

# Operation Reference



## **Grass Valley Model 2200 Video Production Switcher Software Release 5.3**

**071-0154-00**

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# *Preface*

## **Welcome to the Model 2200**

This *Model 2200 Operation Reference* provides detailed information about the control panel functions and associated menu selections used to operate the Model 2200-2 Component Digital Switching Systems.

The Model 2200 document library set consists of:

- *Operation Reference*
- *User Guide*
- *Installation and Service Manual*
- *Drawings Manual*
- *Replacement Parts List*
- *Installation and Planning Guide* (optional)

The *Model 2200 Operation Reference* lists and briefly describes every button, knob, control, lever, and menu selection the switcher has to offer. Use this manual in conjunction with the *Model 2200 User Guide* when learning switcher functions, and/or as a reference and “memory jogger” during daily switcher operation.

The *Model 2200 User Guide* contains a system overview, software configuration, startup, switcher concepts, and task-oriented procedures for switcher functions. This book may be used when learning about, or enhancing your knowledge of, switcher operations.

The *Model 2200 Installation and Service* manual contains a hardware overview, hardware system installation instructions, general maintenance information, and functional descriptions of the Signal Processor Frame and Control Panel power supplies, modules and mezzanine circuit boards.

## Organization of This Manual

This manual is organized as follows:

**Control Panel Descriptions** – Describes the Model 2200 control panel functions.

**Menu Descriptions** – Describes all software menus used to set up switcher parameters.

**Menu Trees** – Graphical depiction of switcher hierarchical menu structure.

## How to Use this Manual

This reference manual assumes you have read, or understood, the contents of the *User Guide* and the System Overview and Functional Descriptions in the *Installation and Service* manual, so that you will be familiar with the basic terminology used in this manual and the structure of the hardware/software system.

If you are a switcher pro, and you know the switcher like the back of your hand, then you'll probably dive right in, referring occasionally to this book and the *User Guide*.

If you are not a switcher pro, you should read or scan the Control Panel Descriptions section to get an idea of the functions of the switcher subpanels and controls.

For quickly locating specific areas of interest, refer to the Table of Contents at the front of each manual section. This "local" table of contents is provided behind each tabbed divider so that you don't have to go all the way to the front of the manual to locate the information in a particular section.

If you have any comments about this manual, we would like to hear from you. Please write to:

**Tektronix, Inc.**  
**Grass Valley Products**  
**Technical Publications Department**  
**PO Box 1114**  
**Grass Valley, CA 95945**

## Conventions Used in this Manual

The following graphical and typestyle conventions are used throughout this manual.

### Button References

A control panel button is shown as follows:



Or, when used in the text, is shown in **boldface type**:

**BKGD A**

### Panel Knob References

Similarly, a control panel knob is shown as follows:



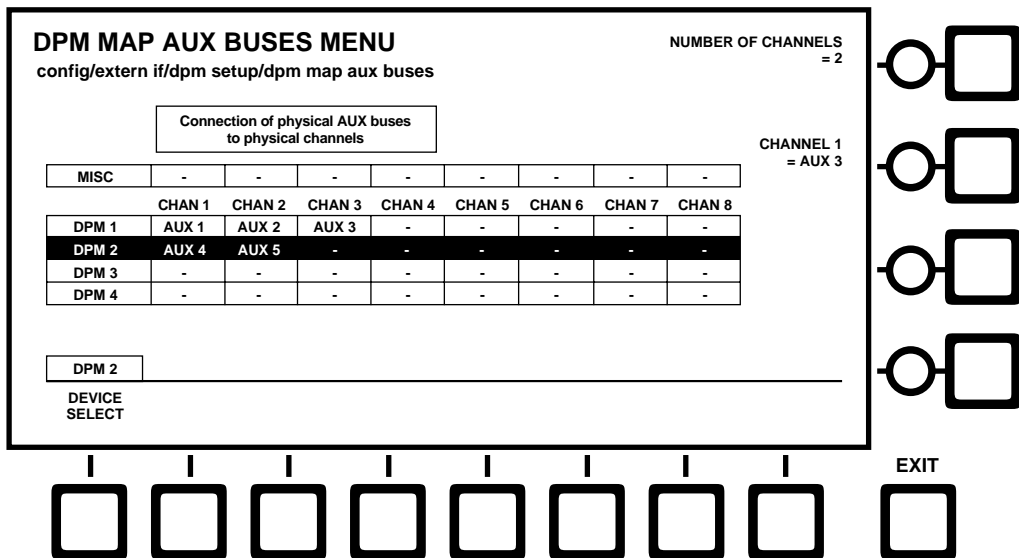
Or, when used in the text, is shown in **boldface type**:

**BRIGHTNESS**

## Menu References

Many Model 2200 features may be accessed via the menu display and its associated “soft” buttons and “soft” knobs. The term “soft” means that the function of the button or knob is assigned via the currently displayed menu.

An illustration similar to the following may be used when you need to access a function via the menu



**NOTE:** For clarity, menus shown in the body of this manual will not display the “soft knobs” (the 4 shaded circles to the right of the menu), or the “soft buttons” (the 9 shaded boxes below the menu). The function labels (for example, “DEVICE SELECT”, and “NUMBER OF CHANNELS”) will remain.

**NOTE:** The four buttons shown adjacent to the soft knobs are used with the Krystal DPM functions (that is, the Model 2200-i) when so configured.





# 1

## *System Overview*

This section presents a general description of the Grass Valley Products Model 2200-2 Production Component Digital Switching Systems.

The Control Panel and Signal Processor descriptions provide a basic knowledge of the Model 2200 basic architecture.

### **Basic Architecture**

The Model 2200 is a component digital switcher. It can manipulate CCIR 601 serial component digital and analog component video and key signals through the use of 10-bit digital processing. An Analog Chroma Keyer Input Module is also available.

The Model 2200-2 provides two full function mix/effects subsystems. Up to 32 serial digital inputs which can be mapped to switcher crosspoint buttons and used as video and/or key sources. Internal sources are also available, such as Black, Masks, Color Bars, and Background.

Effects animation functionality may be used to build and run a sequence of effects. Effects are stored in E-MEM registers as a list of “keyframes” (see the User Guide), for a definition of Keyframes). The E-MEM register operations are used to learn, recall, copy, and link effect registers.

The layout of the Control Panel is logically structured for efficient control of video signals. The Menu Display Subpanel allows quick changes to switcher system parameters.

## **Standard Features**

- 2 Mix/Effects Systems
- Auto-Timed Inputs
- Shaped and Unshaped Video Input Conditioning
- Fineline Keying
- Key Channel Throughout
- 10-Bit Data Processing Throughout
- Full Complement of Wipe Patterns
- E-MEM with Disk Storage
- 100 E-MEM registers for Keyframe effects
- Multiple-event Keyframes/Effects within a single E-MEM Register
- User-Preference Programming
- Safe Title / Area Generators
- Extensive Masking
- Complex Matte Generators
- Analog Output Program/Preview Capability
- Default switcher state —User defined or GVG factory setting
- Chroma Key Auto Setup

## **Optional Features**

- BORDERLINE on all Keyers
- Dual Chroma Keyers for each M/E
- Second Wipe Pattern Generator for each M/E
- Kaleidoscope Run Control and Effects Recall<sup>1</sup>
- Two-Channel Effects Send
- Three Additional Timed Aux Buses
- Key Outputs
- Preview Outputs
- Tally Outputs
- DPM Port
- Redundant Power Supplies
- Module Extenders

Refer to the end of this section for descriptions of the optional features.

---

1. Requires a GVG Kaleidoscope DPM and the Kaleidoscope Interface Upgrade Kit (currently shipped, to customers who have purchased Kaleidoscope, with the 4.0 Software Release Package, Part No. 074825-07).

## Physical Description

The switcher consists of three main areas: the Control Panel, the Signal Processor Frame, and the Frame Power Supply (see s) The electronic circuitry for the Model 2200 is contained on circuit boards and modules in the Signal Processor Frame and Control Panel.

### Signal Processor Frame

The Signal Processor Frame is a large rack-mounted unit that houses the system Controller, Mix/Effect logic and processors, Input/Output interfaces, and Expansion circuit modules.

In addition to the basic system, a typical system may have several options such as Chroma Keyers, Secondary Wipe Generators, and Effects Send. Most options are available as circuit board modules (or submodules called “mezzanine” boards) that are installed in the Signal Processor Frame.

Refer to the Model 2200 *Installation and Service* manual for a complete description of the Signal Processor.

A main processor and separate M/E processors reside within the Signal Processor Frame. Since each M/E has its own processor, failure of one processor does not disable the entire switcher. Individual effects can continue to operate independently in a limited capacity.

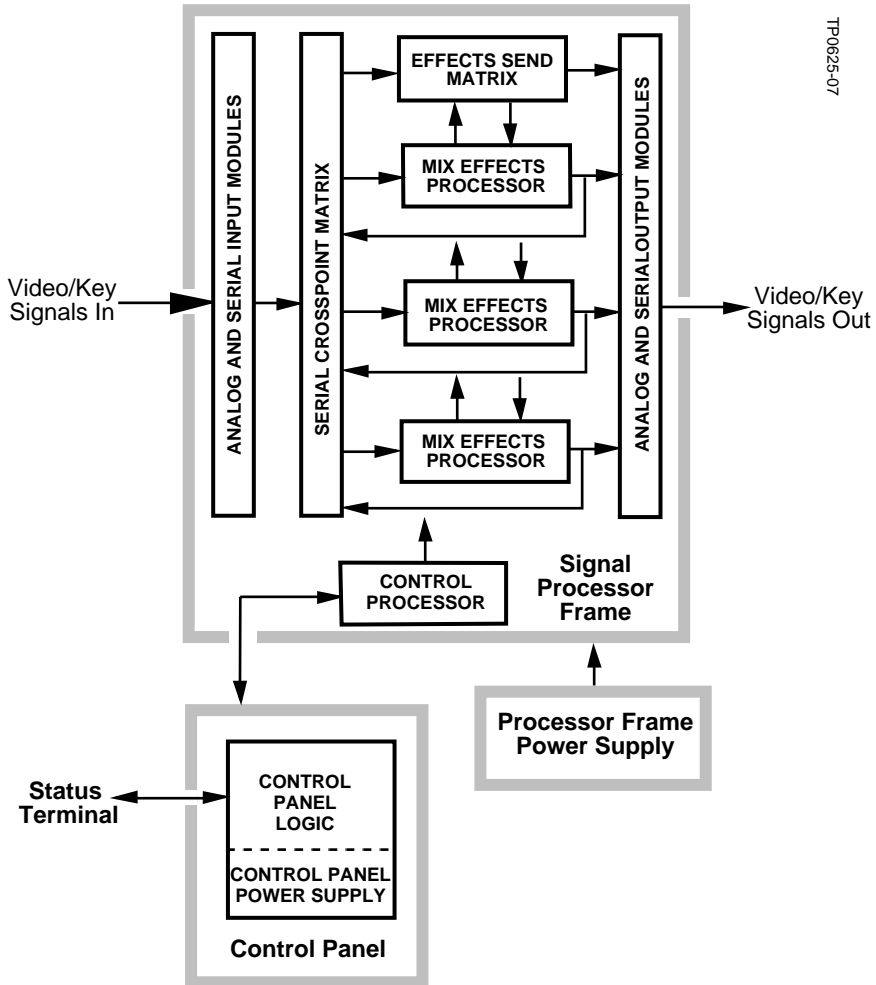
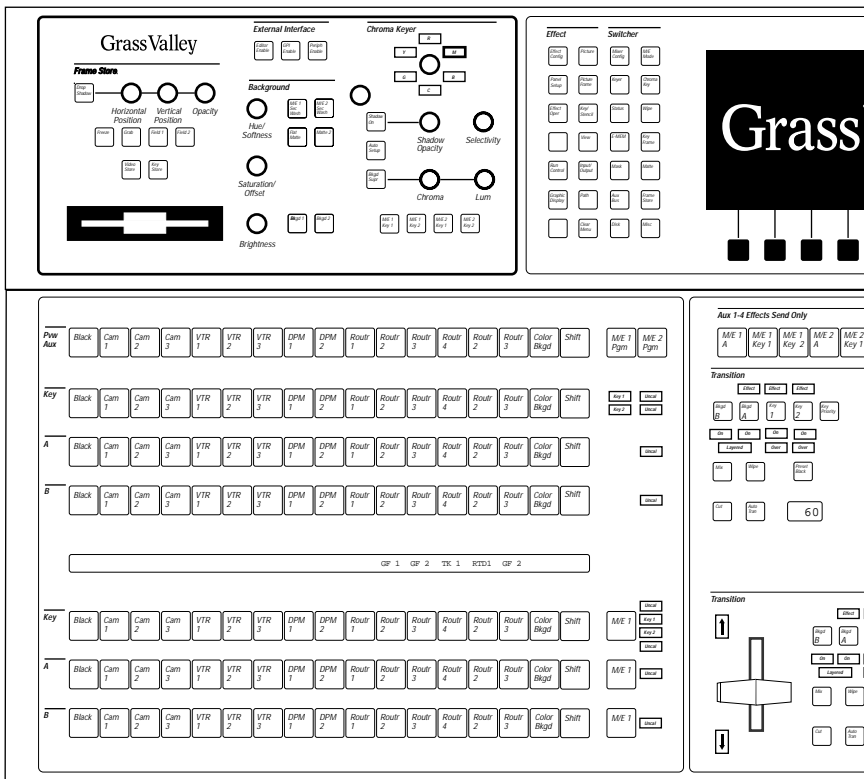


Figure 1-1. Simplified Block Diagram of the Model 2200

## Control Panel

The Control Panel is the operator interface for the Model 2200 system. The operator performs all actions via buttons and knobs and a software-driven menu.



The Control Panel also provides connectors for a status terminal and the data link to the Signal Processor Frame.

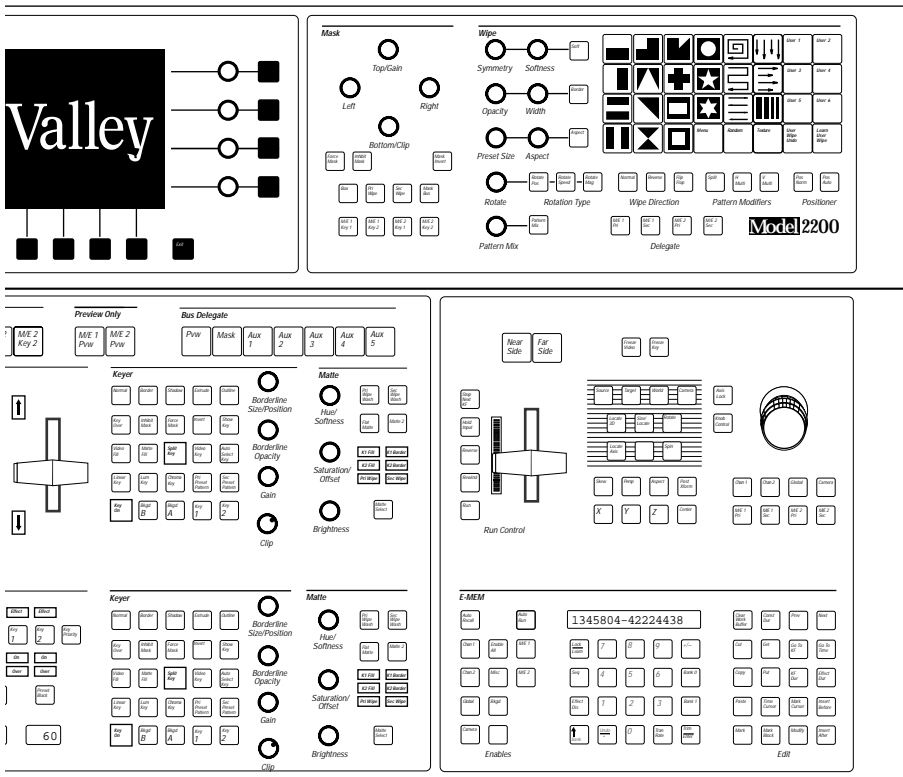


Figure 1-2. Model 2200-2 Control Panel

## Power Supplies

Two power supplies are used in the basic Model 2200 system: a control panel power supply, located in the control panel tub, and a 19" rack mount power supply used by the Signal Processor Frame. Optional Redundant power supplies are available.

## Video and Key Inputs and Outputs

### Inputs

Two types of input modules may be installed in the Signal Processor Frame to suit the needs of your installation. The following types of input modules are available.

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**NOTE:** *Each of the serial or analog inputs can be treated by the switcher as either a video input or a key input.*

---

- Serial Digital Input Module – provides 8 inputs, auto-timed within a range of  $\pm 18$  microseconds. Two modules are supplied in the standard configuration. Two modules are available as options. With four modules installed there are 32 inputs available. The modules are located in Bay C.
- Chroma Key Input Modules (optional) – Either one or two Chroma Key Input Modules may be configured. These modules allow full bandwidth chroma keys. Each module has two inputs. Each input has three BNC connectors labeled: G/V, B/U, and R/V. There is a separate gain adjustment near each BNC connector. The format for each input is user-selectable from RGB, YUV, Beta or MII. The module is located in Bay C.

Refer to the *Model 2200 Installation and Service* manual, Section 3, Functional Description, for more information.

Refer to the *Model 2200 User Guide* for information on assigning input formats and adjusting the timing.



## **Outputs**

Output modules are placed in the rear bay of the Signal Processing Frame. The following module types are available:

- Serial Output Modules (2 standard, each adding 8 outputs with two BNCs)
- Analog Output Module (1 optional with RGB/Y, CR, CB and Key outputs)

The standard Digital Output Modules have the following outputs:

- Mask Bus
- Switched Preview Video
- M/E 1 and M/E 2 Program Video and Key
- M/E 1 Key<sup>1</sup> or M/E 1 Clean Feed<sup>2</sup>
- M/E 2 Key or M/E 2 Clean Feed
- Aux Buses 1A through 2B
- Framestore Video and Key

The optional Analog Output Module has the following outputs:

- M/E 2 Program Out
- M/E 2 Preview Out

---

1. No Lookahead Preview Option installed.

2. Lookahead Preview Option installed.

## Functional Description

### General Overview

[Figure 1-3](#) shows a simple video flow diagram for the Model 2200.

Video and key signals enter the input modules of the Model 2200, which consist of component analog and/or component serial digital formats. The analog signals are converted to digital format, and all inputs are timed and conditioned.

The digital signals are then passed to the Video and Effects Section where keying and mixing take place. This section also provides effect modifications, such as wipes and keyframing, that can be applied to selected inputs.

In the Output Section, digital video and key signals are routed to the Serial Digital Output Modules and the optional Analog Output Module before leaving the Signal Processor.

### Video Processing

Input video and key signal selections are made by the Crosspoint Matrix under control of the system Controller, according to operator assignments entered via the Control Panel.

In addition to primary (external) video, secondary (internal) sources such as Masks, M/E re-entry video, and optional Effects Send are available as inputs to the crosspoint matrix.

Any suitable component digital signal from the Crosspoint matrix may feed the Chromatte™ Chroma Keyer Module option. Analog Component signals may also be used as Chroma Key sources.

Keyers in each Mix/Effects bank provide outputs to the Mixer Interface crosspoints. These outputs may be sent outside the switcher for external processing, or may be routed to the M/E mixers and wipe generators. The Effects Send outputs can be directed to the Framestore option for image capture.

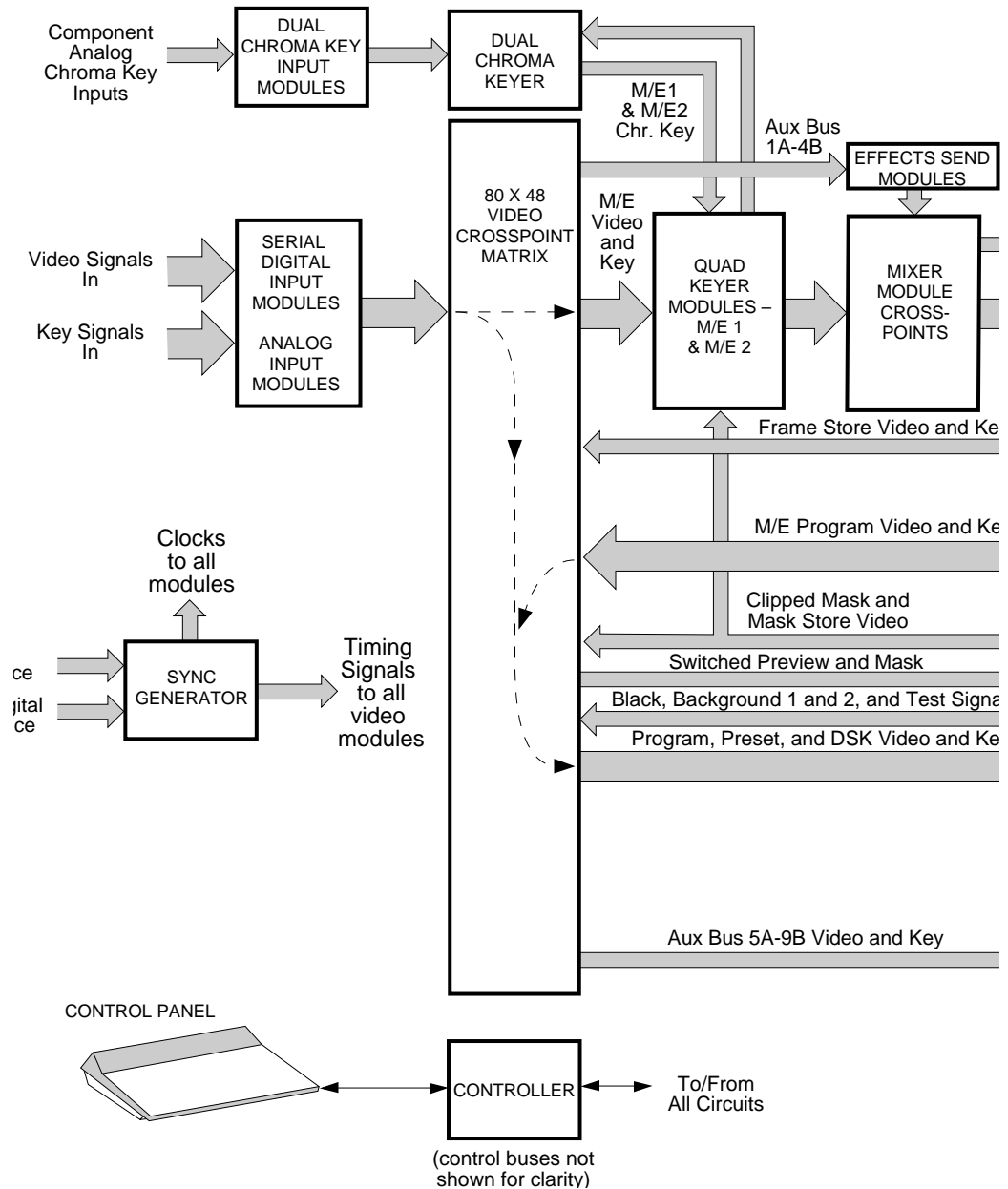
Each M/E has two keyers and two background buses (A and B) as inputs. In standard mode, Keyers 1 and 2 can be mixed into a composite video and key which can be forwarded to the output, or M/E 1 can be reentered into M/E 2. In layered mode, Background Buses A and B are also used as keyers.

Preview capability allows monitoring of sources at many points in the signal flow. You can preview video from the M/E mixers, switched preview bus, or mask bus.

Eight GPI inputs are provided. You can assign each of the GPI inputs via the GPI Input Menu to perform a specific function when triggered.

The editor interface consists of an asynchronous RS-422, 38.4K baud serial communications port, managed by a communications processor. Refer to the Model 2200/3000/4000 *Serial Protocols* manual for information on software functions and protocols observed by the editor port.

# Section 1 — System Overview



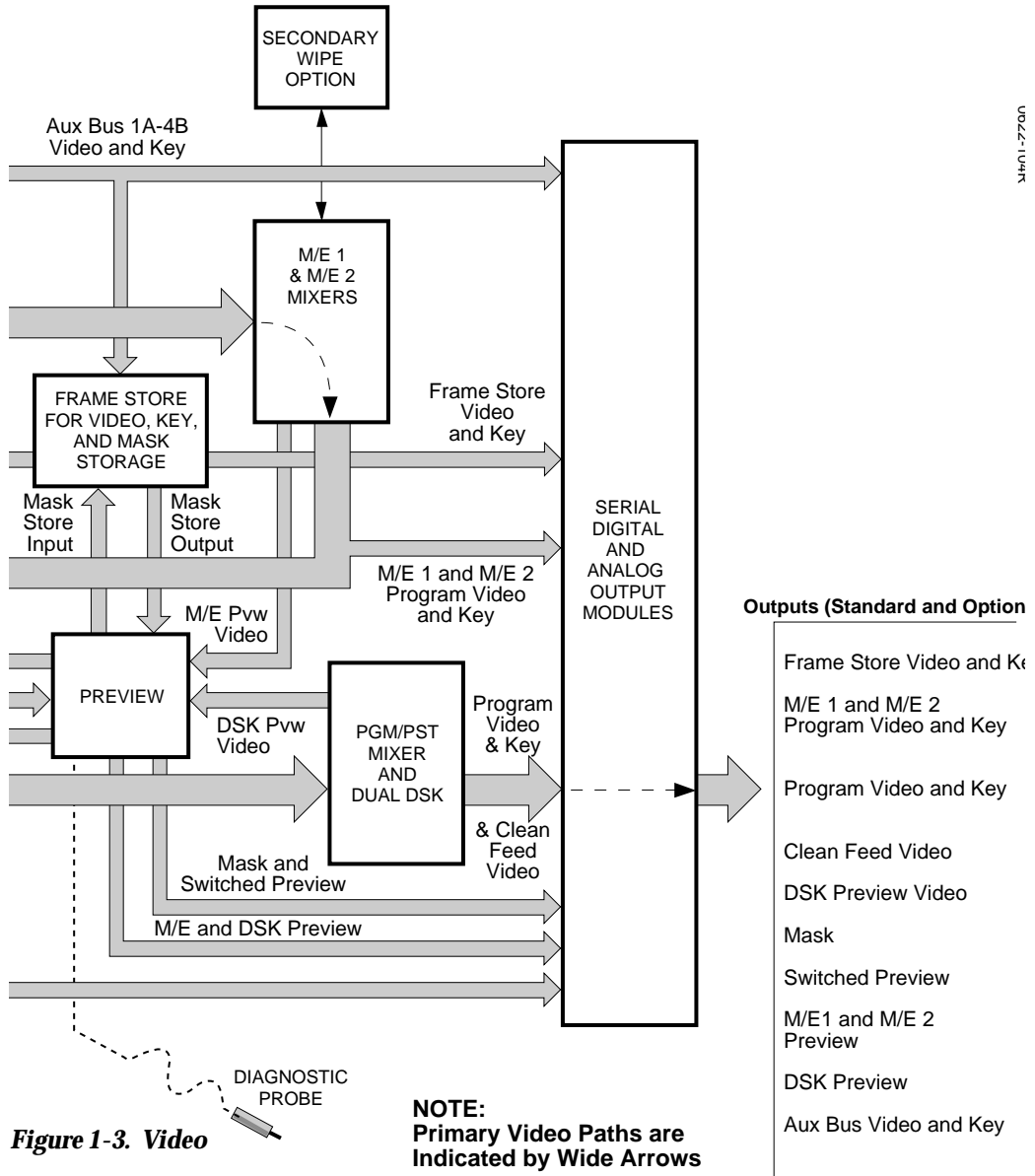


Figure 1-3. Video

## Description of Options

The following options are currently available for the Model 2200 switcher. For more details on these options, refer to the appropriate subpanel descriptions later in this manual.

### **Chromatte Advanced Chroma Keyer**

Each foreground keyer in M/E 1 and M/E 2 has access to an optional component chroma keyer. Either an internal component digital signal or an external component analog signal from one of the Chroma Key Input Modules can be used as the chroma key source. Color background suppression, foreground suppression and shadow processing are included as features.

### **BORDERLINE Key Edge Generation**

BORDERLINE® Key Edge Generators are available for each keyer in the switcher. The Borderline feature is implemented as a submodule that plugs onto the Keyer module of any M/E.

Each Borderline generator supports 1, 2, or 3 line wide borders for border and outline modes and 1 to 6 line wide edges for shadow and extrude modes. Fill within the key edges may be either video or matte.

### **Secondary Wipe Generator**

A Secondary Wipe Generator option provides a second pattern for each M/E. The Secondary Wipe Generator Submodules mount on the M/E 1 and M/E 2 Mix/Wipe Modules.

## **Effects Send**

Effects Send provides a method of integrating digital effects devices into the switcher mix/effects system. Up to two send channels can be used to route the video and key from an M/E to and from an external digital effects system.

## **Frame Store**

Using software version 5.3 and later, the Frame Store option takes the output of an M/E Keyer, sends it to the Frame Store module, then returns the output of the Frame Store to the Mix/Wipe circuit of the same M/E in the switcher. This provides the effect of inserting the Frame Store right into the M/E, between the Keyer and the Mix/Wipe systems.

## **Look Ahead Preview**

Look ahead preview processing is provided for both M/Es with this option. Submodules mount on the M/E 1 and M/E 2 Mix/Wipe Modules.

## **Tally Relay Frame**

The Tally Relay Frame provides external tally outputs that reflect the switcher status. A rear-panel interconnect board provides the relay contacts on two connectors for on-air Tally A and on-air Tally B. The frame can hold up to three Tally Modules. Pinouts for the Tally connectors are given in the Installation section of the *Model 2200 Installation and Service* manual.

## **Remote Aux Bus**

The Remote Aux Control Panel Option allows you to control the Model 2200's aux buses from a remote location. As many as 32 Remote Aux Panels can be daisy-chained to the switcher. There are three Remote Aux Panel configurations available, identified by the number of rack units (RUs) each occupies in the equipment rack.

The panels are designed to control 32 external inputs (16 unshifted and 16 shifted).

## **Timed Aux Output**

The Timed Aux Output Module provides four independent output pairs (video/key) from aux buses 5A through 8B for use with Kaleidoscope and DPM systems.



