# ATARI LIGHT PEN
## AND ATARIGRAPHICS™
### OWNERS GUIDE

# ATARI

HOME COMPUTERS

# Table of Contents

With the ATARI Light Pen, you draw directly on the TV or monitor screen. Nothing provides quicker results, greater access to Atari graphics capabilities, or more of a sense of immediacy when interacting with an ATARI Home Computer. There are no program commands to remember, because *there are no commands.* You only have to use a few keys on the computer keyboard, but if you want, you can also type words—in any color—into your picture.

You simply touch symbols on four sliding control cards with the light pen to zoom in for detailed work, edit single dots, stretch lines, rectangles and circles, and even sketch freehand. You can use any of 128 colors with three kinds of mirroring. You can enhance your work with any of more than 2,000 patterns, and then save it to cassette or diskette.

Users of all ages can easily adapt the ATARI Light Pen and AtariGraphics™ cartridge to suit their imagination and interests. Children can play with the computer for hours with this durable, safe medium. Their enthusiasm can be directed into instructive channels both at home and at school; for example, toddlers can learn the basic shapes of objects and increase their eye-hand coordination.

Powerful features give advanced users sufficient creative control to produce significant art. Practical applications include creating striking 3D-like bar charts and pie diagrams, and doing serious graphic design. Engineers might use the light pen to develop block/flow diagrams, theatrical set designers to create scenery, landscapers to plot the layout of a garden... the possibilities are virtually limitless.

In the next few pages, you'll learn how easy it is to set up and start your work or play. If you wish, experiment on your own with the light pen as you follow along.

The ATARI Light Pen and AtariGraphics Cartridge work with all ATARI Home Computers. However, the graphics resolution is greatest when your computer has 48K Random Access Memory (RAM) or more.

If you want to save the images you create on cassette, you need an ATARI program recorder and a computer with at least 16K RAM. To save to diskette, you need an ATARI disk drive and a computer with 48K RAM or more.

Add a TV set or monitor, and you've got everything you need!

For answers to specific questions about the operation of your ATARI Home Computer, refer to your computer owner's guide.

### Setting Up

**1.** Plug the ATARI Light Pen into any controller port on the computer. Unplug other controllers before using the pen.

**NOTE:** ATARI 400® Computer owners must use port four #4 (on the far right) only.

**2.** With the computer off, turn on the TV set or monitor. Wait for the set to warm up, then wipe your hand over the entire screen surface to remove the static electricity buildup. If you have a program recorder or don't plan to save your work, skip to step 4.

**3.** If you will be using a disk drive, turn it on and wait for the BUSY light to go off. Next, place a formatted diskette containing DOS (Disk Operating System) files, but without an AUTORUN.SYS file, into the drive. Close the drive latch or door, depending on what type of disk drive you have.

See the "STORAGE CONTROL CARD" section in this guide for detailed instructions for storing and retrieving pictures. For information about using cassettes, refer to your *ATARI Program Recorder Owner's Guide*. For diskettes, see *An Introduction to the Disk Operating System* and the *ATARI Disk Operating System Reference Manual*.

**4.** Firmly insert the AtariGraphics cartridge into your computer's cartridge slot, and turn on the computer. If your disk drive is on, the DOS files will load. After a moment, you'll see the software program's title page.

**5.** After the AtariGraphics title page is created, you're asked to point the Light Pen at a short vertical line on the screen. When you point the pen at the line, you'll hear several tones indicating that the light pen is functioning properly. Hold the pen there until the instruction window begins to close, then lift it off the screen.
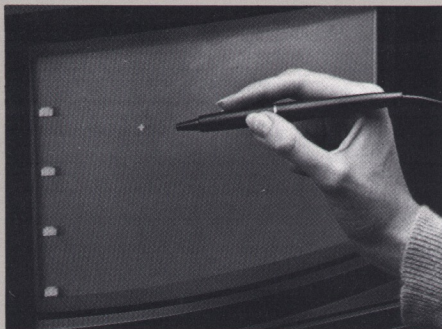
After you've pointed the pen at the vertical line, you'll see a blue screen, empty except for a small white cross and four white tabs on the left side.

