Your VersaWriter comes with a 90 day warranty on parts and labor. Please return VersaWriter to your dealer or directly to us with proof of purchase date and an explanation of the problem. We use quality disks and check a percentage of them for correct copying. However, if you should have a defective disk, your dealer can probably give you a new copy immediately.

5. Owner Registration Card

Please take the time to fill out the Owner Registration Card. VersaWriter software is constantly being improved and updates are periodically released. It is our policy to provide these updates at no charge except for packing and postage. We also expect to market new VersaWriter software packages expanding specific uses. We will notify you as they become available. Please let us know if you have any additional requirements. We work closely with our cuscomers in an effort to provide the most useful and needed software.

NOTE: Your Serial Number is located on the bottom of the VersaWriter drawing board. It is printed on a silver label and consists of a letter followed by four numbers.

6. Connecting the Cable

NOTE: Before connecting or disconnecting the unit to your Atari, make sure the power to your computer is OFF.

Connect the cable from the interface unit to controller (game paddle) jack #4. This is the far right jack on the front of the computer. A diagram of the VersaWriter system is shown in Figure 2.

TV SET

ATARI 810 DISK DRIVE

ATARI PERSONAL COMPUTER

VERSAWRITER INTERFACE UNIT
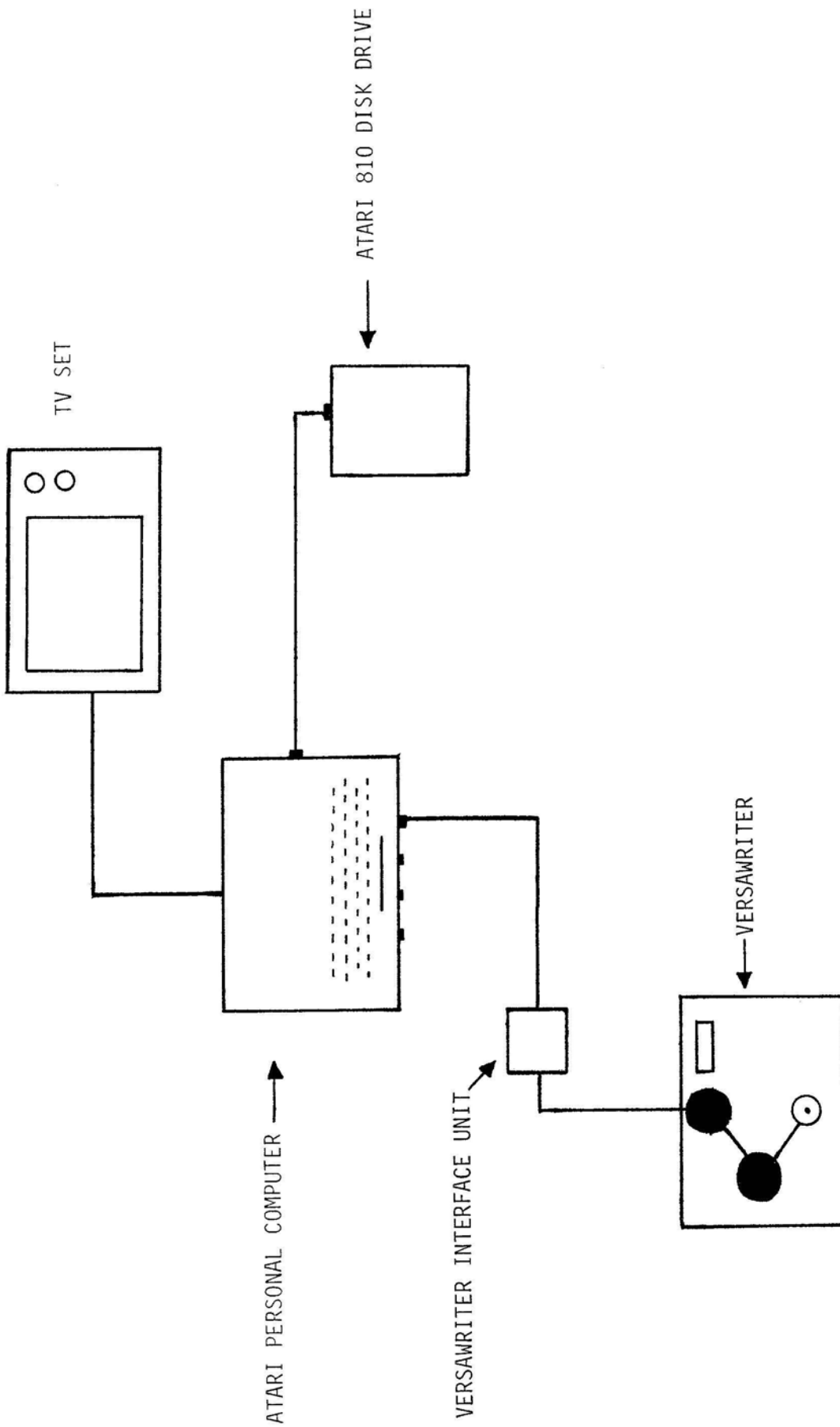
VERSAWRITER

FIGURE 2 VERSAWRITER SYSTEM DIAGRAM

-4-

7. <u>System Requirements</u>

The Atari VersaWriter system requires an Atari Personal Computer with a minimum of 32K of RAM, an 810 disk drive, and a BASIC language cartridge installed in the left cartridge slot.

8. <u>Software Copy Protection</u>

For the convenience of the user, VersaWriter software is supplied without copy protection. This allows the user to make backup copies for his own personal use and to list and modify programs to fit his needs. VersaWriter software is copyrighted and is for the sole use of the purchaser. Please do not abuse this user convenience.

1. Calibration

    Before drawing, you will need to calibrate your VersaWriter Drawing
System. The purpose of calibration is to match your VersaWriter,
Interface Unit, and Atari to each other. This is done by providing four
known arm positions to the computer. These four positions are shown in
Figure 3 and on the calibration chart.

    As a rule, calibration need only be done once. However, if you use
the VersaWriter on another Atari, you will want to recalibrate. Take
your time and be accurate as the quality of your drawings will depend
on the quality of the calibration.

    First, insure the interface unit cable is plugged into controller
jack #4. Then turn the Atari 810 disk power ON. Wait until the busy
light goes out and insert the VersaWriter diskette into the drive.
Turn the computer power ON and after several seconds, the following
menu will be displayed:

                    ****VERSAWRITER****
            Copyright 1981 Versa Computing, Inc.

                1. DRAW - HIGH RES MODE
                2. DRAW - MEDIUM RES MODE
                3. ADD TEXT TO HIGH-RES PICTURE
                4. CALIBRATE
                5. CATALOG PICTURES ON DISK
                6. RUN DEMO PROGRAM
                7. QUIT - END SESSION

                Pick option by number

    Press key "4" to enter the calibration program. Position the
calibration chart under the mylar overlay with the bottom edge of the
chart even with the bottom edge of the VersaWriter. Instructions will
be displayed on the screen. While positioning the arms, readings of
paddle ($\emptyset$) and paddle (1) are displayed. Paddle ($\emptyset$) readings correspond
to the stationary housing at the top center of the board. Readings
should smoothly increase as the pointer is moved from the upper right
hand corner of the drawing area to the upper left hand corner. Paddle
(1) corresponds to the moveable housing and should increase as the pointer
is moved from upper right hand corner to the lower left hand corner of
the drawing area.