# 2

## *Control Panel Descriptions*

### **Introduction**

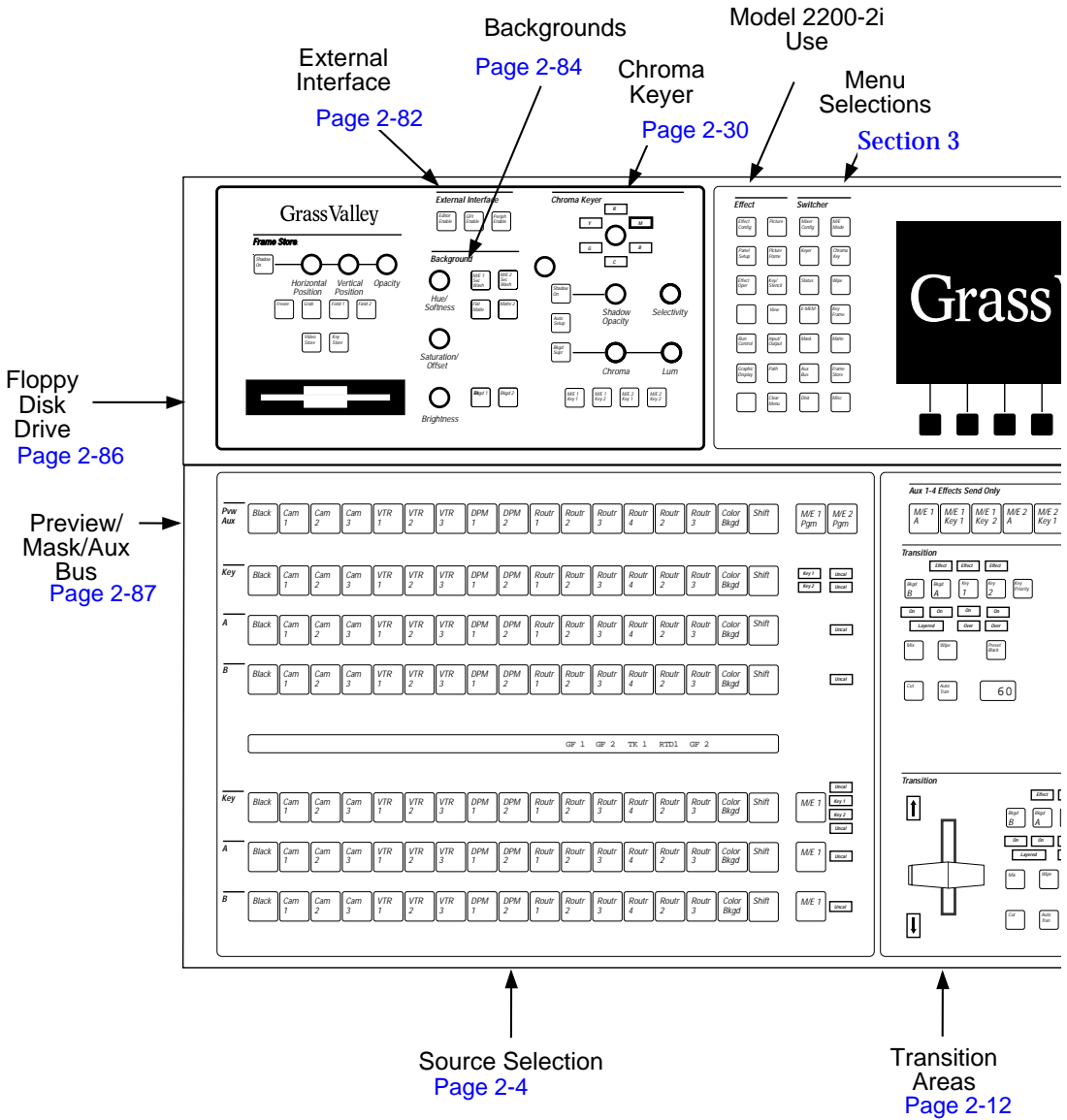
The Model 2200 Switcher is operated by a control panel containing a source-select button matrix, various other groupings of controls and a text and graphics menu display.

This section provides an overview of the Model 2200 control panel and detailed descriptions of the controls. For a descriptions of the menus and the functions available through the menus see Section 3.

### **Control Panel**

[Figure 2-1 on page 2-2](#) shows the control panel and indicates the grouping of the controls by operation.

# Section 2— Control Panel Descriptions



**Figure 2-1. Control Panel**

Menu Display  
Section 3

Mask Area  
Page 2-73

Wipe Area  
Page 2-65

The top-left section of the control panel features a large black display with the word "Valley" in white. To its right are four vertical sliders and a "MIX" button. The top-right section is the "Mask" and "Wipe" area. The "Mask" section includes controls for Top Gain, Left, Right, and Bottom Clip. The "Wipe" section includes controls for Symmetry, Softness, Opacity, Width, Press Size, Aspect, Rotate, Rotation Type, Wipe Direction, Pattern Modifiers, and Positioner. A "Model 2200" label is present at the bottom right of this section.

The bottom-left section contains "Preview Only" and "Bus Delegate" controls. Below these are two identical "Keyer" and "Matte" sections. Each section includes controls for Borderline Size/Position, Hue/Saturation, Opacity, Gain, and Brightness. The "Keyer" section also includes a "Clip" control. The "Matte" section includes a "Clip" control.

Keyer Areas  
Page 2-21

Matte Areas  
Page 2-33

The bottom-right section is divided into two main areas. The top area is the "Positioner Area", featuring "Near Side" and "Far Side" controls, a "Run Control" section with a crosshair, and a "Model 2200-2i Use" label. The bottom area is the "E-MEM" (Effects Memory) section, which includes a display showing the number "1345804-42224438" and various control buttons.

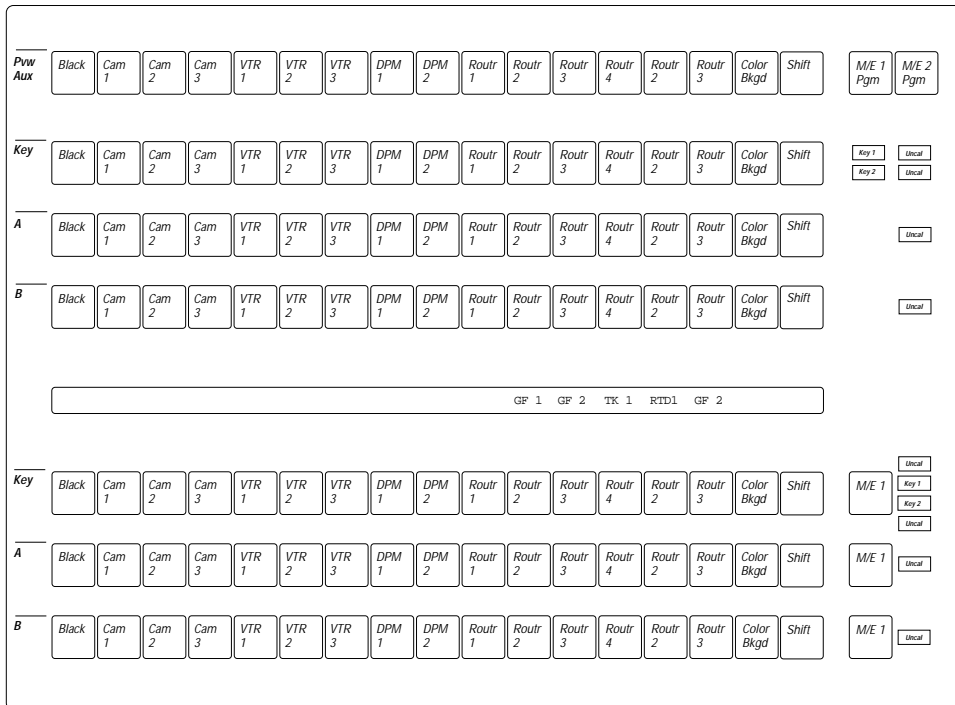
Positioner Area  
Page 2-64

Model 2200-2i Use

Effects Memory (E-MEM) Area  
Page 2-36

## Source Selection

The Source Select portion of the control panel consists of Primary source select buttons, Secondary (re-entry) source select buttons, **SHIFT** buttons, and Key Bus delegation and uncalibrated indicators. (Figure 2-2.) Each vertical column of buttons has the same input; each horizontal row is an output. An input is put on an output by pressing the button on that output row that has the required input. Each input can be named; the first four letters of the name are displayed in the LED panel located between the M/E rows.



**Figure 2-2. Source Select Panel**

All buttons in the Source Select region have three levels of illumination:

- OFF indicates not selected;
- DIM or “low tally” indicates selected, but not on-air;
- BRIGHT or “high tally” indicates selected and on-air.

Only one button in each row is illuminated at any time.

### Primary Source Selection (Primary Crosspoints)



The Source Select Buttons are used to select which of the inputs into the switcher will be used in the switcher. Each row of primary source selection buttons consists of 16 buttons. Each can have a designator under a clear lens cap.

Each input, including internally generated signals such as black and background, can be mapped to any vertical column of crosspoint buttons. Thus, each column of buttons may be visualized as an input bus of video or key crosspoints. Each input can be treated as either a video signal or a key signal, as defined in the Configuration menu.

The input signals on each input column can be placed on any output bus (horizontal row) by pressing the crosspoint button at the intersection of the column and row. Any video/key input may be selected on any number of output buses; however each output bus can have only one output signal selected on it at one time.



The **SHIFT** button located at the right end of each primary source selection row is used to access inputs 17 through 32. To select a shifted input, hold **SHIFT** down (button lamp comes on) and press a crosspoint button on that bus. The **SHIFT** button lamp then remains lit to show that the selection is a shifted selection. The Shift mode will turn off when an unshifted selection is made on that bus.

### Crosspoint Button Caution Indication

A primary crosspoint button may flash if the timing of a selected input cannot be corrected by the automatic input timing circuit. This flashing can be disabled through the Configuration menu.

### Secondary Source Selection (Re-entry Crosspoints)



The secondary source (“M/E re-entry”) buttons, **M/E 1** are located at the right of each row of M/E 2 primary crosspoint buttons. The program output of M/E 1 may be re-entered as an input on an M/E 2 bus by selecting this button as the input.

### Key Delegation and Uncal Indicators

Each M/E has a two key buses but only one row of key bus buttons. The keyer bus buttons are delegated to each key bus by pressing the **key 1** or **key 2** button in the keyer subpanel for that M/E.

*Key 1*

*Key 2*

The **KEY 1** and **KEY 2** indicator LEDs, are located at the right of each row of keyer crosspoint buttons and light to indicate which keyer the row of buttons is currently delegated to control.

*Uncal*

Each **UNCAL** indicator LED, located to the right of each row of primary crosspoint buttons, lights if one or more of the following variables are set to non-default values for the selected crosspoint on that bus: opacity, luminance gain, chroma gain, D.C. offset, coring, or horizontal key position.

## **LED Display**

The Led displays the first four letters of the input name. The inputs are named using the [Name File Menu on page 3-138](#)  
Holding down the **shift** button causes the LEDs to display the name of inputs 17 through 32.

## Auto Delegation

### Panel Delegation

Some of the controls on the Model 2200 Switcher are delegated to other controls under conditional control of the operator or system. This feature is called “auto delegation.” The effect of auto delegation is that pressing a button on one subpanel may activate the controls on another subpanel of the control panel. For example, the single chroma keyer subpanel is used for controlling all chroma keyers, and is activated by pressing the **CHR KEY** button on either of the M/E Keyer subpanels. Auto delegation is normally on, but can be turned off via the User Preferences menu.

[Table 2-1](#) shows some of the delegations present in the Model 2200 Switcher.

**Table 2-1. Panel Delegation**

Subanel	Button Pressed	Delegated Subpanel	Conditions and Comments
Transition	<b>KEY 1</b> or <b>KEY 2</b>	Keyer, Key Bus (same M/E) Mask  Chroma Keyer	<b>INHibit MASK</b> or <b>FORCE MASK</b> must be on  <b>CHR KEY</b> must be on
Transition (Layered Mode)	<b>BKGD B</b> or <b>BKGD A</b>	Keyer (same M/E)	
Transition	<b>WIPE</b>	Wipe	
AUX/Mask/PVW Bus	Any <b>PREVIEW ONLY</b> Crosspoint	Preview Bus	
Keyer	<b>KEY 1</b> or <b>KEY 2</b>	Key Bus (same M/E) Mask  Chroma Keyer	<b>INHibit MASK</b> or <b>FORCE MASK</b> must be on  <b>CHR KEY</b> must be on



Table 2-1. Panel Delegation - (continued)

Subpanel	Button Pressed	Delegated Subpanel	Conditions and Comments
Keyer	<b>PRI PST PTTN</b> or <b>SEC PST PTTN</b>	Wipe	
Keyer	<b>CHR KEY</b>	Chroma Keyer	
Keyer	<b>INHibit MASK</b> or <b>FORCE MASK</b>	Mask	<b>INHibit MASK</b> or <b>FORCE MASK</b> button must be turned on by the press
Keyer	Any Borderline mode button except <b>NORMal</b>	Matte (same M/E)	Lights <b>K1 BORD</b> or <b>K2 BORD</b> indicator in matte subpanel, depending on Keyer delegation
Keyer	<b>MATTE FILL</b>	Matte (same M/E)	Lights <b>K1 FILL</b> or <b>K2 FILL</b> indicator on Matte subpanel, depending on keyer delegation
Matte	<b>PRI WIPE WASH</b> or <b>SEC WIPE WASH</b>	Wipe Matte*	If Wipe <b>BORDER</b> is on
E-MEM	Register Recall	Keyer and Key Bus	
Mask	<b>PRI WIPE</b> or <b>SEC WIPE</b>	Wipe	
Wipe	<b>BORDER</b>	Matte (same M/E)	<b>BORDER</b> button must be turned on by the press Lights <b>PRI WIPE</b> or <b>SEC WIPE</b> indicator on matte subpanel

\*In an M/E Matte Subpanel: Pressing the **PRI WIPE WASH** button causes the Wipe Subpanel to be auto delegated to the primary wipe pattern generator for the calling M/E. Pressing the **SEC WIPE WASH** button in the M/E Matte Subpanel causes the Wipe Subpanel to be auto delegated to the secondary wipe pattern generator for the calling M/E.

## Menu Delegation (DPOPs)

The Model 2200 also delegates some menus on the Menu Display screen to open when specific buttons on the panel are *double-pressed*. (The second press must occur within a half a second) [Table 2-2](#) lists the buttons that support this function.

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**NOTE:** An opened menu is delegated, where appropriate, to the button that opened the menu. For example, double-pressing the *KEY 1* delegation button on the *M/E 1* Keyer panel causes the keyer menu to open and the menu controls to be delegated to keyer 1 of *M/E 1*.

---

**Table 2-2. Menu Delegation**

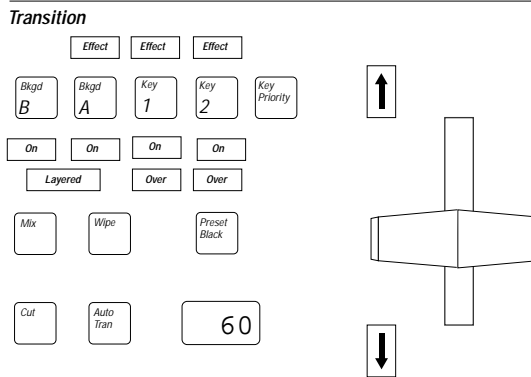
Subpanel	Button Double-Pressed	Delegated Menu
Transition	<b>WIPE</b>	Wipe Pattern menu
Keyer (any M/E)	<b>KEY 1</b> and <b>KEY 2</b>	Keyer menu
Keyer (any M/E) (Layered Mode)	<b>BKGD B</b> , <b>BKGD A</b> , <b>KEY 1</b> , and <b>KEY 2</b>	Keyer menu
Keyer (any M/E)	<b>PRI PST PTTN</b> or <b>SEC PST PTTN</b>	Wipe menu
	<b>CHR KEY</b>	Chroma Key menu
Chroma Keyer	<b>M/E 1 KEY 1</b> through <b>M/E 2 KEY-2</b> on 3000-2 or through <b>M/E 3 KEY 3</b> on 3000-3	Chroma Key menu
Frame Store	<b>VIDEO STORE</b> , or <b>KEY STORE</b>	Frame Store menu

**Table 2-2. Menu Delegation - (continued)**

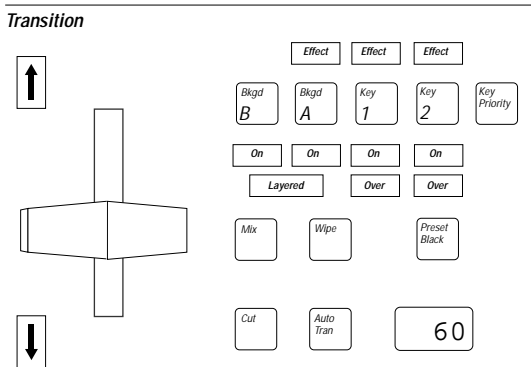
<b>Subpanel</b>	<b>Button Double-Pressed</b>	<b>Delegated Menu</b>
Wipe	Wipe Pattern <b>MENU</b>	Wipe Pattern menu
	<b>M/E 1 PRI</b> through <b>M/E 2 SEC</b> on 3000-2 or through <b>M/E 3 SEC</b> on 3000-3	Wipe Modifiers menu
	Wipe Pattern <b>TEXTURE</b>	Wipe Texture menu
Crosspoint Source Select	SHIFT	User Preference menu
Mask	<b>INH MASK</b> or <b>MASK BUS</b>	Mask menu

## Transition Subpanels

The transition subpanels are used to select the type of transition and to execute the transition. There is a transition subpanel for each M/E. (See Figures 2-3 and 2-4.)



**Figure 2-3. M/E 1 Transition Subpanel**



**Figure 2-4. M/E 2 Transition Subpanel**

## Next Transition Buttons

The five next transition buttons – **BKGD b**, **BKGD a**, **KEY 1**, **KEY 2**, and **KEY PRIORity** – select the output signals that will change during the next transition.

*On* An **ON** indicator located beneath each next transition button is lit when the associated signal is an active part of the M/E output in layered mode.

**NOTE:** *The way the Next Transition buttons operate depends on whether the M/E is operating in Standard Mode or in Layered Mode. The mode of operation is set in the M/E MODE menu, described in section 3.*

### Next Transition Buttons (*Standard Mode*)

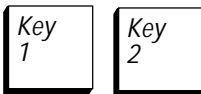
In Standard Mode, only the **BKGD A**, **KEY 1**, **KEY 2**, and **KEY PRIORity** next transition buttons and the **ON** and **OVER** indicators below the **KEY** buttons are functional. (The **BKGD B** button and the **ON** indicators below the **BKGD** buttons are not functional and the **LAYERED** indicator is not lit.)

The transition can affect Background only, Key 1 only, Key 2 only, or any combination of those. Multiple-layer transitions are selected by simultaneously pressing more than one button.



Pressing **BKGD A** selects background video to change during the next transition. That is, the background video output of the M/E will change from the source selected on the A Background bus to the source selected on the B Background bus.

At the end of the transition, the inputs selected on the background buses will interchange, or “flip-flop.” The “new video” on the B Background bus will transfer to the A Background bus, and the “old video” on the A Background bus will transfer to the B Background bus.



Activating the **KEY 1** or **KEY 2** button (lamp lit) causes the next transition to bring on or remove the selected key. Selecting **KEY 1** or **KEY 2** delegates the keyers subpanel and KEY bus to the selected keyer so that the characteristics of the selected key may be adjusted (see keyer subpanel description).

One or both of the KEY buttons can be activated at the same time and one or both keys can be on (**ON** indicator lit) at the same time.



Pressing **KEY PRIORity** causes the next transition to swap the Key 1/Key 2 priority. This can be performed as a mix, wipe, or cut transition. Key priority always involves both Key 1 and Key 2

*Over*

The **OVER** indicators light when that key is over the other key.

*Effect*

The **effect** indicators light when the associated key or video is in the effects send mode.

### **Next Transition Buttons (*Layered Mode*)**

*Layered*

In Layered Mode, *all* of the next transition buttons and indicators are functional and the **LAYERED** indicator is lit. In this mode, **BKGD B** and **BKGD A** are keyers.

The transition can affect Background A only, Background B only, Key 1 only, Key 2 only, or any combination of these. Multiple-layer transitions can be selected by simultaneously pressing more than one button.

---

**NOTE:** *Flip-flop operation occurs only when operating in Standard mode. Operating in layered mode causes the A and B Background layers to transition in a manner similar to the Key 1 and Key 2 layers (see the descriptions for Key 1 and Key 2).*

---



In Layered mode, the **BKGD A** and **BKGD B** buttons also delegate the keyers subpanel. (The key bus delegation remains unchanged when the keyer subpanel is delegated to either of the background layers.)

## Transition Type Buttons

The *type* of transition at the next transition is determined by the **WIPE**, **MIX**, and **PRESET BLACK** buttons.

The **WIPE** and **MIX** buttons are mutually exclusive; pressing one selects it and de-selects the other.



A **WIPE** transition uses the output of the wipe generator to shape the selected transition(s). Your selected wipe pattern appears over the old video/key and moves across the screen, revealing the new video/key as it moves. Use either the **lever arm** or the **AUTO TRANS** button to perform the **WIPE** transition.



Pressing **MIX** selects a transition that mixes video, keys or backgrounds, during the change from one source to the other. A mix transition gradually fades the new video and/or key over the old video and/or key. You can use either the **lever arm** or **AUTO TRANS** button to perform a **MIX** transition.



Pressing the **PRESET BLACK** button selects a two-stage transition that inserts black between the two video sources being mixed, wiped, or cut. For example, instead of mixing directly between the A Background and B Background buses during a background transition, a preset black transition mixes, wipes, or cuts from the A Background bus to black. When a second transition is performed, black mixes, wipes, or cuts, away to the B Background. After completion of the two transitions, **PRESET BLACK** turns itself off automatically.

In addition to this automatic cancellation, you can toggle **PRESET BLACK** on and off manually. If you turn off **PRESET BLACK** while the transition is on the black limit, the M/E output will immediately switch from black to the original signal. If you turn off **PRESET BLACK** when it is off limit, the transition to or from black will stop.

The **PRESET BLACK** function is available in each M/E. **PRESET BLACK** affects only the effect where it is selected and not the entire switcher. The button lights when pressed and turns off automatically when the second transition is complete. The **BLACK** video input button on the A Bus remains lit while the M/E is on the black limit. The preview monitor continues to show the final result of the two-stage preset black transition.

**MIX** and **WIPE** are unaffected when **PRESET BLACK** is turned on. **MIX** and **WIPE** can be changed at any time during a preset black operation.

Preset Black always fades to a full screen black regardless of whether the switcher is operating in layered mode or standard mode.

An abort of Preset Black occurs when the operator selects a crosspoint on the A Background bus while the M/E transition is on the black limit. This abort causes the following to occur: the preset black transition is cancelled, the **PRESET BLACK** button lamp turns off, all keys are dropped, and the selected crosspoint is taken fully on-air. If the abort occurs in Layered Mode, the M/E is forced to Standard Mode to ensure that the selected crosspoint is a full raster image.

A new background source may be selected on the B Background bus when you are at the midpoint of a preset black mix. In the same manner, next-transition delegation buttons, keyer modes, or keyer sources may also be changed. None of these changes will abort the preset black transition.



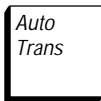
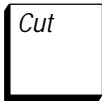


Configuring the **BLACK** Crosspoint – When mapping inputs to pushbuttons, one of the choices in the CONFIG menu is *BLACK*, and another choice is *NONE*. Your selection will have an effect on how **PRESET BLACK** operates, and what will happen in the event the controller CPU fails.

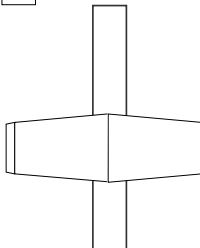
When the first transition during a preset black operation is completed, the left most **BLACK** crosspoint is automatically selected on the A Background bus. If black has not been assigned to any pushbutton, the **PRESET BLACK** button is disabled and the preset black function is not permitted. If a pushbutton is assigned to *NONE*, black appears when that button is selected; however the preset black function will not use this as the **BLACK** crosspoint.

**Processor Failure** – The **BLACK** crosspoint is also important in the situation where the Controller main CPU fails while one of the M/Es is performing a re-entry. When it fails, the M/Es are required to abandon their re-entry crosspoints and select **BLACK** on the same bus. In the case where black was never assigned to a pushbutton, the M/E selects the left most crosspoint on the bus.

### Transition Controls



You can perform a transition using any of three different controls: the **lever arm**, the **AUTO TRANS** button, or the **CUT** button.



The **lever arm** is used to perform manual transitions. Moving the **lever arm** from one limit to the other always performs a complete transition.

Using the **lever arm**, it is possible to start a transition, stop it at any point, reverse it, and even return to the original limit, without completing the transition. The arrows at the top and bottom of the **lever arm** travel lights to indicate the direction that the **lever arm** has to move to complete the transition.

You can use the **lever arm** in combination with the **AUTO TRANS** button to perform a transition. You can start the transition by moving the **lever arm** off its limit, and finish the transition by pressing **AUTO TRANS**. The transition is completed at a rate proportional to the rate set for a full **AUTO TRANS** transition. For example, if the **lever arm** is moved halfway and the transition is completed by pressing **AUTO TRANS** at a rate of 200 frames, the remaining half of the transition will take 100 frames.

---

**NOTE:** *The lever arm will be left off-limit any time you begin a transition with the lever arm and finish it with AUTO TRANS. The lever arm will not function properly again until is moved to either limit (this action will not change the M/E output). While the lever arm is non-functional, both lever arm direction indicators are on.*

---

Pressing **CUT** cannot, however, complete a transition begun with the **lever arm**. In this case, **CUT** reverses the inputs during the background transitions. During key transitions, it changes the logic state of the key.

E-MEM recall operations result in another set of conditions for **lever arm** transitions. When an E-MEM recall places a transition at a point different from the actual position of the **lever arm**, the **lever arm** becomes inactive until it is moved to catch up with the transition. For example, assume the **lever arm** is on a limit and an E-MEM recall puts the transition at some midpoint. In such a case, the **lever arm** would be inoperative until you moved it far enough to catch up with the transition. At that point, you could use the **lever arm** to complete the transition or return it to the beginning limit. (Or, you could press **AUTO TRANS** to complete the transition). Another example of use with E-MEM is a case where the **lever arm** is off limit and an E-MEM recall puts the transition on a limit. In this instance, both lever direction lights would be lit, indicating the **lever arm** is inoperative. Moving the **lever arm** to either limit will turn the direction lights off and reactivate the **lever arm**. (You could also use **AUTO TRANS** to resume the transition since auto transitions continue to function even when the **lever arm** is inoperative.)

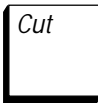
Auto  
Trans

060

Pressing the **AUTO TRANS** button starts an automatic S-linear transition at the rate displayed on the LEDs next to the button.

You can specify a transition rate by entering a value from 0 to 999 frames on the numeric keypad in the effects memory subpanel. A zero frame transition is equivalent to a cut. (Refer to the effects memory subpanel description later in this section for further information on setting the rate.) The lamp in the **AUTO TRANS** button remains lit for the duration of the transition.

Pressing **AUTO TRANS** a second time during a transition, stops the transition at the current point. The transition can be completed by pressing the button a third time or by moving the **lever arm** to its opposite limit. The **lever arm** becomes active when it catches up with the auto transition in progress. Pressing the **CUT** button leaves the transition where it stopped but reverses the two videos or the logic state of a key. Similarly, you can start a transition by using the **lever arm** and complete it by pressing the **AUTO TRANS** button. However, performing a transition in such a manner leaves the **lever arm** off limit.

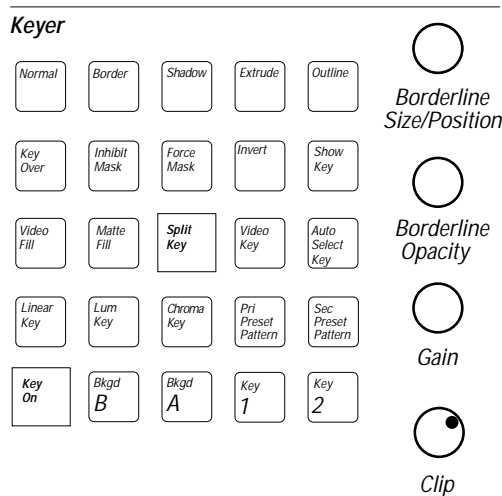


Pressing the **CUT** button causes an immediate transition. The M/E output changes instantaneously.

## Keyer Areas

The keyer areas are used to set up the keyers. There is one keyer subpanel for each M/E each of these can be delegated to each of the keyers in that M/E. (See [Figure 2-5](#).) The keyer areas provide control over the following features for it's M/E:

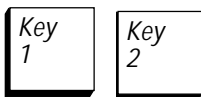
- Key masking
- Video key type selection — preset pattern, chroma key, luminance key, or linear key.
- Key fill: matte or video fill



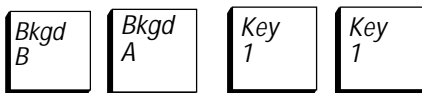
**Figure 2-5. Keyers Subpanel**

- Key source: video key or auto-selection of key signals based on user preferences Show key
- Borderline settings
- Key invert
- Key priority
- Clip and Gain

### Keyer Delegation Buttons



The keyer delegation buttons select which of the keys is being changed. In normal mode, the Keyer Subpanel, located in each M/E row, can be delegated between Key 1 and Key 2.



In layered mode, four keyers are available – Key 1, Key 2, Background B, and Background A.

### KEY ON Indicator

Key  
On

The **key ON** indicator lamp lights when the delegated keyer is in use. This indicator is a logical AND of the **ON** indicator in the transition subpanel and the keyer delegation selection.

### Key Type Buttons



The second row of buttons from the bottom of each keyer subpanel selects one of five keyer modes.



Pressing the **LINEAR KEY** button selects a linear key with a gain fixed at unity, clip fixed at 50%, and no S-shaping. The **LINEAR KEY** button lamp (only) is illuminated when linear key is selected on the delegated keyer.



Clip

If a linear key is desired, but the key signal is not at the correct level, adjustments can be made with the **(CLIP)** and **(GAIN)** knobs. **(CLIP)** adjusts the offset of the key signal (over a small range) in linear key mode. **(GAIN)** adjusts the amplitude of the key signal (over a small range).



Gain

If either knob is adjusted away from unity, the **LUM KEY** button lights in addition to the **LINear KEY** button lamp. Both buttons illuminated indicates to the operator that a linear key is being performed with non-unity gain and/or clip. If the key memory feature is enabled in a software menu, the non-unity setting is recalled whenever the input associated with this setting is selected.

When gain and clip are returned to unity, the **LUM KEY** button lamp goes off. Since it is difficult to adjust the knobs back to exact unity, the unity values can be forced by pressing the **LIN KEY** button a second time while it is lit. This action restores unity and turns off the **LUM KEY** button lamp.

Lum  
Key

The **LUM KEY** button selects a luminance key that has variable clip and gain adjustment and S-shaping of the key signal. Key (**CLIP**) (offset) and (**GAIN**) (amplitude) settings are remembered for each source. Six Clip and Gain values are saved: three for the video key and three for the Auto Select button (**LUM**, **CHROMA KEY**, and **LINEAR**).