## Trying Out Your ATARI Light Pen

The cross shows you where the ATARI Light Pen is pointing on the screen. The pen has a push tip—a little like a ball point pen—that lets the computer know when you're pressing against the screen. The tip is very sensitive, so you don't need to press hard.

Point the pen at the screen, but *don't* press down yet. The white cross jumps to the tip of the pen, following it as it moves. When you do leave the tip pressed against the screen while you move the pen, it leaves a yellow line behind. You also should hear two sounds: One when you press the tip to begin drawing, and another when you release the pen to stop drawing. Adjust the volume on your set so the tones are plainly audible.

This is how you do freehand sketching on the screen. Sketch awhile to get the feel of the ATARI Light Pen. Remember, you don't need to press hard.

*If the white cross does not follow the pen point around the screen, or pushing down does not draw a line, turn to the "In Case of Difficulty" section in this Guide.*

The four tabs on the left edge of your screen, like the tabs on an index card file, make it easier for you to select what you want. Each tab is connected to a "card" behind the screen. To call up the cards on the screen, briefly press the light pen tip against the white tabs. The cards slide up almost as though you had selected a card out of a file or library catalog. The cards slide down out of sight when you press one of the white tabs with the light pen again. You can call up the cards at any time—they slide up over your work without affecting it. Put each card in the down position when you are creating graphics on the part of the screen it occupies.
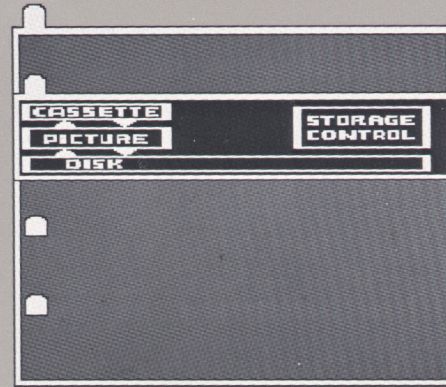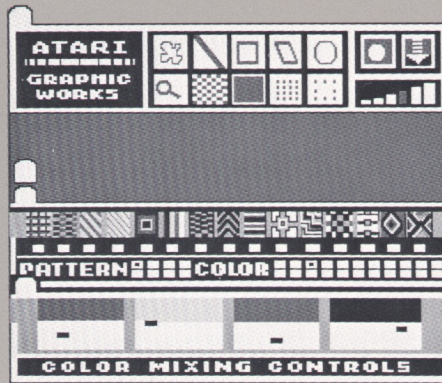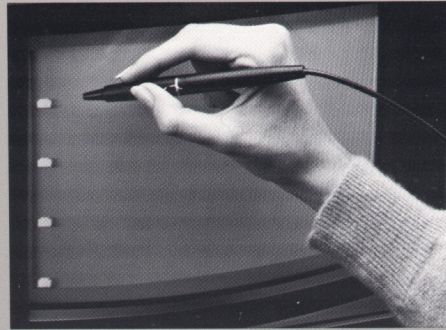
The top card is GRAPHIC WORKS, where you select what you're going to do on the screen; for example, straight-line drawing or point editing. The second card from the top, STORAGE CONTROL, is for when you want to save art to or retrieve art from cassette or diskette. The PATTERNS PALETTE is the next card down. After you create the overall form or individual shapes, you can use the patterns on this card for filling in or creating a striking backdrop. At the bottom is THE COLOR MIXING CONTROL CARD, where you select the hue (or spectrum color) and brightness (or luminance) of the colors you use on screen.

**Important additional information about the electronic index tabs:**

■ On some TV sets or monitors, the tabs may be partially hidden because they're placed too far over the left edge of the screen. To move the tabs to the right, hold down both the **SHIFT** and **CONTROL** keys and type the *Greater Than* symbol (>) key. Hold down **SHIFT** and **CONTROL** and type the *Less Than* (<) key to move the tabs left.

■ To see your picture without the distraction of the tabs, simply press the **TAB** key and they slide out of sight. Press **TAB** again to make the white tabs visible and return them to their original positions.

In the next few pages, you'll become familiar with each of the four cards. If you like, experiment with each operation as you read about it.