    When calibration is complete, the information will be stored on
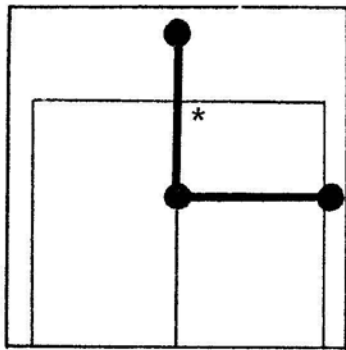diskette and once again the menu will be displayed.

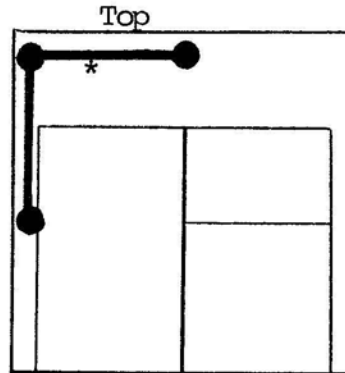Diagram 1
*sight arm to
cal line
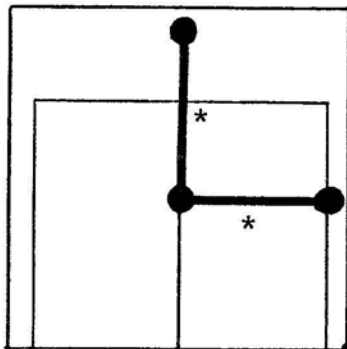
Diagram 2
*sight arm to
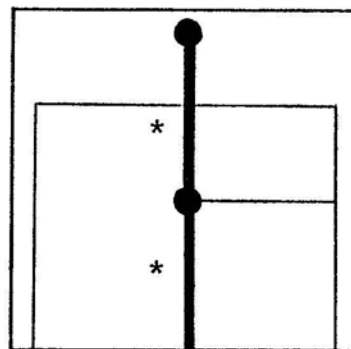top of board

Diagram 3
*sight arms to
both cal lines

Diagram 4
*sight arms to both
cal lines

FIGURE 3 CALIBRATION ARM POSITIONS

2. Demo Pictures

The Demo Program will display several pictures drawn with the VersaWriter Drawing System. These will demonstrate some of the capabilities of the system. To run the Demo Program, just press key "6" on the main menu. When the program is completed, the menu will again be displayed.

3. Step by Step First Drawing

To begin drawing, press key "1" on the main menu. Several seconds later the screen should display:

     * A flashing point that moves with the VersaWriter pointer.
     * X=# Y=# These are the X and Y screen coordinates of the
                  flashing point.

Move the VersaWriter arm around and you will see the flashing point move. To make the VersaWriter draw, select a location where you would like to start. Now press "1" to start drawing in color 1. The words at the bottom will disappear and the point will stop flashing. Now you're ready to draw. Move the pointer and the trace will appear on the screen. To erase the screen, press "E" and answer the prompt "Please confirm" with "Y". Your drawing will be erased and the flashing cursor will again appear.

Now try drawing one of the sample pictures packed with your VersaWriter. Place the picture under the mylar screen. Position the VersaWriter pointer at a convenient starting place on the picture. Select color "1" by pressing key "1" and carefully start tracing the picture. Best results are obtained with a smooth constant motion.

Press "P" and the flashing cursor will again appear. You may now move to a new line. To continue drawing press "1" again. When you have completed your picture, press "P" to stop drawing and return to "Point Cursor".

When the picture is complete, it may be saved to diskette by pressing "S". Next type a name for the picture (let's call it FIRST) and press RETURN. The picture will be saved for later recall. To see how this works, press "E" and then "Y" to erase the screen. Now press "L" to load your picture and then type the name (FIRST) and press RETURN. The picture will be brought back onto the screen.

VersaWriter offers a variety of special drawing commands to allow you greater flexibility. We will guide you through a practice run of some of these commands.

Press "E" and then "Y" to clear the slate. The "P" command which we have already worked with has an additional feature which is point-to-point drawing. Move the cursor into a position you want and press "P"

to mark the point. Now, move the cursor to a new position and press the SPACE BAR. You have now drawn a line point to point. Move the cursor to a third position and again press the space bar.

The "U" command (scale of drawing) allows you to scale the size of your drawing smaller or larger than the original. Place the US MAP under the mylar and pick a state to draw. Place the drawing arm pointer at the center of the state. Press the "U" key and you will be asked "Enter New Horizontal Scale (0.25 to 4.0)". Answer with "2" RETURN to cause the state to appear twice its size. Next answer "Enter New Vertical Scale (0.25 to 4.0)" with "2" RETURN. Your flashing cursor will now be automatically centered on the screen. Now trace the state (press "1" to start drawing). When finished press "P" to stop drawing. Erase the screen ("E" then "Y") and try drawing the state half normal size by going through the above steps and pressing 0.5 for horizontal and vertical scale. The useful range of scale is 0.25 to 4.0.

The "W" command is simple to use. If you are drawing an object from an off-center position on the original and wish it to be centered on the screen, just put the pointer on the object to be centered and press "W". The cursor will then be centered on the screen and you are ready to begin drawing.

To use the Paint Brush Command, press "Z" then answer "Brush size (0,1,2,3)" with "3", and answer "Brush color (0,1)" with "1". Slowly move the pointer to paint the screen. Press "P" to stop painting. Reposition the pointer to a new position. Press "Z", "1" and then "1" to again start painting with a smaller brush. Finally press "Z", "3" and then "∅" to demonstrate the editing capabilities of this command. Move the brush over the areas previously painted in white and they'll disappear.

Now let's print your name on the screen. Erase everything by pressing "E" and then "Y". Place the flashing cursor where you want to start the first letter. Press "Z", "2", "1" and then carefully draw the letter. When the letter is finished, press "P" to return to the flashing cursor. Now position the cursor for the next letter and again press "Z", "2", "1". Continue the procedure until you've completed your name. NOTE: Draw your printed letters as you would normally with strokes. It is better not to go over a line, ie. c and i would be one stroke, D and b would be two strokes, F and K three strokes and E and W four strokes. When each stroke is finished, press "P" for flashing cursor and reposition for the next stroke before pressing "Z", "2" and "1".

