

# **ARTWORX V1.1**

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\*Portions of this program were created using the TIMACHINE compiler written by Cameron Hayne – copyright 1986.

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## DEFINITION OF TERMS

### ATTRIBUTE:

Attributes modify the appearance of the screen by applying PAPER and INK colours, BRIGHT and FLASH to specific areas.

### CURSOR:

A screen reference marker, showing the current position for applying information to the screen (the arrow in the case of ARTWORX).

### FONT

A generic term describing a specific character set.

### GREY SCALE:

With the proper software, a full-sized dot-matrix printer can produce a copy of the screen using varying dot densities (shades) to represent the screen colours. This method of reproduction is known as "GREYSCALE".

### INTERFACE:

A hardware device which allows the computer to communicate (hook up with) a specific peripheral device; e.g., printer, modem, disk drive, etc.

### MENU:

A list of options on the screen allowing control and/or selection of the program features.

### PIXEL:

The smallest addressable dot on the screen. This can be seen using the DOT feature of ARTWORX.

### RAM:

Stands for "RANDOM ACCESS MEMORY" and is the amount of free space your computer has for your programs.

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You can erase by toggling INVERSE (under ATTR) on with the fire button (an asterisk indicates "on"), then select a brush. The brush will now erase when the fire button is held down. For a more thorough understanding of erasing, study INVERSE under the "DESCRIPTION OF FEATURES" section.

Okay, now you know the "fun"-damentals! At this point we urge you to read the "DESCRIPTION OF FEATURES" section and avoid experimenting blindly with all the features. By experimenting as you read, you will be sure to master all features in an hour. If we had a dime for all the times a customer asked about something which is explained in the manual, the plush, well-lit offices of NovelSoft would truly be plush and well lit! PLEASE READ!

## DESCRIPTION OF FEATURES

### TOOLS

#### VIEW

This feature allows the drawing screen to be viewed, uncluttered by the menu or cursor. Useful for screen photography or simply examining your creation. Note that during VIEW mode, the screen is "dead", i.e., no cursor or prompts. The menu is called back in the usual manner of two rapid presses of the fire button.

#### BRUSH

Provides six different brush shapes for free-hand sketching. Upon selection of BRUSH, a pull-down brush menu will appear. Note that the first brush, at the top of the brush menu, is blank. This is actually a brush, but it plots no ink and, therefore doesn't set any pixels. This brush is very handy for painting with attributes only.

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### ROM:

Stands for "READ ONLY MEMORY" and is the brain of your computer. This section of memory cannot be written to or changed by the user. The ROM contains all instructions needed to tell the computer what to do.

### SCREENS:

Pronounced "SCREEN STRING" - this is the Sinclair keyword (below the K key) which tells the computer to save the screen or picture as a byte file. Note that this command has no significance for the use of the ARTWORX program. The picture is sometimes referred to as a "SCREENS".

### WINDOW:

A variable-sized box, used to define an area on the screen.

### INSTALLING THE PROGRAM

The cassette contains programs in this order:

- ARTWORX V1.1

- ZXGALLERY

- Examples: ART1 to ART5

To load ARTWORX, simply type LOAD"" and press ENTER. In a few minutes, a blip will notify you that the program has finished.

NOTE: All references to control in this manual are for joystick use. If you are using keyboard control, then simply substitute the cursor keys (unshifted 5, 6, 7, 8) for the joystick and the Ø key for the fire button.

#### \*\*\*WARNING\*\*\*

ARTWORX uses a unique method for accessing the menu: two presses of the fire button in rapid succession. Bear this in mind at all times. If you get overly anxious while toggling a feature on, you may call the menu accidentally. A sloppy press of the fire button can cause "button bounce" and this too can cause accidental menu calls.

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You can use it to add BRIGHT, FLASH, or PAPER colour to a local area without disturbing or altering the pixels that are already set in that area. This concept may seem a little difficult to grasp at first so feel free to experiment. Refer to the ATTR section of this manual for a more thorough understanding of the attributes.

#### SPRAY

Provides a spray paint simulation which is active while the fire button is held down. Note that, as the speed of the cursor increases, the density of the spray will decrease slightly. Useful for shading effects.

#### FILL

Fills (sets all pixels) any enclosed shape with the current attribute selection. Note that if the walls (boundaries) of the shape being filled have any holes (gaps), the fill will leak out and either contact the next object or, if there is none, stop filling.