You can use **RESET** (called **SYSTEM RESET** on ATARI 800® and 400 Computer keyboards) to stop the computer in the middle of what it's doing and return to the opening screen of the program.

**CAUTION: RESET** completely erases any picture you were working on and didn't save.

Bring up the GRAPHIC WORKS CARD by pressing the top tab on screen with your ATARI Light Pen. If this were a space project, this card would be Mission Control, where you regulate and direct the overall action of the system. There are two bordered sections of control buttons on the card. The section on the right is described first, because the three modes inside modify or affect all the modes in the larger section on the left side of the card.



To select a mode, press the pen on the corresponding symbol until it begins flashing. Then go to the screen and begin your work or play in that mode. You can make all four cards slide down off screen (remember: just press pen on white index tabs) so you have more space to be creative.

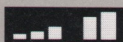### Section on Right: Graphics Management



**Current Drawing Color**  Selects color of lines and shapes created with the light pen. You change this color by pressing the pen tip on the symbol.



**Clear Screen**  Replaces everything on screen with a solid color. Press repeatedly to select the background color you want.

**Smoothness Control**   Determines evenness of the lines you draw when you're in the Freehand Sketching mode described below. Select from a progressive series of six bars: The highest level of smoothness (largest bar) is useful when you are doing intricate or detailed work and must be particularly careful. The lowest level of smoothness (smallest bar) may be appropriate when you are merely doodling. The middle or medium setting is automatically selected in the beginning.

## Section on Left, Top Row: The Shape of Things to Come

**Freehand Sketching**   Draw as the spirit or will moves you (see Smoothness Control mode directly above). Keep the pen tip depressed on the screen while sketching. You can erase by drawing over lines and shapes using the background color (see "Drawing Color" in second section of this card).

**Straight Line**   Push the pen briefly against the screen to select a starting point, lift the tip, and then press it again elsewhere on the screen when you decide on an end point.
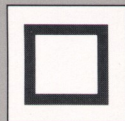
**Rectangle and Square**   Select a corner point by pressing the pen on the screen, then press it again when you decide where you want the opposite corner.

**Parallelogram**   Select the first corner and then a second by pressing the pen tip on screen. A parallelogram then follows the pen point as it moves, until you lock the figure in place by selecting a third corner.

**Circle**   Places circles of any diameter on screen. First select the center point and then select a point on the desired circumference with the pen.

## How to Stretch and Delete Lines and Shapes

**Rubberbanding** is a fun, useful feature built into the Straight Line, Square and Rectangle, Parallelogram, and Circle modes described above. As the name implies, the feature lets you stretch lines and shapes like rubberbands. Try it by selecting the Rectangle mode. Press the pen down on the screen, lift it, and then move the pen without pressing it down. The rectangle follows the pen's movements until you press the pen on the screen again to lock it in place. Try holding down the **OPTION** key while rubberbanding any of the shapes to create an interesting smearing effect.