The "M" (Smoothing factor) command may be used in conjunction with the "Z" (brush) command to cause the brush strokes to be more even. Press "M" and select a factor of "3" RETURN and repeat the above exercise. When complete press "N" to reset scaling and smoothing values to their normal values. Don't erase the screen yet.

Press "B" (background color) and move the VersaWriter pointer around the board. The color on the screen will change as you move the pointer. Press RETURN when a color you like is on the screen. Now press "C" (drawing color) and again move the pointer. Press RETURN when you're happy with the picture.

Now press "T" (textwriter). The disk will run for several seconds and then a message "Press T to start writing text" will appear. Position the flashing cursor on the blank area of the screen. Press "T", a box will appear. Now type anything you'd like. If you'd like to move to a new part of the screen just press the "ESC" key, reposition the flashing cursor and press "T" again. When you're finished writing, just press the "ESC" key again. Now press "F" to load a new type font. When asked for the name of the font, type the name COMPUTER and press RETURN. Several seconds later the flashing cursor will reappear. Position the cursor as desired and press "T". Again, type whatever you please in computer style letters. Press the "ESC" key and then "G" (graphics mode) to return to the drawing program.

If you wish to quit the program now, just press "Q" and answer the prompt "Save Picture First" with "N". This will take you back to the main menu.

A. MAIN MENU SOFTWARE

    1. DRAW - HIGH RESOLUTION MODE

        High-Res drawing provides a horizontal (X) resolution of 320 points by a vertical (Y) resolution of 160 points (split screen) or 192 points (full screen). Initially, the system is set in split screen mode to allow for display of prompt messages at the bottom of the screen.

        Drawing in this mode is limited to one color but a figure may be filled in any of 3 colors. Text may easily be added to a High-Res picture by calling the textwriter program.

        The commands available are:

P	POINT Cursor
Space Bar	Draw straight line from last plotted point
1	Draw in foreground color (1)
Ø	Draw in background color (Ø)
X	Draw (in last color) with X Fixed
Y	Draw (in last color) with Y Fixed
W	Recenter to current position
U	Change X and Y scaling
M	Change Smoothing Factor
B	Change BACKGROUND color (Ø)
C	Change foreground COLOR (1)
E	ERASE screen
R	REVERSE picture
/	Change from full-to-split or split-to-full screen
N	NORMAL - returns color, scaling, etc. to default
F	FILL closed figure with color
Z	Draw/Edit with Paint Brush
A	Draw with AIR BRUSH
D	DISK DIRECTORY - lists High-Res pictures
L	LOAD picture from Disk
S	SAVE picture to Disk
G	Run Medium-Res GRAPHICS drawing
H	HELP - List of command letters
Q	QUIT - End session
T	Run TEXTWRITER

        Each of the above functions is activated by pressing the single letter listed above. Below is a detailed description of each of the commands.

"P" POINT CURSOR - This command will cause the flashing cursor to appear and the current X and Y coordinates to be displayed. It is used to move the VersaWriter pointer without drawing. This function is also used to draw a straight line between the last point plotted and the current cursor position each time the "Space Bar" is pressed. The Point Cursor mode is also the normal exit for most other commands where drawing would be inappropriate.

"1" DRAW - When the "1" key is pressed the VersaWriter will begin drawing in foreground color. To exit drawing, press any desired command letter. Usually "P" point cursor is used to exit from drawing.

"Ø" DRAW - When the "Ø" key is pressed, the VersaWriter will begin drawing in the background color. If the pointer is over a background area when this function is called, nothing will appear to happen because you are drawing background on background. As you move the pointer over areas already drawn in foreground they will turn to background. To exit drawing, press any desired command letter.

"X" DRAW WITH FIXED X - This function makes it easy for you to draw perfectly straight vertical lines. First position the flashing cursor at the start of the line. Press "X" and then draw your line. It will be drawn in the last color used (Ø or 1). This command is exited by selecting any other command.

"Y" DRAW WITH FIXED Y - This function operates similarly to the "X" function detailed above except perfectly straight horizontal lines are produced.

"W" CENTER CURRENT POINT ON SCREEN - This command will place the current VersaWriter position at the center of the screen. If your original is not centered, this function will do it for you. Use with the "U" command below to manipulate the drawing area to your liking.

"U" SCALE OF DRAWING - This command provides independent vertical and horizontal control of the size of your drawing on the screen to that of your original on the VersaWriter. The current position of the VersaWriter pointer will automatically be centered on the screen when this command is executed. The useful range of Scale is from about 0.25 to 4.

"M" SMOOTHING FACTOR - This command averages several digitizer readings to arrive at the current plotting plot. It is useful in removing digitizing errors or jumps when a drawing scale greater than one is used. As it causes the drawing speed to be reduced it is left to the user to select the desired amount of smoothing to be added for a particular drawing. Enter Zero for no smoothing to Five for maximum smoothing. A value of Two or Three is recommended for drawing scales of two and above. This command is also useful for creating smooth flowing lines in drawings of normal scale.

"B" BACKGROUND COLOR - This command allows you to change the color
and intensity of the background. Move the VersaWriter pointer right
and left to vary the color and up and down to vary the intensity. When
the desired color and intensity are present on the screen, depress RETURN.
In this way, you can easily choose any of the ATARI'S 128 colors.

"C" DRAWING (FOREGROUND) COLOR - This command allows you to change the
intensity of the drawing (foreground). The color of the drawing is
determined by the color of the background. Only the intensity can be
varied. Move the VersaWriter pointer up and down to vary it. When the
desired effect is present on the screen, depress RETURN.

"E" ERASE SCREEN - This command does exactly what you would expect -
erase the screen. Because the "E" key could accidentally be pressed,
wiping out your picture, a confirm prompt is added. Answer it "Y"
and the screen will self-destruct.

"R" REVERSE PICTURE - Pressing "R" will reverse the entire picture -
all dark areas become light and vice versa. Press "R" again to reverse
it back.

"/" FULL/SPLIT SCREEN - Permits use of the full screen for drawing.
When using this mode some status prompt messages will not be visible.
All prompts requiring user input will momentarily switch back to split
screen for entry. Pressing "/" again will return to split screen mode.

"N" NORMAL MODES - This command returns all drawing functions (color,
scale, smoothing, centering) to their default or initial settings.