To activate FILL, simply move the cursor inside the boundary of the shape and press the fire button. When filling complex shapes, small pockets may be left unfilled. Just move the cursor to these pockets and press the fire button again.

#### ZOOM

This feature allows a small area of the screen to be magnified eight times for working at the pixel level. Upon selection, the "ZOOM window" will appear in the centre of the screen. Move the window over the area you wish to zoom in on and press the fire button. Everything in the window will now be blown up eight times with a grid indicating pixel locations.

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## GETTING STARTED

Upon running ARTWORX, you are presented with a blank screen with the main menu pulled down. This menu is the only menu in the entire program so you don't have to worry about being confused by endless menus and sub-menus. The title of each feature category is listed along the top of the menu with the features themselves listed underneath. You will also notice that the rectangular selection box is already in the upper-left corner, surrounding the VIEW feature. The menu will always come down with the selection box in the upper-left corner.

Features are selected by moving the box to the feature you wish to select and pressing the fire button. Go ahead and use the joystick now, to get a feel for moving this box around the screen. All features of ARTWORX are controlled with the joystick. The only time you need to use the keyboard is for text entry.

ARTWORX is so friendly and natural to use that there is really only one rule for the novice user to remember: *The menu is called down by rapidly pressing the fire button twice.* Well, now we're ready to experiment a little!

Use the joystick to move the selection box to BRUSH and press the fire button. The BRUSH menu will pull down with the selection box appearing at the top. This menu provides six different brushes (the blank one at the top is also a brush, see BRUSH under DESCRIPTION OF FEATURES) for painting on the screen. Move the selection box to the bottom brush and press the fire button. Now the menu disappears and the arrow cursor is in the middle of the screen.

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You can now toggle individual pixels on or off with the fire button. When you're finished editing, press the fire button twice and the image will return to its original size in its new edited form.

#### CLS

This feature clears the screen. IF YOU CLEAR THE SCREEN ACCIDENTALLY, THERE IS NO NEED TO PANIC! Simply select UNDO immediately, and the picture will return (remember - UNDO will undo anything done since the last menu call). Always remember that when you clear the screen, your current ATTR settings will be applied to the entire screen. You can, therefore, use CLS to apply BRIGHT, FLASH or PAPER colour to the entire screen before drawing on it.

#### UNDO

Erases all information which has been added to the screen (picture) since the last menu call. So, if you're unhappy with what you've drawn since that last time you called the menu, just call the menu down and select UNDO. Note that UNDO must be selected immediately after calling the menu. After selecting UNDO, the screen is "dead" to allow you to contemplate the drawing and decide what to try next. Two pushes of the fire button and the menu is back.

#### \*\*\*WARNING\*\*\*

UNDO IS NOT AVAILABLE AFTER USING ZOOM-SEE UNDO.

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You will use this cursor to apply all features to the screen. Experiment with moving it around. Notice that this cursor has an automatic speed control. At first, its movement is slow and controllable. But, the longer you hold the stick in any direction, the faster the cursor will go! The speed will reset to slow when the stick returns to the rest position (cursor stopped).

This "intelligent cursor" is very handy indeed. It's smart enough to know that if you're doing a lot of starts and stops with the joystick, then you probably want a slow speed for detailed work. If you're holding the stick in one direction for more than a few seconds, then it's a fair bet that you want to cover a large portion of the screen, so the speed increases.

Now, remember that brush we selected? Well, it's still there, waiting to be used. Simply hold the fire button down and start moving the cursor. The brush is active only while the fire button is held down. Now, let's select a different brush. Press the fire button rapidly, two times, and the menu will come down.

This time, select the second BRUSH and draw a small enclosed shape. Make sure that there are no gaps around the edges of the shape. Now call the menu down and select FILL. Move the arrow inside the shape and press the fire button. Presto!

Call the menu and move the selection box to INK (under ATTR). Use the fire button to cycle through the colours until you get to the one you want. Then move back to TOOLS and select SPRAY. Spray works just like BRUSH with the spray active while the fire button is held down.

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## WINDOW

### NOTE:

The window used in all the WINDOW features grows upward, and to the right of the cursor. When the window reaches its maximum size, it will simply stop growing. The maximum size of the window is determined by the area of the window. Thus, if you reduce it in one plane, it can be grown in another.

