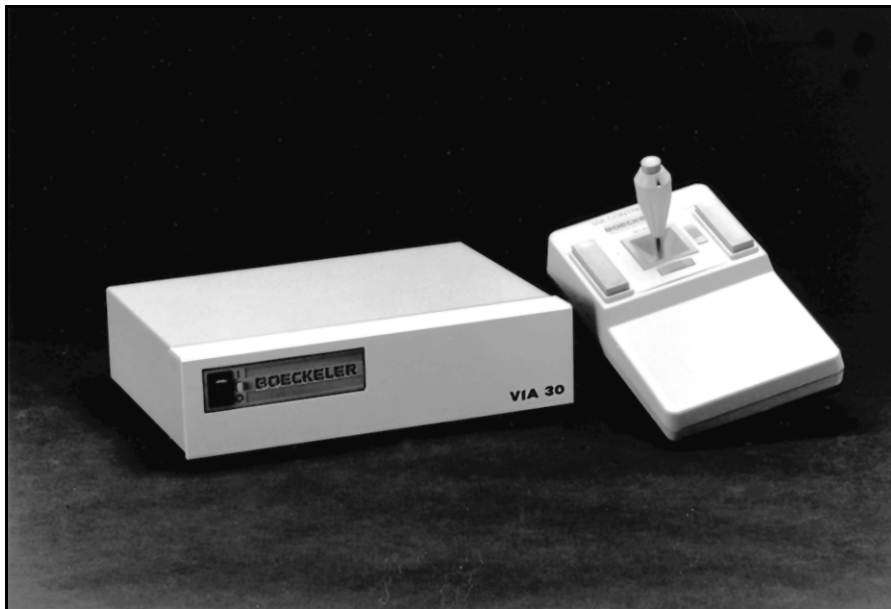


VIA[®]-30

Video Measurement System



User Guide

Accuracy by Design

Boeckeler[®]

VIA-30

Video Measurement System

User Guide

Boeckeler[®]

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Section One: Getting Started

INTRODUCTION

Welcome to the **VIA**-® family of video measuring and marking products, created by Boeckeler Instruments, Inc.

In response to the growing use of video inspection, **Boeckeler Instruments, Inc.**, has created the **Boeckeler VIA-30**® video crossline generator. Integrated with a camera, monitor, optics and stage, the Boeckeler **VIA-30** is an ideal tool to generate lines on a video screen for use in dimensional measurements and comparisons.

As a single crossline generator, the Boeckeler **VIA-30** serves to assist operators in dimensional measuring and aligning or centering objects. Alignments are accomplished using a graphic overlay generated by the Boeckeler **VIA-30** over a video image. Users create this overlay by positioning and anchoring a selection of horizontal and vertical lines, also referred to as *markers*.

As a multiple crossline generator, go/no-go comparison boxes may be constructed for quick dimensional comparisons.

Operating in the **Set Up Menu**, operators may select which line type(s) will be used. By pressing a TRANSMIT button on a joystick controller, users may choose one of ten line or marker patterns — solid, dotted, dashed or scaled, in varying line thicknesses. By selecting and placing individual lines anywhere on the screen, simple or intricate combinations of lines may be created as a graphic *overlay*. With the push of a button, the overlay of lines may be cleared entirely or erased one line at a time, beginning with the most recently placed line.

The engineering and design of the Boeckeler **VIA-30** Video Crossline Generator have been made with operators in mind. The **JS-40** joystick controller was selected to support the Boeckeler **VIA-30** for its ergonomic design, comfort and ease of use.

The domestic model of the Boeckeler **VIA-30** is designed for use with black and white EIA-170 and color NTSC cameras and monitors. Boeckeler also manufactures an export model of the Boeckeler **VIA-30** which is compatible with European black and white CCIR or color PAL video standards. With a Boeckeler video interface, the Boeckeler **VIA-30** is compatible with RGB and Y/C (S-VHS) color monitors and cameras. The Boeckeler **VIA-RGB** and **VIA-Y/C** interfaces (sold separately) offer the opportunity to create brightly colored marker overlays.

FEATURES

VIDEO CROSSLINE GENERATOR

- **Three line or marker types which can be positioned and anchored:**
 1. **Crossed Lines** one vertical line and one horizontal line which intersect and extend to the edges of the screen.
 2. **Horizontal Lines** one horizontal line extending to the edges of the screen.
 3. **Vertical Lines** one vertical line extending to the edges of the screen.
- **The ability to position and anchor lines on the overlay.**
- **On screen display of X and Y coordinates** of positionable line(s) for easy repeatability.
- **An intersection option** which allows users to select an intersection which is crossed or open.
- **A centering option** which automatically places an intersection in the center of the screen or leaves positioning up to operators.
- **A matte option** which adjusts a line's gray level from white to black for optimal contrast with the video image.
- **On screen menu** options for clearing lines all at once or one at a time.

COMPONENTS

JOYSTICK CONTROLLER

Figure 1.1 below depicts the **JS-40** Joystick Controller. The controller functions as the user's interface with the Boeckeler **VIA-30** video crossline generator. In general, the joystick is used to move the cursor within the **Set Up Menu** and in the **Menu Line**. The joystick controller is also used to select and position markers on the screen. Broad definitions of the three keys on the joystick controller are discussed below.

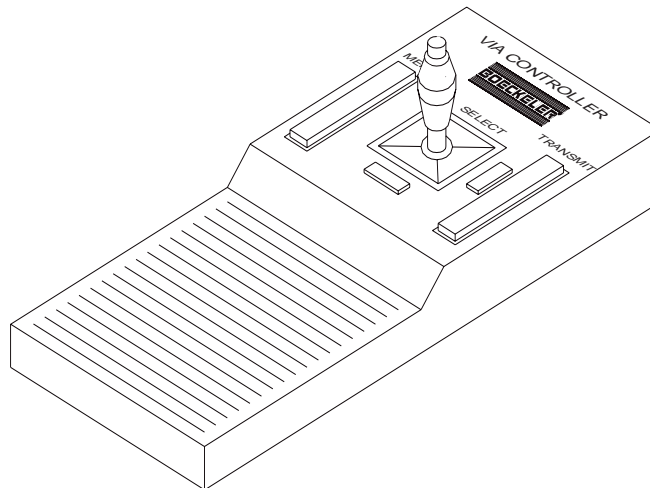


Figure 1.1
JS-40 Joystick Controller

Joystick Controller Key Definitions

- SELECT** — a button which (1) activates the choice beside the cursor when in the **Set Up Menu**, (2) activates the choice above the cursor when in the **Menu Line**, and (3) drops or *anchors* a marker on the screen when in the **BUILD** mode and activates a second marker which is ready for positioning in the overlay.
- MENU** — a button which allows users to exit the overlay and choose options in the **Menu Line**. Pressing this button also allows users to exit the **Menu Line** and return to the overlay.

**TRANSMIT or
MARKERS**

— a button which cycles through the ten marker or line patterns: solid fine, solid medium, solid bold; dotted fine, dotted bold; dashed fine, dashed medium, dashed bold; scaled fine and scaled bold. Each time the button is pressed, the next marker pattern appears. As many different line patterns may be selected as desired to create an intricate overlay. Pressing this button when in the **BUILD** mode will activate this pattern cycle.

Menu Cursor Movement

When operating the **VIA-30** with the joystick controller, the cursor may be moved within the **Set Up Menu** by tilting the joystick forward or backward. Once the cursor is positioned beside the desired menu item, the option may be chosen by pressing the **SELECT** button.

The cursor may be moved within the **Menu Line** by tilting the joystick left or right. Once the cursor is positioned beneath the desired menu item, the option may be chosen by pressing the **SELECT** button.

Marker Movement

When operating the **VIA-30** with the joystick controller, the *active line* (that is, the line or line pair which has not yet been *anchored*), may be moved by tilting the joystick. Vertical lines may be positioned by tilting the joystick left or right. Horizontal lines may be positioned by tilting the joystick forward or backward. Once the line is positioned in the desired area, the line may be dropped or anchored by pressing the **SELECT** button. Anchored lines cannot be moved. To “move” an anchored line, users must erase the line and position a new line or line pair in the new location.

INSTALLATION

To install the VIA-30 with monochrome EIA-170 or color NTSC cameras and monitors (refer to Figure 1.2):

1. **Make all connections before applying power.**

2. Camera connection:

Connect a 75 OHM BNC coaxial cable between the video output of the camera and the CAMERA connector on the back of the VIA-30.