A menu selection is available that switches a chroma trap into the key path to remove unwanted chroma from video used for keying.

Chroma  
Key

Pressing the **CHROMA KEY** button delegates the chroma keyer subpanel to that M/E. (The **CHROMA KEY** button is functional only when the chroma keyer option is installed.) Refer to the chroma keyer subpanel description later in this section for details on chroma keyer operation. **CHROMA KEY** does not function with background keyers (layered mode).

Pri  
Preset  
Pattern

Pressing the Primary Preset Pattern **PRI PRESET PATTERN** button selects the output of the primary (transition) wipe generator as the key source. Pattern adjustment is done in the wipe subpanel (see the wipe subpanel description later in this section for details). The key (**CLIP**) and (**GAIN**) knobs are non-functional when this mode is selected.

In the signal path through the Model 2200 switcher, keys, including preset patterns, occur before the effect send crosspoints. This allows any key, including a preset pattern, to be sent to an external digital video effects device via an effects send. Transition wipes, however, occur after the effects send crosspoints.

After pressing the **PRI PST PTTN** function the **SPLIT KEY** indicator is turned off.

---

**NOTE:** *Double-pressing the **PRI PST PTTN** or **SEC PST PTTN** button in the keyer subpanel opens up a menu that allows you to set the preset pattern wipe direction. A single press of either the **PRI PST PTTN** or the **SEC PST PTTN** button auto delegates the wipe subpanel.*

---



Pressing the **SEC PRESET PATTERN** (Secondary Preset Pattern) button selects the optional secondary wipe generator as the key source. Operation of the keyer while **SEC PRESET PATTERN** is selected is similar to that when **PRI PRESET PATTERN** is selected.

The secondary wipe generator option provides wipe pattern selection independent of the primary wipe generator. When the secondary wipe option is not installed, only the secondary preset pattern edge attributes are independent (preset size, softness, soft symmetry, border width, border matte, border opacity, and normal/reverse).

All pattern controls are present on the wipe subpanel and wipe menus. Refer to the wipe subpanel description, later in this section, for a discussion of these controls.

Primary and Secondary Preset Patterns can be used with all keyers in layered mode.



The **VIDEO FILL** and **MATTE FILL** buttons determine whether the key is filled with key bus video or a locally generated matte. These buttons are mutually exclusive, one of the two buttons is always active and illuminated.

**VIDEO FILL** and **MATTE FILL** operate independently from the key source buttons. All keyer modes except the A and B keyers operate with either video or matte fill.



When the key bus is contributing to the switcher Program output, pressing **MATTE FILL** does not low tally the key bus, even though the key fill *video* is not visible.

Video fill mode operates with background keyers in layered mode. When the keyer is delegated to a background layer, the **VIDEO FILL** button is turned on automatically (**MATTE FILL** is turned off).

### Key Source Buttons



The **VIDEO KEY** and **AUTO SELECT KEY** buttons determine the source of the key.

Pressing the **VIDEO KEY** button forces derivation of the key from a video source. The “video source” is the video selected on the key bus (for keyers 1 and 2) or on the background bus (for background keyers in layered mode only).

If **VIDEO KEY** and **VIDEO FILL** are both selected, the result is a self-key.

Pressing **VIDEO KEY** while in Chroma Key mode causes an encoded chroma key, using the fill video as the source for the encoded chroma keyer.



Pressing the **AUTO SEL KEY** button forces the key to be derived from a user-defined source.

User preferences selected in the Configuration/User Preferences menu determine whether a luminance or linear key is a self-key or an external key (and determine which external key is used). They also specify whether chroma keys are encoded or analog component (YUV, BETA, MII, or RGB).

### Split Key Operation

A Split Key uses any key source other than a key derived from the key fill (self key) or a key source pre-selected in user preferences or a preset pattern. All other key sources can be used in a Split Key. A Split Key can be used in all keyers, and in either standard or layered mode.

A Split Key is set up by first selecting the key fill source on the Key bus, then holding down the **VIDEO KEY** button or the **AUTO SELECT** button while pressing a second button on the key bus. The second source provides the key signal. For **AUTO SELECT** that key is the external key signal mapped to that column of crosspoint buttons; for **VIDEO KEY** the key is the video signal mapped to that column of crosspoints. Pressing a lit **video key** or **Auto Select Key** button will illuminate the key source crosspoint.

*Split  
Key*

When a split key is operational with an auto select key or a video key, the **SPLIT KEY** indicator is lit.

### Other Key Modifier Buttons



Pressing **KEY OVER** swaps the priority of the two keyers, **KEY 1** and **KEY 2**. The **KEY OVER** button lights when the keyer subpanel is delegated to the key that is over the other. It may be pressed whether or not either keyer is on-air.

In Layered mode, the **KEY OVER** button does not light if the keyer subpanel is delegated to either background keyer, but the button still controls the priority of Keyers 1 and 2. It does not affect the priority of the background keyers, which have a fixed priority of background A over background B.

*Over*

One of the two key **OVER** indicators on the associated transition subpanel is always on, indicating the priority of the Keyers 1 and 2. The indicator is on regardless of the on-air status of either keyer.



The **INVert** toggle button inverts the polarity of the key source. Inversion is applied to the incoming key source before key processing is applied. **INVert** operates in all keyers in layered mode.



The **SHOW KEY** button is used for viewing the key signal on a particular keyer. This button does not affect the on-air video. When held down, the switched preview bus output shows the key signal from the keyer currently delegated to the keyer subpanel. The key signal displayed is the key after clipping, masking, and chroma trapping have taken place.

The **SHOW KEY** button does not affect the program output of the M/E and operates in all keyers in layered mode.

## Borderline Controls



The buttons at the top of the keyer subpanel control the Borderline option. The **NORMAL**, **BORDER**, **SHADOW**, **EXTRUDE**, and **OUTLINE** buttons are

interlocked; only one button can be active at a time.

---

**NOTE:** *The background keyers (layered mode) do not have Borderline capability.*

---

Border, Shadow, and Extrude modes operate with video or matte filled keys. The Borderline matte is separate from the fill matte and has its own delegate button in the matte subpanel.

The Borderline matte is adjusted in the matte subpanel after selecting **K1 BORD** or **k2 BORD**, as appropriate, with the **MATTE SELEct** delegation button.



The **NORMAL** button turns Borderline off.



The **BORDER** button turns on symmetrical Borderline mode. The border width may be one, two, or three video lines wide, as adjusted by the (**borderline SIZE/POSITION**) control.



The **SHadow** button turns on Shadow mode. The (**borderline SIZE/POSITION**) knob is used to adjust the shadow width and position from one-to-six lines down and to the right or left.



The **EXtrude** button operates like **SHadow** except that the shape of the shadow is different. The (**borderline SIZE/POSITION**) knob is used to adjust the shadow width and position from one-to-six lines down and to the right or left.



Pressing the **OUTLINE** button produces an outline of the key signal. The border width is adjustable to one, two, or three lines with the (**Borderline SIZE/POSITION**) knob. In Outline mode, there is no fill video or fill matte; only the background video and outline border matte are output. As a result, the **VIDEO FILL** and **MATTE FILL** buttons have no effect when **OUTLINE** is active.



The Borderline (**Borderline SIZE/POSITION**) knob adjusts the width of all Borderline borders. The control also moves the shadow or extruded shadow either down to the left or down to the right.



The Borderline (**Borderline OPACITY**) knob adjusts the transparency of the Borderline borders.

## Auto Preview Operation

In normal operation, the switched preview output of the system may be set to monitor any of the M/E preview outputs, preview output, or preview primary bus.

The Auto Preview feature is activated by pressing one of the keyer delegate buttons (**KEY 1**, **KEY 2**, **BKGD B**, or **BKGD A**) for 1/2 second or longer. When Auto Preview is active, the delegated key is inserted over the M/E preview output so that you may preview the key setup on the switched preview bus.

Holding down a keyer delegate button or turning the (**CLIP**) and/or (**GAIN**) controls prolongs the Auto Preview mode. The preview returns to normal after the delegate button is no longer held down *and* there is no activity on the (**CLIP**) or (**GAIN**) controls for a user-defined period of time. (User preferences are described in Section 2 of this manual.)

## Mask Control



Pressing **INHIBIT MASK** inhibits the key from being displayed wherever the mask is present. Pressing **FORCE MASK** causes the key to be fully turned on where the mask is present, rather than suppressing the key. (Normally, the mask generator is used to define areas of the screen where the key is inhibited.) **FORCE MASK** is not intended for use with shaped video.

The **INHIBIT MASK** and **FORCE MASK** toggle buttons are illuminated when turned on, and can be turned on individually or together.

When either button is pressed, the masks subpanel is automatically delegated for adjusting the correct mask, if auto delegation is enabled.

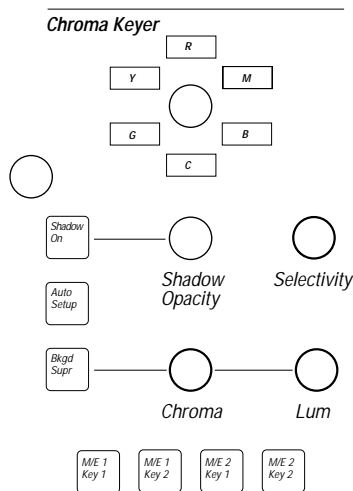
The **INHIBIT MASK** and **FORCE MASK** buttons are inoperative for preset pattern keys. The background keyers (layered mode) do not have mask capabilities and the mask buttons are inoperative when the subpanel is delegated to a background keyer.

## Chroma Keyer Subpanel

The basic Chroma Keyer option consists of a Chroma Key Carrier Module for each M/E, providing two chroma keys per M/E. With this option installed, a chroma key may be done using any 4:2:2 crosspoint signal on the M/E key bus as a source. For external component video sources, an optional dual Chroma Key Input Module can be added, this provides two component video sources.

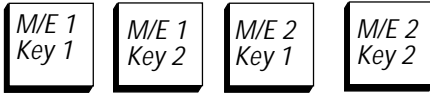
With a Chroma Keyer option installed in one or both M/Es, the Model 2200 switcher can generate key signals on the basis of color information contained in a video picture. User control of chroma keying is provided by the chroma keyers subpanel (Figure 2-6) and the **(CLIP)** and **(GAIN)** controls on the keyer subpanel.

In addition to the controls provided on the chroma keyers subpanel, several chroma keyer controls are provided via the menu display. These are described here and in the menu descriptions under [Chroma Key Menu on page 3-65](#)



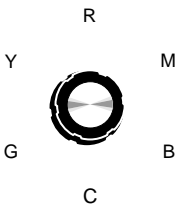
**Figure 2-6. Chroma Keyers Subpanel**

## Chroma Keyer Delegation



The chroma keyers subpanel may be delegated between any of the chroma keyers (two per M/E) using the four buttons located at the bottom of the subpanel.

## Chroma Keyer Controls



The **HUE** control sets the color in the chroma key scene from which the key signal will be derived. The foreground and background suppress mattes also use this color unless otherwise set in the menu. The six indicators near the **(HUE)** knob indicate the color the knob is currently set to (R=red; M=magenta; B=blue; C=cyan; G=green; Y=yellow).



**(SELECTIVITY)** is used to set the how wide a band of colors are used to make the key signal.



The **Shadow ON** button turns the chroma key shadow on or off.



The **(SHADOW OPACITY)** control sets the opacity of the chroma key shadow.



Background suppression removes traces of the chroma key background color from the foreground. The **BKGD SUPR** button turns background suppression on or off. When suppression is turned on, the associated control knobs are used to define the amount of suppression.



*Lum*

The **BKGD SUPR (LUM)** control adjusts the amount of luminance subtracted from the background region of the foreground video.



*Chroma*

The **BKGD SUPR (CHROMA)** control adjusts the amount of chrominance subtracted from the background region of the foreground video. This knob will beep when the chroma has been suppressed to zero (at a linear chroma key location).

The **CLIP** knob in the keys subpanel also will indicate when the chroma key has reached a linear level. In terms of the chroma key this indicates that the foreground part of the scene is just opaque. Only readjust this setting when parts of the foreground are transparent where they are picking up background color.

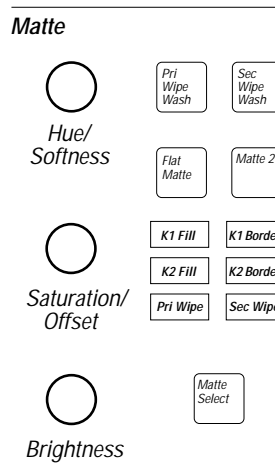


The **Auto Setup** button causes the switcher to automatically set up the chroma keyer. To do this press the **Auto Setup** button. This causes the chroma keyer to take over the wipe positioner knob and puts a cross hair on the chroma key layer of the output. Use the positioner to place the cross hair on the background you wish to key on and press the **Auto Setup** key again.



## Matte Generators

The matte generator areas (Figure 2-7) provide controls for creating and modifying mattes. There is one matte generator subpanel for each M/E, each of these areas controls the six mattes on that M/E.



**Figure 2-7. Matte Subpanel**

### Matte Delegation



Each matte subpanel has a **MATTE SElect** button used to select which of the six matte generators that particular subpanel will control. Above the **MATTE SELECT** button are six indicators, which illuminate to show the current delegation at any given time. Pressing the **MATTE SELLECT** button repeatedly cycles the selection through all six matte generators. Holding the button down causes it to cycle through the selections automatically until the button is released. If the Borderline option is not installed in Key 1 or Key 2, the **K1 BORD** and/or **K2 BORD** selections will be skipped.

#### MATTE SELECT Indicators

The six indicator LEDs indicate delegation as follows:

<i>K1 Fill</i>	<i>K1 Border</i>
<i>K2 Fill</i>	<i>K2 Border</i>
<i>Pri Wipe</i>	<i>Sec Wipe</i>

**K1 FILL** and **K2 FILL** LEDs – Indicate that the matte subpanel is delegated to one of the matte generators for a subpanel determined by the key hole cutter. However, when the keyer is in Video Fill mode, the matte is not visible. Matte fill is available with all key types (LIN, LUM, CHR, PST PTTN).

**K1 BORDER** and **K2 BORDER** LEDs – Indicate that the matte subpanel is delegated to a matte generator for adjusting the characteristics of the key border matte in all Borderline modes. (See the Keyer Subpanel description for related keyer buttons **BORDER**, **SHDW**, **EXTRUDE**, and **OUTLINE**.)

**PRI WIPE** LED – Indicates delegation of the matte generator for controlling the transition wipe border matte. The **PRI WIPE** LED also indicates that the M/E matte subpanel is delegated to create the primary preset pattern border in preset pattern mode. (See the **PRI PST PTTN** button description under the Keyer Subpanel topic.)

**SEC WIPE** LEDs – Indicates that the matte subpanel is delegated to create the secondary preset pattern border in preset pattern mode (see the **SEC PST PTTN** button description under the Keyer Subpanel topic).

## Matte Modifier Controls

Four buttons and three control knobs in each matte subpanel control the characteristics of the delegated background matte. When a Matte Subpanel is delegated away from a matte generator the status of the knobs and buttons is remembered



The **FLAT MATTE** button selects a non-wash matte for the delegated matte generator. Pressing this button deselects all other matte mode buttons (**MATTE 2**, **PRI WIPE WASH**, and **SEC WIPE WASH** on that matte.



The **MATTE 2** button delegates the matte controls to the second matte generator when a matte wash is selected. To select a matte wash, press either **PRI WIPE WASH** or **SEC WIPE WASH** on that matte.



**PRI WIPE WASH** selects the primary (Transition) wipe generator to modulate between the two mattes during a wash. Pressing and holding this button allows you to change the transition softness with the (**HUE/SOFTNESS**) knob and the offset (position) with the (**SATURATION/OFFSET**) knob.



**SEC WIPE WASH** causes the secondary (optional) wipe generator to be used to modulate between the two mattes in a wash. Pressing and holding this button allows you to change the transition softness with the (**HUE/SOFTNESS**) knob and the offset (position) with the (**SATURATION/OFFSET**) knob.



(**HUE/SOFTNESS**) knob – Adjusts the hue of the matte. The knob also adjusts the softness (gain) of the transition between the two matte generators when you hold down the **PRI WIPE WASH** or **SEC WIPE WASH**, button. Softness is not adjustable while **FLAT MATTE** is active.



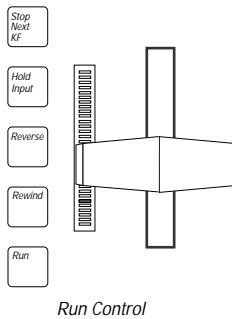
(**SATURATION/OFFSET**) knob – Adjusts the color saturation of the matte. The knob adjusts the offset (position) of the wash modulation when you hold down the **PRI WIPE WASH** or **SEC WIPE WASH** button. Offset is not adjustable while **FLAT MATTE** is active.



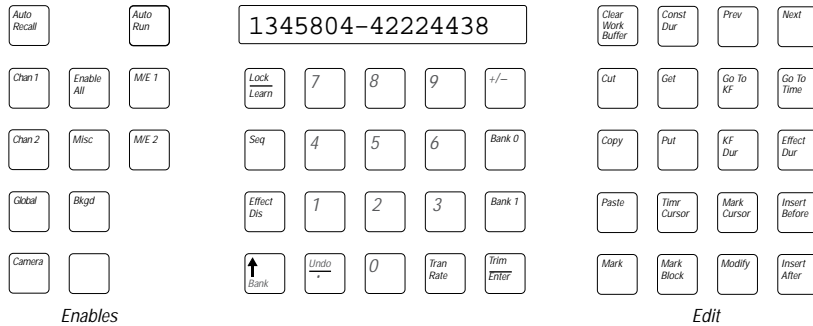
(**BRIGHTNESS**) knob – Adjusts the color brightness of the matte.

## Effects Memory Subpanel

The Effects Memory (E-MEM®) Subpanel ([Figure 2-8](#)) allows you to define, store, and recall effects setups. The single, delegated E-MEM Subpanel contains enable buttons, a keypad with readout, effect editing buttons, effect run buttons, and a run lever arm.



### E-MEM



**Figure 2-8. Effects Memory Subpanel**

## E-MEM Registers

Effect setups are stored in E-MEM registers. There is a total of 100 registers, grouped in ten banks of ten registers. Each register belongs to a specific bank (0 through 9) and has a unique number (0 through 9) within that bank. For example, register 46 means bank 4, register 6.

When the system is powered up, the keypad readout comes up with a “NO CURRENT REG” message.

## Effects and Keyframes

An E-MEM “effect” has generally been considered to be whatever was stored in an E-MEM register. This consisted of the status of enabled levels of the switcher as set up on the control panel and in the menus, at the time the E-MEM effect was stored (“learned”).

However, the Model 2200 Switcher is able to store more than one switcher state (“a keyframe”) on each enabled level in a single E-MEM register, and to transition, or “run,” between keyframes. Therefore, a keyframe effect is considered to be a sequence of keyframes stored in a single E-MEM register.

You may think of an E-MEM effect as being the same as a keyframe effect, but consisting of a single keyframe on each enabled level. This mode of operation (single-keyframe effects) may still be used, and may be preferable to multiple-keyframe effects in many instances.

## Learning Effects

To learn an effect setup into a register, press the following sequences of buttons in the E-MEM Subpanel:

---

**NOTE:** *Only areas which are enabled will be learned. For more information read [Enable Buttons on page 2-47](#).*

---

**LeaRN, BANK, bank number, register number**

If the next desired register is in the current bank, you may press just the desired **register number**.

If the desired bank is 0 or 1, you may substitute **BANK 0** or **BANK 1** for **BANK, bank number** in the above sequences.

### Recalling Effects

To recall a register, press the following buttons:

---

**NOTE:** *Only areas which are enabled will be recalled. For more information read [Enable Buttons on page 2-47](#).*

---

**BANK, bank number, register number**

When an E-MEM register is recalled, the key memory for any recalled crosspoint is updated.

During an E-MEM recall, if you don't want the crosspoint to change, you can manually hold down the present crosspoint button while the E-MEM register is recalled. This is referred to as "crosspoint override," and if key memory is off at this time, the video and key crosspoint are held. If key memory is on, the video and key crosspoint and the current keyer memory state are held.

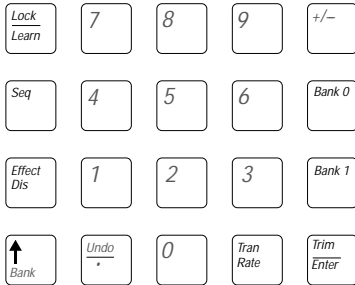
### Crosspoint Override

During an E-MEM recall, if you don't want the crosspoint on an individual bus to change, you can manually hold down the present crosspoint buttons while the E-MEM register is recalled. This is referred to as "crosspoint override." When this is done, the video and key crosspoints are held, and if key memory is on at this time, the current keyer memory state is also held.

See the **HOLD INPUT** button description, later in this section, for a method of holding *all* sources while E-MEM registers are recalled.

## Keypad with Readout

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The E-MEM keypad is used for effect recalls, and serves as a numerical entry pad for the following buttons: **TRAN RATE, LeaRN, LeaRN SEQ, LOCK, BANK, GET, and PUT.** (The last two of these buttons are located in the E-MEM effect editing group of buttons.)

Pushing a numerical button at any time other than when preceded by one of the above buttons recalls the corresponding register within the current bank. To recall a register in a different bank, enter: **BANK, bank number, register number**

NO CURRENT REG

The alphanumeric readout at the top of the E-MEM keypad provides status information about E-MEM operations and registers.

During normal learn and recall operations, the current Bank and Register values are displayed. If the register is locked, there is an “L” shown at the left end of the display. Other messages on the E-MEM readout include “**NO CURRENT REG**” at bootup, “NO EMPTY REGS” if no register is available for a **LeaRN•** or **PUT•** operation, and “**REG IS LOCKED**” if you attempt to put an effect into a locked register. During gets and puts, the display provides prompts asking you for the source or destination register.

---

**NOTE:** Only areas which are enabled will be recalled. For more information read [Enable Buttons on page 2-47](#).

---

It is possible to have two different enabled levels recalled by two different registers. In this case there are actually two current registers, but only one can be shown in the display. The existence of this condition is indicated by a “Δ” between the apparent current bank number and the apparent current register number (for example, “**B0ΔREG 04**”).

This condition occurs if (with **AUTO ReCall** off) you enabled one level, recalled a register, turned off that enable, turned on another enable, recalled another register and re-enabled the first level. The locations of the contributing registers can be determined by turning on one enable at a time.



↑/**BANK** is a two-function key that can be used for bank selection or for accessing “second” functions, that is, **LOCK** and **UNDO**. Pressing the ↑/**BANK** button delegates the numeric keypad to single-digit bank selection, and delegates buttons with second functions to the second function.

The button lights when pressed, and stays lit until the delegation is completed. Pressing ↑/**BANK** a second time also terminates the delegation.

Refer to the “E-MEM Registers” description for use of the **BANK** button, and to the **LOCK** and **UNDO** headings for use of the ↑ (second) function button.



**LeaRN** is used for storing or “learning” the current panel setup in a register or for learning a register sequence.

---

**NOTE:** *Only areas which are enabled will be learned. For more information read [Enable Buttons on page 2-47](#).*

---

**LeaRN, BANK, bank number, register number**

If the next desired register is in the current bank, you may press just the desired **register number**.

If the desired bank is 0 or 1, you may substitute **BANK 0** or **BANK 1** for **BANK, bank number** in the above sequences.

Refer to the **SEQ** button description for learning a register sequence.





The **LOCK** function locks a single register. Locking a register prevents the contents of that register from being changed. To lock the current register, press the following buttons:

↑, **LOCK**

When locked, an “L” is displayed at the left end of the E-MEM readout, next to the register number. To unlock the register, press the buttons again:

↑, **LOCK**

---

**NOTE:** You cannot lock an entire E-MEM bank from the subpanel; a menu selection is provided for this action. See [E-MEM Register Menu on page 3-83](#)

---



Pressing the **BANK 0** button makes Bank 0 the current bank, and causes buttons 0 through 9 on the keypad to become one-button recall registers for registers 00 through 09. This button is lit whenever Bank 0 is the current bank.



Pressing **BANK 1** makes Bank 1 the current bank, and causes buttons 0 through 9 on the keypad to become one-button recall registers for registers 10 through 19. This button is lit whenever Bank 1 is the current bank.



**ENTER** confirms a numerical entry on the keypad, such as for the following functions: **GET**, **PUT**, and **TRAN RATE**. The **ENTER** button lights when pressed.



**SEQ** is used for creating automated register-recall sequences.

Create sequences with the following buttons and values (parameters in angle brackets (<...>) are optional):

---

**NOTE:** Only areas which are enabled will be recalled. For more information read [Enable Buttons on page 2-47](#).

---

**SEQ, LRN,**  
**register, <TRAN RATE>, <delay>,**  
**register, <TRAN RATE>, <delay>,**  
  
..  
  
...  
  
**LRN**

The command syntax is defined below.

*SEQ* and *LRN* may be pressed in either order to start the command sequence.

*LRN* must be pressed again to end the command sequence.

<*TRAN RATE*> and <*DELAY*>, in angle brackets, are optional.

(*TRAN RATE*) enables a user-defined delay to be introduced between register recalls.

<*DELAY*> is a 1- to 3-digit number entered on the keypad that specifies an amount of delay in TV frames. (If the number entered is a 1- or 2-digit number, the entry must be terminated by pressing *ENTER*.)

*REGISTER* is any desired register number, as described previously (that is, *BANK*, *BANK NUMBER*, *REGISTER NUMBER*).

Create a sequence loop by pressing the first register button as the last register in the sequence.

Initiate sequences by pressing the following buttons:

**SEQ, register**

The sequence starts at the register indicated, and proceeds through the linked sequence to the last register. If a loop has been programmed, the sequence loop continues until the **SEQ** button is pressed to terminate the sequence.

A sequence loop can be broken by double-pressing a register button, clearing the sequence link that existed in that register, and making the invoked register the last register in the sequence.

During a sequence of registers with multiple levels, the **SEQ** button will high tally if any of the enabled levels was learned with a sequence. However, it may be that not all enabled levels are sequencing.

Different sequence delays may be learned separately into different enabled levels. Sequence delays on different levels are completely independent, and thus the sequencing may be occurring at different times on different levels.

If an E-MEM level is disabled while it is actively sequencing, the sequence will continue. Turning off the **SEQ** button will not halt the sequence, because the sequencing level is not delegated. To ensure halting all actively running sequences, all E-MEM levels must be enabled (**ENABLE ALL**) and then **SEQ** turned off.

Effect  
Dis

**EFFect DIS** causes an S-linear transition from the current state to the next recalled register. The current state may be a setup you have just done on the control panel or the state resulting from a register recall.

An effects dissolve may be learned into a register, so that recalling that register will initiate a dissolve to another specified register. The following button sequence is used to learn a dissolve (parameters in angle brackets (<...>) are optional):

---

**NOTE:** Only areas which are enabled will be learned. For more information read [Enable Buttons on page 2-47](#).

---

**LeaRN, EFFect DIS, <TRAN RATE, (eff dissolve rate>, (register)**

The command syntax is defined below.

*LEARN* and *EFFECT DIS* may be pressed in either order to start the command sequence.

*TRAN RATE* enables a user-defined effects dissolve rate to be introduced in the dissolve.

<*EFF DISSOLVE RATE*> is a 1- to 3-digit number entered on the keypad that specifies the effects dissolve rate in number of TV frames. (If the number entered is a 1- or 2-digit number, the entry must be terminated by pressing *ENTER*).

*REGISTER* is any desired register number, as described previously (that is, *BANK, BANK NUMBER, REGISTER NUMBER*).

The effects dissolve rate is the same as the auto transition rate indicated in the readout on the corresponding Transition Subpanel.

When the register with the learned effects dissolve is recalled, the **EFFect DIS** button will high tally until the dissolve is completed, then will turn off.

During a recall of a register with multiple levels, the **EFF DIS** button will high tally if any of the enabled levels contains an effects dissolve. However, not all enabled levels may be dissolving.

Different effects dissolve rates may be learned separately into different enabled levels. The effects dissolve rates on different levels are completely independent, and thus the dissolves may be running at different rates on different levels.



The • (DOT) button is used to represent the next empty register when used with **LeaRN** and **PUT**. (The next empty register is defined as the next register that is empty on all levels, not just enabled levels, starting with the current register. (At register 99, the search for an empty register will wrap around to 0).

**LeaRN •** learns the current switcher state into the next empty register, and that register becomes the current register.

**PUT • ENTER** copies the current register into the next empty register. The current switcher state is unaffected and the current register number is unaffected.

**GET • ENTER** clears out all levels of the current register. The current switcher state is unaffected and the current register number is unaffected.

---

**NOTE:** *If there are no empty registers, the operation will not be done, an error beep will sound, and the keypad readout shows “NO EMPTY REGS”*

---



**UNDO** is used to back out of a recall, **LeaRN**, **PUT**, **GET**, or another **UNDO** register operation. The **UNDO** button lights when pressed, confirming that it has been pressed. An **UNDO** must be done immediately after an undesired operation, otherwise it may not be able to undo the operation.

For these register functions, pressing  $\uparrow$ , **UNDO** repeatedly allows you to toggle back and forth between the two last states.

(For toggling **UNDO**, you have to press  $\uparrow$ /**BANK** then **UNDO** each time.)



**TRAN RATE** is used with the keypad to set the rate used by the **AUTOTRANS** (auto transition) button in the transition areas and by the **EFFect DIS** button on the E-MEM keypad.

When **TRAN RATE** is pressed, the E-MEM display queries:

**SET WHICH RATE?**

and any Enable buttons that are on turn off.

The transition rate is then delegated to the desired Transition Subpanel by pressing **M/E 1** or **M/E 2**. Both of these functions may be enabled simultaneously by pressing **ENABLE ALL**.

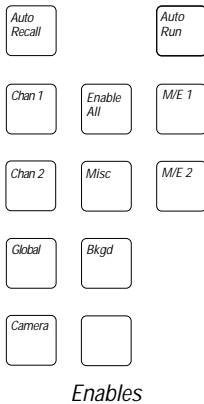
After enabling the desired levels, the display queries:

**AUTO RATE = ?**

Enter the desired rate using the numeric buttons on the keypad. Entering three digits on the keypad automatically enters the rate. If only one or two digits are entered, the entry must be completed by pressing **ENTER**. Rates from zero through 999 frames may be entered. If one or two digits have been entered, the entry may be cleared and the previous rate restored by pressing **TRAN RATE** again. As soon as the new rate is confirmed, it is displayed in the auto transition rate display in the delegated transition subpanel(s).

When the transition rate has been set, the **TRAN RATE** button turns off and the Enable buttons return to their previous state, as does the keypad readout display.