### MOVE

This feature provides the ability to move large pieces of the picture anywhere on the screen! After selection, move the cursor to a suitable starting location for growing the window (remember that the window grows upward, and to the right of the cursor) and press the fire button. Next, use the joystick to grow the window around the object you wish to move and press the fire button again. Now you can move the image anywhere you like!

Note that only pixels are moved. The attributes of the image will stay behind; e.g., if you have a white screen and you move an image containing some red PAPER colour, the red PAPER area will remain behind and the image will be applied to the screen using the current ATTR settings.

### COPY:

Works the same as MOVE except that the original image remains on the screen, thus "duplicating" the image. Note that COPY can be used to change the colour of an image by selecting the desired colour, then defining and committing the image in the same location.

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## TURN

After defining the window, the original image is erased, turned 90 degrees clockwise, and reproduced. The image can be rotated repeatedly. If the image would go off the screen when rotated, the feature will abort and the "ABORT" will flash at the bottom of the screen.

## BIG

After defining the window, the original image is erased and is reproduced using a magnification factor of two. The image can be magnified repeatedly. Note that if the image being magnified will go off the screen, then the magnification will be aborted and the "ABORT" message will flash at the bottom of the screen.

## SMALL

After defining the window, the original image is erased and is reproduced using a reduction factor of two. The image can be reduced repeatedly. When using SMALL, a certain amount of image distortion or "information loss" will take place. This will not be apparent while viewing the reduced image. However, it will be very apparent if you try to restore the image to its original size using BIG. Better to use UNDO in this case.

## FLIPV

After defining the window, the image is erased and then mirrored vertically. This is like holding a mirror up to the top or bottom of the image.

## FLIPH

After defining the window, the image is erased and then mirrored horizontally. This is like holding a mirror up to the side of the image.

## CLEAR

After defining the window, the original image is erased.

## ATTR

See "Attributes" in the "DEFINITION OF TERMS" section.

## INK, PAPER and BORDER

(Ink, Pap, Bor)

These attributes are selected by positioning the selection box around the desired feature and then "cycling" through the different colours with the fire button. All eight colours are available with INK and PAPER also having a "transparent" setting - "tr". Transparent simply means that attributes already on the screen will remain dominant; i.e., if you have INK set at "tr", then whatever you draw on the screen will adopt the same INK colour as what you are drawing over. The same goes for PAPER.

INK is simply the colour the pixels will be set to. You're probably accustomed to thinking of PAPER colour as a global attribute, i.e., affecting the entire screen at once. ARTWORX allows you to apply PAPER colours locally! It may help you to understand if you think of local PAPER colour as a background colour and INK as the foreground colour.

Now, this is where things get a little tricky, so pay attention. Unfortunately, the Spectrum has "low resolution colour". This means that, although the computer is capable of relatively high resolution graphics (large numbers of addressable pixels), there are restrictions on how close different coloured pixels can be together.

Try to think of the screen as being divided up into two different resolutions. One is the "pixel" resolution of

256 pixels horizontally and 176 pixels vertically. The second is the colour or "attributable" resolution of 32 horizontally and 22 vertically. The "pixel" resolution is made up of the smallest dots of the screen (see "Pixel" in the "Definition of Terms" section). The "attribute" resolution can be seen by selecting GRID.

Think of these GRID squares as "attribute blocks". The attributes INK, PAPER, BRIGHT and FLASH will affect an area *no smaller than one attribute block*. Read that last sentence again! What this all means is that you apply different BRIGHT, FLASH, PAPER or INK values to two or more different pixels sharing the same attribute block.

## BRIGHT, FLASH, OVER, INVERSE

(Bri, Fla, Ovr, Inv)

These features are toggled on/off using the fire button, with an asterisk indicating "on".

BRIGHT will brighten the screen in attribute block locations and is used mainly for highlighting an area of the screen. It also effectively doubles the number of colours available in PAPER and INK due to the different shades it creates. Note that *all* BRIGHT areas of the screen will be removed by GRID.

FLASH also affects the screen in attribute block locations and is mainly used for highlighting or emphasizing.