3. Video monitor connection:

Connect a 75 OHM BNC coaxial cable between the MONITOR connector on the VIA-30 and the video monitor.

4. Joystick controller connection:

Connect the VIA-30 Video Crossline Generator joystick controller to the JOYSTICK connector on the VIA-30.

5. Power Supply.

A. **Ensure that the DUAL VOLTAGE SWITCH is in the proper position to coincide with the incoming power supply.**

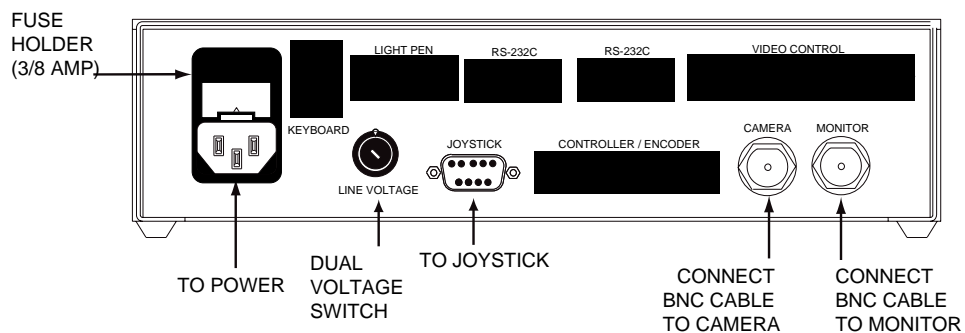


Figure 1.2
Back Panel of the VIA-30

- B. **Plug the power cord into the back of the VIA-30 and then into any grounded outlet.**
- C. **Plug the camera power cord and monitor power cord into any grounded outlet.**
- D. **Turn on the camera, monitor, and VIA-30.**

NOTE: *In order for the **VIA-30** to immediately receive the proper image signals, the camera must be turned on first.*

After a moment the monitor will display a live video image of the object(s) in the field of view of the camera. A copyright message will be superimposed over the video image as shown in Figure 1.3. The copyright message will disappear after several seconds and be replaced by an *overlay*, which will be blank if markers have not been previously anchored, or if the **VIA-30** was in the **PASS-THROUGH** mode when last powered down. **Press the MENU button** on the joystick controller. The **Menu Line** shown on page 18 should appear. If the **Menu Line** appears on the screen, then the system should be working properly and installation of the **VIA-30** is complete. If the menu is not properly displayed on the screen, then refer to the *Troubleshooting Guide* in **Section Three: Appendices**.

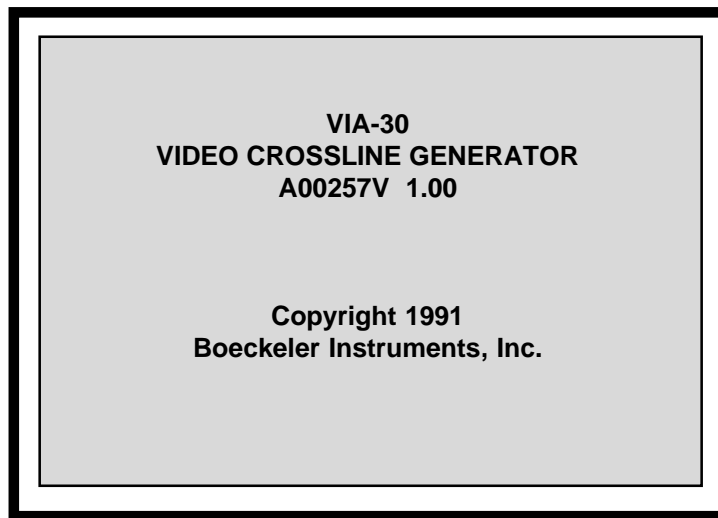


Figure 1.3
VIA-30 Copyright Message

To install the VIA-30 with a VIA-RGB or VIA-Y/C interface (refer to Figure 1.4):

1. Make all connections before applying power.
2. Video interface placement:

The video interface unit can be easily stacked on or under the VIA-30.

3. Camera connections:

A. RGB systems:

Connect the red, green, blue, and sync lines of the camera cable to the corresponding red, green, blue, and sync input connections on the back of the VIA-RGB (refer to Figure 1.5). Connect the camera end of the cable to the corresponding camera output connection.

B. Y/C (S-VHS) systems:

Connect the Y/C monitor cable to the corresponding output connection of the VIA-Y/C. Connect the monitor end of cable to the corresponding monitor input connections.

4. Video interface and monitor connections:

A. RGB systems:

Connect the red, green, blue and sync lines of the monitor cable to the corresponding output connection of the VIA-RGB. Connect the monitor end of cable to the corresponding monitor input connections.

B. Y/C (S-VHS) systems:

Connect the Y/C monitor cable to the corresponding output connection of the VIA-Y/C. Connect the monitor end of cable to the corresponding monitor input connections.

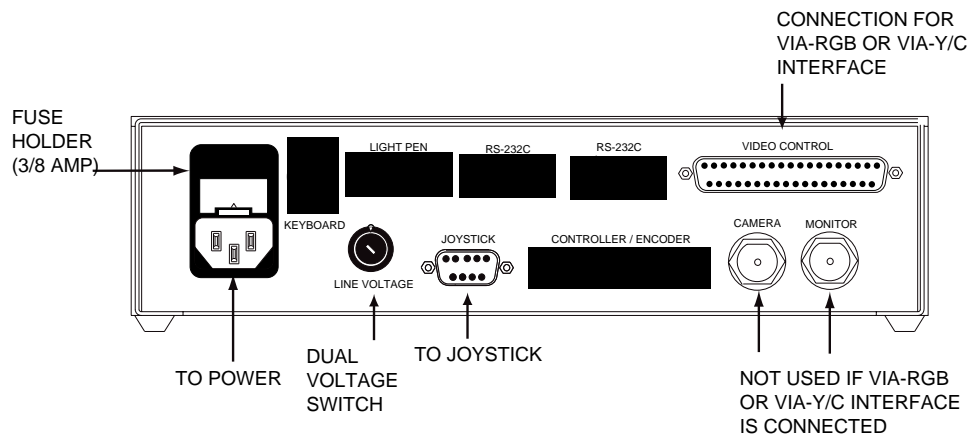


Figure 1.4
Back Panel of the VIA-30
for Y/C or RGB

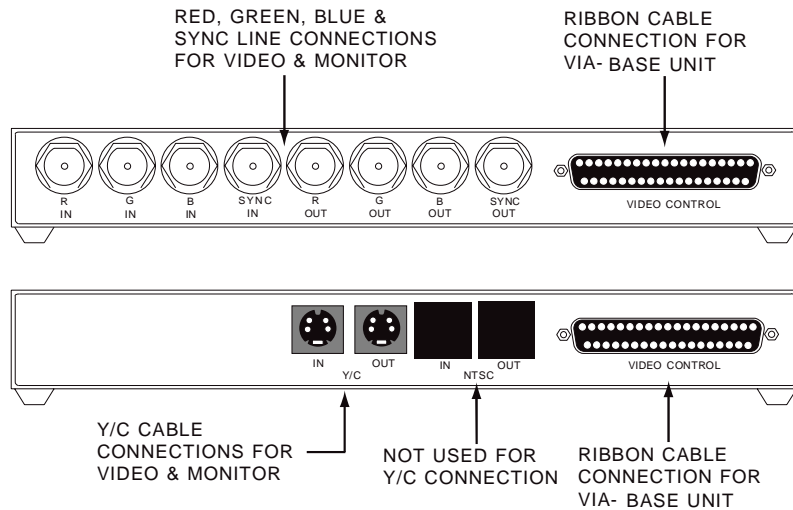


Figure 1.5
Back Panel of the VIA-30
for Y/C or RGB

5. Video interface and **VIA-30** connections:

Using the 37-pin ribbon cable provided, connect the VIDEO CONTROL port of the interface to the VIDEO CONTROL port on the VIA-30.

6. Joystick controller connection:

Using the 25-pin cable provided, connect the joystick controller to the JOY-STICK connector on the VIA-30 (refer to Figure 1.4).

7. Power Supply.

- A. **Plug the power cord into the back of the VIA-30 and then into any grounded outlet.**
- B. **If necessary, adjust the DUAL VOLTAGE SWITCH to coincide with the incoming power supply.**
- C. **Turn on the camera, monitor and VIA-30.**

NOTE: In order to ensure that the **VIA-30** immediately receives the proper image signals, the camera must be turned on first.