"F" COLOR FILL CLOSED FIGURES - This function permits filling any irregular
closed figure with one of four colors. To use this function, first enter
the point cursor mode ("P") and position the flashing cursor inside the
closed figure. The area to be colored may be white or black and must be
bounded by either a SOLID LINE or the screen edge. When coloring a WHITE
area the surrounding solid line must be black. When coloring a BLACK area
the line must be white. Do not attempt to color areas already colored in
blue or orange/brown or to color areas adjacent to blue or orange/brown
areas that do not have a solid line separating then from the new area to be
colored. Now press "F". Then answer the question "Color Black (B) area or
White (W) areas" with B or W. Finally, enter the fill color desired -
"Ø" is black (background), "1" is white (foreground), "2" and "3" are
colors that the user has no direct control over. As you change the back-
ground and drawing color/intensities these colors change also. Generally
"2" is an Orange/Brown color and "3" is a Blue color.
    The fill in routine often leaves areas uncolored within the figure.
Position the flashing cursor within such an area and press "F" again. This
time merely press the space bar to continue filling in the same color as the
previous fill.
    If you change your mind prior to entering the color number, just press
RETURN and the command will be aborted. Otherwise the command will return
to the point cursor mode after executing the selection. If you wish to stop
the color fill prior to it's completion, just press the "ESC" key.

"Z" DRAW/EDIT WITH PAINT BRUSH - A striking function that imitates the action of a paint brush. Select brush size (Ø for a fine to 5 for a broad), select brush color (Ø for background, 1 for drawing or foreground) and then paint the screen. This mode is also useful for editing a picture. Again select a brush size (Ø-5), select color (usually Ø for background) and then move the brush over the undesired areas or lines. This command is exited by selecting and other command.

"A" DRAW WITH AIR BRUSH - A very interesting command which allows you to apply shading to your pictures. First, the question "ON WHITE (W) or ON BLACK (B)" will appear. Answer "W" if you are Air Brushing over a white area. Answer "B" if it is a black area. If you are airbrushing over a colored area (orange-brown or blue) and you specify ON WHITE, the shading will be black dots. If you specify ON BLACK, the shading will be white dots. Next the question "Enter percent blue" will appear. Answering 100 will be totally blue, Ø will be totally orange/brown, and 50 will be a mixture which appears white. Experiment with any number between Ø and 100. After answering the question move the VersaWriter pointer over the area to be shaded. Move quickly for sparse shading and slowly for heavy shading. This command is exited by selecting any command.

"D" DISK DIRECTORY - This command will list at the bottom of the screen the names of all High-Res pictures currently stored on the disk. To continue press any command letter.

"L" LOAD PICTURE FROM DISK - This command will ask for the name (8 characters or less) of a previously saved High-Res picture and then transfer it onto the screen. You may cancel this command by entering only a RETURN when asked for the picture name. There is no need to use quote marks or type D: when using the command.

"S" SAVE PICTURE TO DISK - This command will ask for the name of your picture and then save the picture to disk. You may cancel this command by entering only a RETURN when asked for the picture name. There is no need to use quote marks or type D: when using this command.

"G" MEDIUM-RES GRAPHICS - This command will call the Medium-Res drawing program. A question regarding whether to save your picture or not will first be asked because changing graphics modes will destroy any picture currently on the screen. Answer "Y" to save your High-Res drawing. Answer "N" to go directly to Med-Res drawing (your High-Res picture will be lost). Answer "RETURN" to abort the command and return to High-Res drawing. Your picture will still be intact.

"H" HELP - A list of the available commands will be displayed at the bottom of the screen. To continue, press any command letter.

"Q" QUIT - Entering this command will exit the High-Res drawing program and return control to the main menu. A question regarding your current picture will be asked. Answer "Y" to save your picture first. Answer "N" to go directly to the main menu (your picture will be lost). Answer "RETURN" to abort the command and return to drawing.

"T" TEXTWRITER - This command will transfer control to the Textwriter program. Please refer to section 3, (page 18), for complete operational details of the textwriter.

2. DRAW - MEDIUM RESOLUTION MODE

        Medium-Res drawing provides a horizontal (X) resolution of
160 points by a vertical (Y) resolution of 80 points (split screen)
or 96 points (full screen). Initially the system is set in split
screen mode to allow for display of prompt messages at the bottom
of the screen.

        Three drawing and fill colors are available in this mode.
Each may independently be set by the user to one of the 128
Atari colors available.

        The commands available are:

P   POINT Cursor
Space Bar   Draw straight line from last plotted point
1   Draw in color #1
2   Draw in color #2
3   Draw in color #3
∅   Draw in background color (∅)
X   Draw (in last color) with X Fixed
Y   Draw (in last color) with Y Fixed
W   Recenter to Current Position
U   Change X and Y scaling
M   Change Smoothing Factor
B   Change BACKGROUND Color (∅)
C   Change one of Drawing COLORS (1,2, or 3)
E   ERASE screen
R   REVERSE picture
/   Change from full-to-split or split-to-full screen
N   NORMAL - returns color, scaling, etc. to default
F   FILL closed figure with color
Z   Draw with Paint Brush
D   DISK DIRECTORY - lists Med-Res pictures
L   LOAD picture from Disk
S   SAVE picture to Disk
G   Run High-Res GRAPHICS drawing
H   HELP - list of Command Letters
Q   QUIT - End Session

        Each of the above functions is activated by pressing the
single letter listed above. Below is a detailed description
of each of the commands.

"P" POINT CURSOR - This command is identical to the "P" command described in the High-Res Drawing Section (page 12), except the current color at the point under the flashing cursor is also displayed.

"1" DRAW - When the "1" key is pressed the VersaWriter will begin drawing in color 1. To exit drawing, press any desired command letter. Usually "P" Point Cursor is used to exit from drawing.

"2" DRAW - Same as "1" above except the drawing color is "2".

"3" DRAW - Same as "1" above except the drawing color is "3".

"∅" DRAW - See the "∅" DRAW command description in the High-Res Drawing Section (page 12).

"X" DRAW WITH FIXED X - See the "X" command description in the High-Res Drawing Section (page 12).

"Y" DRAW WITH FIXED Y - See the "Y" command description in the High-Res Drawing Section (page 12).

"W" CENTER CURRENT POINT ON SCREEN - See the "W" command description in the High-Res Drawing Section (page 12).

"U" SCALE OF DRAWING - See the "U" command description in the High-Res Drawing Section (page 12).

"M" SMOOTHING FACTOR - See the "M" command description in the High-Res Drawing Section (page 12).

"B" BACKGROUND COLOR - See the "B" command description in the High-Res Drawing Section (page 13).

"C" DRAWING COLORS - This command allows you to change the color and intensity of the 3 drawing colors. Select "C" and then press the number of the color you wish to change. Move the VersaWriter pointer right and left to vary the color and up and down to vary the intensity. When the desired color and intensity is present, depress RETURN.

"E" ERASE SCREEN - See the "E" command description in the High-Res Drawing Section (page 13).

"R" REVERSE SCREEN - See the "R" command description in the High-Res Drawing Section (page 13).

"/" FULL/SPLIT SCREEN - See the "/" command description in the High-Res Drawing Section (page 13).

"N" NORMAL MODES - See the "N" command description in the High-Res Drawing Section (page 13).