If you change your mind about the kind of figure you want to draw, you can cancel before you finish it. Simply move the pen back and forth rapidly in front of the screen, as though the shape is stuck to the pen and you're trying to shake it off. After about four shakes, you'll hear a tone, and the figure disappears. You can also press the keys **ESCape, DELETE BACK SPACE,** or **BREAK** to cancel a figure before it is finished.
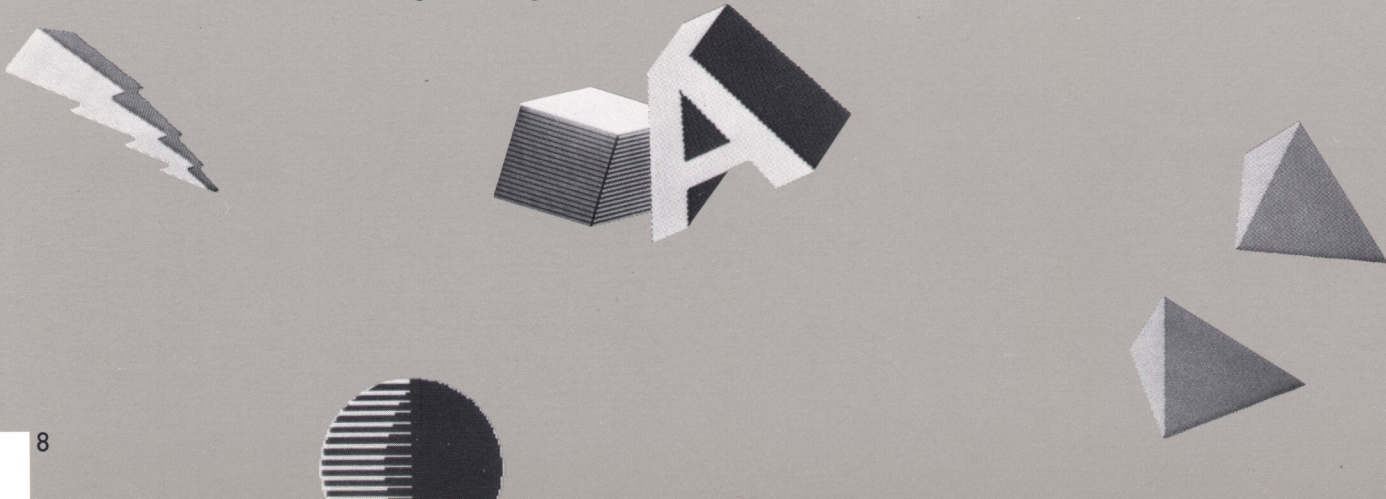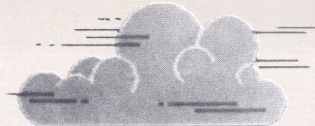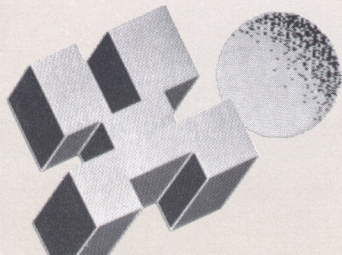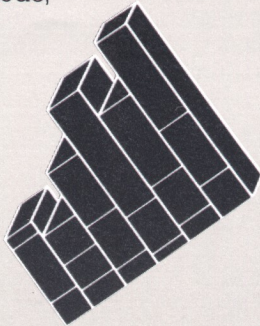
## How to Zoom in for a Close Look

If you've been experimenting with your ATARI Light Pen as you've read this *Guide* and haven't cleared the screen, your TV or monitor probably shows some lines, shapes, and doodles. If the screen is clear, then scribble something on screen after selecting the Free-hand Sketching mode. Point the pen at any area on screen where there are graphics and press the **Space Bar.** You are now *zoomed in* on that section of your drawing. Try using the drawing modes in GRAPHIC WORKS while you're zooming. Hint: When you are canceling a figure you've begun while in the zoom mode, try using a slower side-to-side motion.

You can slide the zoomed-in section around the screen by holding down either **SHIFT** key and moving the pen. To move across the entire screen and stay zoomed in, let go of the **SHIFT** key and move the pen to another position. Then hold down the **SHIFT** key while moving the pen. You can even drag figures behind you as you go.

Press the **Space Bar** again when you're through doing a close-up.

**Point Edit**   Now that you know how to zoom in for a close-up, you can edit your pictures point by point. Use the Point Edit mode when you want to change many points to different colors. While you are zoomed in, point the pen to any point and press. That point will change color. By successively pressing and releasing the pen in one position, that point cycles through the four colors shown in THE COLOR MIXING CONTROL CARD (bottom card).

   To change many points to one color, select the Freehand Sketching mode while you are in either the normal or the zoom mode. Choose the color you want by pressing the pen on any point. See the "How to Zoom in for a Close Look" section on the previous page.

**Fill**   Creates background or fills in outlines with patterns selected from the PATTERNS PALETTE CARD (third card from top of screen). Turn to that section of this *Guide* for more information.
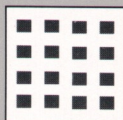
**Grid**   Superimposes pattern of evenly spaced dots, or a grid, as a precision guide for imposing proportions and creating geometric displays. It's almost like having electronic graph paper. To try it, select Clear Screen, then press the GRID symbol. Try different drawing modes against the background of dots, and note that lines and shapes lock into the grid coordinates.