After a moment the monitor will display a live video image of the object(s) in the field of view of the camera. A copyright message will be superimposed over the video image as shown in Figure 1.6. The copyright message will disappear after several seconds and be replaced by an *overlay*, which will be blank if markers have not been previously anchored, or if the **VIA-30** was in the **PASS-THROUGH** mode when last powered down. **Press the MENU button** on the joystick controller. The **Menu Line** shown on page 18 should appear. If the

Menu Line appears on the screen, then the system should be working properly and installation of the **VIA-30** is complete. If the menu is not properly displayed on the screen, then refer to the *Troubleshooting Guide* in **Section Three: Appendices**.

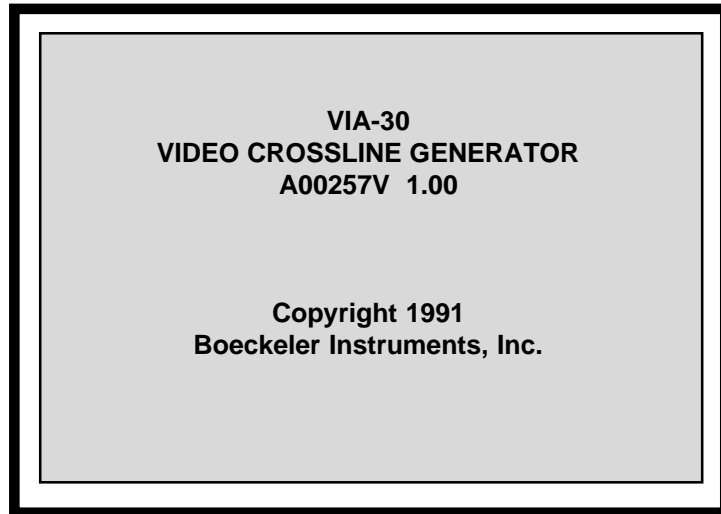


Figure 1.6
VIA-30 Copyright Message

MENU LINE

The **Menu Line** (refer to Figure 1.7) is accessed by pushing the **MENU** button on the joystick controller while in **BUILD** mode. This menu allows operators to select any of five basic *action options*. As the name suggests, these options allow users to perform actions or begin a given process with regard to the lines which overlay the video image.

NOTE: The **VIA-30** may only be operated using a **JS-40 Joystick Controller**.

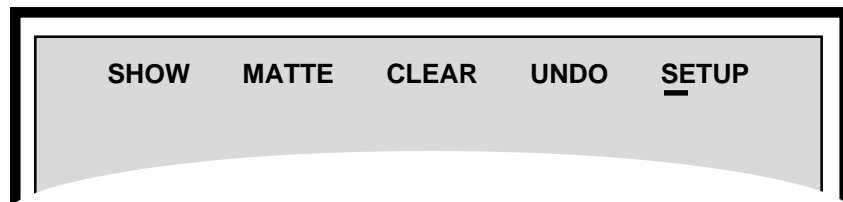


Figure 1.7
VIA-30 Menu Line

SETUP MENU

The **Set Up Menu** (refer to Figure 1.8) is accessed from the **Menu Line**. This menu allows operators to select any of the four basic categories of options.

The text in the **VIA-30 Set Up Menu** is split into two columns. The left-hand column represents the general categories to which each of the menu options belong. The right-hand column specifies the individual options which operators may select. The *cursor* is represented by the small rectangle ■ between the two columns. Operators move the cursor vertically and position it beside the option which they wish to select.

The options presented in a given menu are of two types. The first type is termed a *preference option*. As the name suggests, this option allows users to specify a preference before performing actual operations. When a preference option is chosen, a small arrow ➔ appears on the screen to indicate its selection. This arrow is termed the *preference arrow*. The second type of menu option is called an *action option*. Selection of such an option allows users to perform actions or begin a given process. Some action options move operators through the menu structure. Other action options allow operators to position lines on the screen.

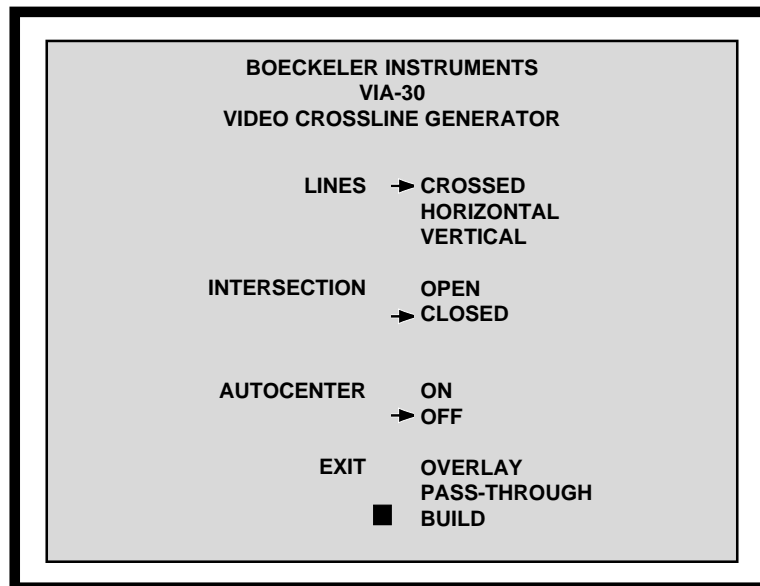


Figure 1.8
VIA-30 Screen with Set Up Menu

Section Two: Using the Lines

OVERVIEW

The Boeckeler **VIA-30** equips operators with a variety of lines for positioning, comparing and inspecting images on a video monitor. The lines available to users include crossed lines, horizontal lines and vertical lines, displayed in a variety of line patterns. Any combination of these lines may be placed on the screen. Such a combination is called an *overlay*. While power is on, an overlay may be changed or erased. When powered down, the **VIA-30** will automatically store the overlay. When powered up later, the screen will display the overlay that was stored.

UNDERSTANDING THE SET UP MENU

Figure 2.1 shows the root menu of the **VIA-30**, which is called the **Set Up Menu**. There are three categories of options in the **Set Up Menu**. The first category, entitled **LINES**, presents three preference options. Selection of any of these options allows operators to place the corresponding type of line on the screen and thus, create an overlay. The second category, entitled **INTERSECTION**, contains preference options which allow operators to select the type of intersection desired for crossed lines. The **AUTO-CENTER** option allows operators to automatically center the selected line(s) or manually position the line(s). The three action options in the **EXIT** category allow users to leave the **Set Up Menu** and display the new or stored overlay, display the video image without the overlay, or build onto a new or existing overlay.

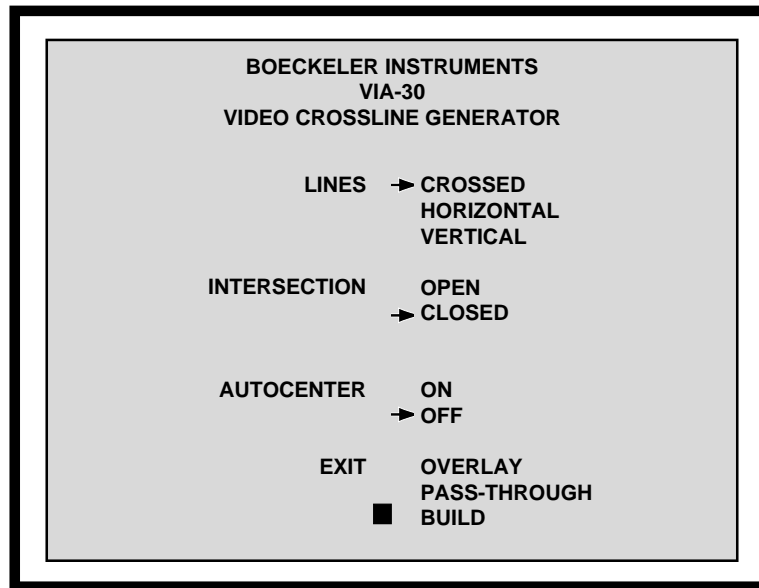


Figure 2.1
VIA-30 Screen with Set Up Menu

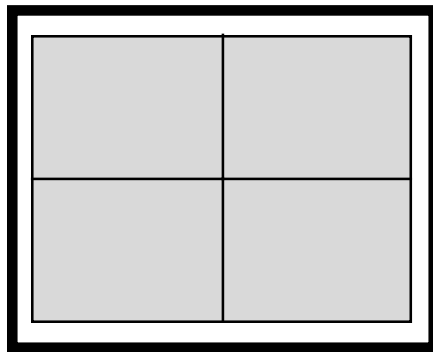
Lines Options

The **LINES** category consists of three basic types of lines available to operators. Each of these three types may be selected with a different line pattern. Therefore, the total variety of lines which operators may place on the screen is much greater than three. The default setting for **LINES** is the **CROSSED** option. A brief description of each **LINES** option is given below and examples are displayed in Figure 2.2.