"F" COLOR FILL CLOSED FIGURE - This command is almost identical to the "F" command described in the High-Res Drawing Section (page 13). You can fill in any of the 3 Medium-Res drawing colors (1,2,3). The area to be colored must be BLACK and bounded by a SOLID line of any drawing color (1,2 or 3) and/or the screen edge.

"Z" DRAW/EDIT WITH PAINT BRUSH - This command is almost identical to the "Z" command described in the High-Res Drawing Section (page 14), except there are a choice of 4 colors instead of just 2. You can select background color (∅) or one of the 3 Medium-Res drawing colors (1,2,3).

"D" DISK DIRECTORY- This command is identical to the "D" command described in the High-Res Drawing Section (page 14), except all Medium-Res pictures are listed.

"L" LOAD PICTURE FROM DISK - This command is identical to the "L" command described in the High-Res Drawing Section (page 14), except a Medium-Res picture is loaded.

"S" SAVE PICTURE TO DISK - This command is identical to the "S" command described in the High-Res Drawing Section (page 14), except a Medium-Res picture is saved.

"G" HIGH-RES GRAPHICS - This command will call the High-Res drawing program. A question regarding whether to save your picture or not will first be asked because changing graphics modes will destroy any picture currently on the screen. Answer "Y" to save your Medium-Res drawing. Answer "N" to go directly to High-Res drawing (your Medium-Res picture will be lost). Answer "RETURN" to abort the command and return to Medium-Res drawing. You picture will still be intact.

"H" HELP - See the "H" command description in the High-Res Drawing Section (page 14).

"Q" QUIT - See the "Q" command description in the High-Res Drawing Section (page 14).

3. ADD TEXT TO HIGH-RES PICTURE

Text may easily be added to any High-Res picture. Upper/lower case, graphics symbols, numbers, punctuation and the inverse of all of these may be written. The standard ATARI text font may be used or others may be loaded from disk. COMPUTER, GREEK and STYLISH text fonts are included on the disk. Other text fonts may be generated by several programs commercially available (such as the IRIDIS Fontedit Program).

The commands available are:

P	POINT Cursor
T	Start writing TEXT
ESC	Stop writing text
E	ERASE screen
R	REVERSE picture
/	Change from full-to-split or split-to-full screen
D	DISK DIRECTORY
L	LOAD picture from disk
S	SAVE picture to disk
F	Load New Type FONT
G	Run High-Res GRAPHICS Drawing
H	HELP - List of command letters
Q	QUIT - End session

Each of the above commands is activated by pressing the single letter listed above. Below is a detailed description of each of the commands.

"P" POINT CURSOR - This command will cause the flashing dot to appear on the screen. Using the VersaWriter pointer, position the flashing dot at the position where the start of text is desired. Then press the "T" command described below to start writing text. All other commands described below can be called from the "P" mode.

"T" WRITE TEXT - While in the "P" mode, position the flashing dot at the desired location. Press "T". The dot changes to a box and you are ready to start writing text. All letters (upper and lower case), graphics symbols, numbers/punctuation and inverse of all may be written as usual. Back-space, space bar and RETURN commands will function normally. Other control commands will not function as commands but instead will print on the screen their unique symbol. To move to a different section of the screen, just press the "ESC" key, reposition the flashing dot with the VersaWriter pointer and then again press "T". When finished writing text just press the "ESC" key to return to the "P" point cursor mode. You may then select any command desired.

"ESC" STOP WRITING TEXT - This command will return the user to the point cursor mode. The user may then enter any new command.

"E" ERASE SCREEN - See the "E" command description in the High-Res Drawing Section (page 13).

"R" REVERSE PICTURE - See the "R" command description in the High-Res Drawing Section (page 13).

"/" SPLIT/FULL SCREEN - See the "/" command description in the High-Res Drawing Section (page 13).

"D" DISK DIRECTORY - This command will list all of the High-Res pictures or Text Fonts stored on the diskette. After pressing "D" - press "P" to display the list of pictures or "F" to display the list of text fonts. To continue press any command letter.

"L" LOAD PICTURE FROM DISK - See the "L" command description in the High-Res Drawing Section (page 14).

"S" SAVE PICTURE TO DISK - See the "S" command description in the High-Res Drawing Section (page 14).

"F" LOAD NEW TEXT FONT - This command will ask the name of the new desired text font. After entry, the new font will be loaded and ready for use. Three (plus standard ATARI) text fonts are included on your VersaWriter disk. COMPUTER is a font with computer style letters and numbers. STYLISH is a stylized version of the standard ATARI text font. GREEK is the standard greek alphabet. All of the above contain upper and lower case as well as the Atari graphics symbols, numbers and punctuation.

"G" HIGH-RES GRAPHICS - This command will transfer control to the High-Res Graphics Drawing Program.

"H" HELP - See the "H" command description in the High-Res Drawing Section (page 14).

"Q" QUIT - See the "Q" command description in the High-Res Drawing Section (page 14).

4. CALIBRATE

    As stated in the SYSTEM STARTUP section, calibration is performed
to match the VersaWriter, Interface Unit, and your Atari to each other.
Ordinarily, this need only be done once, but calibration may be done
at any time by following the detailed instructions in the SYSTEM
STARTUP - CALIBRATION SECTION.

5. CATALOG PICTURES ON DISK

    This utility will list the names of all pictures stored on the disk.
Any alternate text fonts (for use with the Textwriter program) stored
on the disk will also be listed. The menu will return after any key is
pressed.

6. RUN DEMO PROGRAM

    The Demo program will display several pictures drawn with VersaWriter.
When the program is completed, the menu will again be displayed.

7. QUIT - END SESSION

    This command returns control back to BASIC.

B. ADDITIONAL SOFTWARE ON THE DISK

    A program titles "VWPICLD" is also included on your diskette. This utility
program will load a picture drawn with VersaWriter without the need to have the
VersaWriter hardware or drawing software.

    This program could be used for example to send your pictures to friends,
etc. Just include your picture and this program on the disk. Tell them to boot
the disk and then type RUN "D:VWPICLD". The program will then ask for the name
of the picture desired. Once the name is entered, the picture will be displayed
on the screen.

HARDWARE

The VersaWriter digitizer operates on a simple principle. A potentiometer is mounted within each cylindrical housing. The housings connect together like a human arm. The clear arm with the dot in the center is called the pointer. As the pointer is moved across the drawing board the potentiometers measure the unique angles of a certain point. The angles are digitized by the interface unit and then mathematically adjusted by the computer to represent screen coordinates (X,Y).

This simple principle has several advantages for the user. VersaWriter <u>does not</u> use RF or electrostatic fields which can accidentally erase diskettes or interfere with television reception. Complexity is reduced resulting in a more reliable and rugged digitizer.