## Enable Buttons



The Enable buttons are located to the left of the keypad in the E-MEM Subpanel and are used for enabling register levels. Each register is partitioned into sections (or “levels”) corresponding to the Enable buttons.

All register manipulation, including learn and recall operations, affect only the enabled levels. This allows you to build independent effects on each level and to recall the levels independently.

For example, an effect using both M/E 1 and M/E 2 could be built with both being enabled, and either the M/E 1 or M/E 2 part of the effect could be recalled separately by enabling only one and recalling the register. Conversely, separate effects built at different times, in different levels of the same register, can be recalled together by enabling both M/E 1 and M/E 2.

The **ME 1** and **M/E 2** buttons are also used when setting transition rates in the effects systems, as previously described (see **TRAN RATE**).



**M/E 1** and **M/E 2** enable the following areas for learn and recall operations on a specific M/E: standard or layered mode operation, crosspoint settings, transition settings, keyer settings, masks and mattes, chroma key settings, wipes, positioner settings and full additive mix (FAM) settings.



**BKGD** enables the two background matte generator settings (**BKGD 1** and **BKGD 2** In the background subpanel) for learn and recall operations, excluding matte wash.



**MISC** enables the following user-defined areas for learn and recall operations: frame store settings, peripheral settings, GPI settings, aux bus settings, mask bus settings, preview bus settings, and matte wash settings for Backgrounds 1 and 2. All aux buses default to the **MISC** level unless assigned to a DPM level using the Config/DPM Map Ports and Config/DPM Map Aux Buses menus.



**chan 1**, **chan 2**, **Global**, and **Camera** enable parameters of the channel 1, channel 2, channel 3, and channel 4 DPMs (Digital Picture Manipulators) for learn and recall operations.



Pressing **ENABLE ALL** lights all Enable buttons if any or all of them are not presently lit, or turns all Enable buttons off if all are already lit. This action allows all enables to be turned off or on with a maximum of two button presses. **ENABLE ALL** may also be used to enable all levels simultaneously when setting transition rates (see the **TRAN RATE** button description).



**AUTO ReCaIL** allows the state of the Enable buttons to be learned or recalled as part of an effect.

If **AUTO ReCaIL** is on while an effect is learned, the state of the Enable buttons is learned as part of the effect. If **AUTO ReCaIL** is off while an effect is learned, the enables are not learned, and any subsequent recall (even if **AUTO ReCaIL** is on during the recall) does not change the state of the enables.

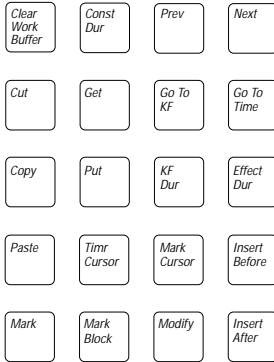
If **AUTO ReCaIL** is on during a recall, the enables (as learned) are first recalled, then the resulting enabled portions of the switcher are recalled. If **AUTO ReCaIL** is off during a recall, the enables remain as set on the Enable panel, and those parts of the effect are recalled.



**AUTO RUN** enables effect Recall-and-Run operations. When **AUTO RUN** is active, a register recall causes a recall of the register, sets the Time Cursor at Time 0, and causes an immediate run if the effect contains more than one keyframe.



## Effect Editing Controls



*Edit*

The effect editing controls are located at the right side of the Effects Memory Subpanel.



**CLEAR WORK BUFR** is used to clear out stored values from the following switcher memory areas.

1. To Clear Current Working Buffer— *except* Keyers:

Single press of the **CLEAR WORK BUFR** button: (E-MEM Subpanel)

Clears Current Working Buffer (CWB) to user-defined defaults. The key memory portion of the CWB is unaffected (for example, video processing or clip and gain). All non-key memory parameters are cleared for enabled levels.

2. To Clear Current Working Buffer — *including* Keyers:

Double press of the **CLEAR WORK BUFR** button:

Same as above, with addition of key memory parameters being cleared. Crosspoints are unaffected.

3. To Clear a Single Crosspoint Key Memory:

Hold a key bus crosspoint, *single* press **CLEAR WORK BUFR** button:

Clears only the key memory portion of the Current Working Buffer for switcher key crosspoints held down. Clears any split keys for that key crosspoint.

4. To Clear Current Working Buffer for a selected E-MEM level and clear any split keys for that key crosspoint— including Keyers for E-MEM level owning Crosspoint Keyer:

Hold a key bus crosspoint, *double* press the **CLEAR WORK BUFR** button.

**CLEAR WORK BUFR** is always functional, even when the other effects editing buttons are not enabled (**KEYFRAME EDITING** set to **DISABLE** in the Keyframe Menu).

The **CLEAR WORK BUFR** button is normally off, but lights for one-half second when pressed.

---

**NOTE:** The “Current Register” is defined as the active register on each E-MEM level. If all enabled levels are in the same register, the Current Register is the same as that shown in the E-MEM keypad display. However, if the enabled levels have different Current Registers, as indicated by a “Δ” between the bank number and the register number, the Get and Put operations will operate on different registers. For example, if enabled level M/E 1 is in Register 1, and enabled level M/E 2 is in Register 2, a “PUT CUR INTO 03” operation will copy M/E 1 Register 1 into M/E 1 Register 3, and M/E 2 Register 2 into M/E 2 Register 3.

---

Get

**GET** provides a method of copying or “getting” the contents of a specified register into the current register.

The current switcher state and the current register number are unaffected.

The **GET** button is at low tally whenever a get operation is permissible and off when the operation is not permissible (no current register, locked register).

When pressed, the **GET** button high-tallies and the E-MEM readout provides a prompt. For example, if Bank 0 and register 7 are currently selected, the display prompts:

**GET 0x INTO CUR**

(If the bank were 1 and the current register 7, the display would show: **GET 1x INTO CUR**)

To get the effect from a specific bank and register, change the bank number if the correct bank is not already selected, then enter the register number of the effect to be copied. Press **ENTER** to complete the **GET** operation.

The **GET** operation does not copy sequence link information (sequence link register or sequence delay) to the current register.

If the current register is locked, the **GET** operation will not be performed, an error beep will sound, and the keypad readout will show “**REG IS LOCKED**”.

An **UNDO** of the **GET** operation will restore the previous contents to the current register, without affecting the current switcher state or current register number.

Also, as mentioned previously under the • button description, the **GET** button may be used for clearing out the current register by pressing **GET • ENTER**.



The **PUT** button provides a method of copying or “putting” the contents of the currently selected register into another E-MEM register.

The **PUT** button is at low tally whenever a **PUT** operation is permissible and off when the operation is not permissible (no current register).

When pressed, the **PUT** button high-tallies and the E-MEM readout provides a prompt. For example, if Bank 0 and register 7 are currently selected, the display prompts:

**PUT CUR INTO 0 x?**

To put the current effect into a specific bank and register, change the bank number if the correct bank is not already selected, then enter the (destination) register number. Press **ENTER** to confirm the **PUT** operation.

The **PUT** operation does not copy sequence link information (sequence link register or sequence delay) to the destination register.

If the destination register is locked, the **PUT** operation will not be performed, an error beep will sound, and the keypad readout will show “**REG IS LOCKED**”.

An **UNDO** of the **PUT** operation will restore the previous contents to the destination register, without affecting the current switcher state or current register number.

Also, as mentioned previously, the **PUT** button may be used to copy the current register contents into the next empty register by pressing **PUT • ENTER**.

---

**NOTE:** *The remainder of the Effect Editing controls deal primarily with effect keyframes and effect timelines.*

---

Refer to “Effects and Keyframes” near the beginning of this section for general definitions of *effects* and *keyframes*.

In the Model 2200, a *Timeline* is a graphical representation (in the Timeline menu) of the keyframes and their time relationships on a given enabled level in the current E-MEM register. Each enabled register has its own timeline.

The *Master Timeline* (the top timeline in the Timeline menu) is a composite representation of the timelines of all enabled levels in the current E-MEM register. All time positions of the effect are referenced to the Master Timeline.

A *Master Timeline Keyframe* is a point on the Master Timeline that has a keyframe on one or more levels at that point in time.

The *Current Time* is the time position of the Time Cursor on the Master Timeline of the effect.

The *Current Keyframe* is the keyframe and its duration on which the Time Cursor is positioned.



Pressing the **TIME CURSOR** button once brings up the Timeline menu of the current E-MEM register. If there is more than one keyframe in the effect, the position of the Time Cursor may be positioned on the timeline by the (*RUN TIME*) soft knob in the menu, the Run lever arm on the E-MEM panel, or any of the effects positioning buttons (**GO TO KF**, **GO TO TIME**, **NEXT**, **PREV**, or **REWIND**).



The **MARK CURSOR** button is provided for future editing operations; however, pressing **MARK CURSOR** once brings up the Timeline menu.

### Modes of Insertion/Deletion

The editing mode selected determines the way keyframes are added to or removed from an effect. The editing mode is selected by the **CONST DUR** button (on/off) on the E-MEM Effects Editing panel and by the *DELEGATES/ENABLES* selection in the Main Keyframe menu or the Timeline menu.

The four editing functions that add keyframes or delete keyframes from an effect (**Cut**, **Paste**, **Insert Before**, and **Insert After**) are affected by the selected editing mode and by the position of the Time Cursor on the Master Timeline.

---

**NOTE:** *Cuts, Inserts, and Pastes cannot be performed on any locked level of an E-MEM register.*

---

Only those levels that are *delegated* are affected by timeline editing. When **ENABLES** is selected in the Timeline menu or the main Keyframe menu, *all* enabled levels are also delegated; thus all levels are affected. When **DELEGATES** is selected in the menu, only specified enabled levels are delegated; all other enabled levels are *enabled but not delegated*.

---

**NOTE:** *The DELEGATES selection in the Timeline menu and main Keyframe menu is discussed in the Effects Editing section of this manual.*

---

### Constant Duration Off

The following pages describe the operation of the keyframe insertion/deletion functions when Constant Duration mode is *not* selected (**CONST DUR** button at low tally) and **ENABLES** is selected in the Timeline menu or main Keyframe menu.

---

**NOTE:** *Refer to the CONST DUR button description for the operation of keyframe insertions and deletions in Constant Duration mode. When CONST DUR is off, the overall duration of the effect is the sum of the durations of the individual keyframes (on the Master Timeline). Adding or deleting keyframes or changing the duration of one or more keyframes may change the overall duration of the effect.*

---

*Insert  
Before*

**On a Keyframe.** When the Time Cursor is positioned on a Master Timeline keyframe, **INSERt BEFORE** inserts a keyframe and its duration into each delegated level just prior to the current keyframe. All subsequent keyframes are “rippled” (pushed out) in time by an amount equal to the newly inserted keyframe duration. This increases the overall duration of the effect by the duration of the inserted keyframe.

The data entered into the keyframe on each delegated level is the data in the Current Working Buffer, which is the same as the Current Switcher State for that level.

Unless otherwise specified (see **KF DUR**), the duration of the inserted keyframe is the same as that of the current keyframe.

Any delegated level that does not have a keyframe at that point in time will have a keyframe inserted just *before* the current keyframe.

**On the Path.** When the Time Cursor is “on-the-path” (not on a Master Timeline keyframe), the **INSerT BEFORe** button is tallied off and the Insert operation is not allowed.

Insert  
After

**On a Keyframe.** When the Time Cursor is positioned on a Master Timeline keyframe, **INSerT AFTER** inserts a keyframe and its duration into each delegated level immediately *following* the duration of the current keyframe (in other words, just before the *next* keyframe). All subsequent keyframes are “rippled” (pushed out) in time by an amount equal to the newly inserted keyframe duration. This increases the overall duration of the effect by the duration of the inserted keyframe.

The data entered into the keyframe on each delegated level is the data in the Current Working Buffer, which is the same as the Current Switcher State for that level.

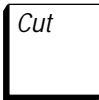
Unless otherwise specified (see **KF DUR**), the duration of the inserted keyframe is the same as that of the current keyframe.

Any delegated level that does not have a keyframe at that point in time will have a keyframe and its duration inserted just *after* the current keyframe. The current time position moves to the time point of the newly-inserted keyframe.

**On the Path.** When the Time Cursor is located “on-the-path” (not on a Master Timeline keyframe), **INSerT AFTER** inserts a keyframe on each delegated level but does not add time to the overall effect.

The data entered into the keyframe on each delegated level is the data in the Current Working Buffer, which is the same as the Current Switcher State for that level. This includes the values of all parameters at that point, interpolated on-the-path between the two keyframes, plus any changes that may have been made on the control panel and in the menus since stopping at that point on the timeline.

The duration of the inserted keyframe is the difference between the point of insertion and the position of the *next* keyframe. The duration of the previous keyframe (what had been the current keyframe) is decreased by the same amount. The current time position remains at the point of the newly-inserted keyframe.



When the Time Cursor is positioned on a Master Timeline keyframe, **CUT** deletes the keyframe from any delegated level that has a keyframe, and deletes the duration of the Master Timeline keyframe from all delegated levels, even those that do not have a keyframe at that point. All subsequent keyframes are rippled backward in time (toward Time 0) by an amount equal to the duration on the Master Timeline of the deleted keyframe. This decreases the overall duration of the effect by the duration of the cut keyframe.

When the Time Cursor is not on a Master Timeline keyframe, the **CUT** button is disabled and the Cut operation is not permitted.



**COPY** makes a copy of the data in the Current Working Buffer, for all delegated levels, and places it in the Clipboard Buffer. No changes are made to the effect.

If the Time Cursor is on a keyframe on the Master Timeline when the Copy is done, the duration of the copied keyframe is the duration of the Master Timeline keyframe. If the current time position is on-the-path on the Master Timeline, the keyframe duration is the difference between the current time position and the position of the next keyframe.

The keyframe can then be pasted into another effect (same levels) or into another point in the same effect (same levels).



Paste

The **PASTE** button inserts a keyframe (on all delegated levels) into an effect. This operation is essentially the same as doing an Insert After, with the following exceptions: For a Paste, the data to be inserted comes from the Clipboard Buffer, rather than from the Current Working Buffer, and the keyframe duration also comes from the Clipboard if the Paste is done on a keyframe. If the Paste is done on-the-path, the keyframe duration is handled the same as that of an Insert After, adding no time to the effect.

### Constant Duration On

The following paragraphs describe the operation of keyframe insertion/deletion in Constant Duration mode. Refer to the previous portion of this section for operation with Constant Duration turned *off*.

Const  
Dur

**CONST DUR** forces the overall duration of an effect to be constant during editing, except as noted here. The length of the existing effect is unchanged by keyframe deletions (cuts) or additions (inserts or pastes). When **CONST DUR** is on, the button is high-tallied; when off, it is low-tallied if edit mode is enabled, or tallied off if edit mode is off.

Also, in Constant Duration mode, the **KF DUR** button is tallied off, indicating that keyframe duration modifications are not allowed.

All Inserts and Pastes in Constant Duration mode must be made *on-the-path*—they are not allowed *on keyframes*—except as follows:

An Insert Before may be done on the first keyframe of an effect, or an Insert After or Paste may be done on the last keyframe of an effect. The duration and timing of the *original* effect are not affected, but the inserted keyframe is appended to the effect, increasing its overall duration.

When an Insert or Paste is done on-the-path in Constant Duration mode, the duration of the inserted keyframe is subtracted from that of the previous keyframe.

A Paste operation in Constant Duration mode is similar to an Insert After, except that the data to be pasted comes from the Clipboard Buffer, rather than the Current Working Buffer.

A Cut must be made *on* a keyframe, whether **CONST DUR** is on or off. If a Cut is done in Constant Duration mode, the keyframe state is deleted and the duration of the cut keyframe is added to the duration of the previous keyframe. The Time Cursor remains positioned at the point of deletion.

---

**NOTE:** *The following operations are the same whether **CONST DUR** is on or off.*

---



### Modify Keyframes

When the Time Cursor is positioned on a Master Timeline keyframe, pressing the **MODify** button *once* enters any modification that has been made on any delegated level. When **MODify** is pressed, the button high-tallies for one-half second to confirm the Mod operation.

If an individual delegated level does not have a keyframe at the time location where a Mod is being done, the Mod operation will insert a keyframe on-the-path if any changes have been made on that level. The duration of the inserted keyframe is taken from that of the previous keyframe. No change is made to the overall effect duration.

### Modify All Keyframes (Relative)

When the Time Cursor is positioned on a Master Timeline keyframe, pressing the **MODify** button *twice* applies any modification that has been made on any delegated level to all keyframes *on that level*. For instance, if you want to change the background color by 180° in all keyframes on the M/E 1 level, place the cursor on any keyframe, change the background color, and press **MODify** twice (generally referred to as Mod All Relative operation).

It is also possible to modify all keyframes on a given level to a single value (for example, changing the background to Blue in all keyframes on that level) by doing a Mod All Absolute operation. This function is accessed through the Keyframe menu, as described in the menu descriptions portion of this manual



**KF DUR** allows you to change the duration of the current keyframe or to set the duration of a keyframe to be inserted. If not all delegated levels are on a keyframe, or if different delegated levels have differing keyframe durations, pressing **KF DUR** will add an appropriate change to the current keyframe duration on all levels.

When pressed, **KF DUR** high-tallies and the E-MEM display shows the current keyframe duration:

**KF DUR SSS:FF.f**

where **SSS**=Seconds, **FF**=Frames, and **f**=field(s) of the desired keyframe duration.

A new duration may be entered as follows on the E-MEM keypad:

**S S S • F F • f ENTER<sup>1</sup>**

The keyframe duration is then applied to all delegated levels by pressing **MODify** once.



The **EFFect DUR** button is provided for future editing operations.



**PREV** and **NEXT** are used to step the effect forward or backward to the next keyframe on the Master Timeline.

When the **PREV** or **NEXT** button is pressed, it high-tallies for one-half second to confirm the operation.

The **PREV** button is off at the *beginning* of an effect or if the effect has zero or one keyframe. The **NEXT** button is off at the *end* of an effect or when the effect has zero or one keyframe.



**GO TO TIME** enables positioning of the effect to a specific position on the Master Timeline. When **GO TO TIME** is active, the desired time is entered as follows on the E-MEM keypad:

**SSS•FF•fENTER**

where SSS=Seconds, FF=Frames, and f=field(s) of the desired point in time

or as abbreviated above under **KF DUR**.



**GO TO KF** moves the Time Cursor to the specified keyframe on the Master Timeline.

---

1. Not all digits are required for defining the time. The system will recognize the • button presses to determine which digits are seconds, which are frames, and which are fields. For instance, to enter 2 seconds and 5 frames (65 frames or 130 fields), you would need only to enter:

**2 • 5 ENTER**

or **• 6 5 ENTER**

or **•• 1 3 0 ENTER**

In all of these cases, the display will show:

**KF DUR 002:05.0**

To move to the desired keyframe, press the **GOTO KF** button, enter the number on the keypad, then press the **ENTER** button.

(A 3-digit number is entered automatically without pressing **ENTER**).



The **MARK** button is provided for future clipboard operations.



The **MARK BLOCK** button is provided for future clipboard operations.

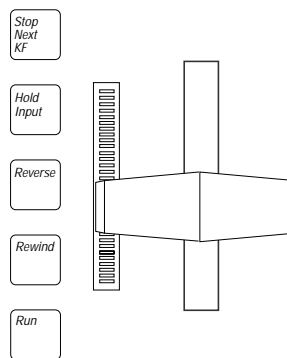
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**NOTE:** Refer to the *Effects Editing* section of this manual for additional information on use of the *Effect Editing* controls.

---

## Run Controls

The Run controls, which are above the E-MEM Subpanel, determine the manner in which the selected E-MEM effect will run.



Run Control

**Figure 2-9. E/MEM Run Controls**

Stop  
Next  
KF

Pressing **STOP NEXT KF** causes an effect to be stepped through, one Master Timeline keyframe at a time. When on, **STOP NEXT KF** causes run commands to last the duration of one keyframe, and each **lever arm** transition to advance the run only one keyframe at a time. The button is at high tally when the function is selected, at low tally when enabled but not selected.

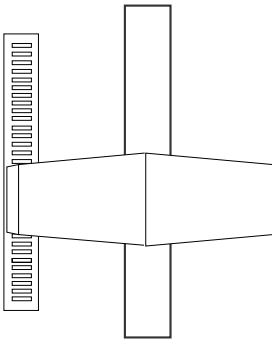
Hold  
Input

When **HOLD INPUT** is enabled (high tally), all crosspoints (video and key) on all buses of the switcher are held. That is, the state of the crosspoints do not change when an E-MEM recall is done. If key memory is on at this time, the current keyer memory state is also held. (See [Recalling Effects on page 2-38](#) for information about holding crosspoints on individual buses.)

Run

Pressing the **RUN** button causes an effect to begin running from its current position. The **RUN** button is also used to stop and resume an effect during the run by acting as a run toggle button. The **RUN** button lights during a run, then turns off when the run is complete.

The **Run lever arm** can be used to manually run an effect. Moving the **lever arm** causes the current effect to run.



Normally, the position of the **lever arm** directly corresponds to the relative percentage of run completion; however, if the **lever arm** and the effect get out of sync (for example, the **lever arm** is not at an endpoint when a register is recalled), the remaining **lever arm** movement is scaled to the remaining effect duration. (Forward direction is scaled to the end of the effect; reverse direction is scaled to the start of the effect.)

The **Run lever arm** may also be used for positioning the Time Cursor in the Timeline menu when building an effect.

The **LEDs** to the left of the **lever arm** give a visual indication of run completion for either the **lever arm** or the **run** button.



**REVerse** causes an effect to run backwards. The button may be pressed before or during the effect run (on-the-fly). The button lights and stays lit when pressed, then toggles off when pressed again.



**REWIND** positions the current effect at Time 0. If an effect is already running when this button is pressed, the effect run stops and the effect returns to Time 0. The **REVerse** button inverts the **REWIND** function. In other words, it positions the effect at the last keyframe of the effect. The **REWIND** button lights for one-half second any time it is pressed.

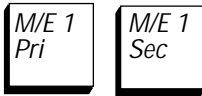
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**NOTE:** Refer to the *Effects Editing* section of this manual for additional information on use of the Run controls.

---

## Positioner Joystick

The Positioner joystick allows wipes to be moved from their current position to another position on the screen.



The delegation buttons located below the joystick (Figure 2-10) enable control of the primary and (optional) secondary wipe patterns to be delegated to either or both M/Es.

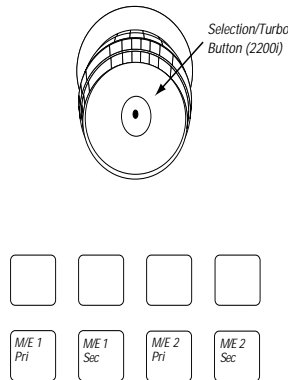


If all of the delegation buttons are turned off, the joystick is disabled.

---

**NOTE:** The position of a wipe pattern cannot be changed if both **POS NORM** and **POS AUTO** are off for that wipe generator, even if the joystick is delegated via its delegation button. See “Wipe Positioner Buttons” on page 2-71.

---



**Figure 2-10. Positioner Subpanel**

Direction and speed of pattern movement are determined by the direction and distance the joystick is moved. The farther it is moved from the center position, the faster the pattern moves. When released, the joystick returns to its center position, leaving the pattern where it is currently positioned.



## Wipe Subpanel

The Wipe Subpanel (Figure 2-11) is used to control all four of the wipe pattern generators in the switcher. Each M/E has a primary wipe pattern generator and may have an optional secondary wipe pattern generator. The secondary wipe pattern generator option allows complete independence between the primary and secondary wipes with no interaction between them.

Even if the secondary wipe pattern generator option is not installed, secondary wipes are available, but only the edge attributes of the secondary wipe are independent. (Edge attributes include preset size, softness, soft symmetry, border width, border matte, border opacity and normal/reverse.) Pattern select, rotation modes, positioner modes, and pattern modifiers are the same values as those of the primary wipe generator on the same M/E.

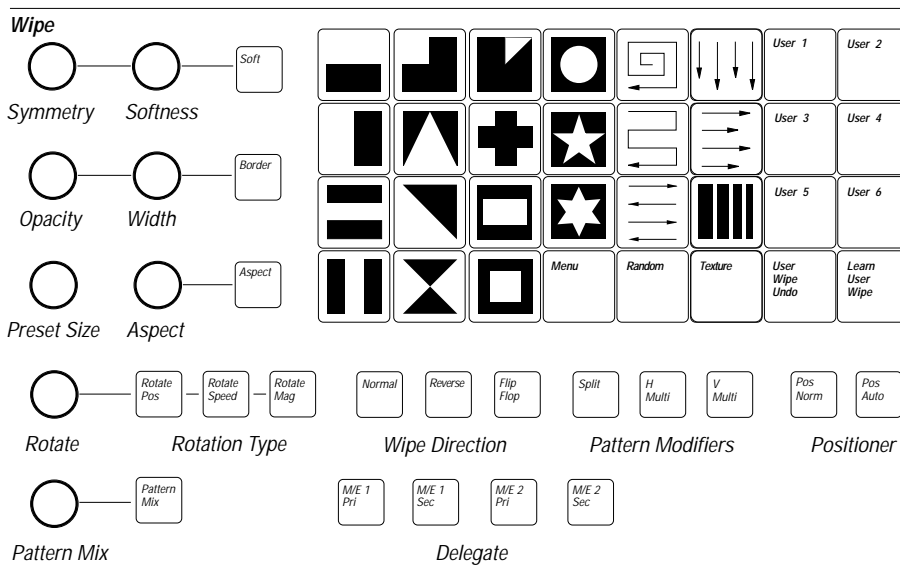
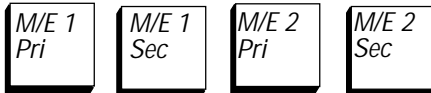


Figure 2-11. Wipe Subpanel

The transition **WIPE** button in the Transition Subpanel always uses the primary wipe generator. Preset wipes, masks, and matte wash can also use the secondary wipe generator.

### Wipe Delegation



Pressing any one of the Wipe delegation buttons at the bottom of the Wipe Subpanel delegates the entire Wipe Subpanel to the named wipe generator.

### Wipe Pattern Buttons



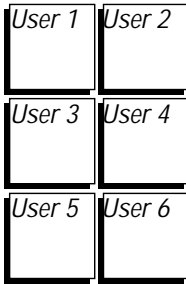
Pressing any of the Wipe pattern buttons (see [Figure 2-11](#)) selects that wipe pattern and lights the button. These buttons are mutually exclusive (including **MENU**); pressing one selects a pattern and de-selects the previously active pattern. Pressing the **MENU** pattern button selects a pattern that was previously chosen in the pattern menu. Double-pressing the **MENU** button opens the wipe pattern menu. Wipe patterns not available on the pattern select panel may be selected through the Wipe menu, described later in this section under “Menu Descriptions.”



**RANDOM** selects one of the available random patterns.



**TEXTURE** selects a user-adjusted texture pattern, selected in the Wipe Texture menu.



**LEARN USER WIPE** – The six **USER 1 - USER 6** wipe buttons let you learn a wipe effect into memory and then recall it all at once. Everything on the Wipe Subpanel is learned except the delegate buttons. Upon recall, the stored wipe parameters are transferred to the delegated wipe generator. This shared system allows you to transfer wipe effects from one wipe generator to another.



To store a wipe setup, press the **LEARN USER WIPE** button, followed by any one of the six **USER** buttons. The current wipe pattern selection and all modifiers will be memorized into the **USER** register. To recall the wipe effect later, press that **USER** button. After a **USER** button is pressed, either for a learn or recall operation, the button remains lit as a reminder that it was the last one used.



**USER WIPE UNDO** allows an accidental **USER** wipe recall or learn to be “un-done.” When undoing a recall, pressing this button restores the panel to the state that existed before the last learn; when undoing a learn, it restores the user register to its previous state (the control panel is not affected).

## Wipe Controls



Pressing the **SOFT** button toggles the wipe edge softness on and off. When the button is illuminated, wipe edge softness can be adjusted with the **(SOFTNESS)** knob.



The **(SOFTNESS)** knob controls the amount of wipe edge softness when **SOFT** is on. A setting of full counter-clockwise rotation causes zero softness, while full clockwise rotation causes maximum softness.



Turning the **(SYMMETRY)** knob controls the relative softness between the inside and outside wipe border edges, when the **SOFT** and **BORDER**, buttons are turned on. The last value of **(SYMMETRY)** is remembered when either **BORDER**, or **SOFT** is turned off.



**BORDER** toggles control of the wipe border on and off. When **BORDER** is on, the adjacent **(WIDTH)** and **(OPACITY)** knobs become active for modifying the wipe border. The wipe border is functional on transition and preset wipes only.



The **(WIDTH)** knob sets the width of the wipe border when **BORDER** is on. When **BORDER** is turned off, the last value of **(WIDTH)** is remembered and is recalled when **BORDER** is turned on again.



The **(OPACITY)** knob controls the opacity or translucence of the wipe border when **BORDER** is on. The **(OPACITY)** value is remembered when **BORDER** is turned off.



**(PRESET SIZE)** adjusts the wipe pattern size for preset patterns used in non-transitional wipe patterns. It is also used to adjust the size of masks that use the wipe generator.



The **ASPECT** button toggles control of the **(ASPECT)** knob (horizontal to vertical ratio) of the wipe pattern on and off.



Turning the **(ASPECT)** knob clockwise from mid-position stretches the horizontal axis of the wipe pattern. Similarly, turning the knob counter-clockwise from mid-position stretches the vertical axis.

## Wipe Rotation Controls



The 3 wipe rotation buttons, **ROTate POS**, **ROTate speed**, and **ROTate MAG** are mutually exclusive and toggle on and off. Only one of these buttons can be on at a time.



*Rotate*

The **(ROTATE)** knob, located adjacent to the three rotation type buttons, controls whichever mode is enabled. The knob setting for each of the three rotation modes is remembered even when the modes are de-selected.



**ROT POS** (rotate position) allows rotation of the wipe pattern to a fixed angle. With this mode on, turning the **(ROTATE)** knob from its mid-position rotates the entire wipe pattern up to four complete rotations, either clockwise or counterclockwise.



**ROTate SPeeD** allows constant rotation of the wipe pattern at a rate adjusted by the **(ROTATE)** knob. Turning the knob clockwise or counterclockwise from mid-position causes the wipe pattern to rotate up to a maximum of four rotations per second.



**ROTate MAG** (rotate magnitude) causes the wipe pattern to rotate as a function of the transition position (lever arm or auto transition). The amount and direction of rotation is adjusted by the **(ROTATE)** knob. Turning the knob clockwise or counterclockwise causes the wipe pattern to rotate up to a maximum of four rotations during the course of the wipe transition. The starting angle (or position) of the pattern is determined by the **ROTate POS** value.