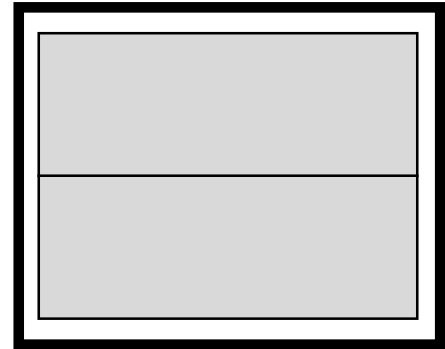
CROSSED one horizontal line and one vertical line which intersect and extend to the edges of the screen.

HORIZONTAL one horizontal line extending to the edges of the screen, vertically positionable.

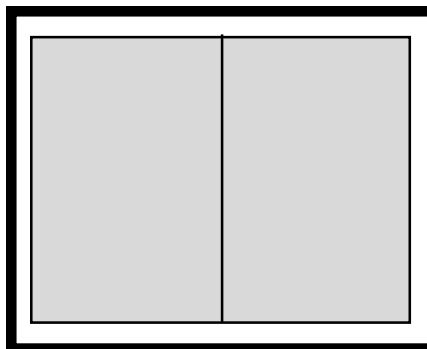
VERTICAL one vertical line extending to the edges of the screen, horizontally positionable.



CROSSED



HORIZONTAL



VERTICAL

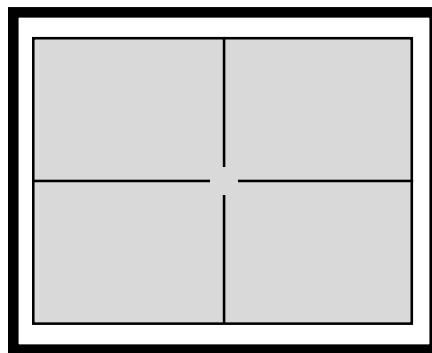
Figure 2.2
Lines Options

Intersection Options

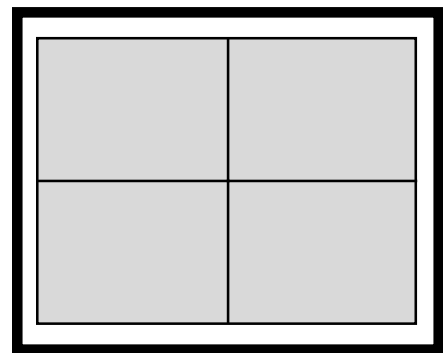
The **INTERSECTION** category consists of two types of intersections which operators may choose for any intersecting lines. Both types of intersections may be used in a single overlay. The default setting for **INTERSECTION** is the **CLOSED** option. A brief description of each **INTERSECTION** option is given below and examples are displayed in Figure 2.3.

OPEN the actual intersection of the crossed lines is open to allow for precise centering.

CLOSED the intersection of the crossed lines is standard, or closed, which assists operators in positioning the lines against the edges of an object in the field of view.



OPEN



CLOSED

Figure 2.3
Intersection Options

Autocenter Options

The **AUTOCENTER** category consists of two ways lines may be positioned on the overlay. A combination of freely positioned and automatically centered lines may be dropped or anchored in a single overlay. The default setting for **AUTOCENTER** is the **OFF** option. A brief description of each **AUTOCENTER** option is given below and examples are displayed in Figure 2.4.

ON the selected line type will be automatically centered in the overlay. The centered line or crossed lines are not manually positionable on the overlay once selected. Operators should be sure to select or anchor the intersection, or it will not be saved in the overlay.

OFF the selected line type is manually positionable in the overlay. The line or line pair may be positioned anywhere on the overlay until selected or anchored.

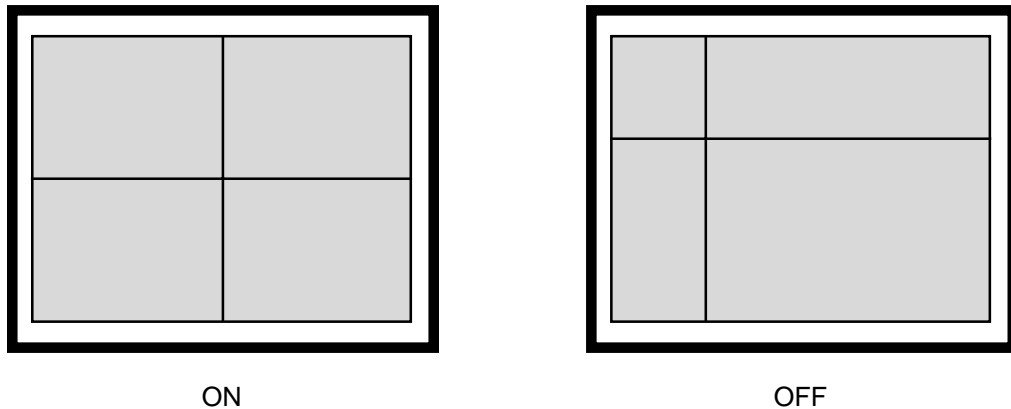


Figure 2.4
Autocenter Options

Exit Options

The **EXIT** category consists of three ways operators may leave the **Set Up Menu**. A brief description of each **EXIT** option is given below.

OVERLAY This option allows operators to view the current marker overlay. Selecting this option exits the **Set Up Menu** and displays the overlay juxtaposed on top of the camera image. If no overlay exists, then only the camera image will be seen. Operators cannot *build* on to an overlay in this mode.

To return to the Set Up Menu after selecting the OVERLAY option:

1. **Press the MENU button on the joystick controller.**

The **Menu Line** shown in Figure 2.5 will appear.

For an explanation of the options in the **Menu Line** refer to “Understanding the Menu Line” on page 37.

2. **Tilt the joystick to the left or right to ensure that the cursor is positioned under SET UP as shown below.**
3. **Press the SELECT button.**

The overlay will be removed from the screen and the **Set Up Menu** will appear.

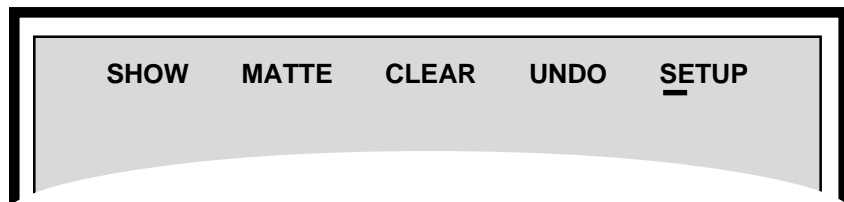


Figure 2.5
The Menu Line

**PASS-
THROUGH**

This second **EXIT** option places the **VIA-30** in a *video pass-through* mode. When this function is selected, the **Set Up Menu** is removed from the screen and only the live camera image is displayed on the monitor. The **Set Up Menu** may be retrieved simply by pressing the **SELECT** button on the joystick controller.

BUILD

This third **EXIT** option places the **VIA-30** in a building mode, which allows operators to create or change an overlay. Selecting this option exits the **Set Up Menu** and displays the current overlay juxtaposed on top of the camera image. If no overlay exists, then only the camera image will be seen. Only in this mode can operators *build* or change an overlay.

To return to the Set Up Menu after selecting the BUILD option:

1. **Press the MENU button on the joystick controller.**

The **Menu Line** shown in Figure 2.6 will appear.

For an explanation of the options in the **Menu Line** refer to “Understanding the Menu Line” on page 37.

2. **Tilt the joystick to the left or right to ensure that the cursor is positioned under SET UP as shown above.**
3. **Press the SELECT button.**

The overlay will be removed from the screen and the **Set Up Menu** will appear.