With the simplicity and ruggedness it should not be forgotten that VersaWriter is a precise instrument. It must resolve angles to 2 tenths of a degree and select one of about 61,000 screen points to plot. It should be afforded some care and protection. Do not position the pointer arm off the drawing board when unattended. Do not attempt to separate the arm/housing units as it always results in a broken VersaWriter.

TIPS AND HINTS

1. When trying to "touch up" or edit a drawing, select a reduced scale to make cursor control easier.

2. Use an original on the drawing board even for things like writing your name or drawing simple figures.

3. When working on a large "masterwork", occasionally save to disk the partially completed picture with the "S" command. You never know what evil lurks.

4. If your VersaWriter is not used for several weeks, the potentiometer windings may tarnish. This will cause plotting errors. Moving the arms back and forth several times will clear the problem.

5. Keep a diskette just for pictures. After initializing the diskette, just change the standard diskette for the picture diskette when saving and recalling. A diskette will hold about 10 High-Res pictures. After this the I/O Error #162 will be seen.

6. If the VersaWriter digitizer appears dead, check and double check the connection at the controller (game paddle) jack.

7. To delete a picture use the normal DOS "D" command. High-Res and Medium-Res pictures will have an extension of ".PI8" and ".PI7" respectively. Be sure to add the extension when using DOS commands.

8. Try your best to NEVER press BREAK or SYSTEM RESET. If you accidentally do, there is still hope. Type RUN and your picture should return with minor damage toward the bottom of the screen. You will then have to edit/clean-up your picture.

9. If your are drawing very slowly you may notice some slight jumps in your drawing. This is due to slight variations in digitizing. It is recommended that some smoothing ("M" command) be added. Remember, with smoothing you must pause at sharp corners to prevent the corners from being rounded off.

ATARI VERSAWRITER MEMORY MAP

RAM HIGH MEMORY	
	MEDIUM RES SCREEN / HIGH RES SCREEN
HIGH MEM-4K	
HIGH MEM-8K	
Unused - size depends on amount of RAM	
$6000 24576	
	TRIG LOOK-UP TABLE
$5000 20480	Potentiometer read routine
$4F00 20224	Pot to screen conversion routine
$4C00 19456	Alternate character set data
$4800 18432	Textwriter character plot routine
$4600 17920	
	VERSAWRITER BASIC PROGRAMS
$1CFC 7420	
	DOS
$700 1791	
$600 1536	VersaWriter I/O routine
$0 0	Operating system RAM

<u>OWNER REGISTRATION</u>

SERIAL NUMBER _____

Please register me as an ATARI VersaWriter owner. I would like to
receive notice of VersaWriter software updates and new software
packages as they become available.

NAME _____

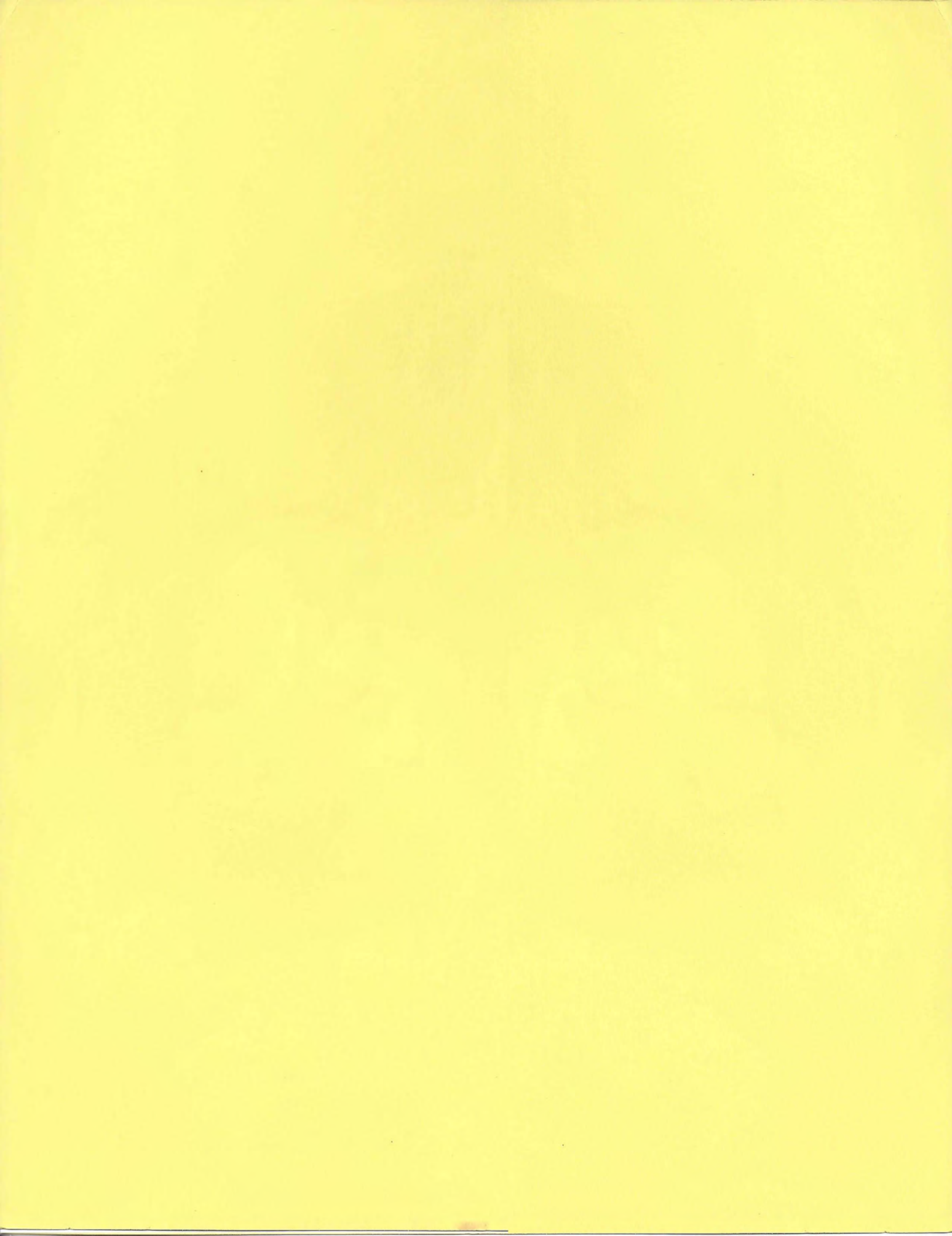STREET _____

CITY _____

STATE _____

ZIP CODE _____

My Dealer is: _____

              _____

              _____

Date purchased _____

I would be interested in seeing the following software developed.