   To remove the grid, press the pen to the GRID symbol again.
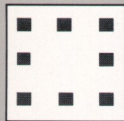
**Mirrors** Mirrors what you draw horizontally, vertically, or in four planes on screen. This is a particularly useful mode when you want to draw a picture which will have the same elements on two sides; for example, if you were to draw an imaginary line down the center of a person's face, the half-face on the left side of the line would be a mirror image of the right side.
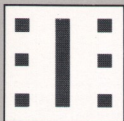
When you press the pen tip on this mode, the symbols automatically cycle through four options: no mirroring, vertical mirroring, horizontal mirroring, and four-way mirroring. When you select the option you want, lift the pen tip off the screen. The particular option you select is represented on the screen by one or two dotted lines; for example, one dotted horizontal line for horizontal mirroring.
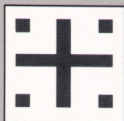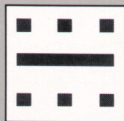
You can move the mirror axis to any part of the screen to create local area symmetrical images. First, select the desired mirror option (horizontal, vertical or four-way). Then touch the pen where you want the mirror line to appear. Then go back to GRAPHIC WORKS, select a drawing mode, and begin creating mirrored images on screen.

To get a feel for mirroring, try drawing with both the Freehand Sketching mode *and* the Mirroring mode (set to the four-plane option) selected.

After you've created the overall form or individual shapes, you can fill in outlines, create subtle shading, or create background patterns by using this card and the FILL mode in GRAPHIC WORKS, the top card. If the card is not already visible on the screen, push the light pen tip against the second white tab from the bottom and it will slide up.

There are three blinking buttons on the PATTERNS PALETTE CARD. The first is the Pattern Selector, which indicates which one of the 15 patterns shown will be used for FILLing. To change the selected pattern, point to another pattern or to the selector button immediately below the pattern and press the pen tip against it. The button below the new pattern will start flashing.

There are more than just 15 patterns available, however. On the lower left side of the PATTERNS PALETTE CARD are the Pattern Variation selectors. The program automatically selects the first variation. Try pressing the other buttons to see all eight sets of patterns. The 24 Color Variation buttons next to the Pattern Variation selectors make many color combinations possible in the patterns.

Choose the second Pattern Variation selector button on the PATTERNS PALETTE CARD, and the first pattern in the top row of 15 becomes a solid color. The first four Color Variation selectors will turn it into any of the possible background colors.

SKETCH several enclosed areas on screen. Point inside one of the closed-in sections and press the pen tip down once. It quickly FILLS with a pattern. Select a different pattern on the PATTERNS PALETTE CARD, and point inside the same figure you just filled. In this way, you can FILL over existing patterns as often as you like. Experiment with the Color Variation and Pattern Variation selectors as you fill and refill drawings on screen.

## Oops! A Leak!
## How to Cure Pattern Spill

Sooner or later, a leak is going to get you. You'll be filling your work, and a missing point on the perimeter of what you thought was a completely enclosed figure lets the pattern run out. *It's not hard to fix.*

Zoom in, using the Point Editor freehand sketching mode, and examine the perimeter of the leaking area, patching any leaks you find. Choose one of the solid colors or any pattern, and refill over the pattern area that leaked.

Press the pen against the bottom white tab on screen if this card is not already visible.

When it slides up, you'll see four large white control pads (actually, grids of invisible buttons) representing the four colors you use at the same time. A total of 128 colors are available, but only four can be shown simultaneously on screen. Each control pad has a colored stripe above it and a black dot somewhere inside. The black dot represents the current color setting. When you press the pen on a control pad, the stripe above the pad changes color and the dot jumps under the pen tip to show the new setting. Select different hues (spectrum colors) by pressing the pen at different points on a horizontal axis. Select the brightness (also called luminance) of the hues by moving the pen up and down on the pads.

Experiment to see how this affects what you draw on the screen, especially when you FILL shapes with patterns.