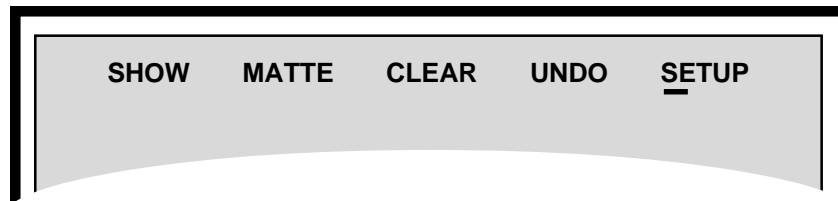


Figure 2.6
The Menu Line

PLACING LINES

The ten different marker or line patterns available in the **VIA-30** are grouped in four basic categories: solid, dotted, dashed and scaled. Each are available in varying line thicknesses (refer to Figure 2.7). While most combinations of lines of all types may be compiled in one overlay and simultaneously displayed, each individual graphic image must be placed separately. This section presents the step-by-step procedure for selecting and placing lines. This procedure may be repeated as often as desired using any of the ten line patterns. It is important to note that line placement can only take place when in the **BUILD** mode, and when the **Menu Line** is not visible.

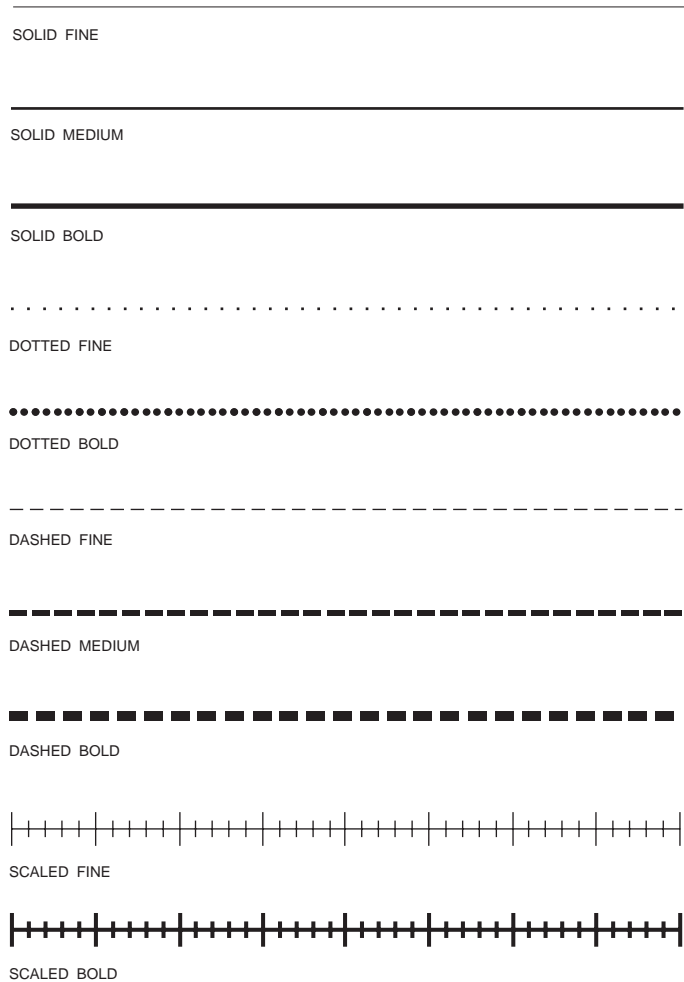


Figure 2.7
Line Patterns

The ten different line patterns available are selected using the joystick controller when the **VIA-30** overlay is in the **BUILD** mode and when the **Menu Line** is not visible on the screen. Because a variety of lines may be placed on screen as many times as desired, the total number of lines on the screen may be much greater than ten.

NOTE: *Scaled lines cannot be combined with other lines in an overlay. Each line or marker type is pictured in Figure 2.7.*

SELECTING LINES

To select lines:

1. In the **Set Up Menu**, tilt the joystick forward or backward to position the cursor beside the desired **LINES** option — **CROSSED**, **HORIZONTAL** or **VERTICAL**.
2. **Press the SELECT button on the joystick controller.**

The preference arrow between the columns of text will move to indicate the new selection. In Figure 2.8, a vertical line is selected.

3. **Specify the desired INTERSECTION, OPEN or CLOSED, and AUTOCENTER option, ON or OFF, by tilting the joystick forward or backward to position the cursor beside a desired option and pressing the SELECT button.**

The preference arrow between the columns of text will move to indicate new selections.

4. **Tilt the joystick forward or backward to position the cursor beside BUILD and press the SELECT button.**

A screen will appear with the specified type of line(s) superimposed on the video image. From this point, operators may build on to a previously constructed overlay or create a new overlay.

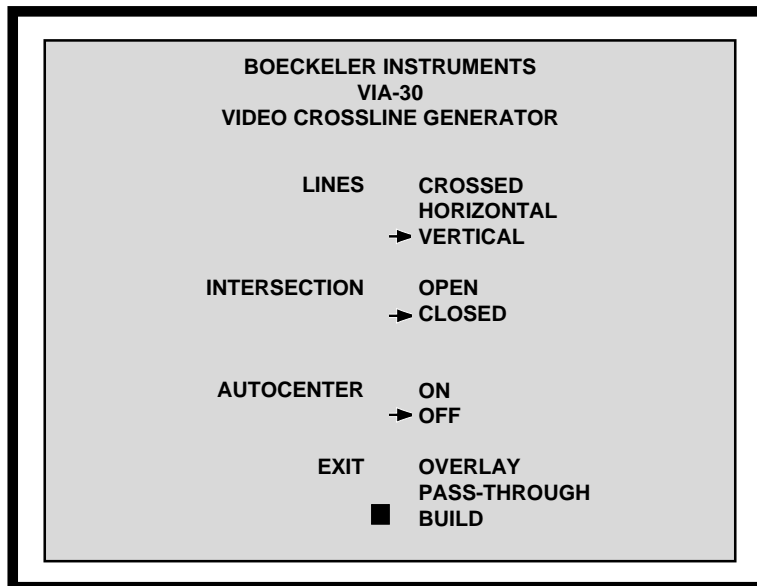


Figure 2.8
Selecting a Line Type

To select a line pattern:

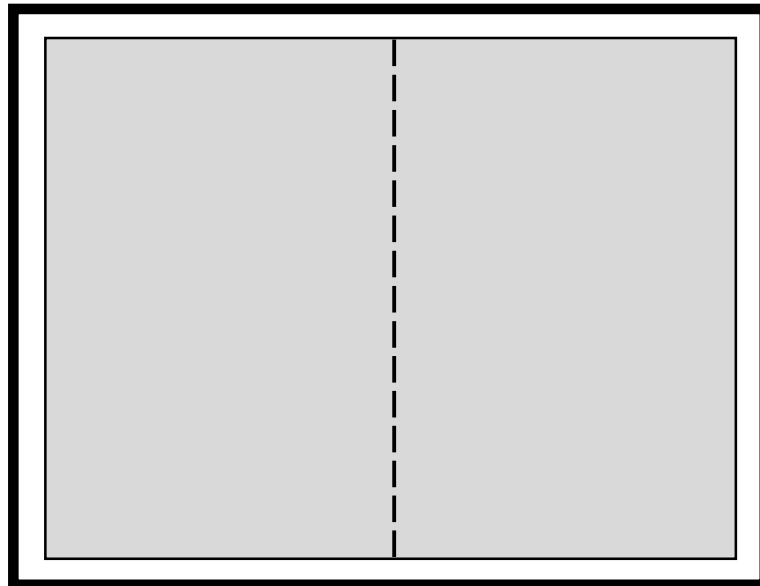
1. **If the Menu Line is on screen, press the MENU button on the joystick controller.**

The **Menu Line**, will be cleared from the screen and the active line will appear on the overlay.

2. **Press the TRANSMIT (or MARKERS) button on the joystick controller.**

The active line will express the selected line pattern.

3. **Continue to press the TRANSMIT button until the desired line pattern appears on the screen.** In Figure 2.9, a **Dashed Medium** pattern is selected for a vertical line.



**Figure 2.9
Selecting a Line Pattern**

POSITIONING LINES

To position a line:

1. The joystick positions the lines differently depending on the type of lines selected. Lines may be positioned only if the AUTOCENTER option is **OFF**.

- A. Crossed lines may be moved simultaneously or one at a time.

To move both lines, tilt the joystick in a diagonal direction. The intersection of the lines will move in the direction in which the joystick is tilted.

To move the vertical line from left to right, tilt the joystick left or right.

To move the horizontal line from top to bottom, tilt the joystick forward or backward.

- B. For single vertical lines:

Tilt the joystick left or right to move the vertical line from left to right.