### Wipe Pattern Mix



**PATtern MIX** toggles the pattern mix mode on or off. When *PTN MIX SOURCE* is set to *NORMAL* in the menu, the pattern mix mode causes the delegated wipe generator to mix its pattern with the other wipe generator pattern on a given M/E. (The “other wipe generator” is the secondary generator if delegated to the primary, or the primary generator if delegated to the secondary.) When *PTN MIX SOURCE* is set to *TEXTURE*, the pattern mix mode causes the delegated wipe generator to mix its pattern with the texture pattern.



*Pattern Mix*

The adjacent (**PATTERN MIX**) knob controls the mix ratio between the two pattern generators. If the *PTN MIX TYPE* is *NAM+* or *NAM-* (as selected in the Wipe Modifier menu), the pattern mix knob controls the relative size of the two patterns. The knob value (shared by mix and *NAM* modes) is remembered when the **PATtern MIX** button is turned off.

### Wipe Direction



**NORMAl** and **REVerse** select the wipe direction (normal or reverse). One of these buttons is always on.



**FLIP FLOP** toggles flip-flop mode on and off. When flip-flop mode is on, the wipe direction changes at the end of each wipe transition. (The **NORMAl** and **REVerse** lights alternate on and off during a wipe, every time the transition reaches the opposite limit.)

---

**NOTE:** The **NORMAl**, **REVerse**, and **FLIP FLOP** buttons on the wipe subpanel do not affect the primary preset pattern key. Instead, a menu selection provides a choice of either *NORMAL* or *REVERSE*.

---

## Wipe Pattern Modifiers



The **SPLIT** button toggles split mode on and off. When split mode is on, the selected wipe pattern is split into two. Split operation is affected by the **SPLIT OFFSET** button and knob in the Wipe Modifier menu.



**H MULTI** and **V MULTI** allow multiple copies of the same wipe pattern to appear.

Pressing **H MULTI** results in an additional copy of the wipe pattern being arranged horizontally (in a row). One additional copy of the pattern is supplied for each push of the button, up to a maximum of eight rows. Similarly,

**V MULTI** produces multiple patterns arranged vertically in a column. Pressing both **V MULTI** and **H MULTI** at the same time results in a grid alignment of multiple patterns.

If either button is held down for 1/2 second, that aspect (horizontal or vertical) returns to a single pattern.

Additional modifiers are available through menus available under the Wipe menu. These menus are described in Section Three of this manual.

## Wipe Positioner Buttons



The **POS NORM** and **POS AUTO** buttons are mutually exclusive; only one can be on, although both can be off. If both are off, delegating the joystick has no effect on the pattern. See [“Positioner Joystick” on page 2-64](#).

Pressing **POS NORM** allows you to move the center of the wipe solid with the delegated joystick on the positioner subpanel. When used for a wipe transition, the **POS NORM** button may cause the wipe edge to pop if the pattern is too far off center when a transition is performed.

The **POS AUTO** button invokes an auto positioner mode allowing you to place a wipe pattern anywhere on the screen. You can then make a transition between the wipe pattern and a second video source without the second video “popping” at the end of the lever arm travel.

When auto position is selected, the size of the wipe pattern is scaled according to the distance it is positioned off-center. That is, the wipe pattern gets smaller as it moves away from screen center. You can also move the wipe pattern completely off-screen and bring it back again.

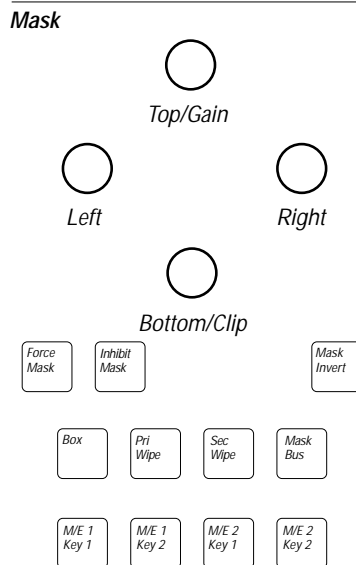
Auto positioning may be used with primary, secondary, and program/preset wipes.

Auto positioning has no effect with matrix (non-solid type) wipe patterns.



## Masks Subpanel

The masks subpanel (Figure 2-12) services and controls all video key masks in the switcher. A mask is a control signal used to modify a key signal. Delegation of the subpanel allows it to control any of the masks. Buttons and knobs are provided for controlling mask position and aesthetic features.



**Figure 2-12. Masks Subpanel**

### Mask Delegation



Pressing one of the delegation buttons selects one of the mask generators. Only one button can be on at a time.



**INHIBIT MASK** delegates the mask subpanel controls for adjusting the inhibit mask. The actual selection of mask inhibit is performed on the keyer subpanel (see the **MASK INH** discussion under the Keyer panel description).



**FORCE MASK** delegates the mask subpanel controls for making adjustments to a forced mask. The actual selection of force mask is performed on the keyer subpanel (see the **FORCE MASK** discussion under the Keyer panel description).

Auto delegation of the mask subpanel may occur when other buttons on the control panel are pressed. (Refer to the Auto Delegation discussion earlier in this section.)

### Mask Source Selection

The top row of buttons (excluding **MASK INVert**) select sources that determine the shape of the mask. These buttons are mutually exclusive and one is always active.



**BOX** uses a rectangular box generator for the mask. The box is completely independent of the wipe systems. The four knobs at the top of masks subpanel determine the position of the four sides of the box. The box mask has hard edges. Each keyer has its own box, so it is possible to have up to six differently sized box masks in use at a time.



**PRI WIPE** selects the primary (transition) wipe generator to produce the mask. The primary wipe generator in the same M/E provides the mask signal. Wipe Subpanel controls select the pattern, size, position and edge softness.



**SEC WIPE** selects the secondary (optional) wipe generator to produce the mask. The secondary wipe generator in the same M/E provides the mask signal. If the secondary wipe option is not installed, the pattern shape and position are the same as the primary wipe generator. Pattern size and edge softness are still independent of the primary wipe mask source.



**MASK BUS** selects a video source to generate the mask. The mask bus is a dedicated video bus in the primary matrix accessed with a bus delegate button in the Aux Bus Subpanel of the panel. The mask bus permits any primary or re-entered input to be used as a mask source. A clip and gain circuit in the mask generator processes the selected video input for display in the mask. When **MASK BUS** is selected, the **(TOP/GAIN)** knob becomes a gain control and the **(BOTTOM/CLIP)** knob becomes a clip control.

## Mask Controls

Several knobs and one button on the masks subpanel control the size and edge characteristics of the mask.

An edge of the mask cannot be moved past the edge of the raster or past the opposite mask edge. On a box mask, as one edge is adjusted to reach the opposite mask edge or the edge of the raster, the control function stops and the knob beeps. Turning the knob in the other direction then shows the mask edge.

The Mask **(TOP/GAIN)** and **(BOTTOM/CLIP)** knobs function only as gain and clip controls when the mask source is delegated to the Mask bus. The clip and gain-adjusted Mask bus can be frozen in the mask frame store (or mask store).

## Section 2— Control Panel Descriptions

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*Top/Gain*

**(TOP/GAIN)** is a two-purpose knob whose operation is dependent on whether the **BOX** button or the **MASK BUS** or **MASK STORE** button is pressed. If **BOX** is active, the **(TOP/GAIN)** knob controls the top side of the box-style mask (see **BOX** button description). If **MASK BUS** is active, the **(TOP/GAIN)** knob controls the gain of the Mask bus clipper.



*Bottom/Clip*

**(BOTTOM/CLIP)** is a two-purpose knob whose operation is dependent on whether the **BOX** button or the **MASK BUS** or **MASK STORE** button is pressed, just as with the **(TOP/GAIN)** knob. If **BOX** is active, the **(BOTTOM)** knob controls the bottom of the box-style mask (see **BOX** button description). If **MASK BUS** or **MASK STORE** is active, this knob controls the Mask bus clipper.



*Left*



*Right*

The **(LEFT)** and **(RIGHT)** knobs control the left and right sides of the box-style mask. They are inactive if **BOX** is not selected.



The **MASK INVert** button inverts the polarity of the signal used to create the mask. A mask that normally allows a key inside of a box, will allow a key outside the box when **MASK INVert** is on. Mask Invert functions with all mask sources.

## **Frame Store Subpanel**

The primary functions of the Frame Store option are storage of still video and key images and creation of dropshadows behind keys. Controls for manipulation of these functions are found on the Frame Store Subpanel and menus.

The Frame Store option allows storage and retrieval of images at a 10-bit resolution. Up to four 2-field pages can be stored in both the video store and the key store. Video and Key inputs may be frozen together or independently. The images can later be read with either one- or two-field mode. Either replication or interpolation may be used if one field readout is selected.

Frame Store is controlled from a dedicated group of controls on the upper Control Panel. Frame Store is source oriented in that its inputs are fed with an AUX/effects send bus (Aux 4) and the outputs are available as primary inputs to the crosspoint matrix.

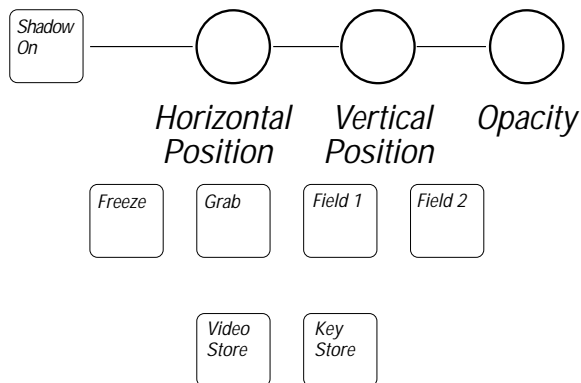
You can assemble complex graphics by layering multiple picture elements into a final composite image. Adding dropshadows is made easier by the provision of a Frame Store real-time dropshadow mode. Using this feature, variable-density full-resolution shadows can be created from the key signal and positioned anywhere within the raster.

**Frame Store Features:**

- Freeze video and key
- Mosaic, Pseudo-color Bit-map Effects, Blur, Repositioning, Strobe, Rectangular Cropping, and Hue Rotate.
- Write after read capability allowing layering of stills in a recursive manner. (i.e., frame store could receive output from an M/E that is using the frame store as one of its inputs).
- Ability to provide a real-time drop shadow on a key that can be positioned anywhere in the raster. Shadow can be blurred independent of Video and Key.
- Frame Store Video and Key may be composited on top of a background.
- Four two-field images may be captured.
- 1 or 2 fields read when frozen with replicate or interpolation on readout.

---

**Frame Store**



**Figure 2-13. Frame Store Subpanel**

## Input Selection

Aux bus pair 4A/4B can be used to supply inputs to the frame store video and key channels.

## Output Routing

Video and key outputs from the frame store are routed to the switcher crosspoint matrix and may be used as primary switcher inputs. The video and key outputs are also routed to an output module for use by external devices.

If the frame store is not in Freeze mode, its output is delayed by 2 fields from its input.

## Still Image Storage

Video and key can be frozen either separately or simultaneously through the use of panel controls. In addition, the system has read-before-write capability, so stills can be layered in a recursive manner. The system accomplishes this by sending the output of the frame store to the input of an M/E for combination with another image. A composite is generated that can be fed back to the input of the frame store and re-frozen.



The **Video Store** and **Key Store** buttons select whether the Frame Store Subpanel is assigned to the video channel or key channel. One of these buttons is always lit. **Video Store** and **Key Store** may be selected simultaneously.

Operations that can be independently set for video and key channels are as follows:

- Freeze
- Grab
- Field 1 and Field 2

When **V** and **KEY 1** are delegated simultaneously, the key channel settings are automatically aligned with the video channel settings.



The **Freeze** button provides a freeze/unfreeze function that toggles between states. Press once to freeze, press a second time to unfreeze. When enabled, this button stops data from being written to the frame store, resulting in a frozen image.



Pressing the **Grab** button updates the frame store with new input data and freezes the new data. If freeze is off (moving video is coming out of the frame store), pressing **Grab** turns on freeze. Freeze can be turned off again by pressing the **FRZE** button. If freeze is on and **Grab** is pressed, the frame store is unfrozen for two fields and then frozen again. The **Freeze** button remains lit to indicate that freeze is still on. Since the **GRAB** button initiates a single one-time action, it lights only while the button is pressed and for a short instant afterward.



**Field1** and **Field 2** determine the field, or fields, that are read out while the image is frozen. Either field may be selected, or both may be selected at the same time. (When unfrozen, the Field buttons have no effect.)

A full frame is always frozen, regardless of the state of these buttons. This method of storage allows the operator to decide between fields and frames after the image is frozen.

When an image is read from the frame store in field mode, the “other” field is replicated from the selected field (indicated by the illuminated **Field 1** button), if **REPLICATE** mode is selected in the Video Store menu. If **INTERPOLATE** mode is selected in the menu, the “other” field is interpolated from the selected field.



## Drop Shadow



The **Drop Shadow** button turns shadow mode on and off.



When shadow mode is on, the **Horizontal Position** and **Vertical Position** knobs adjust the horizontal and vertical offset of the shadow from the main key signal. A third knob, **Opacity**, adjusts the opacity of the shadow.



**DROP SHDW** mode is functional only with primary video inputs that have an associated linear key signal or an M/E in layered mode. No clip and gain adjustments are available to the user. Dropshadow mode does not reduce the bandwidth of the key channel.



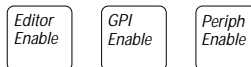
Drop Shadow is added to the key signal; the video output is unaffected. Therefore the Frame Store video and key must be composited on top of another layer in order to see the dropshadow.

## External Interface Subpanel

The External Interface Subpanel, located near the left end of the upper control panel, provides selection of the type of interface to be used to communicate with external devices.

---

### *External Interface*



**Figure 2-14. External Interface Subpanel**

The buttons in this subpanel perform the following functions:



The **EDIT Enable** button enables or disables editor access to the switcher. Initially pressing the button illuminates it and allows external control of the switcher through the Editor port. Pressing the button a second time turns off the button lamp and disables editor control of the switcher. With **EDIT Enable** off, editor protocol messages that affect the switcher are still acknowledged by the switcher, although it does not act under Editor control. For example, the switcher will still send status information to the editor.

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**NOTE:** *An editor cannot control the **EDIT Enable** button via software protocol. In addition, the **EDIT Enable** button does not affect communication through the other serial ports.*

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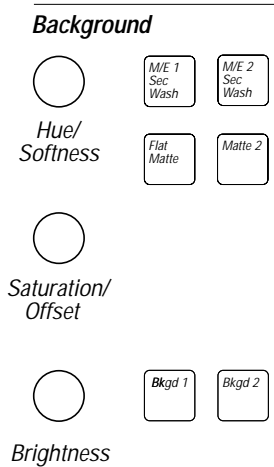
The **GPI enable** button enables and disables GPI outputs and control of the switcher from GPI inputs. When **GPI enable** is on, control inputs from GPI relay contacts are read by the switcher, and GPI outputs from the switcher are also active for external use. When the button is off, all GPI inputs and outputs are disabled.



The **PERIPH Enable** button functions in a manner similar to that of the **EDIT Enable** button, except that it controls peripheral access to the switcher via any peripheral-configured serial port and it does not acknowledge protocol messages while it is turned off.

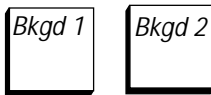
## Background Subpanel

The background matte Subpanel controls the two background matte generators.



**Figure 2-15. Background Subpanel**

### Matte Select Buttons



The **Bkgd 1** and **Bkgd 2** select which of the background matte generators the matte modifier controls are changing.

## Matte Modifier Controls

Four buttons and three control knobs in each matte subpanel control the characteristics of the delegated background matte. When a Matte Subpanel is delegated away from a matte generator the status of the knobs and buttons is remembered



The **FLAT MATTE** button selects a non-wash matte for the delegated matte generator. Pressing this button deselects all other matte mode buttons **MATTE 2**, **PRI WIPE WASH**, and **SEC WIPE WASH** on that matte.



The **MATTE 2** button delegates the matte controls to the second matte generator when a matte wash is selected. To select a matte wash, press either **PRI WIPE WASH** or **SEC WIPE WASH** on that matte.



**PRI WIPE WASH** selects the primary (Transition) wipe generator to modulate between the two mattes during a wash. Pressing and holding this button allows you to change the transition softness with the **(HUE/SOFTNESS)** knob and the offset (position) with the **(SATURATION/OFFSET)** knob.



**SEC WIPE WASH** causes the secondary (optional) wipe generator to be used to modulate between the two mattes in a wash. Pressing and holding this button allows you to change the transition softness with the **(HUE/SOFTNESS)** knob and the offset (position) with the **(SATURATION/OFFSET)** knob.



**(HUE/SOFTNESS)** knob – Adjusts the hue of the matte. The knob also adjusts the softness (gain) of the transition between the two matte generators when you hold down the **PRI WIPE WASH** or **SEC WIPE WASH**, button. Softness is not adjustable while **FLAT MATTE** is active.



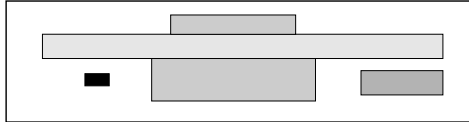
**(SATURATION/OFFSET)** knob – Adjusts the color saturation of the matte. The knob adjusts the offset (position) of the wash modulation when you hold down the **PRI WIPE WASH** or **SEC WIPE WASH** button. Offset is not adjustable while **FLAT MATTE** is active.



**(BRIGHTNESS)** knob – Adjusts the color brightness of the matte.

## Floppy Disk Drive

The floppy disk drive (Figure 2-16) is located in the left end of the Upper Control Panel.



**Figure 2-16. Floppy Drive**

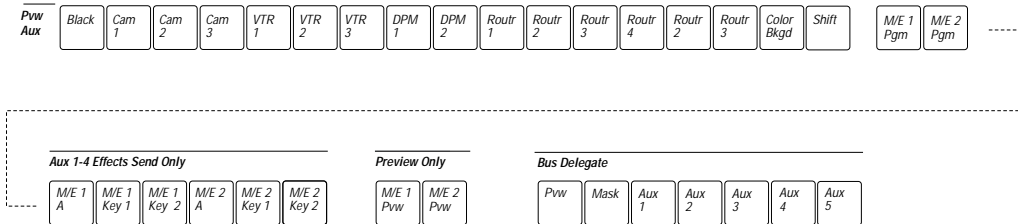
Operations available by way of the disk drive are

- Formatting disks
- Saving and loading system configurations
- Saving and loading E-MEM register data

Refer to the Disk Menu portion of Section Three for disk operating instructions.

## Preview/Aux Bus Source Select and Delegate Subpanel

The PVW AUX buttons are used to select sources for the preview, mask, and aux bus facilities. This row of buttons is located along the top of the lower section of the Control Panel. (Figure 2-17.)

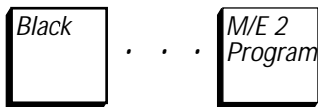


**Figure 2-17. PVW AUX Source Select and Delegate Buttons**

The PVW AUX crosspoints consist of five groups of buttons:

- Primary Source Select (**BLACK... SHIFT**)
- Secondary (Re-entry) Source Select (**M/E 1 PGM, M/E 2 PGM**)
- Aux 1-2 Effects Send Only Select (**M/E 1 A... M/E 2 KEY 2**)
- Preview Only Select (**M/E 1 PVW... M/E 2 PVW**)
- Bus Delegate Select (**PVW... AUX 5**)

### Source Selection



The first *two* groups of buttons select primary and secondary (re-entry) video/key sources for PVW, MASK, and AUX 1-5 output buses.

The re-entry sources are M/E 1 and M/E 2 program outputs

The selected source button is either bright or dim, depending upon its on-air status. All other buttons in the row are unlit.

### Effects Send Buttons



The Effects Send buttons select output of both video and key sources. Key outputs must be associated with selected video sources.

---

**NOTE:** *The AUX 1-2 EFFECTS SEND ONLY buttons are functional only when the Effects Send option is installed. (For Effects Send operation, the system automatically configures the aux bus pair (A/B) as a video/key pair. It is not necessary to do this in the Aux Bus Format menu.)*

---

### Preview Only Select Buttons



The Preview Only buttons select the desired preview output to be viewed on the switched preview monitor. When one of the Preview Only buttons is pressed, the **PVW** bus delegate button is automatically selected if it isn't already on.

Choices available on the switched preview output are M/E 1 Preview output and M/E 2 Preview output



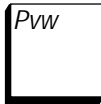
## Bus Delegate Buttons

The following delegation sources are available:

- Any of the panel-selectable Aux buses (press one of the **AUX 1... AUX 5** buttons)
- The mask bus (press **MASK**)
- The preview bus (press **PVW**)

One of the Bus Delegate buttons is always lit.

### Preview Bus Selection



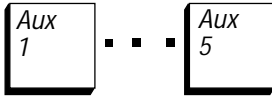
The **PVW** button enables the selection of the source to be viewed on the switched preview monitor. The selection can be any primary or secondary input, or any of the PVW ONLY crosspoint sources (**M/E1 PVW** or **M/E 2 PVW**).

### Mask Bus Selection



Pressing the **MASK** button in the Bus Delegate group delegates the source select buttons to select a source for the mask generators. The **MASK** button high tallies when the mask bus is contributing to the switcher Program output. The **Mask Bus** Pushbutton in the Mask Subpanel must be selected.

### Aux Bus Selection



Aux buses 1 through 5 can be used as simple video routing aux buses or for sending video and key to an external digital device (DPM). Each bus consists of an “A” bus and a “B” bus under E-MEM control. The “A” buses are for video only; the “B” buses may be configured for either video or key.

#### To use the Aux bus as a simple routing bus:

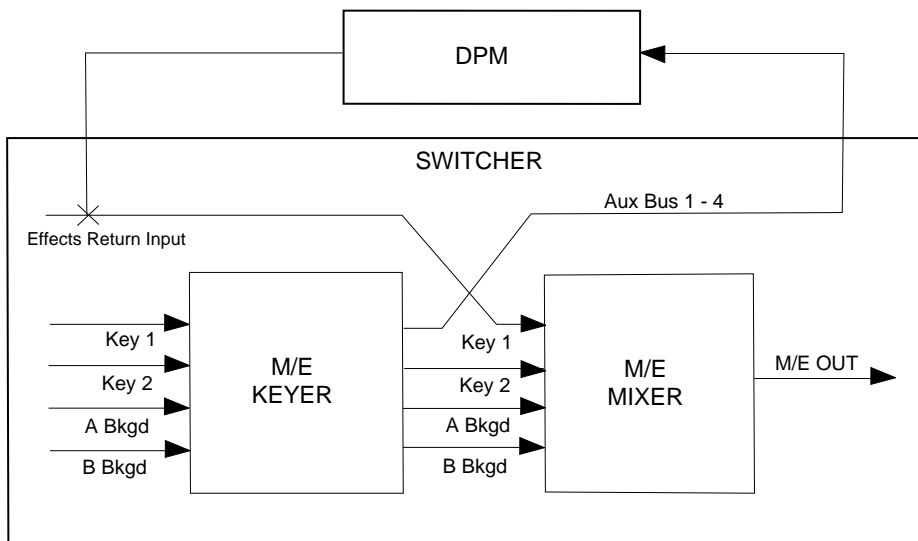
For an “A” bus, press the appropriate Bus Delegate button to select the desired Aux bus, then select any primary or re-entry source on the PVW AUX row. To select a “B” bus, hold down the Bus Delegate button while selecting the primary or re-entry source.

#### To use an Aux bus for “effects looping” operation:

Select the layer of the desired M/E on the Effects Send group of buttons. This causes the selected M/E output to be sent out the Aux bus output. Concurrently, a primary switcher input (that has previously been chosen to receive the return video from the DPM or other external device) is automatically routed to the chosen mixer layer for insertion of the processed video. The primary input to be used for the return path is set up in the Configuration menu.

## Effects Send – Looping Mode

Looping mode takes the output of an M/E Keyer, sends it to an external DPM, then returns the output of the DPM to the Mix/Wipe circuit of the same M/E in the switcher. This provides the effect of inserting a DPM right into the M/E, between the Keyer and the Mix/Wipe system, as illustrated in [Figure 2-18](#).



**Figure 2-18. Effects Send Looping Mode**

1. To select Effects Send looping mode, first press the **AUX BUS** button on the main menu panel, then press the **PHYS AUX SELECT** soft button to select the Aux Bus to be looped. With the **EFX LOOP MODE** button select **EXT LOOP**.
2. With one of the **BUS DELEGATE** buttons, select the (physical) **AUX BUS (1-2)** that you want to use. With the switcher set up as described previously for looping, the DPM output will automatically be routed to the Mix/Wipe system of the M/E whose Keyer output you sent to the DPM.

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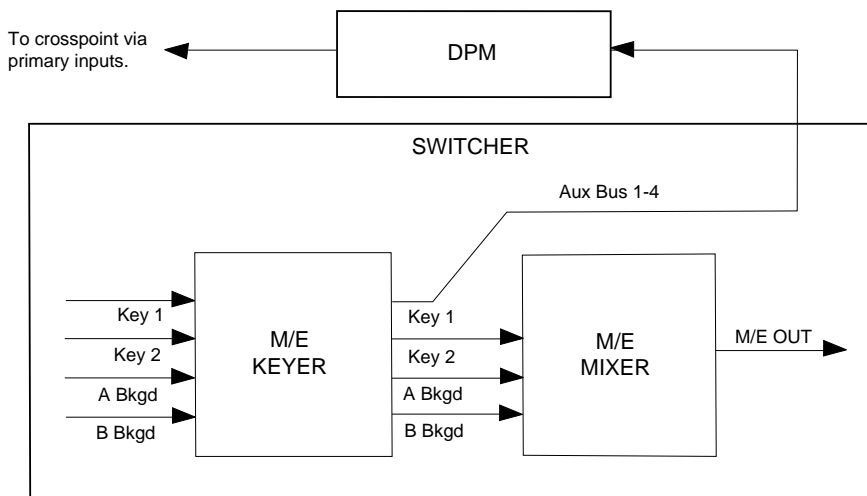
**NOTE:** The **A** and **B** bus selections apply only when in layered mode.

---

3. Select the Keyer output to be sent to the DPM by pressing one of the **EFFECTS SEND** buttons on the PVW/AUX row of buttons (**M/E 1 A** through **M/E2 Key2**).

### Effects Send – Non-Looping Mode

Non-Looping mode takes the output of an M/E Keyer and sends it to an external DPM. The output of the DPM may then be used as an input to the switcher and may be selected on any bus on the control panel. This allows the output of one Keyer to be manipulated by the DPM, then used as a video or key input by the other M/E. See [Figure 2-19](#).



**Figure 2-19. Effects Send Non-Looping Mode**

1. To select Effects Send non-looping mode, first press the **AUX BUS** button on the main menu panel, and then press the **PHYS AUXSELECT** soft button to select the Aux Bus to be looped. With the **EFX LOOP MODE** button select **NO LOOP**.
2. Select the Keyer output to be sent to the DPM by pressing one of the **EFFECTS SEND** buttons on the PVW/AUX row of buttons (**M/E 1 A** through **M/E 2 Key 2**).

---

**NOTE:** *The A and B bus selections apply only when in layered mode.*

---

3. With one of the **BUS DELEGATE** buttons, select the (physical) **AUX BUS (1-2)** that you want to use. With the switcher set up as described previously for non-looping, the DPM output will be routed to the previously-mapped crosspoint column on the Source Select panel.
4. If the DPM output has been connected to a primary input and mapped to one of the crosspoints, it may then be selected as a source on any output bus on the Source Select panel.

### **Effects Send Loop with Frame Store**

With previous software versions, the output of the Frame Store option could not be returned to the M/E mixer via the effects send loop.

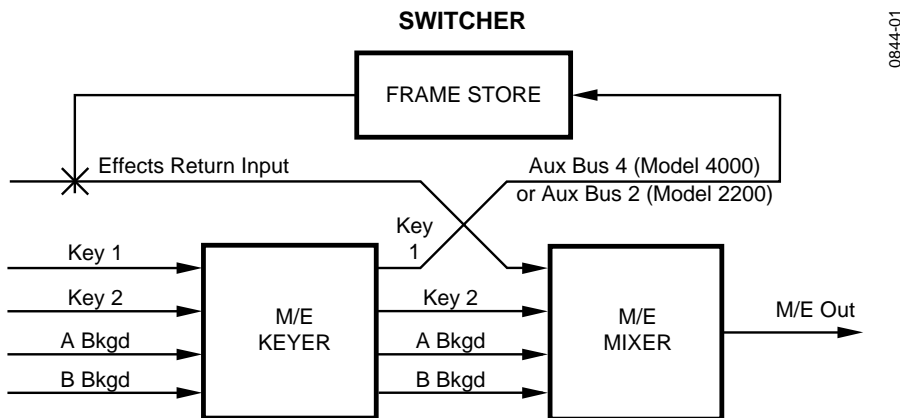
With Software Release 5.2, the Frame Store may now be used with the effects send loop to capture the output from a keyer and return the frozen image to the mixer of the same M/E. This is similar to using the effects send loop with an external DPM (Digital Picture Manipulator).

---

**NOTE:** *You must have the Frame Store option and the Effects Send option installed in order for this feature to operate.*

---

Frame Store Looping Mode (Figure 2-20) takes the output of an M/E Keyer, sends it to the Frame Store module, then returns the output of the Frame Store to the Mix/Wipe circuit of the same M/E in the switcher. See Figure 2-20. This provides the effect of inserting the Frame Store right into the M/E, between the Keyer and the Mix/Wipe system.



**Figure 2-20. Effects Send Frame Store Looping Mode**

1. To select Frame Store looping mode, first press the **Aux Bus** button on the main menu panel, then press the **BUS SELECT** soft button in the Aux Bus Menu to select the Aux Bus to be looped (**AUX 2** for the Model 2200).
2. With the **EFF LOOP MODE** button, select **FRAMESTORE**. This sends the output of the selected Keyer to the Frame Store option module and connects the output of the Frame Store to the Mix/Wipe system of the same M/E.
3. On the Switcher's **Pvw Aux** bus, select the Keyer output to be sent to the Frame Store by pressing **Aux 2 Effects Send Only** button on the Model 2200.

---

**NOTE:** The Keyer A selections apply only when in layered mode.

---

Open the Aux Bus Shaping menu by pressing **Config** on the top menu panel, then select **AUX BUS FORMAT>** and **AUX BUS SHAPING>** in the submenus.

Set the shaping of the effects send video to **SHAPED** by selecting **AUX BUS 4** for the Model 4000 or **AUX BUS 2** for the Model 2200, then selecting **SHAPED** with the **VIDEO/KEY FMT** button.

In Frame Store loop mode, operation of the Effects Send loop is the same as for external looping mode (described in the User's Guide), except that manipulation of the Keyer output is done on the Frame Stores panel, rather than by an external Digital Picture Manipulator.