OVER sometimes causes a little confusion, so listen carefully. It's quite simple, really. The pixels of the image being applied to the screen, will be set opposite to what is already there. In other words, if you are setting some pixels and there are already some pixels set in this area, then they will be "unset". If there are no pixels set in this area then they will set.

To illustrate this, choose a brush and draw an enclosed shape. Now FILL the image. Call the menu and flag (turn on) OVER. Choose a brush and draw on the screen, both in the blank areas and through the filled shape. Notice that the unset pixels in the path of the brush are now set and the previously set pixels are now unset.

INVERSE is sort of like half an OVER! If INVERSE is flagged and no pixels in its path are set, they will be left unchanged. However, set pixels will be unset.

## FILLING WITH ATTRIBUTES

Yes, just when you thought things couldn't possibly get any more complicated, you can fill with attributes! Try this example and you'll see how useful this can be. Select CIRCLE from the SHAPE category and create a circle about three inches in diameter (this is done by defining the centre point of the circle with the fire button, growing the circle with the joystick, then committing the circle with the fire button). Then create another circle, about two inches in diameter, in the centre of the first circle.

FILL the space between the two circles with red ink. Now, FILL the centre of the smaller circle with green ink. What a mess! Because of the bleeding, you might well think that curved surfaces in closed proximity to each other, such as this example, cannot be two different colours.

Well, that's true, but we can create the illusion that they can. Try this! Call the menu and select UNDO to get rid of the green mess. Now, flag INVERSE and select transparent (tr) INK and green PAPER. Okay, now FILL the smaller circle. Neat!

There is still a rough, blocky mess of green on the screen but since it is PAPER colour, it remains in the background and the INK colours are always in the foreground. In fact, if you change the PAPER colour back to white and erase the INK, you will see this to be true.

## SPECIAL NOTE ABOUT INVERSE

### ERASING

You may have noticed that "erase" features are conspicuous by their absence. Quite the opposite is true, however! Due to the sophisticated methods we have employed regarding attributes, virtually EVERY feature is an eraser when INVERSE is flagged. Since INVERSE unsets pixels, any feature which sets pixels will now unset them!

## SHAPE

### CIRCLE

(Circ)  
Define the centre of the circle with the fire button, then grow the circle to the desired size using the joystick. The rate of growth is related to the speed of the cursor. The circle can be grown in any direction. Once the desired circle is defined, press the fire button to commit it.

### ARC and OVAL

These features use a triangle for visual reference of the three boundaries. Use the fire button to define the starting point, then grow the first axis of the triangle to the length and angle you wish. Press the fire button again and you can now use the joystick and fire button to define the third point of the triangle. The shape will be drawn, using the tips of the triangle to determine the start, finish and deflection points.

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## GETTING STARTED

Initially, GALLERY is empty and option 1 should be selected first. ARTWORX comes with five samples of artwork and these are located immediately after ZXGALLERY. We suggest that you load all five so that you can become familiar with GALLERY.

Section option 1 and enter 5 for the number of pictures. Next, position the tape just past ZXGALLERY, enter the name of the first sample (ART1) and play the tape. Stop the tape immediately after the first sample has loaded. You will be prompted to enter a BORDER colour, then to enter the name of the second sample and so on until all five have loaded.

After the last picture has loaded, the menu will return. You may now select option 4 to view GALLERY. Note that when viewing GALLERY, there are three hidden controls:

- you can "fast forward" the pictures by pressing "F".
- you can pause the screen by pressing "P".
- you can return to the menu by pressing the space bar.

There is no on-screen menu for these controls, so the screen will be free of distractions for the show.

Option 2 allows you to save the entire show under one filename so that it can be loaded back in at a later date using option 3.

Option 5 allows you to change the viewing time. The default setting is one second.

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For best results, always try to define the amount of deflection (the third point) in the centre of, and perpendicular to, the first two points. Note that you can define the arc or oval at any angle!

If you create an arc which goes off the screen edge, then the error trapping routine will call the menu down. This is a universal response to system errors. If you create an oval which goes off the screen edge, the oval will simply stop drawing when it reaches the edge.

### LINE and RAY

Define the starting position with the fire button and then use the joystick to grow the line to the desired length and angle. Press the fire button to commit the line. The only difference between LINE and RAY is that the lines in RAY have a common centre.

### BOX

This feature works the same way as the WINDOW features except that there is no restriction on the size of the box.