- C. For single horizontal lines:

Tilt the joystick forward or backward to move the horizontal line from top to bottom.

2. When the line(s) are positioned in the desired location, **press the SELECT button to “drop” or anchor the line(s) in place.**

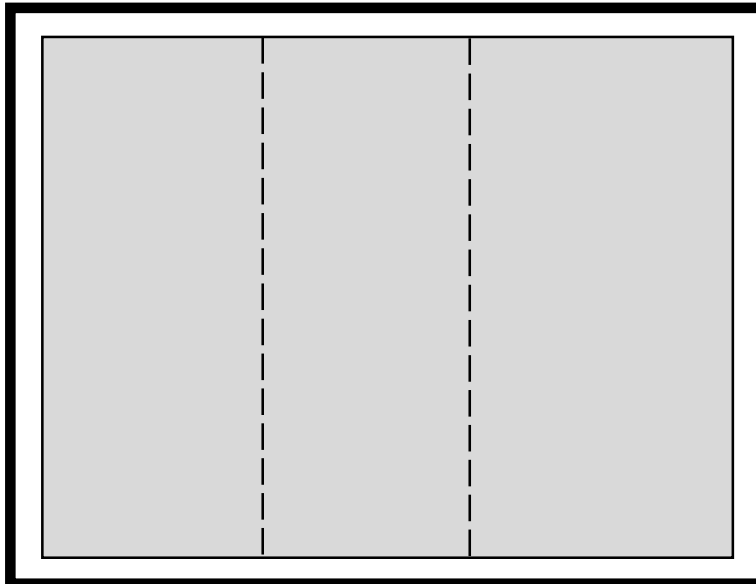


Figure 2.10
Anchoring a Line

The original line has been anchored in place and a duplicate line has been created (refer to Figure 2.10). The duplicate line is the new active line. Once anchored, lines may not be moved again in this overlay.

3. **To place additional lines of the same type in different locations, repeat steps 1 and 2.**
4. **To place additional lines of the same type, but of a different pattern, press the TRANSMIT (or MARKERS) button until the desired pattern appears on screen. Repeat steps 1 and 2.**
5. **To place additional lines of a different type, return to the Set Up Menu and make new selections.**

An example of a combination of line types, patterns and placements is depicted in Figure 2.11.

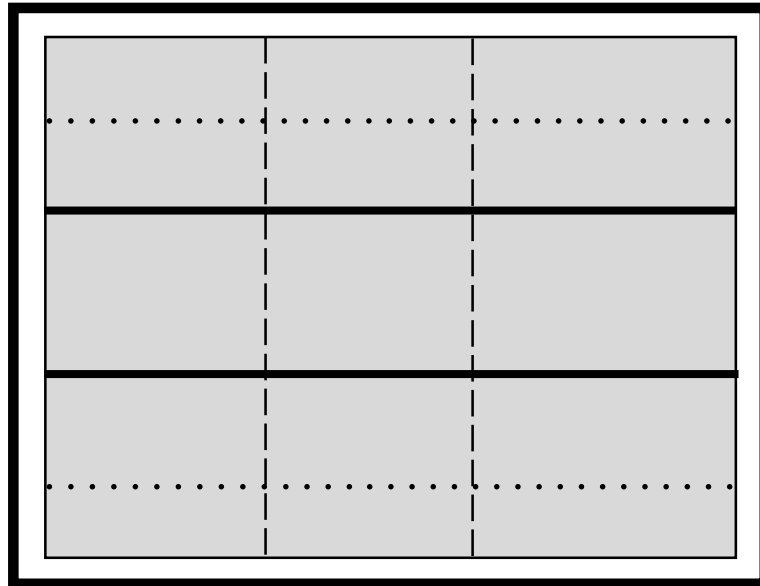


Figure 2.11
Combining Lines

To quit placing lines and return to the Set Up Menu:

1. **Press the MENU button.**

The **Menu Line** will appear across the top of the screen, with the cursor positioned under **SET UP** as shown in Figure 2.12.

For an explanation of the options in the **Menu Line** refer to “Understanding the Menu Line” on page 37.

2. **Press the SELECT button.**

The **Set Up Menu** will appear on the screen.

To exit the Set Up Menu and return to the Menu Line:

1. **Tilt the joystick forward or backward to position the cursor beside BUILD or OVERLAY.**

2. **Press the SELECT button.**

The current overlay will appear on screen.

NOTE: The **VIA-30** is designed for easy access so that operators may repeat use of the same overlay to position or inspect similar objects. Users only have to turn on the **VIA-30** to begin alignments.

3. **Press the MENU button.**

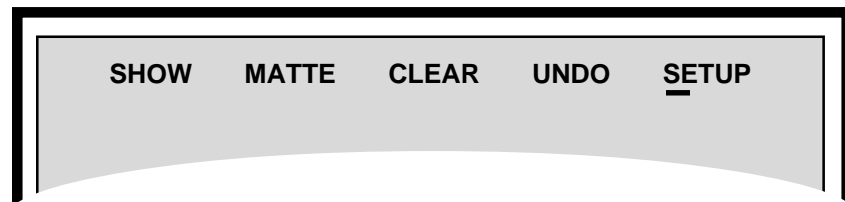


Figure 2.12
The Menu Line

UNDERSTANDING THE MENU LINE

Figure 2.13 shows the **VIA-30 Menu Line**. The **Menu Line** is accessed by pressing the MENU button on the joystick controller while in the **BUILD** or **OVERLAY** mode.

There are five *action options* in the **Menu Line**. The first option on the right, entitled **SETUP**, allows users to exit the overlay and enter the **Set Up Menu**. The second option, entitled **UNDO**, allows users to erase a line or line pair, one at a time, beginning with the most recently anchored line. The third option, entitled **CLEAR**, will erase all lines from the overlay in one action. The fourth option, **MATTE**, allows operators to adjust the gray level of the overlay from white to black in order to achieve the best contrast to the video image. The fifth option, **SHOW/HIDE**, is a toggle switch which allows operators to show or hide the X and Y coordinates of the active line or line pair as the line(s) are being positioned.

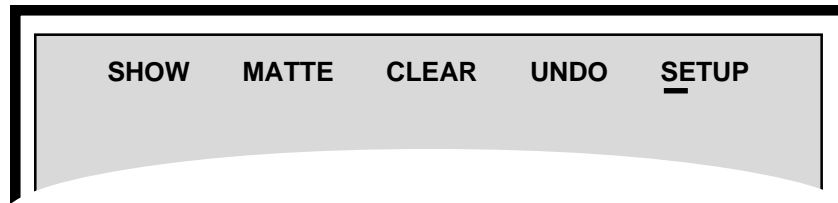


Figure 2.13
The Menu Line

Set Up Option

The **SETUP** option in the **Menu Line** exits users from the current building mode and returns them to the **Set Up Menu**.

To enter the Set Up Menu from the overlay:

1. While in the overlay, press the MENU button on the joystick controller.

The **Menu Line** shown in Figure 2.13 will appear.

2. Tilt the joystick to the left or right to ensure that the cursor is positioned under **SET UP** as shown above.
3. Press the **SELECT** button.

The overlay will be removed from the screen and the **Set Up Menu** will appear.

Undo Option

The **UNDO** option in the **Menu Line** allows users to erase each line, one at a time, beginning with the most recently *anchored line*. The anchored line is a line that has been positioned on an overlay by pressing the **SELECT** button on the joystick controller. It cannot be moved, but it can be erased. A single line can be erased one at a time until the screen is cleared. The *active line*, that is, the line that has not yet been anchored, will remain on screen after each anchored line is erased.

To erase lines one at a time:

1. **While in the BUILD mode, press the MENU button on the joystick controller.**

The **Menu Line** shown in Figure 2.13 will appear.

2. **Tilt the joystick to the left or right to ensure that the cursor is positioned under UNDO as shown in Figure 2.14.**
3. **Press the SELECT button.**

The most recently anchored line will be erased.

4. **Press the SELECT button again to erase the next most recently anchored line, and continue this step until only the desired lines are left on the overlay.**
5. **To exit the Menu Line and return to the overlay, press the MENU button on the joystick controller.**

NOTE: The active line will reappear ready for positioning.