**NOTE:** Light pens don't work well when you draw against black, dark-red, and certain other dark-color backgrounds. If you want one of these dark colors to be the background, first draw your picture with a lighter background color, then use the **COLOR MIXING CONTROL CARD** to change the background to the desired color.
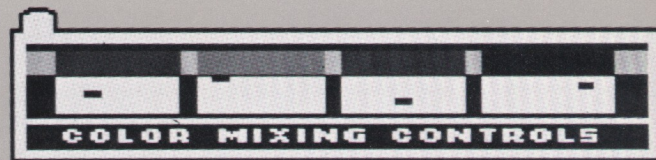
By this point in the *Guide,* you've learned how to use the extensive artistic capabilities of the ATARI Light Pen and AtariGraphics software, and have had to use only a few keys on the keyboard. To add titles, captions, chart data, and other textual information to your graphics, you can use the keyboard to type directly into the picture.

Point the pen where you want to begin typing and type the first key. Then put the pen down and continue typing the line. The characters fill in horizontally to the right, until the edge of the screen is reached. The characters don't wrap around to the next line. When you're finished, press **RETURN** to tell the computer you're through typing the line.

You are in the text mode from the time you type the first character until you press RETURN. The characters you type appear in the Current Drawing Color. You can change the colors of characters while typing a line by changing the Current Drawing Color.

Type the **ESCape, DELETE/BACKSPACE,** or **BREAK** keys to delete your typos, or shake the pen rapidly back and forth like an eraser over mistyped characters.

**NOTE:** You won't be able to zoom in or out of the picture while you're entering text, because the computer treats the **Space Bar** as a character space.

If you can't see the characters you're typing on your T.V. screen, the color you're typing in may be the same as the background you're typing on. Change your typing color by pressing the pen to the Current Drawing Color control button, in the upper right corner of the GRAPHIC WORKS CARD.

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# Storage Control Card
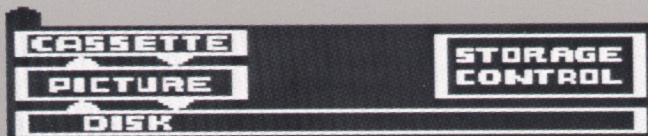


## WITH DISK DRIVE

When you want to save your art and graphics, press the pen tip against the second white tab from the top if the card is not already visible.

Depending on which peripheral storage device you have, you can save images to or retrieve images from diskette or cassette. The three elements in STORAGE CONTROL are CASSETTE, PICTURE, and DISK FILE. PICTURE is joined to the other two elements by arrows.
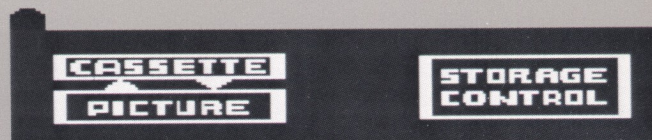


## WITHOUT DISK DRIVE

The DISK FILE option doesn't appear on screen if:

- your computer has only 16K Random Access Memory (RAM), that is, ATARI 400 Computers and 600XL™ Computers without ATARI Memory Expansion Modules,

- you didn't turn on your disk drive before turning on the computer, or

- you didn't use a diskette loaded with DOS (Disk Operating System).

If you are using a disk drive and have met the above three conditions, note the two arrows between the boxes in the STORAGE CONTROL CARD, one pointing toward DISK and one pointing toward PICTURE. The arrows indicate *the direction of flow* of information. To save the picture to diskette, simply press the pen on the arrow pointing toward DISKETTE. To retrieve a picture you've already saved, press the pen on the other arrow. After you've selected the desired arrow, you'll be asked for a file name. Type it in and press **RETURN**. See the "HOW TO GET STARTED" section in this guide for loading instructions.

Consult your disk drive owner's manual for more information about how to operate your disk drive.

You also select the direction of data transfer by selecting arrows if you have a program recorder. To save a picture to cassette, press the pen on the arrow pointing toward CASSETTE. Be sure to note down the program recorder counter number so you'll know exactly where the picture is stored on the cassette. To retrieve a picture you've already saved, ADVANCE to the counter reading where your picture is stored and press the pen on the arrow pointing toward PICTURE. That's all there is to it!