### TRIANGLE

(Tri)

You have already used this feature in ARC and OVAL. It works the same way except that the triangle remains on the screen.

### DOT

Sets individual pixels each time the fire button is pressed.

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## APPENDIX A

### TIPS FOR GETTING PROFESSIONAL RESULTS

1. You will find it far easier and more natural to complete the outline of your drawing before adding any attributes (colour, BRIGHT, etc.).
2. Use ZOOM when creating small detailed images.
3. Fast and excellent results can be achieved by first tracing a picture or photograph onto clear acetate and then taping it to the T.V. or monitor. Then use the various tools available in ARTWORX to trace the image onto the screen. Use the ARC feature for best results when tracing complicated images.
4. When using the WINDOW routines, note that the boundaries for movement around the screen are determined by the window size and not the shape within it. Therefore, be sure to "hug" the image closely when defining the window.
5. Different hues or tones of colour can be created by manually filling an area with individual dots, leaving a one pixel space between each. This is best done using the ZOOM feature.
6. Use OVER to apply text to an area which already has pixels set, e.g., a filled shape.
7. Use OVER with some of the larger brushes for a very interesting effect. This is caused by the brush half erasing itself while it is being drawn.
8. Use OVER with SPRAY to erase in a spray pattern.

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## TEXT

After selecting a text font, move the text cursor to the desired start location and press the fire button. Now you can enter text as you normally would from the keyboard. CAPS SHIFT and CAPS LOCK work as normal and DELETE provides a backspace. The text will automatically wrap around at the screen edge but will not justify.

When you are finished entering your text, press ENTER to return to the beginning of the feature. Remember that all ATTR settings are applicable to the text, so experiment. Note that the text is applied to the screen in attribute block locations but you may shift the position of the text anywhere you like using MOVE. Use GRID to help you plan where your text will go initially.

Also note that you are not limited to the four fonts which are provided. The text can be enhanced in many different ways with creative use of BIG, SMALL, ATTR, etc. Some distortion in the lower case ITALIC was unavoidable, so certain letters may seem a little unusual. This is due to the limitations of the computer.

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## APPENDIX B

### USING THE PICTURES IN YOUR OWN PROGRAMS

The pictures created with ARTWORX can be used as loading screens for your own programs. To load them into the computer when ARTWORX is not present, use the SCREEN\$ (extended mode/SYMBOL SHIFT K) command as follows:

LOAD "name" SCREEN\$

Follow the example below to create a suitable loader:

```
10 LOAD "name" SCREEN$
20 LOAD "your program"
```

Save the loader on the tape, then the picture, then your program. Note that ARTWORX saves the pictures as code, but the pictures can be loaded as SCREEN\$.

You will notice that when you load a SCREEN\$ into the computer, you are able to watch the picture being assembled as it loads. It is sometimes desirable to reveal the picture to the viewer after it has loaded. One easy way to do this is to set the INK and PAPER colours to the same value while the picture is loading. If this is done, the picture will not be revealed until the last few hundred bytes of the SCREEN\$ (the attribute file) are loading.

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## FILE

### LOAD and SAVE

This category provides I/O (input/output) for saving and loading your pictures to tape or Microdrive. Just answer the prompts and you can't go wrong! Note that the maximum length for a filename is ten characters. ARTWORX V1.1 supports both tape and Microdrive. The five sample pictures included with ARTWORX can be loaded into either GALLERY or ARTZGALLERY. These samples are located immediately after ZXGALLERY.

If a tape error is encountered during loading or saving, you will receive a flashing warning and the program will restart with no loss of picture information.

\*\*\*WARNING\*\*\*

Microdrive errors are not trapped. If you get a Microdrive error during loading or saving, enter GOTO 0 to restart the program. DO NOT USE RUN OR YOU WILL LOSE YOUR PICTURE!

## GALLERY

### INSTALLING THE PROGRAM

GALLERY is an interesting little bonus program we provide with ARTWORX which allows you to create a slide show using your ARTWORX masterpieces! You may load in up to five pictures and cycle through them at any time interval you like. It is even possible to create some crude animation by selecting the fastest cycling time of .01 seconds (a smaller interval will cause GALLERY to pause).

ZXGALLERY is located on the tape immediately after ARTWORX. Simply enter LOAD "" or LOAD "ZXGALLERY".

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