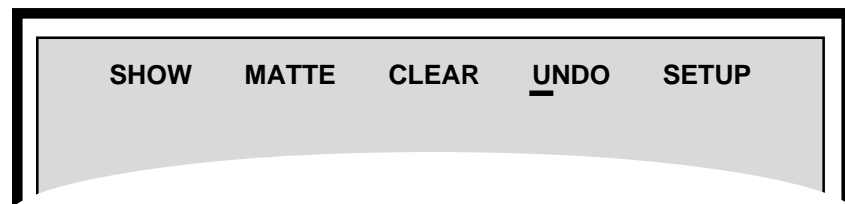


Figure 2.14
Selecting the UNDO Option

Clear Option

The **CLEAR** option in the **Menu Line** allows users to erase all lines on the overlay in a single action. The active line will remain on screen.

To clear all lines from the overlay in a single action:

1. While in the **BUILD** mode, **press the MENU button on the joystick controller.**

The **Menu Line** shown in Figure 2.13 will appear.

2. **Tilt the joystick to the left or right to ensure that the cursor is positioned under CLEAR as shown in Figure 2.15.**

3. **Press the SELECT button.**

A warning message shown in Figure 2.16 will appear on screen to ensure that operators do not unintentionally erase and overlay.

4. To confirm a full erase, **press SELECT.**

All of the lines on the overlay will be erased and the **Menu Line** will reappear on the screen. Pressing the **MENU** button will return users to the **BUILD** mode with an active line ready for positioning.

5. To abort the full erase, **press the MENU button on the joystick controller.**

The **Menu Line** will reappear on screen with the cursor under **CLEAR** (refer to Figure 2.15).

To exit the Menu Line and return to the overlay:

1. **Press the MENU button on the joystick controller.**

The **Menu Line** will disappear and lines may now be positioned in the overlay.

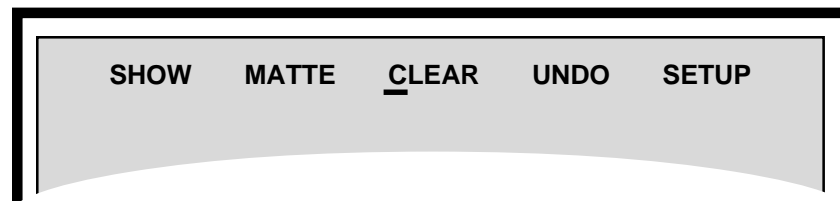


Figure 2.15
Selecting the CLEAR Option

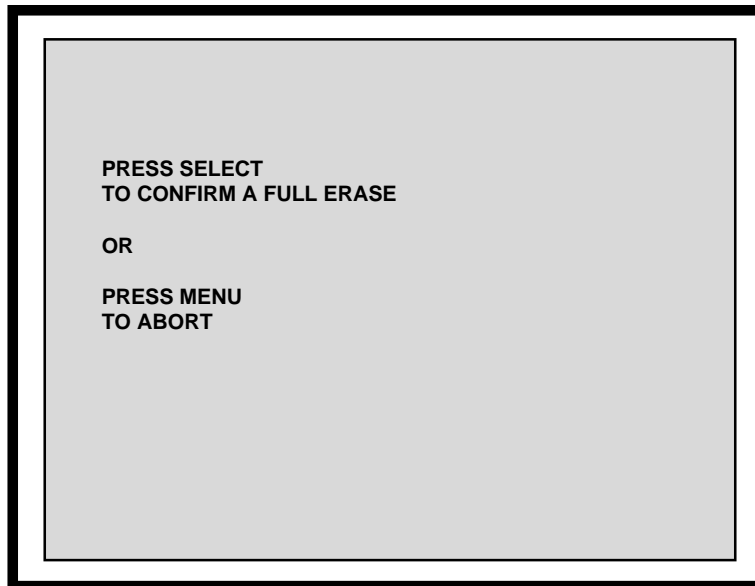


Figure 2.16
Erase All Warning Message

Matte Option

The **MATTE** option in the **Menu Line** allows users to adjust the matte or gray level of the overlay for proper contrast with the video image. With Boeckeler **VIA-RGB** and **VIA-Y/C** (S-VHS) video interfaces, this option is accessed to change the *color* of the lines.

To adjust the gray level or color of the overlay:

1. While in the **BUILD** mode, **press the MENU button on the joystick controller.**

The **Menu Line** shown in Figure 2.13 will appear.

2. **Tilt the joystick to the left or right to ensure that the cursor is positioned under MATTE** as shown in Figure 2.16.
3. To darken or lighten the graphics on the screen, **tilt the joystick backward or forward.**
4. When the desired **MATTE** has been attained, **press the MENU button to exit the Menu Line.**

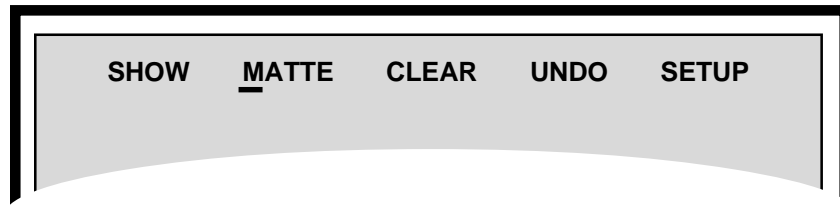


Figure 2.16
Selecting the MATTE Option

Show/Hide Option

The **SHOW/HIDE** option allows users to show or hide the X and Y coordinates of the line(s) being positioned. For crossed lines, the coordinates displayed are for the intersection. For single lines, the coordinates are relevant for either the X or Y dimension.

In order to display the coordinates, **SHOW** must be selected. Coordinates (0,0) are at the left and bottom of the monitor, and such coordinates may not be visible on monitors not equipped with an overscan mode. Coordinates are intended to be used as a reference to aid in the repeatability of positioning lines on the screen.

To show or hide coordinates of the active line(s):

1. **While in the BUILD mode, press the MENU button on the joystick controller.**

The **Menu Line** shown in Figure 2.13 will appear.

2. **Tilt the joystick to the left or right to ensure that the cursor is positioned under SHOW to show the coordinates or under HIDE to hide the coordinates** (refer to Figure 2.17).

Once one mode is selected, the opposite mode will then replace it in the **Menu Line** as the selectable option.

3. **Press the SELECT button.**

The coordinates for the active line will be shown or hidden in the overlay according to the selection made. Figure 2.18 displays a sample overlay with the coordinates in the **SHOW** mode.

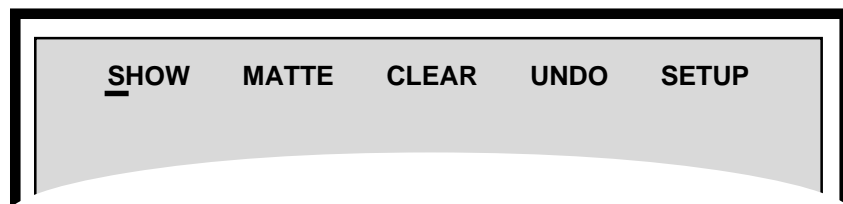


Figure 2.17
Selecting the SHOW/HIDE Option

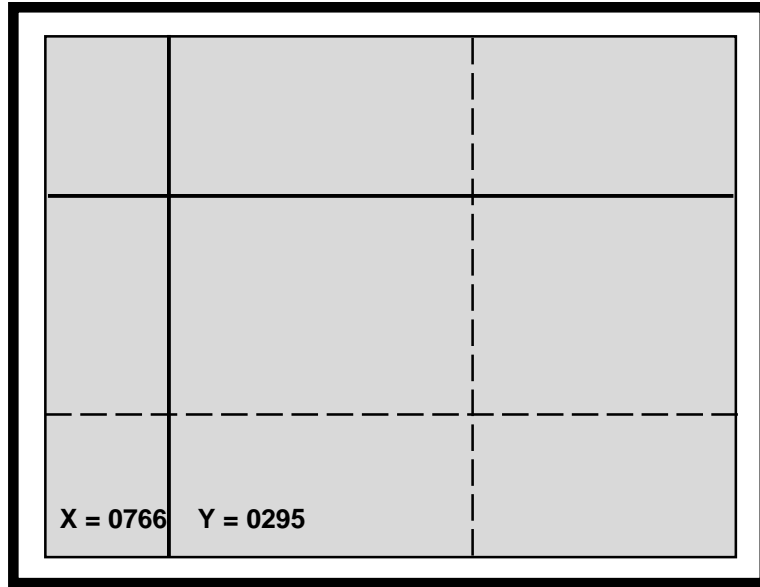


Figure 2.18
Overlay in Show Mode
(solid lines are active)

Section Three:

Appendices

||| TROUBLESHOOTING GUIDE

Boeckeler's quality inspectors test each **VIA-30** for software and hardware performance prior to shipment. Therefore, most problems which operators encounter are related to installation. Table 3.1 below describes common problems and their solutions. If, after referring to this table, a problem still exists, call Boeckeler Instruments, Inc., at (800) 552-2262 or (520) 745-0001 and ask for technical assistance. There are no user serviceable parts in the **VIA-30**. Do not open the cabinet.