_____

_____

_____

_____

_____

_____

_____

PLEASE MAIL TO:

Versa Computing, Inc.
887 Conestoga Circle
Newbury Park, CA. 91320

Arrow to center of rotation

Cal line

c
a
l
l
i
n
e

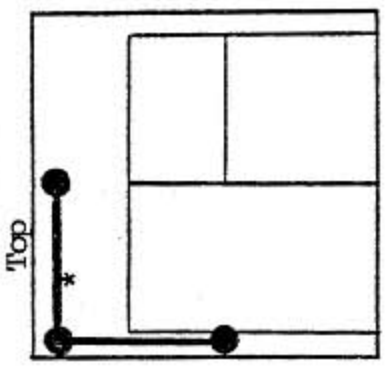Top

Diagram 1
*sight arm to
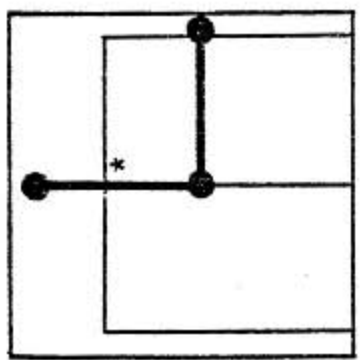cal line

Diagram 2
*sight arm to
top of board
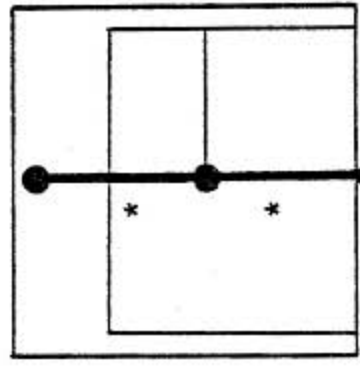
Diagram 3
*sight arms to
both cal lines
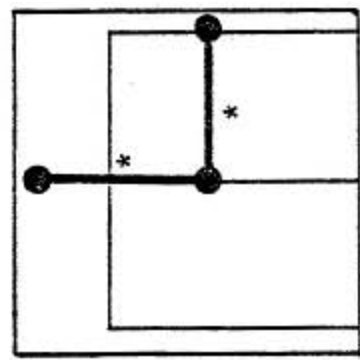
Diagram 4
*sight arms to both
cal lines

Align edge to
bottom of board

THE STATES and THEIR CAPITALS

ME.

VT.

N.H.

MA

R.I.

CONN.

N.Y.

N.J.

DEL

MD.

PA.

W. VA.

VA.

N.C.

OHIO

S.C.

GA.

FLA.

MICH.

IND.

KY.

TENN.

ALA.

WIS.

ILL.

MISS.

LA.

MINN.

IOWA

MO.

ARK.

N.D.

S.D.

NEB.

KANS.

OKLA.

TEX.

MONT.

WYO.

COLO.

N. M.

UTAH

ARIZ.

IDA.

WASH.

NEV.

ORE.

CALIF.

HAWAII

ALASKA
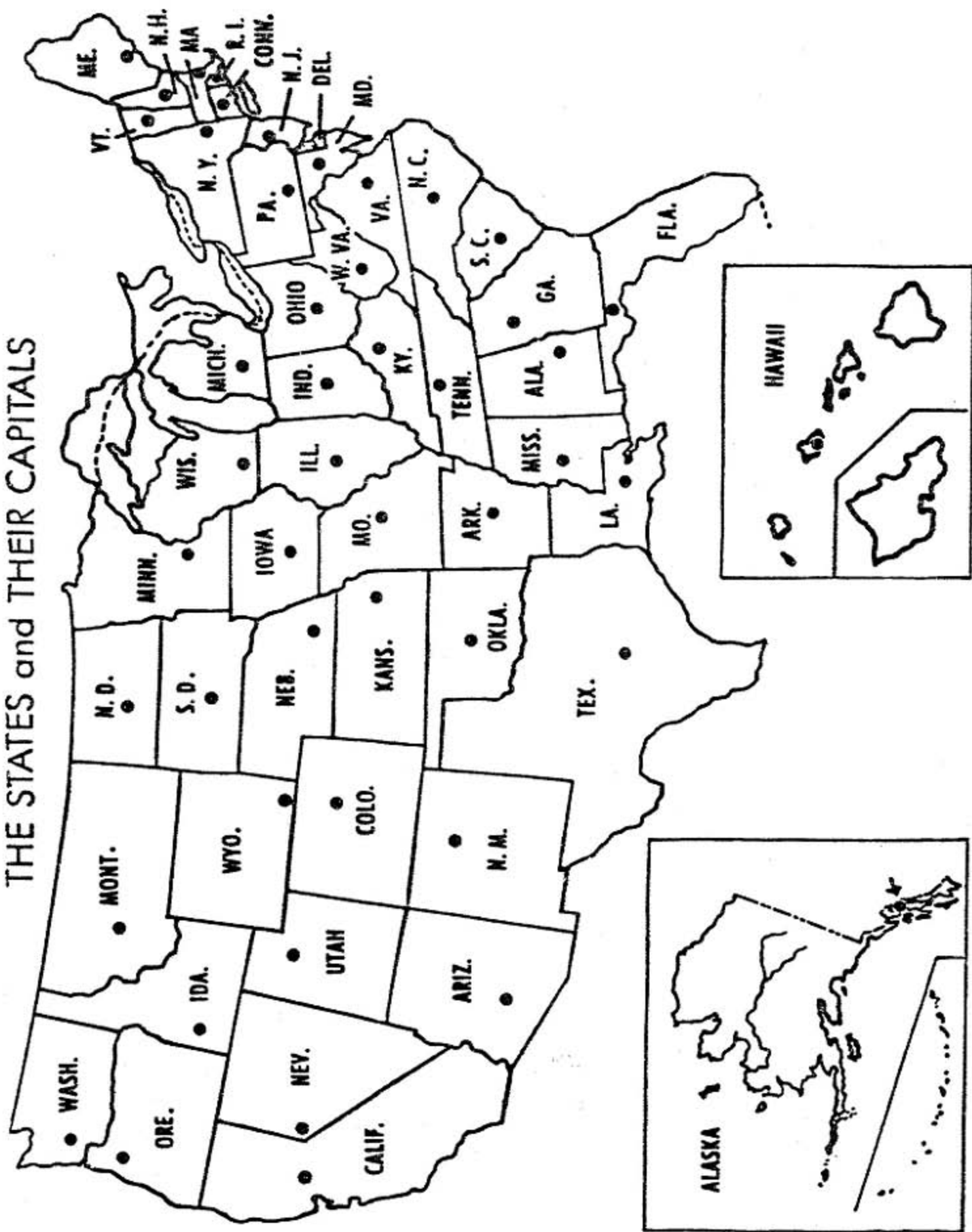
ATARI VERSAWRITER ADDENDUM

Two improvements have been added to the VersaWriter diskette.

1. In High-Res drawing, you may now draw in 2 additional colors.
    Press "2" or "3" to draw in the additional colors. Generally "2"
    is an orange/brown color and "3" is a blue color. This may vary
    with your Atari and television.