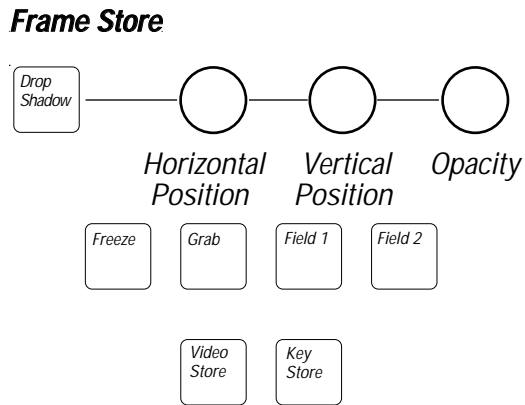
---

**NOTE:** *The Video Store and Key Store need to be unfrozen.*

---

## Frame Store Subpanel

The primary functions of the Frame Store option are storage of still video and key images and creation of dropshadows behind keys. Controls for manipulation of these functions are found on the Frame Store subpanel, shown below, and in the Frame Store menu, described in Section Two.



**Figure 2-21. Framestore Subpanel**

### Input Selection

Aux bus pair 2A/4B can be used to supply inputs to the frame store video and key channels.

### Output Routing

Video and key outputs from the frame store are routed to the switcher crosspoint matrix and may be used as primary switcher inputs. The video and key outputs are also routed to an output module for use by external devices.

If the frame store is not in Freeze mode, its output is delayed by 2 fields from its input.

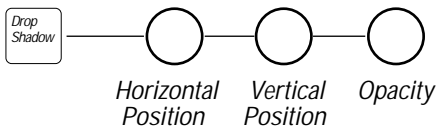


## Still Image Storage

Video and key can be frozen either separately or simultaneously through the use of panel controls. In addition, the system has read-before-write capability, so stills can be layered in a recursive manner. The system accomplishes this by sending the output of the frame store to the input of an M/E for combination with another image. A composite is generated that can be fed back to the input of the frame store and re-frozen.

## Frame Store Shadow Controls

The **Shadow On** button turns shadow mode on and off.



When shadow mode is on, the **Horizontal POSITION** and **Vertical POSITION** knobs adjust the horizontal and vertical offset of the shadow from the main key signal. A third knob, **OPACITY** adjusts the opacity of the shadow.

Shadow On mode is functional only with primary video inputs that have an associated linear key signal or an M/E in layered mode. No clip and gain adjustments are available to the user. Shadow On mode does not reduce the bandwidth of the key channel.

Shadow On is added to the key signal; the video output is unaffected. Therefore the Frame Store video and key must be composited on top of another layer in order to see the shadow.



The **Video Store** and **Key Store** buttons select whether the Frame Store subpanel is assigned to the video channel or key channel. One of these buttons is always lit, and **Video Store** and **Key Store** may be selected simultaneously.

Operations that can be independently set for video and key channels are as follows:

- Freeze
- Grab
- Field 1 and Field 2

When **Video Store** and **Key Store** are delegated simultaneously, the key channel settings are automatically aligned with the video channel settings.



The **Freeze** button provides a freeze/unfreeze function that toggles between states. Press once to freeze, press a second time to unfreeze. When enabled, this button stops data from being written to the frame store, resulting in a frozen image.



Pressing the **Grab** button updates the frame store with new input data and freezes the new data. If freeze is off (moving video is coming out of the frame store), pressing **Grab** turns on freeze. Freeze can be turned off again by pressing the **Freeze** button. If freeze is on and **Grab** is pressed, the frame store is unfrozen for two fields and then frozen again. The **Freeze** button remains lit to indicate that freeze is still on. Since the **GRAB** button initiates a single one-time action, it lights only while the button is pressed and for a short instant afterward.



**Field1** and **Field 2** determine the field, or fields, that are read out while the image is frozen. Either field may be selected, or both may be selected at the same time. When unfrozen, the Field buttons have no effect.

A full frame is always frozen, regardless of the state of these buttons. This method of storage allows the operator to decide between fields and frames after the image is frozen.

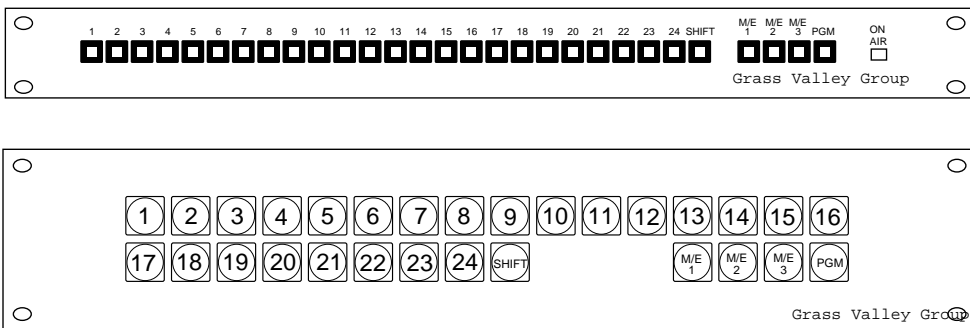
When an image is read from the frame store in field mode, the “other” field is replicated from the selected field (indicated by the illuminated **Field** button), if *REPLICATE* mode is selected in the Video Store menu. If *INTERPOLATE* mode is selected in the menu, the “other” field is interpolated from the selected field.

## Remote Aux Bus Panels

The Remote Aux Control Panels allow you to control the switcher aux buses from a remote location. There are three models of the Remote Aux Panels, each identified by the number of rack units (RUs) it occupies in the equipment rack.

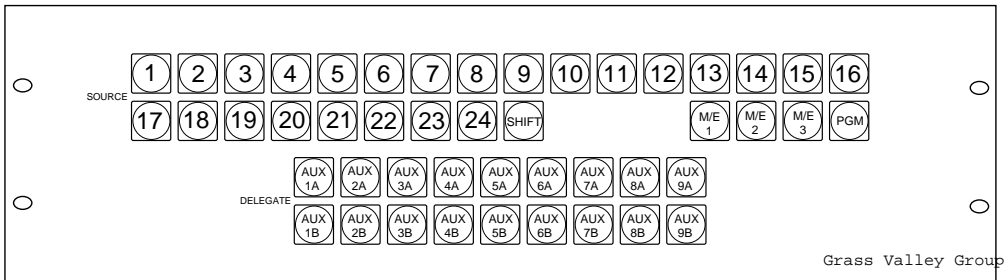
- 1-RU panel (Option Part Number 088901-00)
- 2-RU panel (Option Part Number 088902-00)
- 3-RU panel (Option Part Number 088903-00)

The 1-RU and 2-RU panels (Figure 2-22) are functionally identical. The 1-RU panel is designed for areas with very restricted space, and has small crosspoint buttons containing LED tally lamps. The 2-RU panel has large crosspoint buttons with internal tally lamps. Each of these panels must be set up to control a specific aux bus and must have the setup changed to control another bus.



**Figure 2-22. 1- RU and 2-RU Remote Aux Control Panels**

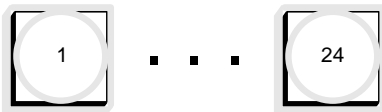
The 3-RU panel (Figure 2-23) has large buttons and is designed for locations where it is desirable to operate more than one bus. This panel will normally control all aux buses but can be set up to lock out specific buses.



**Figure 2-23. 3-RU Remote Aux Control Panel**

As many as 32 Remote Aux Panels can be attached to one switcher.

### Source Selection



The Remote Aux Panels are designed to control 48 inputs (24 unshifted and 24 shifted). For use with the 2200, inputs 1 through 16 and **SHIFT 1** through **SHIFT 16** will be the active crosspoints. Input buttons 17 through 24 are disabled, as will the **M/E 3** and **PGM** buttons.

Each crosspoint lamp on the 2-RU or 3-RU panel will high tally when that input is on air. There is an **ON AIR** lamp on the one RU panel which will illuminate to indicate that the selected input is on air. The on-air tally can be permanently enabled on all panels.

### Rear Panel Switches

The rear panel includes a number of switches that control operating modes, such as address, bus enable, delegate enable, and test mode. These switches are set up during installation, as described in the Installation section of the *Model 2200 Installation and Service Manual*.

### Remote Aux Operation

Operation of the Remote Aux Panel is identical to operation of the local aux panel installed in the switcher control panel.

If the switcher setup identifies a bus pair (that is 2A and 2B) as video and key, selecting a source on bus 2A will also change 2B. To split the key selection will require use of the 3-RU panel or two of the 1-RU or 2-RU panels (one set up for each bus).

More than one Remote Aux Control Panel can attempt to control a single aux bus. When two or more panels controlling the same bus have source buttons pressed, the panel with the highest address will control the source.

### Chop

The chop function switches rapidly between two inputs; this is a test function and not a creative feature. To start the chop function, press the first input button then double press the second input button. to stop the chop button press any input button for that aux bus on any aux panel. Chop must be enabled on the rear of the Remote Aux Control Panel.

## **Joy Stick Override**

Joy stick override (JSO) causes the normal input selection on the aux bus to be overridden and another input to be used in its place. To activate joy stick override, press the JSO button; to return to normal operation, release the JSO button.

### **Programming the Joy Stick Override**

To program the JSO buttons:

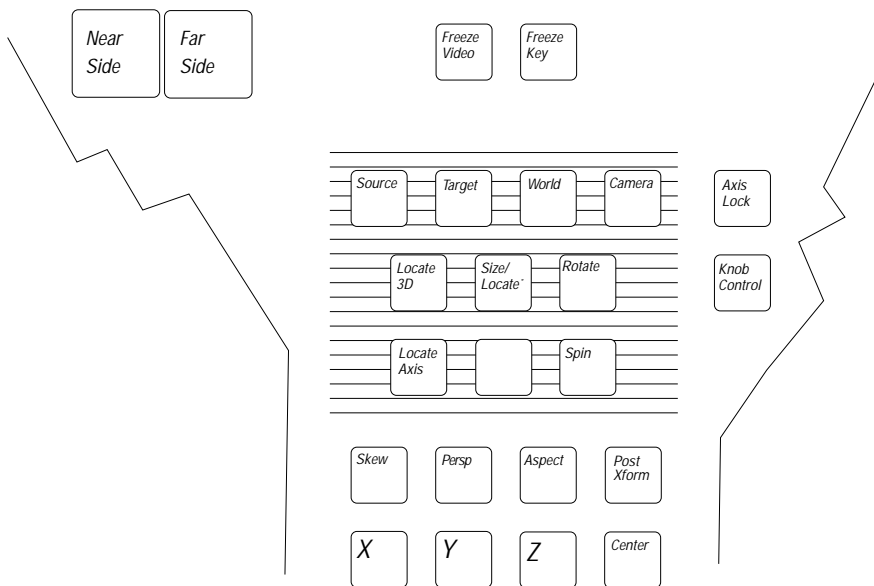
1. Set the test mode switches to 12 (0011)

The test mode switches are on the rear of the Remote Aux Panel.

2. Press and hold the JSO switch to be programmed.
3. Press the desired source button on the Remote Aux Panel.
4. Release the JSO Switch.
5. Repeat steps 2 through 4 for the other buttons.
6. Return test mode switch to 0 (0000).

## Effects Subpanel

Most of the functions of the buttons shown in [Figure 2-24](#) on the Effects Subpanel are used exclusively with the Model 2200-i. For the 2200-2, only the Near Side and Far Side functions are available on this panel.



**Figure 2-24. Effect Controls**





Front and back video image switching may be accomplished via Aux Buses connected to a Kaleidoscope or Krystal DPM. The Near Side and Far Side buttons (and the Near/Far Aux Bus Menu buttons; they work the same) are used to delgate the Front and Back sides of the video image.

Video can have a “Front” and “Back” side. The same source information can be applied to both sides of the video image, or the two sides may be adjusted separately.

The Near side is the video image which is *visible*. The Far side is the *invisible* side. The Front and Back may be rotated in any manner, but the Near side is always the visible side; and the Far side is always the invisible side.

For more information on Near/Far Aux Bus Selections, see Section 3, [Menu Descriptions](#). For a detailed description of Front/Back and Near/Far video processing, see Switcher Concepts, Manipulating Video Concepts, in the *Model 2200 User Guide*.



# 3

## *Menu Descriptions*

### Introduction

This section provides an overview of the Model 2200 menus, and detailed descriptions of the menus and submenus and the functions they provide. Menu trees in Section 4 show the overall menu hierarchy.

### Menu Display Subpanel

Many Model 2200 features are accessed via the Menu Display on the upper control panel. Top-level menus are brought up on the display by pressing the appropriate buttons at the left of the Menu Display. (Figure 3-1) Except for the button in the lower left corner, which is **last menu**, the two columns under Effects are used with the Krystal DPM functions (that is, the Model 2200-i) when so configured.

Choices are made in the menus by pressing the “soft buttons” below the display, and sometimes by making parameter adjustments with the “soft knobs” at the right end of the display. The buttons to the right of the display are for possible future expansion and are not active at this time. These controls are called “soft” because their functions change with different menus.



*Figure 3-1. Menu Display Subpanel*

### Top Level Menu Buttons

The menu system is divided into groups of function-related menus. Any group can be accessed by pressing one of the buttons on the Menu Display subpanel. This action brings up the corresponding top-level menu, which assigns specific functions to the soft buttons and knobs.

Except for the button in the lower left corner, which is **last menu**, the two button columns under Effect are for future use and not activated at this time. The **LAST MENU** button recalls the previously chosen menu.

Illustrations and descriptions of the Switcher menus are provided on the following pages.

<i>Effect</i>		<i>Switcher</i>	
Effect Config	Picture	Mixer Config	M/E Mode
Panel Setup	Picture Frame	Keyer	Chroma Key
Effect Oper	Key/Stencil	Status	Wipe
	View	E-MEM	Key Frame
Run Control	Input/Output	Mask	Matte
Graphic Display	Path	Aux Bus	Frame Store
	Clear Menu	Disk	Misc

## Soft (Function) Buttons and Soft Knobs

The buttons below the menu display implement the menu-selected functions or access lower-level menus. A dedicated **EXIT** button allows you to return to the menu one level higher on the menu tree. Buttons are active only if a label appears above the button.

---

**NOTE:** Buttons to the right of the menus are for possible future expansion and are not active at this time.

---

The knobs at the right end of the menu display are available for adjusting various parameters. These knobs are active only when labels appear adjacent to them in the menu display. Many menus do not require the use of the soft knobs.

## Menu Display and Graphics

In addition to specifying functions for the soft buttons and soft knobs, the high-resolution menu display is sometimes used for showing bit-mapped graphics. For example, menu-selectable wipe patterns are displayed when the **WIPE** button is pressed.

## Menu Delegation

The Model 2200 also delegates some menus on the Menu Display screen to open when specific buttons on the subpanels are *double-pressed*. (The second press must occur within a predetermined amount of time.) [Table 3-1](#) lists the buttons that support this function.

---

**NOTE:** *An opened menu is delegated, where appropriate, to the button that opened the menu. For example, double-pressing the **KEY 1** delegation button on the M/E 1 Keyer panel causes the keyer menu to open and the menu controls to be delegated to keyer 1 of M/E 1.*

---

**Table 3-1. Menu Delegation**

Subpanel	Button Double-Pressed	Delegated Menu	Comments
Transition	<b>BKGD B</b>	M/E Mode menu	
Keyer	<b>KEY 1</b> and <b>KEY 2</b>	Keyer menu	
Keyer (Layered Mode)	<b>BKGD B, BKGD A, KEY 1, and KEY 2</b>	Keyer menu	
Keyer	<b>PRI PreSeT PaTTerN or SEC PreSeT PaTTerN</b>	Wipe Modifier menu	Used to set <b>PST PTN DIRECTION</b>
Keyer	<b>CHR KEY</b>	Chroma Key menu	
Chroma Keyer	<b>M/E 1 KEY 1 through M/E 2 KEY 2</b>	Chroma Key menu	
Wipe	Wipe Pattern <b>MENU</b>	Wipe Pattern menu	
Wipe	<b>M/E 1 PRI through M/E 2 SEC</b>	Wipe Modifier menu	
Wipe	Wipe Pattern <b>TEXTURE</b>	Wipe Texture menu	
Source Select Any of the following delegated buses: M/E 1 Key 1 M/E 1 Key 2 M/E 1 Key A M/E 1 Key B M/E 2 Key 1 M/E 2 Key 2 M/E 2 Key A M/E 2 Key B Aux 1 through Aux 5 (if configured as a video and a key)	Any Primary or Secondary Crosspoint	Clear Key Memory menu (submenu under Misc menu)	

## Menu Descriptions

This section describes all system menus functions and the soft buttons and soft knobs accessed by each. (The Configuration menus are also described in the *User Guide*, with additional information on external device configurations.)

The menus are presented in hierarchical order. After each top level menu, the submenus under that top level menu are described. All menus and submenus are listed in the local Table of Contents at the beginning of this section. In addition, the menu structure is also depicted in graphical form in Section Three, Menu Trees.

The top level menus may be displayed by pressing the buttons at the left of the Menu Display. Submenus are then brought up by pressing the soft buttons at the bottom of the display. Each menu function that will call up a submenu is indicated by a “>” symbol at the end of the function name.

Some menus or submenus may also be brought up by automatic menu delegation which is activated by double-pressing certain buttons on the control panel. Auto delegation is discussed near the beginning of Section One, Control Panel Descriptions.

---

***NOTE:*** *The following menu descriptions are for the two button columns under Switcher. The Effects menu buttons are for future use and not activated at this time.*

---



## Configuration Menus

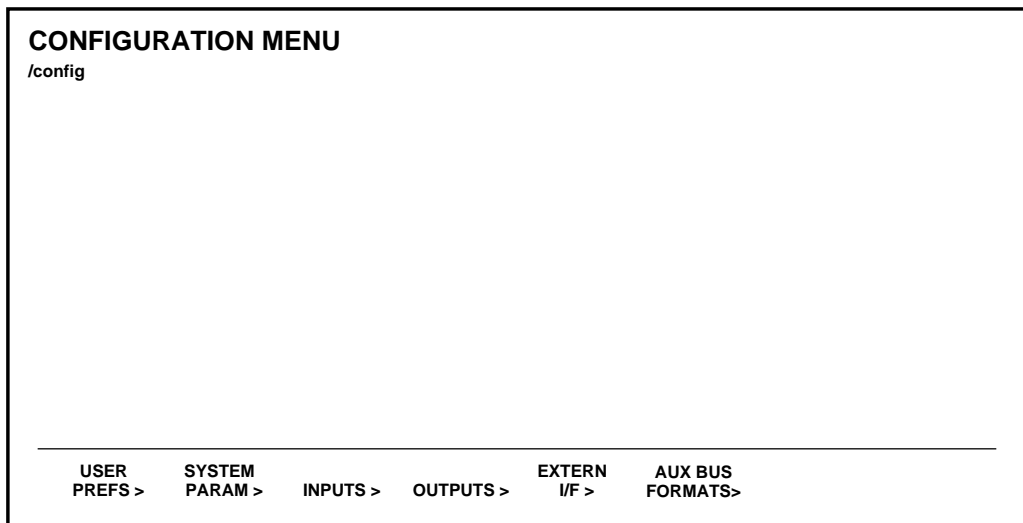
The Configuration Menus are accessed by pressing the **mixer CONFIG** button on the Menu Display Subpanel. This displays the Configuration menu and the sub-menu choices.

The Configuration Menus are used to set up the switcher to the requirements of the site or job. The system parameters to be used at a particular site are usually configured following installation of the equipment. These include defining the input sources, assigning the sources to crosspoints, setting output levels, and defining external interfaces. These menu items are accessed through the Configuration menu.

---

**NOTE:** While only one configuration can be active at a time, it is possible to store more than one configuration setup on disk and retrieve it for later use. See [Load File Menu on page 3-134](#).

---

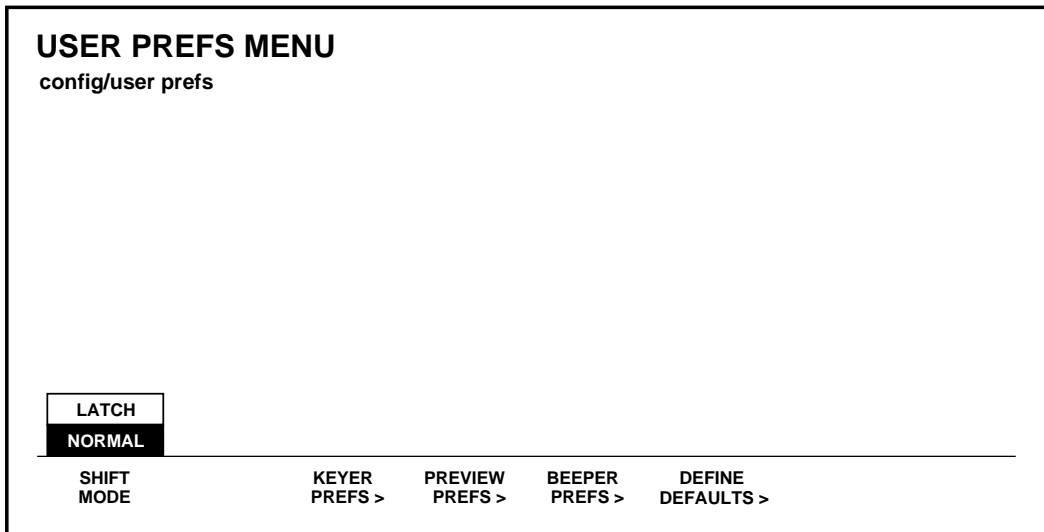


The following items are accessed through the configuration menus:

- **USER PREFS >** — Set up operating parameters, such as Keyer and Preview preferences.
  - Keyer Prefs
  - Preview Prefs
  - Define Defaults
- **SYSTEM PARAMS >** — Set aspect ratio, the matte generator limiter and the system clock.
  - Matte Gen Lim
  - Set Clock Menus (Date /Time)
- **INPUTS >** — Define your inputs and name crosspoint buttons.
  - Map Inputs and Name Crosspoint Button
  - Chr Key Inputs
  - GPI Inputs
- **OUTPUTS >** — Adjust the luminance and chroma limiter settings on the switcher outputs.
- **EXTERN I/F >** — Select or change settings for the Editor, DPM, and Peripherals Interfaces connected to the Model 2200.
  - Editor I/F
  - DPM I/F
  - Peripheral I/F
- **AUX BUS FORMAT>** — Sets the “B” Aux Bus on Aux buses 3B— 5B to be either a separate video or key bus to accompany the corresponding “A” Aux Bus. Set Aux Buses 1A through 2B (physical/logical) for shaped or unshaped video output.
  - Aux Shaping

## User Preferences

From the Configuration Menu, press the **USER PREFS >** button to bring up the User Preferences Menu. Use the User Preferences Menu to access the various user preference submenus described below.



1. Select either **LATCH** or **NORMAL** with the **SHIFT MODE** soft button.

The **LATCH** selection allows you to lock any switcher crosspoint bus into a shifted (UPPERCASE) state. This allows ready access to those input sources mapped to shifted crosspoints. (See [“Setting Input Characteristics” on page 3-21.](#))

With **LATCH** enabled on the User Preferences Menu, press and hold the **SHIFT** button while selecting a crosspoint. The bus containing that crosspoint is now locked into a shifted state. Any crosspoint selected on this bus will now be a shifted crosspoint. The **SHIFT** button light will remain ON while the bus is in this state.

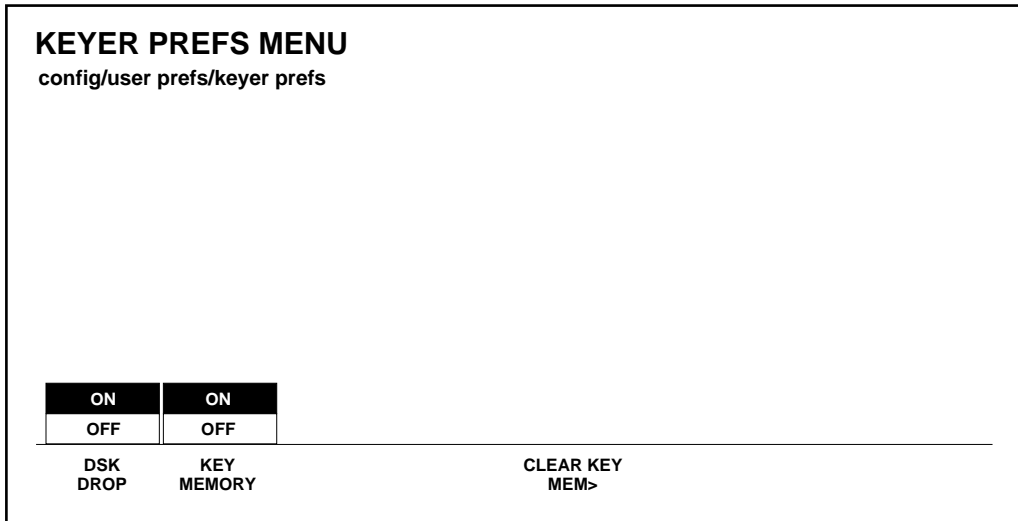
To unshift a bus, press and hold the **SHIFT** button. Select a crosspoint button. The bus is now unshifted, and the **SHIFT** button lamp is OFF.

1. Select the **KEYER PREFS** button to display the Keyer Preferences menu.
2. Select the **PREVIEW PREFS** button to display the Preview Preferences menu.
3. Select the **Beeper PREFS>** — button to display the Beeper Preferences menu.
4. **DEFINE DEFAULTS>** — Opens the Define Defaults menu, which allows you to change the default values used when the switcher is turned on.

Press **exit** to return to the Configuration menu.

## Keyer Preferences

From the User Preferences menu, press the **KEYER PREFS>** button to display the Keyer Preferences menu:



1. Press the **DSK DROP** button to turn on or off the DSK drop feature. Select either ON or OFF.
2. Press the **KEY MEMORY** button to turn on or off the key memory feature. Select either ON or OFF.
3. **CLEAR KEY MEM>** — Opens the Clear Key Memory menu, which allows you to clear the key memory settings for various areas of the switcher.

Press **EXIT** to return to the User Preferences menu.

### Clear Key Memory Menu

From the Keyer Preferences menu, press the **clear key mem>** button to display the Clear Key Memory menu:

## CLEAR KEY MEMORY MENU

config / user prefs / keyer prefs / clear key mem

CURRENT  
XPT

7

M/E 1	A
M/E 2	B
DSK	KEY 1
AUX	KEY 2
MASK	

Press a button below to clear key memory for –

CLEAR XPT: the current xpt on the selected bus

CLEAR BUS: all xpts on the selected bus

CLEAR SECTION: all xpts on all buses in the selected section

CLEAR SWITCHER: all xpts in the switcher

---

SECTION  
SELECT

BUS  
SELECT

CLEAR  
XPT

CLEAR  
BUS

CLEAR  
SECTION

CLEAR  
SWITCHER

The Clear Key Memory menu selections are as follows:

**SECTION SELECT** and **BUS SELECT** — Select the area of the switcher whose key memory you wish to clear.

After selecting the section and bus, press the specific crosspoint desired on the selected bus. (The number of that crosspoint will appear in the **CURRENT XPT** box in the menu.)

When **AUX** is selected, bus choices are 1 through 5. And when **MASK** is selected, the **BUS SELECT** and **CLEAR SECTION** choices disappear.

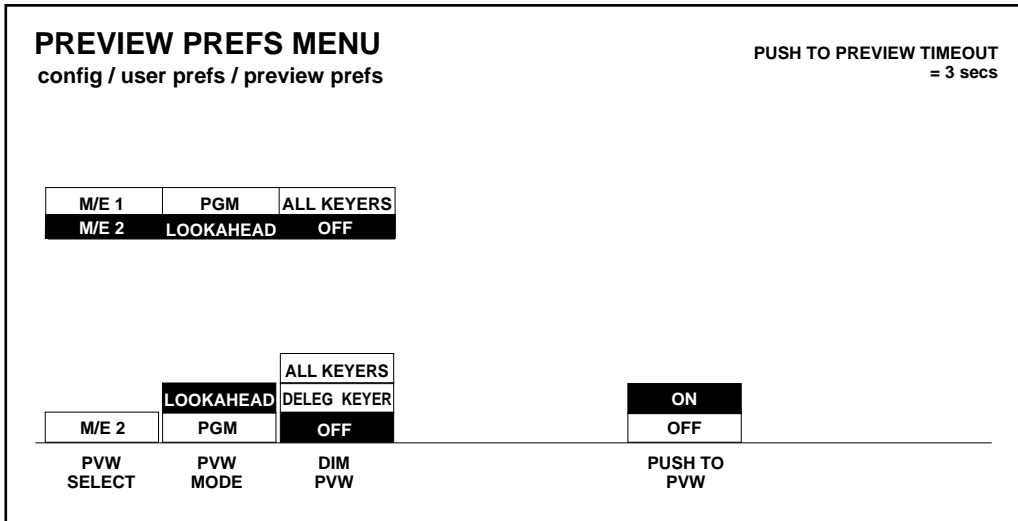
**CLEAR XPT**, **CLEAR BUS**, **CLEAR SECTION**, and **CLEAR SWITCHER** — Perform the Clear operation for the selected memory area.

Press **exit** to return to the Keyer Preferences menu.

Press **exit** again to return to the User Preferences menu.

## Preview Preferences

From the User Preferences menu, press the **PREVIEW PREFS>** button to display the Preview Preferences menu:



1. Select the preview from M/E 1 or M/E 2 using the **PVW SELECT** button.
2. Use the **PVW MODE** button to select the preview mode desired for the selected switcher subsystem:

---

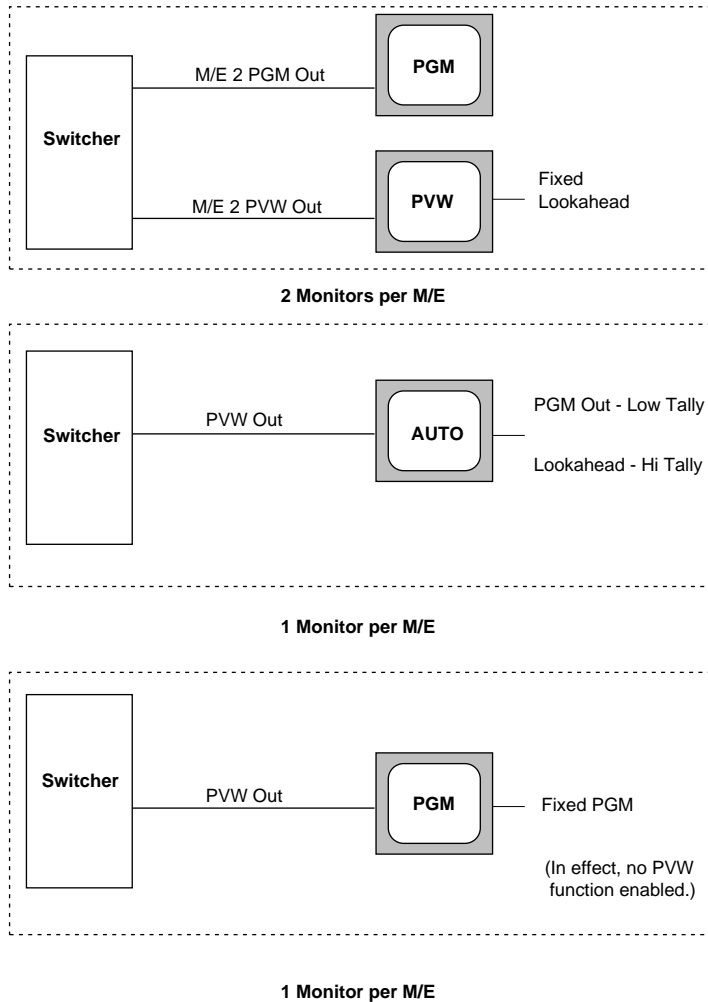
**NOTE:** The optional M/E Preview Mezzanine must be installed for each M/E in order to select **LOOKAHEAD** Preview Mode. **This selection will not be displayed in the menu if the mezzanine board is not installed.**

---

The Preview Mode choice depends on how many monitors you have per M/E, and how you wish to use them (see [Figure 3-2](#)).