Table 3.1
Troubleshooting Guide

Symptoms	Possible Solutions
The green indicator light on the front of the VIA-30 does not light up.	<ol style="list-style-type: none"> 1. Check that the VIA-30 is plugged into a live outlet. 2. On the back panel of the VIA-30 remove the plastic cover above the power supply connector and check for a blown fuse. Replace the fuse only with a BUSS MDL 3/8 amp slow blow.
Monitor does not light up.	<ol style="list-style-type: none"> 1. Check that the monitor is plugged into a live outlet. 2. Check that the monitor is switched on. 3. Check that the monitor brightness control is properly adjusted.
Monitor displays a scrambled picture.	<ol style="list-style-type: none"> 1. Check the horizontal hold control on the video monitor for proper adjustment. 2. Check that the Dual Voltage Switch (110V/ 220V) located on the back panel of the VIA-30 is properly set.

(continued on next page)

Table 3.1
Troubleshooting Guide
(continued)

Symptoms	Possible Solutions
Monitor lights up but does not display a picture.	<ol style="list-style-type: none"> 1. Check that the video source and VIA-30 are each plugged into a live outlet. 2. Check that the video source and VIA-30 are both switched on. 3. Check that the coaxial cables are connected to the proper BNC connectors on the video source, the VIA-30 and the monitor. Some cameras and monitors have multiple output and input connectors. Consult your video manuals for correct connection information. 4. If the video source or monitor has a switch for 75 OHM or high Z, ensure this switch is in the 75 OHM position. 5. On the back panel of the VIA-30 remove the plastic cover above the power supply connector and check for a blown fuse. 6. Bypass the VIA-30 by connecting the monitor directly to the video source. If the video image still does not appear, have the video source and monitor checked.
The VIA-30 graphics bloom.	<ol style="list-style-type: none"> 1. Adjust system parameters on the video output device, monitor or camera (if in use) such as contrast, gain, brightness, color, light and intensity. 2. Adjust the MATTE of the VIA-30.
Video image on monitor scrolls.	<ol style="list-style-type: none"> 1. If using NTSC composite input, ensure that the 37-pin ribbon cable between the VIA-30 and Y/C or RGB interface is disconnected.
The cursor races across the screen upon power up.	<ol style="list-style-type: none"> 1. When powering up, be sure that the camera is the first unit to be turned on, followed by the monitor and the VIA-30.

GLOSSARY

ACTION OPTION

- menu options which allow users to perform actions or begin a given process.

ACTIVE LINE

- the line on the overlay which is positionable.

ANCHORED LINE

- the opposite of an *active* line. An anchored line has been placed in a fixed position on the overlay and cannot be moved again. However, anchored markers may be erased or cleared.

BLOOM

- crosslines which enlarge or blur on the monitor due to excessive brightness.

BNC COAXIAL CABLE

- a cable consisting of a tube of electrically conducting material surrounding a central conductor held in place by insulators and that is used to transmit high frequency television signals.

CCIR

- the specifications describing monochrome television electrical performance standards issued by the International Radio Consultative Committee, an international telecommunications standards-setting body of the United Nations. The CCIR standard is used throughout most of Europe and Africa (except France and parts of northern Africa).

CLEAR

- the *action option* which allows operators to clear the overlay of all anchored lines at once. A single active line will remain on screen.

CONTROLLER

- a device which controls the creation, positioning and storage of lines on a **VIA-30** overlay, which would be the joystick *controller*.

COORDINATES

- a set of numbers used to specify the location of a point on the video monitor.

CURSOR

- a symbol used to designate the menu option which an operator wishes to select.

EIA RS-170

- the specifications describing monochrome electrical performance standards issued by the Electronic Industries Association (EIA). Also referred to as RS-170 (Recommended Standard # 170). The EIA standard is used in North and South America, Japan and

most of Asia.

GRAY LEVEL

- the degree of white, gray, or black used to display the **VIA-30** menus and graphics on the video screen. *Gray level* is used interchangeably with *matte*.

LINES

- graphic lines which are superimposed on a video image and positioned by operators to mark or annotate the object in the field of view. Marking lines are anchored, stored and erased. Once anchored, lines may not be repositioned, although they may be erased or cleared from the overlay.

MARKER

- graphic symbols (lines, pointers, scales, boxes, circles, labels, grids and clock) which are superimposed on a video image and positioned by operators to mark or annotate the object in the field of view. In the **VIA-30** model, markers offered are a variety of horizontal, vertical and crossed lines. Once anchored, markers may not be repositioned, although they may be erased or cleared from the overlay.

MATTE

- the degree of white, gray, or black used to display the **VIA-30** menus and graphics on the video screen. *Matte* is used interchangeably with *gray level*.

MENU LINE

- a line of text at the top of the video monitor containing options which an operator may select.

NONVOLATILE MEMORY

- memory which retains information whether or not power is being supplied to the unit.

NTSC

- the North American **N**ational **T**elevision **S**ystem **C**ommittee 525-line color-TV standard. The NTSC standard is used in North and South America, Japan and most of Asia.

OVERLAY

- a combination of one or more graphic symbols placed on the screen using the marking capabilities of the **VIA-30**.

PAL

- the European 625-line, 25-frame color TV **P**hase **A**lternate **L**ine standard. The PAL standard is used throughout most of Europe and Africa (except France and parts of northern Africa).

PIXEL

- condensed form of the phrase "picture element" used to describe a unit of visual data, usually applied to a video screen or video overlay.

PREFERENCE OPTION

- menu options which allow users to specify preference before performing actual operations.

RGB

- a video signal which is segregated into three or four picture component signals: red (**R**), green (**G**) and blue (**B**) signals. Synchronization information may be included with

the G signal or may be separate.

RS-170

- see *EIA RS-170*.

VIDEO SOURCE

- a device from which the **VIA-30** receives a video image. The **VIA-30** incorporates the image with its graphic overlay capabilities, then outputs the image and graphics to the corresponding monitor. Examples of video sources include VHS recorders/players, macro- and microscopic cameras, standard television sets, teleconference equipment, slide to video converters, visual presenters and more.

VOLATILE MEMORY

- memory which is only retained when a continuous source of power is supplied to the unit.

X-AXIS

- horizontal measurement.

Y-AXIS

- vertical measurement.

Y/C

- a video signal which is segregated into two picture component signals: luminance or YIQ/YIV (**Y**) signals and chrominance or color (**C**) signals.

||| ABOUT BOECKELER INSTRUMENTS, Inc.

From its beginnings as a small manufacturer of precision micrometers in the early 1940s to its cutting edge precision measurement products today, Boeckeler Instruments, Inc., has remained a cornerstone of innovation and reliability in the worlds of science and industry.

Possessing a team well-grounded in design, development and service, Boeckeler products have long been applied to fields as diverse as precision machining, aviation and aerospace, electronics, biomedical research, clinical diagnostics, metallurgy and criminology.

Over the decades, as Boeckeler grew, its creative staff introduced such innovations as a toolmaker's microscope to handle shop floor capacity with watchmaking precision and speed; digital micrometers and readouts; digital filar eyepieces for microscopic measurement; video image analysis systems and auto positioning systems for microscope stages controlled by computer.

If you are interested in Boeckeler's other products or in keeping informed of Boeckeler's latest developments, contact a Boeckeler dealer in your area or call Boeckeler Instruments, Inc., in Tucson, Arizona at (800) 552-2262.

Other Fine Boeckeler Products

- * VIA-20 Video Pointer
- * VIA-30 Video Crossline Generator
- * VIA-50 Video Image Marker
- * VIA-100 Video Measurement System
- * VIA-110 Video Hardness Measurement System
- * VIA-170 Video Image Marker-Measurement System
(with keyboard)
- * VIA-S Series Image Archiving & Measurement Software
- * Digital Readouts
- * Digital Micrometers
- * Mechanical Micrometers
- * Linear Measuring Systems
- * Digital Dial Indicators
- * Digital Filar Eyepieces
- * Auto Positioning Systems

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