    The 2 new colors are also available in brush mode (described on
    page 14 of the manual). When asked "Brush Color", you may now
    answer 0,1,2 or 3.

2. An additional program has been added to the diskette. This
    utility program allows you to display pictures drawn with the
    VersaWriter from your own Basic programs. This utility is simply
    added to the end of your own program.

    The name of this utility is PICPROG.   It consists of lines 0 and
    30000 through 30160. Your own Basic program may use any lines except
    these. PICPROG has been stored on the diskette in two different
    formats. "PICPROG.BAS" is stored on the diskette in standard SAVE
    format. It must be loaded (using LOAD "D:PICBROG.BAS".) before you
    begin typing in your program. "PICPROG.ENT" is stored in LIST format.
    It may be added to an existing program using ENTER "D:PICPROG.ENT".
    Just make sure your program does not have line 0 or lines 30000
    through 30160 because they will be deleted when "PICPROG.ENT" is
    entered.

    To display a picture from your program is now very simple. First,
    set the proper GRAPHICS mode for your picture (if not already in that
    particular graphics mode). Second, set FS$ equal to the name of your
    picture. (Don't forget to include the D: and the extension of .PI7
    for Medium-Res Mode 7 and .PI8 for High-Res Mode 8 pictures). Finally
    GOSUB 30000.

    An example is:

        GRAPHICS 8: FS$ = "D:USMAP3.PI8":GOSUB 30000

    If you were already in Graphics Mode 8 it would simplify to just:

        FS$="D:USMAP3.PI8":GOSUB 30000

    This would provide a SPLIT screen picture so that you could display
    TEXT at the bottom. If you wished a FULL screen picture just add
    16 to the GRAPHICS command.

    An example is:

        GRAPHICS 8+16:FS$="D:USMAP3.PI8":GOSUB 30000

    A small example program demonstrating the above instructions is
    also included on the diskette. It's name is "D:EXAMPLE". Load
    and list it to familiarize yourself with the operational details.

TECHNICAL DESCRIPTION OF VERSAWRITER PICTURE STORAGE

The VersaWriter pictures are stored on the disk as follows:

HIGH-RES PICTURE (.PI8)		MED-RES PICTURE (.PI7)	
BYTE # (Decimal)	Description	BYTE # (Decimal)	Description
1	Address Low*	1	Address Low*
2	Address High	2	Address High
3	Length Low**	3	Length Low**
4	Length High	4	Length High
5	DINT (#1)***	5	Color #0***
6	BINT (#2)	6	Inten #0
7	BCOL (#2)	7	Color #1
8	-	8	Inten #1
9	-	9	Color #2
10	-	10	Inten #2
11	-	11	Color #4
12	-	12	Inten #4
13	-	13	-
14	-	14	-
15-7694	Picture Data	15-3854	Picture Data

-    = Currently not used.

*   = Screen start address minus 10 when picture was saved.

**   = Length of Picture File including Color register information but
       excluding 4 byte address and length header (bytes #1-4 above).

*** = Color Register information (numbers denote color register).

ATARI VERSAWRITER INSTRUCTIONS

DRAW HIRES MODE

The new commands available are:

    CTRL-D - Screen Dump
    F   - Run Fast Fill Program
    J   - Run Shape Maker

SCREEN DUMP

"CTRL-D" (Screen Dump) - This command allows you to "dump" the screen to an Epson MX-80 or MX-100 printer. After hitting a CTRL-D, the computer will load the screen dump programs from the disk. The computer will now respond inverse (Y or N)?". Normally you would type "N" to this command so the printer will print out exactly what you see on the screen. Answering "Y" to this question will give you a print out like a photographic negative.

FAST FILL

"F" runs fast fill program - This program permits filling in irregular closed figures with 64 different colors. After running this program, the computer will ask you to point the cursor within a figure. You may type "ESC" to exit to the main program or position the cursor inside a closed figure on the screen. After doing this press return. Next the computer will ask the color number. After selecting a color, the computer will ask "test color first (Y/N)", you may display the color in the lower right of the screen. Pressing the ↑ and ↓ arrow keys will move the selected color up or down the color table. When the desired color is present in the test area, press the return key. You will now be asked if you would like to fill a black area or a white area. Type "B" for a black area or "W" for a white area. The figure will now be colored in. Press "Q" to return to VersaWriter routines. A chart of the 64 colors can be seen from the main VersaWriter Drawing Program by typing "L" (load command) and then entering the name "COLORS".

A very striking feature of the fast fill program is the invert function. By pressing an "I" the computer will "invert" the picture image. Black changes to white, red to green, etc.

SHAPE MAKER

"J" runs the Shape Maker Program - This function allows any portion of the HIRES screen to be moved into a shape table which can later be copied anywhere on the screen. From the command mode there are 9 commands available:

1. "Ø" Color Ø
   When the "Ø" key is pressed the VersaWriter will begin drawing
   in background color.

2. "1" Color 1
   When the "1" key is pressed the VersaWriter will begin drawing
   in freground color.

3. "E" Erase
   This command will erase the screen.

4. "Z" Zero Shapes
   This command will erase all the shapes in the shape table.
   Because the "Z" key could accidentally be pressed, a confirm
   prompt is added. Answer with "Y" to erase the shapes.

5. "L" Load
   This command will allow you to load a previously saved picture
   or shape table from disk.

6. "S" Save
   This command will allow you to save the picture or shape table
   to disk.

7. "/" Split
   This command permits use of the full screen for drawing.
   When using this mode some status prompt messages will not be
   visible. All prompts requiring user input will switch back
   to split screen mode for entry.

8. "Q" Exit - This command will allow you to return to the main
   program.

9. "M" Enter the Shape Maker Sub Program.

SHAPE MAKER COMMANDS (Sub Program) Press "M" first.

"D"   - Pressing "D" will display the graphic screen point
               cursor. The user is directed to place the cursor
               at the upper left corner of the intended shape.
               After positioning the cursor, press any key. The
               user is now directed to place the cursor at the
               lower right corner of the intended shape and again
               press any key. The shape specified will then be
               automatically scanned, and placed in the shape table.

"↑"   - This command will move up the shape table to the
               next shape.

"↓"   - This command will move down the shape table to
               the last shape.

"x" fix X   - This function will fix the horizontal position of
               the shape while moving it up or down in perfectly
               straight lines.

"Y" fix Y   - This function will fix the vertical position of
                     the shape while moving it left or right.

"Space Bar"   - This function will print the shape in the current
                     position.

"DELETE/BACK S"   - This command will delete the last shape entered
                     in the shape table.

"*"   - This command will x-or the shape in the current
                     position.

"C"   - This function will return you to the command mode.

"N"   - This function will restore normal movement.

"U"   - This command will "unprint" a shape from the screen.