**LOOKAHEAD**— Use to review what is going on-air next. Always shows the next transition of the selected M/E.

**PGM** — Use this selection to have the PGM output of the M/E displayed on the Preview monitor. (Useful if your PGM monitor goes down — signal is feed from the switched PVW output.)



**Figure 3-2. . Preview Mode Configurations**



3. Press the **DIM PVW** button to dim the preview of all keyers using a mask in that M/E or to turn off the preview dim function so that the preview never dims regardless of masking.
4. Assign one of the following Dim Preview modes:
  - ALL KEYERS** — the preview of all keyers using a mask in that M/E will dim the Preview monitor.
  - DELEG KEYR** — only the keyer which is currently delegated and doing a mask in that M/E or DSK will dim the Preview monitor.
  - OFF** — preview never dims, regardless of masking.
5. Press the **push to pvm** button to enable/disable the push to preview mode for the entire switcher. Hold down the key delegate button (for example **key 1** or **key 2** on the Keyer panel) of the appropriate keyer for 1/2 second or more to display the M/E look-ahead preview along with the selected keyer output on the switched preview monitor.

When the key delegate button is released, the preview display remains on for a programmed time-out period, as set by the **Push to Preview Timeout** soft knob, before reverting to its original state.

**Push to Preview Timeout**— Sets how long the preview will remain on after you have released the key delegate button. The default value for the auto preview is 3 seconds. Any adjustments to clip or gain resets the time-out, thus maintaining the auto preview mode while making clip and gain adjustments.

Press **EXIT** to return to the User Preferences menu.

## Beeper Preferences

You may wish to customize the beeper alert system. Beeper preferences are selected on the Configuration/User Preferences Menu/Beeper Preferences Menu shown below.

**BEEPER ON/OFF** — Use to enable or disable the beeper alert system.

**WARNING** — Use to enable or disable beeper warnings. (For example: On the Keyer Copy Menu, if you try to copy M/E 1 Key 1 to M/E 1 Key 1 (copy a key onto itself) you will get a beep with Beeper Prefs selection: WARNING ON.)

**END OF KNOB** — Enable or disable the beeper alert that sounds when the knob is turned to either end of its' range.

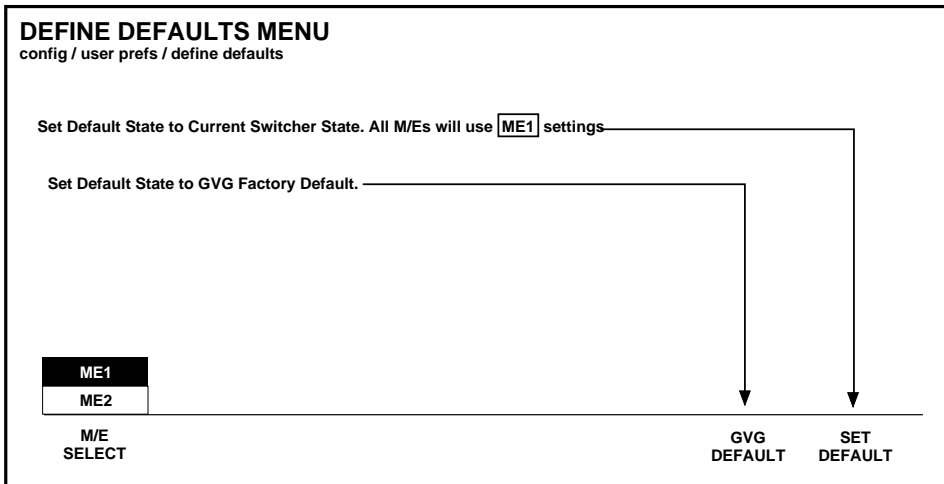
**KNOB CENTER** — Enable or disable the beeper alert that sounds when the knob is turned to the center of its' range.

**INACTIVE KNOB** — Enable or disable the beeper alert for knobs “turned off” during the current switcher state.

<b>BEEPER Prefs MENU</b>				
config/user prefs/beeper prefs				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
BEEPER ON/OFF	WARNING	END OF KNOB	KNOB CENTER	INACTIVE KNOB

## Define Defaults Menu

From the User Preferences menu, press the **define defaults>** button to display the Define Defaults menu: This menu allows you to change the default values that are stored in memory and used when the switcher is turned on or the **CLEAR WORK BUFR** button is pressed.



The Define Defaults menu selections are as follows:

**M/E SELECT** — Selects the M/E whose settings are to be used during power-up. (Only one set of values is stored for the M/Es, therefore both M/Es use the same values at boot-up.) The switcher panel (including the selected M/E) is used to set up the switcher default values.

**SET DEFAULT** — Enters the new default values.

**GVG DEFAULT** — Restores the factory-set default values to the switcher.

Press **exit** to return to the User Preferences menu.

Press **exit** again to return to the Configuration menu.

## System Parameters

From the Configuration menu, press the **System parameters>** button to bring up the System Parameters menu.

SYSTEM PARAMETERS MENU		
config/system param		
		XMITABLE
	FIELD 1	VALID RGB
4 X 3	FIELD 2	BOTH
16 X 9	NONE	NONE
ASPECT RATIO	FIELD DOMINANCE	MATTE GEN LIM
		SET CLOCK >

1. **ASPECT RATIO** — Soft button may be set to either the **4 x 3** or **16 x 9** setting, depending on your installation requirements.
2. **FIELD DOMINANCE** — (**FIELD DOMINANCE** set to **NONE**), selection changes become effective at the beginning of the next field (immediately after the functions have been changed).

### Using Field Dominance

If the Model 2200 output is going to be recorded onto tape that will later be edited along with other tape, it is important that changes take place consistently on the *same* field. They can occur on either Field 1 or Field 2 of the frame, but need to be on the same field every time. If this is not done, there will be a “flash” at the edit in the resulting taped video.

With **FIELD 1** selected as the dominant field, if a change takes place just prior to Field 1, the change will become effective at the beginning of Field 1. But if the change takes place prior to Field 2, the change will be delayed by one field so that it also becomes effective at the beginning of the next Field 1. This way, all changes will be synchronized to take place at the beginning of Field 1.

Similarly, if **FIELD 2** were selected as the dominant field, those changes that take place prior to Field 1 would be delayed until Field 2.

If you are recording the switcher output on video tape and will be doing post-production editing of the tape, it is recommended that you set Field Dominance for a specific field (either **FIELD 1** or **FIELD 2**), and leave it at that setting. This will ensure that all changes will take effect consistently on the same field.

If an Editor or a GPI trigger initiates one of these functions, it will produce the same effect as a control panel change. That is, the initiation of any of these functions will be delayed until the beginning of the selected dominant field.

3. Set the matte generator chroma limiting algorithm by toggling through the available choices. The **MATTE GEN LIM** selections are:

**XMITABL** — Prevents the total signal (luminance and chrominance) from exceeding the NTSC transmission standard.

**VALID RGB** — Limits colors to those which generate red, green, and blue values within the 0 to 100% range.

**BOTH** — Selects a valid RGB color limiter which also prevents the encoded signal envelope from exceeding NTSC transmission level. This is the system default mode.

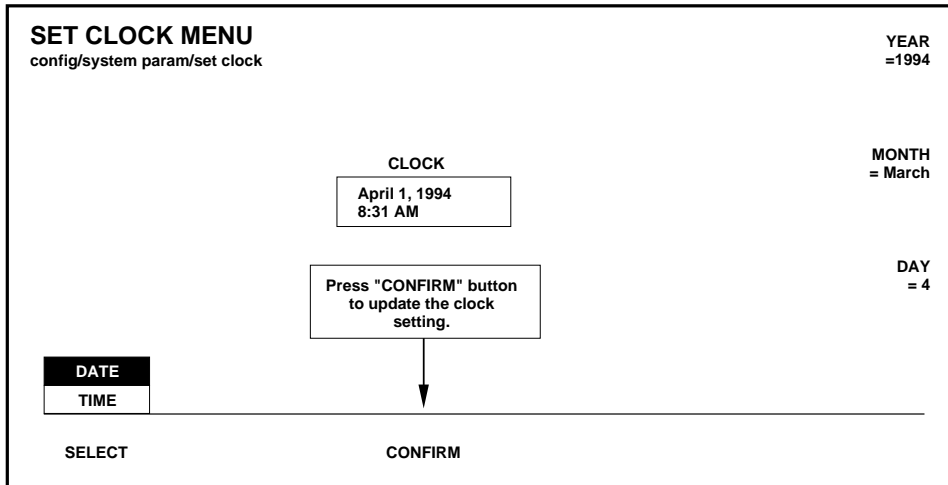
**NONE** — Turns off all algorithm methods for matte generator limiting.

4. Press **SET CLOCK>** to open the Set Clock menu to set the system time and date.

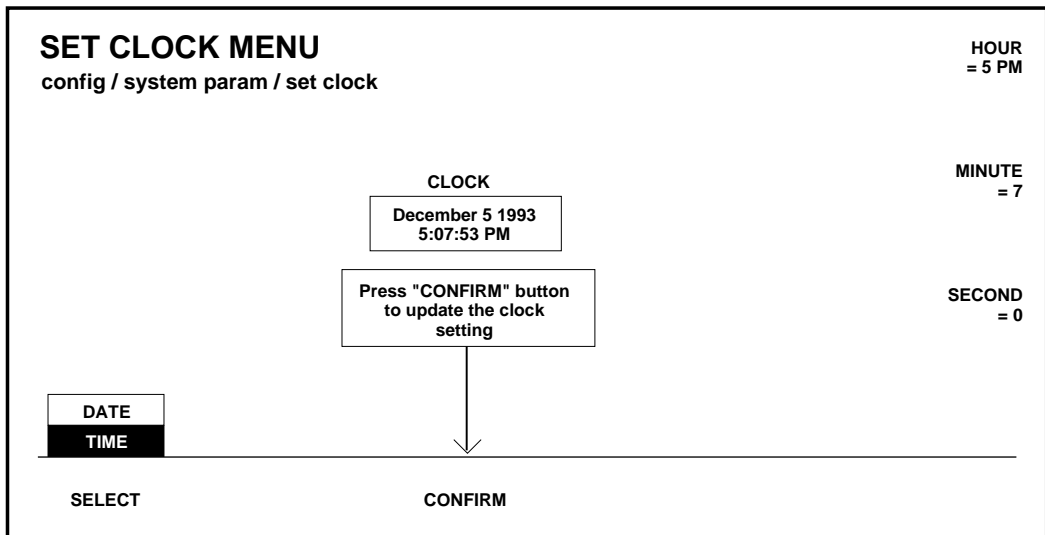
Press **exit** to return to the Configuration menu.

## Set Clock Menu

From the System Parameters menu, press the **SET CLOCK >** soft button to display the Set Clock menu. If the date and/or time are incorrect, they may be reset as follows:



1. Set the date by selecting **DATE** with the **SELECT** button and turning the soft knobs to select the appropriate **YEAR**, **MONTH**, and **DAY**.
2. Press the **CONFIRM** button to enter the new date.
3. Set the time by selecting **TIME** with the **SELECT** button and using the soft knobs to select the **HOUR**, **MINUTE**, and **SECOND**.



4. Press the **CONFIRM** button to enter the new time.  
Press **EXIT** to return to the System Parameters menu.  
Press **EXIT** again to return to the Configuration menu.

### Setting Input Characteristics

Primary video and key inputs to the switcher are numbered 1 through 32 (16 unshifted and 16 shifted). Any of these inputs can be treated as either a video or key signal. During the installation procedure, each of the 32 input buses is assigned a video signal, a key signal, and a chroma key signal. All inputs are defined by function, name, crosspoint, input number, and signal format.

Each input, including internally generated signals such as black and background, can be mapped to any vertical column of source select (“crosspoint”) buttons. You may determine the input assignments and the characteristics of the input signals through the use of the Configuration submenus, as described in the following procedures.

---

**NOTE:** *The external video and key assignments are set up following installation to correspond to the video and key inputs connected to the frame. These assignments should never be changed by the operator.*

---



### Configuring the Black Crosspoint

When mapping inputs to pushbuttons, one of the choices in the Configuration menu is **BLACK**, and another choice is **NONE**. Your selection will have an effect on how **PRESET BLACK** operates, and what will happen in the event the controller CPU fails.

When the first transition during a preset black operation is completed, the left most **BLACK** crosspoint is automatically selected on the A Background bus. If black has not been assigned to any pushbutton, the **PRESET BLACK** button is disabled and the preset black function is not permitted. If a pushbutton is assigned to **NONE**, black appears when that button is selected; however the preset black function will not use this as the **BLACK** crosspoint.

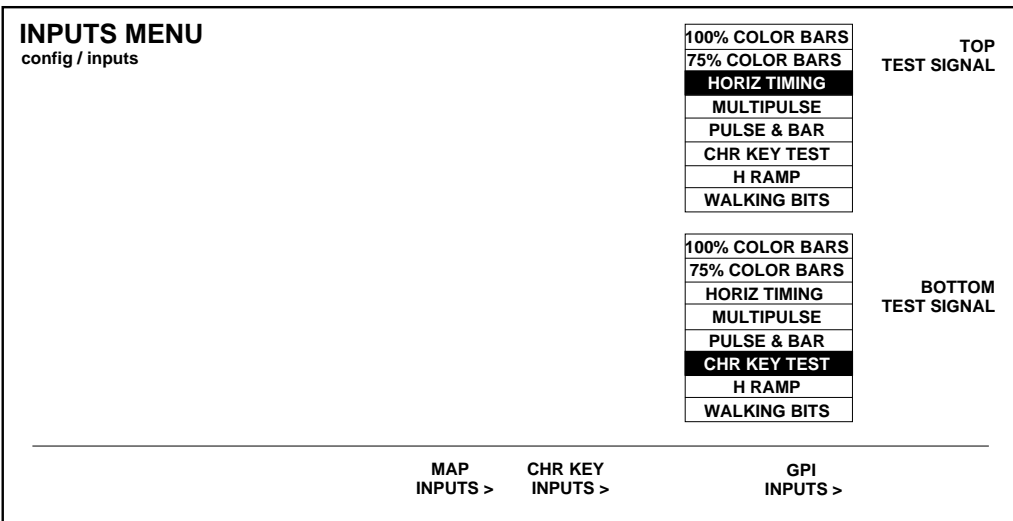
### Processor Failure

The **BLACK** crosspoint is also important in the situation where the Controller main CPU fails while one of the M/Es is performing a re-entry. When it fails, the M/Es are required to abandon their re-entry crosspoints and select **BLACK** on the same bus. In the case where black was never assigned to a pushbutton, the M/E selects the left most crosspoint on the bus.



## Inputs Menu

From the Configuration menu, press the **INPUTS >** button to access the Inputs menu:



1. Press **MAP INPUTS** to select the format (shaped or unshaped) for each video/key input.

From the **map inputs** menu, press **name xpt** button to name each crosspoint (up to nine letters may be used).

2. Press **CHR KEY INPUTS** to define format and setup for the two optional Chroma Key analog inputs. (Menu will depend on setting of FIELD RATE switch on the Sync Generator Module in Cell A10 of the switcher frame).
3. Press **GPI INPUTS** to program up to eight GPI inputs to trigger Model 2200 functions, such as E-MEM registers.
4. Use the **top** and **bottom** soft knobs to select the test pattern signal for the top and bottom of the screen.

Press **exit** to return to the Configuration menu.

## Map Inputs Menu

From the Inputs menu, press the **MAP INPUTS>** button to select the Map Inputs menu. This menu selects which physical input (input connection on frame) is used as a video, key, or chroma key on each crosspoint.

**MAP INPUTS MENU**  
config/inputs/map inputs

VIDEO INPUT  
= 4  
(DIG SER/RGB/SETUP)

KEY INPUT  
= 1  
(DIG SER/8 BIT/SETUP/SYNC)

CHROMA KEY INPUT  
= NONE  
(INTERNAL)

	XPT BUTTON NUMBER	XPT BUTTON NAME	
UNSHAPED VIDEO	38 (SHIFT-14)		
SHAPED VIDEO	Use the Preset Bus to select button number.		LOG CHANNEL PHYS CHANNEL
VIDEO/ KEY FMT			LOG/PHYS ASSIGNMENT    NAME XPT BUTTON >

1. On the M/E 2 B Bus, press the crosspoint button whose sources you wish to select.
2. With the **log/phy assignment** button, select **phys inputs**.
3. Use the appropriate soft knob to select the desired type of input. Note that inputs formats are displayed when selecting input type.

---

**NOTE:** *Undefined buttons default to black.*

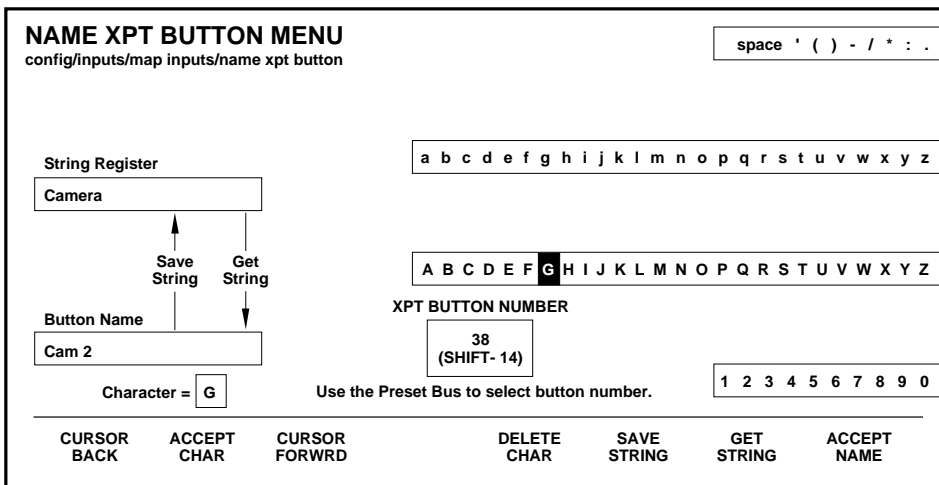
---

4. If mapping a chroma key input, use the **chroma key input** soft knob to assign the chroma key type for the currently selected crosspoint button.
5. Use the **video/key fmt** button to assign whether the input will use the shaped video or unshaped video format.
6. Refer to “DPM Map Aux Bus menu” under “DPM Setup,” in this section, for use of the **log channel** function of the **log/phy assignment** button.
7. After mapping the input, you may name the crosspoint by pressing **name xpt button>**. The Name Xpt Button menu appears as shown next.
8. Repeat steps 1 through 7 for all inputs.

Press the **EXIT** button to return to the Inputs menu.

## Name Crosspoint Button Menu

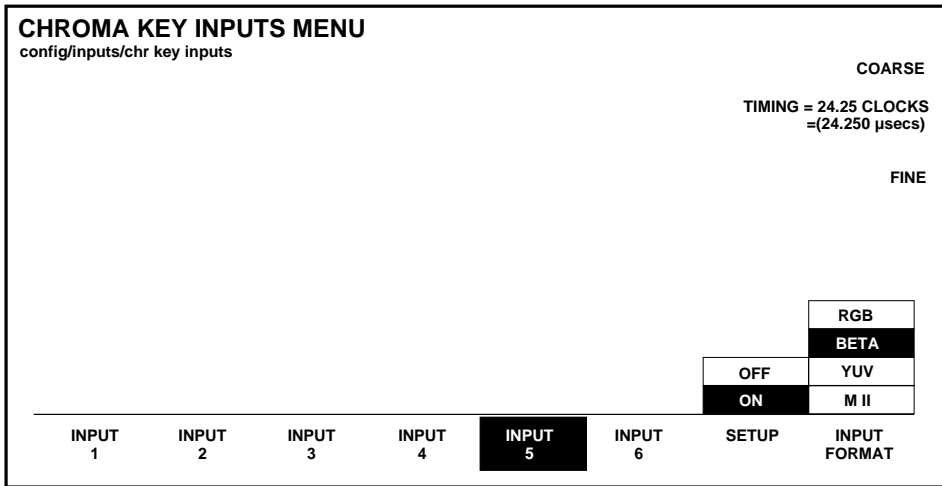
From the Map Inputs menu, select **NAME XPT BUTTON>** to display the Name Crosspoint Button menu.



1. Move the cursor with the **Cursor Back** and **Cursor Forward** buttons
2. Select each character by turning the soft knobs. Use the **ACCEPT CHAR** button to accept the new character. Up to 9 characters may be used.
3. Press **ACCEPT NAME** to store the name. The system automatically returns to the Map Inputs menu.  
The first four characters of the name will appear in the display panel located between the two M/E's.
4. **Save String** moves the name into the string register **Get String** moves the string into the button name.  
The string register is a holding place which allows the button name to be changed or recalled easily.  
Press **exit** to return to the Inputs menu.

## Chroma Key Inputs Menu

From the Inputs menu, press the **CHR KEY INPUTS >** button to select the Chroma Key Inputs menu; if optional Chroma Keyer is installed.



1. Select the chroma key input to adjust by pressing the **INPUT 1** or **INPUT 2** button.
2. Select the correct format for that input using the **INPUT FORMAT** and **setup** buttons.

**NOTE:** When the input is set to YUV the setup button will not appear.

3. Adjust the coarse and fine timing for each chroma key input. the range of the (coarse) soft knob is -256 clocks to +256 clocks (1 clock = 69.84 nsecs). Use the **fine** soft knob to adjust the fractional value from.000 to 0.999 clocks.

Press **exit** to return to the Inputs menu.

## GPI Inputs Menu

From the Inputs menu, press the **gpi inputs>** button to select the GPI Inputs menu.

Eight GPI inputs are provided. All of these accept pulse-type inputs except Aux Tally Back, which is level-sensitive. Use the GPI Inputs menu to set GPI assignments for signals that can be used to trigger Model 2200 functions. These assignments must correspond to the physical GPI connections described in the Installation section of the *Model 2200 Installation and Service Manual*.

### GPI INPUTS MENU

config/inputs/gpi in

GPI 1	M/E 1 AUTO TRAN
GPI 2	GPI DISABLED
GPI 3	GPI DISABLED
GPI 4	GPI DISABLED
GPI 5	GPI DISABLED
GPI 6	GPI DISABLED
GPI 7	GPI DISABLED
GPI 8	GPI DISABLED

When the desired function is selected, press PROGRAM GPI button to set the selected GPI input to the selected function.

FUNCTION SELECT (AUTO TRANS)

M/E 1 AUTO TRAN	M/E 2 AUTO TRAN	M/E 2 PST BLACK
--------------------	--------------------	--------------------

Choose from these 6 buttons to select various categories of GPI functions. Then use the FUNCTION SELECT knob to select a function.

GPI 1

GPI SELECT

MISC

KF EFFECT

AUTO TRANS

CUT

E-MEM

FRAME STORE

PROGRAM GPI

M/E 1  
AUTO TRAN ?

The types of GPI assignments currently available are Miscellaneous (Aux Tallies), Keyframe Effects, Auto Transitions, Cuts, E-MEM registers, and Frame Store as indicated by the button labels at the bottom for the display window. One of these functions is always selected. The selected function is indicated in parentheses under the **function select** knob label.

1. To assign the GPI inputs, first press **gpi select** to select the desired input.

2. Select the type of category to be assigned (Misc, Keyframe Effects, etc.) by pressing the appropriate soft button.
3. Turn the **FUNCTION SELECT** knob to assign a specific function (Aux Tally, etc.).
4. After the desired function has been selected for each GPI, press **program gpi** to enter the selection, which is indicated in the display table.

The following categories are available for assignment:

**MISC** — Enables selection of the Aux Tally Back function, or allows the selected GPI input to be disabled.

**AUXTALLY** — Allows an external device to control the aux bus tally level (high or low). The **AUX BUS** soft knob selects the appropriate aux bus.

**DISABLE GPI** — Causes any signal applied to the selected GPI input to be ignored.

**kf effect** — Enables selection of the Keyframe GPI function. The following transitions may be triggered with GPI pulses:

- **run, rewind, auto run, and reverse**

**AUTO TRANS** — Enables selection of the Auto Transition GPI function. The following transitions may be triggered with GPI pulses:

- **M/E 1, M/E 2, and M/e 2 PST BLK**

**CUT** — Enables selection of the Cut GPI function. The following cuts may be triggered by the GPI:

- **M/E 1, and M/E 2**

**E-MEM** — Enables selection of the E-MEM GPI function. The following E-MEM functions may be triggered by the GPI:

- **RECALL ME 1, RECALL ME 2, RECALL MSTR, AUTO RECALL, EFX DISSOLV, and SEQUENCE.** The **REGISTER** soft knob selects the register for E-MEM recalls.

**FRAME STORE** — Enables selection of the Frame Store GPI function. Triggerable functions are as follows:

- **VIDEO GRAB, KEY GRAB, and MASK GRAB**

Press **exit** twice to return to the Configuration Menu.

## Outputs Menu

Select **OUTPUTS>** from the Configuration Menu. The Outputs Menu shown below displays.

OUTPUTS MENU		
config/outputs		
M/E1 PGM	BOTH	PEAK
M/E2 PGM	PEAK WHITE	PEAK
	OFF	
	PEAK WHITE	
	PEAK BLACK	OFF
M/E 1 PGM	BOTH	PEAK
OUTPUT SELECT	LUM LIMITER	CHROM LIMITER

1. Select the desired output with the **OUTPUT SELECT** button.
2. With the **LUM LIMITER** button choose one of the following luminance limiting conditions (does not apply to reentries):
  - PEAK WHITE** — the luminance level is limited at peak white
  - PEAK BLACK** — the luminance level is limited at standard black
  - BOTH** — keeps the luminance levels between standard black and peak white
  - OFF** — does not limit luminance levels
3. Use the **CHROMA LIMITER** button to set the chrominance to the following conditions:
  - PEAK** — keeps the chrominance between 100% chroma saturation levels
  - OFF** — allows chrominance levels to vary between the full legal D1 limits

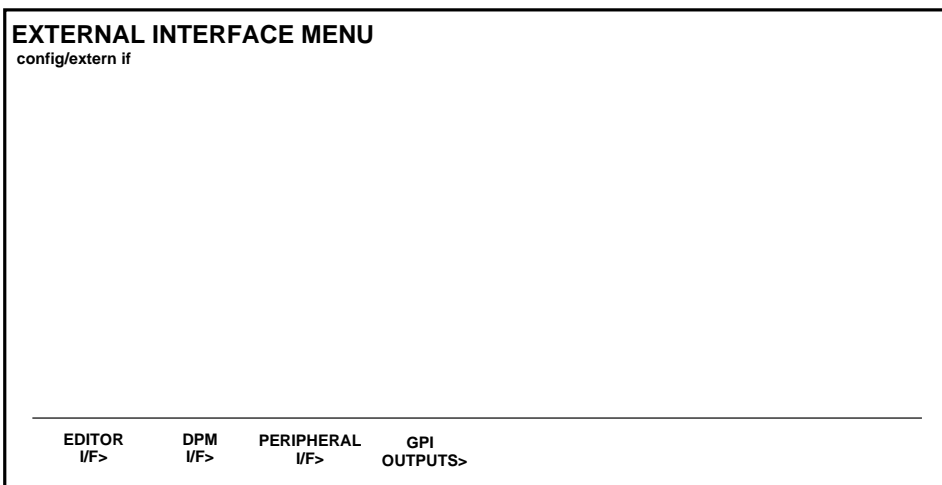
Press **EXIT** to return to the Configuration menu.



## External Interface Menu

From the Configuration menu, select **EXTERN I/F>** to bring up the External Interface menu:

Parameters for external interfaces such as the editor, GPI, DPM interfaces, and other peripheral interfaces can be set through the External Interfaces menu.



Press the **EDITOR I/F>** button to advance to the Editor Interface menu.

Press the **DPM I/F>** button to advance to the DPM Interface menu.

Press the **PERIPH I/F>** button to advance to the Peripheral Interface menu.

Press the **GPI Outputs>** button to advance to the GPI Outputs menu.

Press **exit** to return to the Configuration menu.

### Editor Interface Menu

From the External Interface menu press the **EDITOR I/F>** button to select the Editor Interface menu:

**EDITOR INTERFACE MENU**  
config/extern if editor if

2400	
4800	
9600	<b>ODD</b>
19200	EVEN
<b>38400</b>	NONE

BAUD      PARITY

1. Select the desired switcher editor port BAUD rate with the **BAUD** button. The choices are listed below:
  - 2400
  - 4800
  - 9600
  - 19200
  - 38400 (Typical setting for Grass Valley editors.)
2. Select the desired parity for the switcher editor port with the **PARITY** button. The choices are listed below:
  - ODD (Typical setting for Grass Valley editors.)
  - EVEN
  - NONE

Press the **EXIT** button to return to the External Interface menu.

## DPM Setup Menu

From the External Interface Menu, press **DPM I/F>** to bring up the DPM Setup Menu.

The DPM type, aux bus control, channel routing selection, effects send delay, and control delay for each of (up to) four DPM devices is indicated in the table in the display. The menu displayed references a Model 2200-2i integrated DPM system.