- Use **RESET** with caution. It stops the program in the middle of what it's doing, returns you to the opening screen, and *erases any picture in memory.*

- The pen point is very sensitive to pressure. You *never* need to press down hard on the screen.

- There are only two times when you should *keep the pen tip pressed down* while you work:

1. When you're in the Freehand Sketching mode.
2. When in the Mirrors mode, hold the pen down to place the mirroring effect where you want it on the screen.

At all other times, always press and then release the pen point on the screen when you are working or selecting an item.

- To avoid touching the pen to your television screen, press **START** and draw, fill etc. while holding the pen two to three inches away from the T.V. screen. When **START** is pressed, it substitutes for the pen switch action caused by pressing the pen to the screen. You can also depress the pen point with your finger instead of pressing it to the screen.

- **RETURN** tells the computer that you're finished typing text or a file name.

- To zoom in or out of your picture, point the pen where you want a close-up and press the **Space Bar.**

- To scan the screen while zooming, hold down **SHIFT** and move the pen in the direction you want to move.

- Press the white tabs with the pen to slide the control cards on and off the screen.

- Press the **TAB** key to remove or replace the white tabs connected to the control cards.

- Hold down **CONTROL** and **SHIFT** and type < to make the tabs move left, and hold down **CONTROL** and **SHIFT** and type > to make the tabs move right.

- To add text to your picture:

1. Select the color for your text (Current Drawing Color mode), then point to where you want the line to start.
2. Type the first character, then put the pen down and continue typing.
3. Press **ESCape, DELETE/BACKSPACE,** or **BREAK,** or shake the pen left and right to erase incorrect characters.
4. When finished, press **RETURN.**

If you have problems when you begin using the ATARI Light Pen and AtariGraphics program, go through the quick checklist below. Is the...

☐ Computer Power Light on?
☐ TV set or monitor on and set to correct channel?
☐ Switch Box set to COMPUTER?
☐ AtariGraphics cartridge *firmly* inserted?
☐ Pen plugged into controller port No. 4 (ATARI 400 Computer owners only)?

**Q** Dear Atari,
The AtariGraphics program begins normally with the animated title page, but the "Point Light Pen at the Line Below" message where the second control card is supposed to be won't go away. What am I doing wrong?

**A** Try the following:
- Adjust the TV or monitor's brightness or contrast controls to make the image brighter. The ATARI Light Pen must be able to "see" the image coming from the screen.
- Press **RESET** to start over.

**Q** Why does the small white cross move erratically around the screen instead of closely following my ATARI Light Pen tip around the screen as it should?

**A** You can clear up the problem by:
- Increasing the brightness on the TV or monitor.
- Make sure the pen tip is kept near the screen.
- Remove static electricity from the screen by wiping your hand over the entire screen surface.

**Q** The disk storage section in the STORAGE CONTROL CARD is not visible. How am I going to store images to or retrieve them from diskette?

**A** There are a number of things you should check.
- Make sure your ATARI disk drive is correctly connected.
- Did you turn on the drive *before* you turned on the computer?
- There should be a DOS-formatted diskette in the drive. You can check to see if the diskette is formatted by removing the cartridge and turning on the disk drive and the computer. The DOS main menu will appear on screen if files are present.

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**IMPORTANT:** Like any electrical appliance, this Atari Home Computer equipment uses and produces radio frequency energy. If it's not installed and used properly according to the instructions in this guide, the equipment may cause interference with your radio and television reception.

If you believe this equipment is causing interference with your television reception, try turning the equipment off and on. If the interference problem stops when the equipment is turned off, then the equipment is probably causing the interference. With the equipment turned on, you may be able to correct the problem by trying one or more of the following measures:

- Reorient the radio or television antenna.

- Reposition the equipment in relation to the radio or television set.

- Move the equipment away from the radio or television.

- Plug the equipment into a different wall outlet so that the equipment and the radio or television are on different branch circuits.

If necessary consult an experienced radio-television technician, or call the Atari toll-free HelpLine, 800-538-8543 (in California, 800-672-1404).

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