<b>DPM SETUP MENU</b>						EFF SEND DELAY = 5 fields
config / extern if / dpm setup						
			EFF SEND DELAY	CONTROL DELAY	E-MEM LEVELS	
DEVICE 1	INTERNAL	BOTH	5	6	CHAN 1, CHAN 2, GLOBAL and CAMERA	
DEVICE 2	NONE	OFF	2	0	DPM 2	
DEVICE 3	NONE	OFF	2	0	none (no E-MEM control)	
DEVICE 4	NONE	OFF	2	0	none (no E-MEM control)	
<b>WARNING: Changing DPM TYPE may change channel routing, control devices and aux bus mapping.</b>						CONTROL DELAY = 6 fields
	KSCOPE					
	KRYSTAL	SWR IN				
	OTHER	SWR OUT				
	NONE	BOTH				
DEVICE 1	INTERNAL	OFF				
DEVICE SELECT	DPM TYPE	CHANNEL ROUTING			DPM MAP AUX BUSES >	DPM MAP INPUTS >

**NOTE:** For information on assigning aux buses to DPMs, be sure to read “DPM Configurations” in the Startup section of the Model 2200 User Guide.

### For Kaleidoscope:

1. Set the **DPM TYPE** to **KSCOPE**.
2. Turn the **EFF SEND DELAY** soft knob to select **2 fields**. It is important that this delay be set correctly.

3. Set the **CONTROL DELAY** to **6 fields**
4. **PORT ASSIGN** is set automatically to **PORT A1**. The baud rate for Port A1 is fixed at 307 Kbaud.
5. Set **CHANNEL ROUTING** for **BOTH** or **SWR IN**, depending upon your system configuration, as described in “DPM Configurations” in the *Model 2200 User Guide*.
6. Press the CPU Reset button through the hole in the door of the switcher frame.

Communication should now be established between the Model 2200 and Krystal.

### For Krystal:

1. Set the **DPM TYPE** to **KRYSTAL**. The values denoted in Steps 2 through 4 are set automatically.
2. Turn the **EFF SEND DELAY** soft knob to select **5 fields**. It is important to set this delay correctly.
3. Turn the **CONTROL DELAY** soft knob to select **6 fields**.
4. **PORT ASSIGN** is set automatically to **PORT A1**. The baud rate for Port A1 is fixed at 307 K baud.
5. Set **CHANNEL ROUTING** for **BOTH** or **SWR IN**, depending upon your system configuration, as described previously under “DPM Configurations.”
6. Reset the Control Processor in the Model 2200 Signal Processor frame. This is done by opening the front door of the Processor and pressing the **RESET** button located near the top of the Control Processor module.

Communication should now be established between the Model 2200 and Krystal.

**For a DPM-700:**

1. Set the **DPM TYPE** to **OTHER FIXED**.
2. Turn the **EFF SEND DELAY** soft knob to select 2 fields. It is important that this be set correctly.  
The **CONTROL DELAY** soft knob has no effect with the DPM-700.
3. Set **PORT ASSIGN** to **NONE**.
4. Set **CHANNEL ROUTING** to **OFF**.

**For devices which must be set up manually:**

1. Program all other required parameters
2. Set **EFF SEND DELAY** to 0
3. Select **BLACK** on the Aux Bus feeding the external device

---

**NOTE:** A delay has been introduced when changing **DPM TYPE**. This delay allows a new **DPM TYPE** to be chosen without cycling through intermediate **DPM Types**. Once the desired solution has been made, the new **DPM TYPE** will be set 2 seconds later.

---

4. Turn the M/E Effects Send button on and off and look for a flash of the wrong video (**BLACK**) as Effects Send is turned on. (The flash will appear on the M/E output for the Effects Send you selected.)
5. Increase the **EFF SEND DELAY** one field at a time until there is no video flash when turning on Effects Send.

---

**NOTE:** Increasing the **EFF SEND DELAY** any further will not change the Effects Send appearance. It will, however, delay the entry into Effects Send unnecessarily.

---

### DPM K'SCOPE Sources Menu

The DPM K'Scope Sources Menu, shown below, allows you to map Kaleidoscope video source crosspoints to your switcher video source crosspoints. The first time you use this menu you must set user defaults. After setting defaults you can map crosspoints as required.

Map Kaleidoscope video source crosspoints as follows:

1. From the DPM Setup Menu, press **DPM K'SCOPE SOURCES>** to access the DPM K'Scope Sources Menu.
2. Push **SET DEFAULTS** to set user defaults.
3. Scroll the menu table selection fields with the **K'SCOPE BUTTON** soft knob. Highlight the K'Scope button number you want to map.
4. Use the **SWITCHER BUTTON** soft knob to set the desired switcher video source crosspoint to the Kaleidoscope video source crosspoint

**DPM K'SCOPE SOURCES MENU**  
config/extern if/dpm setup/dpm k'scope sources

K'SCOPE BTN	SWR BTN	K'SCOPE BTN	SWR BTN	K'SCOPE BTN	SWR BTN
0	1	11	12	22	23
1	2	12	13	23	24
2	3	13	14	24	S/1
3	4	14	15	25	S/2
4	5	15	16	26	S/3
5	6	16	17	27	S/4
6	7	17	18	28	S/5
7	8	18	19	29	ME/1
8	9	19	20	30	ME/2
9	10	20	21	31	PGM
10	11	21	22		

DIAL IN SWITCHER XPT BUTTON FOR K'SCOPE SOURCE BUTTON

K'SCOPE BUTTON =

SWITCHER BUTTON =

---

SET DEFAULTS

### DPM Map Aux Buses Menu

From the DPM Setup menu, press **DPM MAP AUX BUSES>** to access the DPM Map Aux Buses menu:

## DPM MAP AUX BUSES MENU

config/extern if/dpm setup/dpm map aux buses

NUMBER OF CHANNELS  
= 2

Connection of physical AUX buses  
to physical channels

MISC	AUX 4	AUX 5	AUX 8	-	-	-	-	-
	CHAN 1	CHAN 2	CHAN 3	CHAN 4	CHAN 5	CHAN 6	CHAN 7	CHAN 8
DPM 1	AUX 1	AUX 2	AUX 3	-	-	-	-	-
DPM 2	AUX 6	AUX 7	-	-	-	-	-	-
DPM 3	-	-	-	-	-	-	-	-
DPM 4	-	-	-	-	-	-	-	-

CHANNEL 1  
= AUX 6

DPM 2

---

DEVICE  
SELECT

The Aux bus-to-device assignment for each DPM device is shown in the table in the display.

1. Select the desired device by pressing the **DEVICE SELECT** button
2. For Kaleidoscope, rotate the **NUMBER OF CHANNELS** knob, assigning aux buses 1 through n to this device number. Note that a Kaleidoscope device (or other poolable DPM) does not allow you to select a starting aux bus number other than aux bus 1, and that all aux buses assigned to this Kaleidoscope must be in consecutive order.

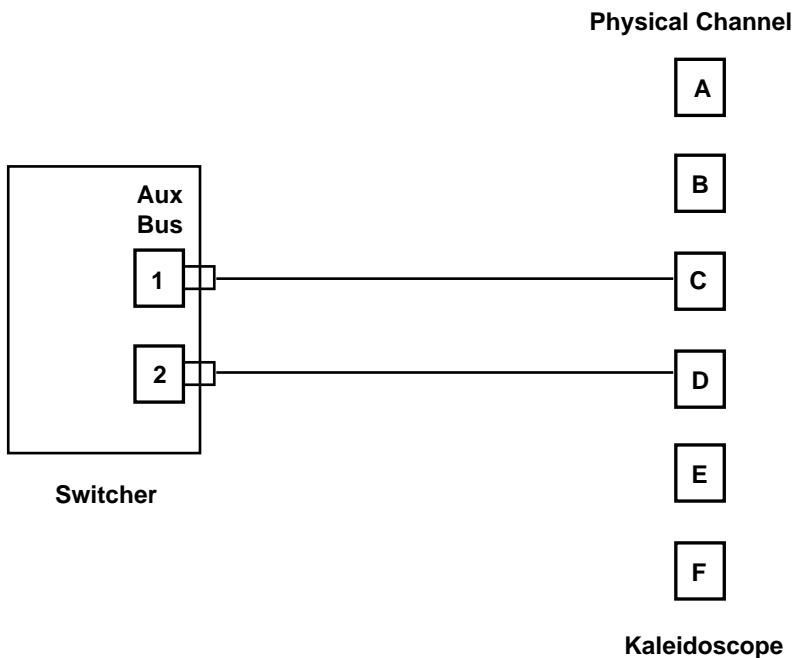
3. For DPM 100 or 700 set the **NUMBER OF CHANNELS** and **CHANNEL 1=** soft knobs as appropriate for your installation.

Assigning an aux bus to a DPM level saves the parameters under the DPM level rather than the MISC level for E-MEM operations.

### Kaleidoscope Connection Examples

Some examples of connecting switcher(s) to Kaleidoscope are described next. See examples 1 and 2 below.

#### Example 1: Switcher-to-Kaleidoscope Configuration



**Figure 3-3. Switcher-to-Kaleidoscope Cabling**



Example 2: Two Switchers-to-1 Kaleidoscope Configuration

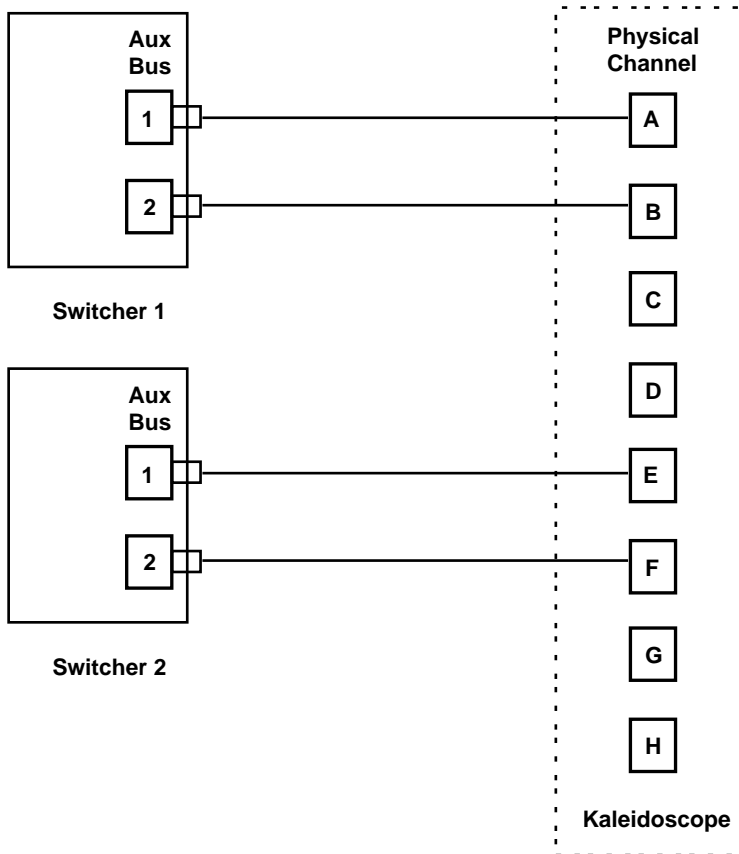


Figure 3-4. Switcher-to-Kaleidoscope Cabling

## Section 3 — Menu Descriptions

The following menu shows how you might set up the DPM Map Aux Buses Menu for use with Kaleidoscope.

<b>DPM MAP AUX BUSES MENU</b>									NUMBER OF CHANNELS = 4
config/extern if/dpm setup/dpm map aux buses									
Connection of physical AUX buses to physical channels									FIRST CHANNEL = CHAN E
MISC	AUX 5	AUX 6	AUX 7	-	-	-	-	-	
PHYS CHAN	CHAN A	CHAN B	CHAN C	CHAN D	CHAN E	CHAN F	CHAN G	CHAN H	
<b>DPM 1</b>					<b>AUX 1</b>	<b>AUX 2</b>	<b>AUX 3</b>	<b>AUX 4</b>	
DPM 2	-	-	-	-	-	-	-	-	
DPM 3	-	-	-	-	-	-	-	-	
DPM 4	-	-	-	-	-	-	-	-	

**DPM 1**

---

DEVICE  
SELECT

Press the **EXIT** button to return to the DPM Setup menu.

## DPM Map Inputs Menu

From the DPM Setup menu, press **DPM MAP INPUTS>** to bring up the DPM Map Inputs menu.

**DPM MAP INPUTS MENU** VIDEO INPUT = 19

config/extern if/dpm setup/dpm map inputs

	PHYSICAL	LOGICAL	VIDEO INPUT	KEY INPUT
DPM 2	CHAN 1-PRI		6	23
	CHAN 2		19	42
	CHAN 3		29	63
	CHAN 4		-	-
	CHAN 5		-	-
	CHAN 6		-	-
	CHAN 7		-	-
	SECONDARY		-	-

KEY INPUT = 42

DPM 1	
DPM 2	
DPM 3	
DPM 4	CHAN 2

---

DPM  
SELECT

CHANNEL  
SELECT

Set up the Kaleidoscope video and key return input numbers as follows:

1. Select the desired device (1 through 4) by pressing the **DPM SELECT** button.
2. Select the desired DPM channel by pressing the **CHANNEL SELECT** button.

3. Use the **VIDEO INPUT** knob to assign an input (1 - 32) to the Model 2200 physical channel to which the Kaleidoscope physical channel video return is connected.
4. Use the **KEY INPUT** knob to assign an input (1 - 32) to the Model 2200 physical channel to which the Kaleidoscope physical channel video return is connected.
5. Set up the aux bus format as described under the Aux Bus Format heading later in this section. Make sure that any aux buses assigned to Kaleidoscope are configured for **KEY** operation of their B aux buses.

---

**NOTE:** *It is not necessary to set the format for aux buses that are to be used for Effects Send. When Effects Send is selected, the B bus of each selected aux bus is automatically configured as a key.*

---

6. Press the **exit** button to return to the DPM Setup menu.
7. Press **EXIT** again to return to the External Interface menu.

### Mapping DPM Returns

Complete the DPM Setup by assigning the DPM channel returns.

1. Bring up the Map Inputs menu by pressing the following buttons: **Mixer CONFIG, INPUTS>, MAP INPUTS>**
2. Press a crosspoint button on the M/E 2 B background bus to select the crosspoint whose input mapping is to be changed.
3. Select **LOG CHANNEL** with the **LOG/PHYS ASSIGNMENT** button.

**DPM MAP INPUTS MENU** VIDEO INPUT = 19

config/extern if/dpm setup/dpm map inputs

	PHYSICAL	LOGICAL	VIDEO INPUT	KEY INPUT
DPM 2	CHAN 1-PRI		6	23
	CHAN 2		19	42
	CHAN 3		29	63
	CHAN 4		-	-
	CHAN 5		-	-
	CHAN 6		-	-
	CHAN 7		-	-
	SECONDARY		-	-

KEY INPUT = 42

DPM 1
DPM 2
DPM 3
DPM 4

CHAN 2
--------

---

DPM SELECT
CHANNEL SELECT

4. Rotate the **VIDEO INPUT** knob to assign the desired DPM number and logical channel for this crosspoint. For example, assign logical channel 1 of DPM 1 by selecting **DPM 1 LOG CHAN 1**.
5. Rotate the **KEY INPUT** knob to assign the desired DPM number and logical channel for this crosspoint. For example, assign logical channel 1 of DPM 1 by selecting **DPM 1 LOG CHAN 1**.

Press the **CONFG** button to return to the Configuration menu.

### Peripheral Interface Menu

From the External Interface menu press **Peripheral If/>** to bring up the Peripheral Interface menu.

The Peripheral Interface Bus allows communications with external devices such as a GVG DPM 700 using Peripheral Bus II protocol. This menu indicates the settings of the baud and parity for the Peripheral PORT A3 on the Expanded Communications Module on the back of the frame.

PERIPHERAL INTERFACE MENU	
config/extern if/peripheral if	
<b>NOTE:</b> The Peripheral Bus port is labelled "Port A3" on the rear of the frame electronics.	
2400	
4800	
9600	<b>ODD</b>
19200	<b>EVEN</b>
<b>38400</b>	<b>NONE</b>
<b>BAUD</b>	<b>PARITY</b>
<b>PERIPHERAL TRIGGERS&gt;</b>	

1. Select the desired switcher peripheral port BAUD rate with the **BAUD** button. (For a DPM-700 set the baud rate to 38400 and parity to NONE.) The choices are listed below:
  - 2400
  - 4800
  - 9600
  - 19200
  - 38400
  
2. Select the desired parity for the switcher peripheral port with the **PARITY** button. The choices are listed below:
  - ODD
  - EVEN
  - NONE

From the **PERIPHERAL I/F** menu select the **PERIPHERAL TRIGGERS>** button.

### Peripheral Triggers Menu

From the Peripheral Interface menu, press **PERIPHERAL TRIGGERS>** to open the Peripheral Triggers menu.

**PERIPHERAL TRIGGERS MENU**  
 config/extern if/peripheral if/peripheral triggers

DEVICE NUMBER  
= 1

FUNCTION NUMBER  
= 4

<>LEVEL  
= DPM 1

	DEVICE NO.	FUNCTN NO.	LEVEL
A	1	1	-
B	1	4	DPM 1
C	1	0	0
D	15	1	-
E	-	-	-
F	0	2	-
G	17	1	-
H	3	15	-

B

---

TRIGGER SELECT
FIRE B

Use this menu to configure eight peripheral triggers for the switcher (designated A through H). Each trigger specifies what is to be done and is sent to a particular address (Device Number) on the Peripheral Bus. This menu also allows delegation of the trigger to the E-MEM level of misc or DPM 1 - DPM 4.

Once configured, these triggers can be learned into E-MEM effects (on the **MISc** or **dpm 1 - dpm 4** level) or fired directly from this menu (**FIRE n**. Refer to the Attach Peripheral Trigger Menu description in this manual for attaching peripheral triggers to E-MEM registers.

1. Increment **TRIGGER SELECT** to select the designator to be assigned (A through H).
2. Turn the **DEVICE NUMBER** soft knob to select the peripheral device to which that trigger will be sent.



3. Turn the **FUNCTION NUMBER** soft knob to select the device function that will be triggered by a trigger message on the Peripheral II bus.

The device functions for a DPM 700 depend on whether the DPM is operating in trigger mode, or E-MEM recall mode, as listed in [Table 3-2](#).

***Table 3-2. . DPM 700 Functions***

Trigger	DPM Trigger Function	DPM E-MEM Recall
0	Function not defined	Not valid
1	STOP	DPM RECALL REGISTER 1
2	RUN	DPM RECALL REGISTER 2
3	NEXT KEYFRAME	DPM RECALL REGISTER 3
4	PREVIOUS KEYFRAME	DPM RECALL REGISTER 4
5	STOP NEXT	DPM RECALL REGISTER 5
6	REVERSE	DPM RECALL REGISTER 6
7	REWIND	DPM RECALL REGISTER 7
8	KEYER AUTO-TRANS	DPM RECALL REGISTER 8
9	KEYER CUT	DPM RECALL REGISTER 9
10	FADE TO BLACK AUTO-TRANS	DPM RECALL REGISTER 10
11	FADE TO BLACK CUT	DPM RECALL REGISTER 11
12	COMBINER AUTO-TRANS	DPM RECALL REGISTER 12
13	COMBINER CUT	DPM RECALL REGISTER 13
14	Function not defined	DPM RECALL REGISTER 14
15	Function not defined	DPM RECALL REGISTER 15

- Turn the **Level** soft knob to select which E-MEM level will activate this trigger.

Press **EXIT** to return to the Peripheral Interface menu.

Press **EXIT** again to return to the External Interface menu.

### GPI Outputs Menu

From the External Interface menu press **GPI Outputs** to bring up the GPI Outputs menu.

The GPI Outputs menu allows you to set which E-MEM Level each of the GPIs is assigned. The default condition is Misc. There is also provision for setting the length of the GPI signal.

#### GPI OUTPUTS MENU

config / external if / gpi outputs

OFF
GPI 1
GPI 2
GPI 3
GPI 4
GPI 5
GPI 6
GPI 7
GPI 8

PGM CUT TRIGGER

	LEVEL	LENGTH
1	MISC	1
2	MISC	1
3	MISC	1
4	MISC	1
5	MISC	1
6	MISC	1
7	MISC	1
8	MISC	1

MISC
DPM 1
DPM 2
DPM 3
DPM 4

7
---

LENGTH  
= 1 Field

SELECT GPI
E-MEM LEVEL

- Select a GPI by pressing the **Select GPI** Button until the desired GPI number shows up in the window.
- Select the E-MEM level by pressing the **E-MEM Level** Button until the desired E-MEM Level is highlighted.
- Turn the **Length** knob to select the required GPI duration.

4. Repeat for other GPIs.

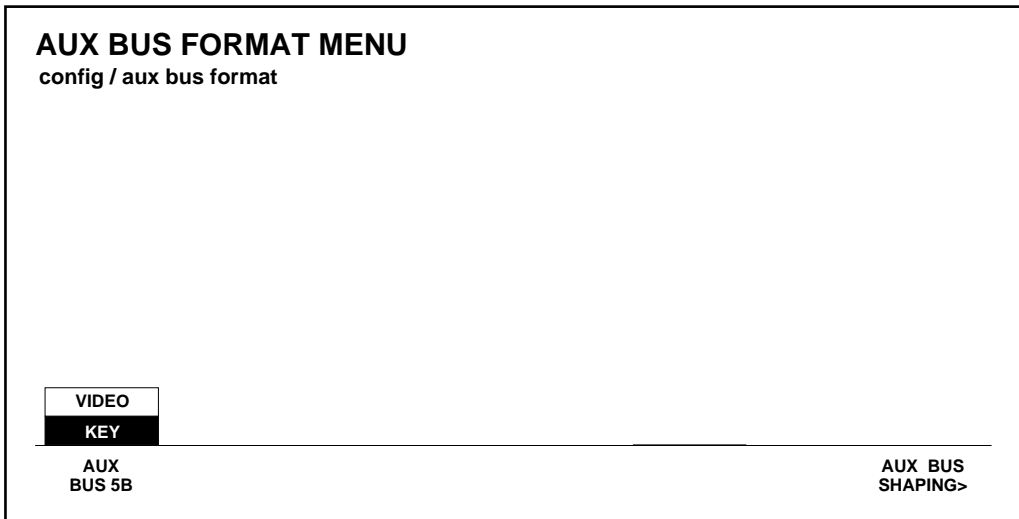
Press **Exit** to return the the External Interface Menu

Press **Exit** to return the the Configuration Menu

## Aux Bus Format Menu

From the Configuration menu, press the **AUX BUS FORMAT>** button to display the Aux Bus Format menu:

There are five pairs of Aux Buses in the Model 2200, designated A1 through A5, and B1 through B5. Aux pairs one through four are not configurable (video/key only). Aux bus pair five can be configured as video/video or video/key signals. In addition, Aux buses 1-4 (A and B) may be configured for either shaped or unshaped video output.



The selection above the **AUX BUS** button indicates the format selected for the corresponding B bus.

1. For the “5B” bus, select either *VIDEO* or *KEY* with the appropriate soft button.
2. Press the **AUX BUS SHAPING>** button to select the Aux Bus Shaping menu.

Press **EXIT** to return to the Peripheral Interface menu.

### Aux Bus Shaping Menu

From the Aux Bus Format menu, press the **AUX BUS Shaping>** button to display the Aux Bus Shaping menu.

The Aux Bus Shaping Menu allows you to select the output configuration to be *always shaped* or *always unshaped* on aux buses one and two. Thus the configuration should be set according to the input needs of the external device connected to the aux bus. The switcher then internally decides whether to turn on shaping or unshaping circuitry according to the nature of the video/key pair feeding the aux bus.

---

**NOTE:** *The output shaped/unshaped selections for the Aux Buses apply only to the Aux 1 and Aux 2 outputs and only if the Effects Send option is present. Without the circuitry on the Effects Send module, the aux bus outputs simply pass whatever signal is present—either shaped or unshaped.*

---

1. Press the **PHYS AUX SELECT** button to select the physical aux bus to be used in the effects send loop.
2. Set the **VIDEO/KEY FMT** selections for Aux Buses 1 and 2 to match the characteristic **SHAPED** or **UNSHAPED** expected by the external devices connected to those outputs. These settings control the states of the shapers and unshapers on the Aux Bus outputs.

**AUX BUS SHAPING MENU**  
 config / aux bus format / aux bus shaping

PHYSICAL	LOGICAL	
AUX BUS 1	AUX BUS 1	ON
AUX BUS 2	AUX BUS 2	OFF
AUX BUS 3	AUX BUS 3	OFF
AUX BUS 4	AUX BUS 4	OFF

AUX BUS 1	ON
	OFF

---

PHYS AUX SELECT                      UNSHAPER

1. Press the **PHYS AUX SELECT** button to select the physical aux bus to be used.
2. With the **UNSHAPER** button, select the format of the video output on the aux bus to match the input requirements of the device that is to use the signal: **ON** if the video is already shaped but the external device needs a full screen-sized picture, or **OFF** if the device can accept video that has already been processed by a key signal.

The **LOGICAL** column indicates the logical aux bus being used. This may be different from the physical aux bus when the Model 2200 is connected to a Kaleidoscope or other DPM that is able to control the aux buses. (This column is informational only. You can not change it from this menu.)

---

**NOTE:** *Since the process of unshaping the video signal results in dividing the video signal by its key, level errors, especially around black, may produce extreme signal levels where the key is at or near zero. Kaleidoscope ignores these extraneous signals, but they may cause problems with external sync separators or clamps. Therefore, it is recommended that connections to Kaleidoscope inputs be made directly from the 2200 Aux Bus outputs.*

---

When the Effects Send option is not present, the **VIDEO/KEY FMT** selections are not visible in the menu.

This is the end of the Configuration menu and the end of the switcher setup. The following menus are used by the operators to operate the switcher.

## M/E Mode Menu

Press the **M/E Mode** button at the left of the panel to display the M/E Mode menu. Use the M/E Mode menu to select Standard or Layered mode, and to turn Full Additive Mix mode on or off on an M/E-by-M/E basis.

**M/E MODE MENU**  
me mode

		KEY 1 OPACITY = 100.00%
M/E 1	STANDARD	
M/E 2	LAYERED	
M/E 1	OFF	KEY 2 OPACITY = 100.00%
M/E 2	ON	
		KEY A OPACITY = 100.00%
M/E 1	LAYERED	
M/E 2	STANDARD	
M/E 1	ON	KEY B OPACITY = 100.00%
M/E 2	OFF	
M/E SELECT	M/E MODE	FULL ADD MIX
		M/E COPY >

The following menu selections are accessible through the M/E Mode menu:

**M/E SELECT** — Selects the M/E system to be adjusted.

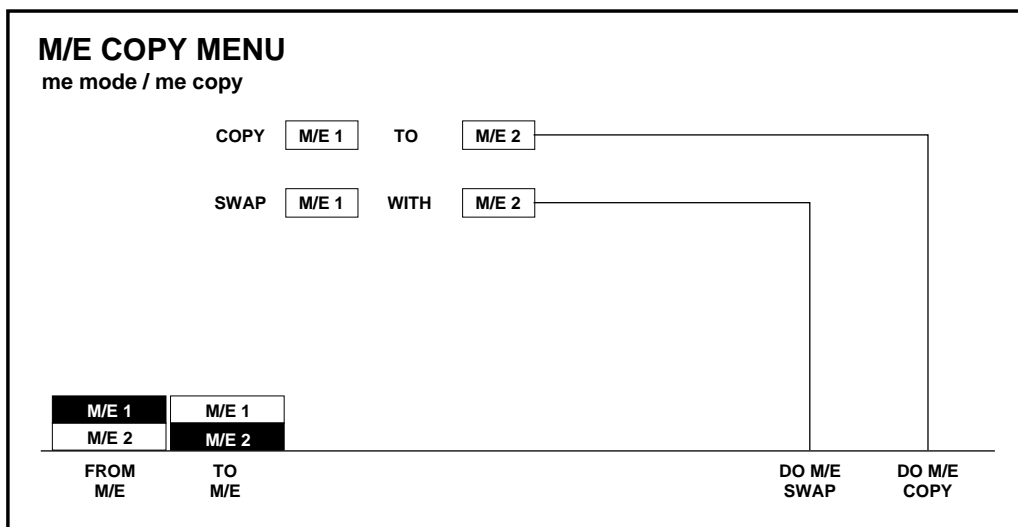
**M/E MODE** — Sets the selected M/E to either Layered mode or Standard mode. In Layered mode, the A and B buses function as keyers rather than background buses. In Standard mode, the A and B buses function as background buses.

**FULL ADD MIX** — Enables or disables the FAM mode when in Layered mode. When FAM is on, the opacity of each layer is adjustable with a soft knob.

**M/E COPY>** — Opens the M/E Copy menu.

## M/E Copy Menu

From the M/E Mode menu, press the **M/E copy>** button to display the M/E Copy menu. This menu allows you to copy or swap all M/E settings between M/Es.



The M/E Copy menu selections are:

**FROM M/E** — Selects the M/E system to copy or swap from.

**TO M/E** — Selects the M/E system to copy or swap to.

**DO M/E SWAP** — Initiates the M/E swap currently selected.

**DO M/E COPY** — Initiates the M/E copy currently selected.

---

**NOTE:** An **UNDO** function appears in the menu after a Copy or Swap operation has been initiated. The Undo must be performed before exiting the menu in order to take effect.

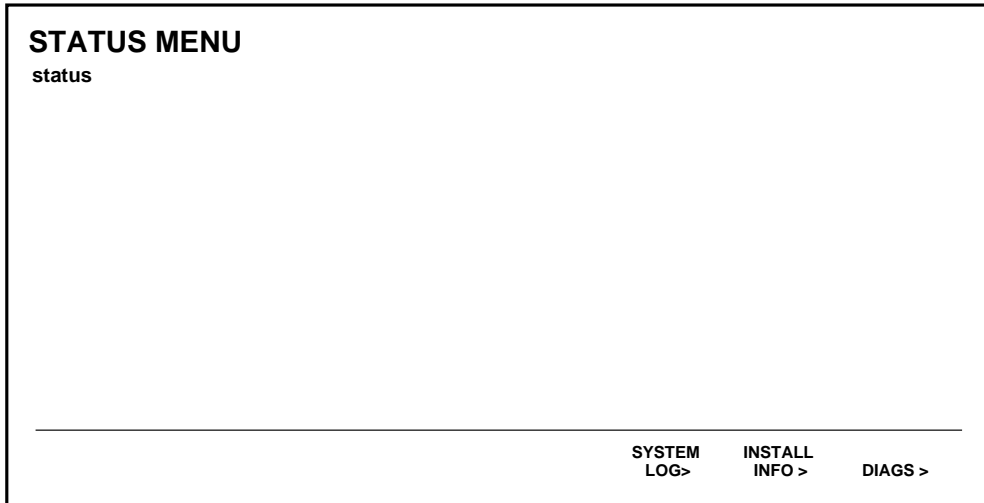
---

Press **exit** to return to the M/E Mode menu.



## Status Menu

Press the **Status** button at the left of the panel to display the Status menu. Use the Status menu to get information about the current software version number.



The Status menu selections are:

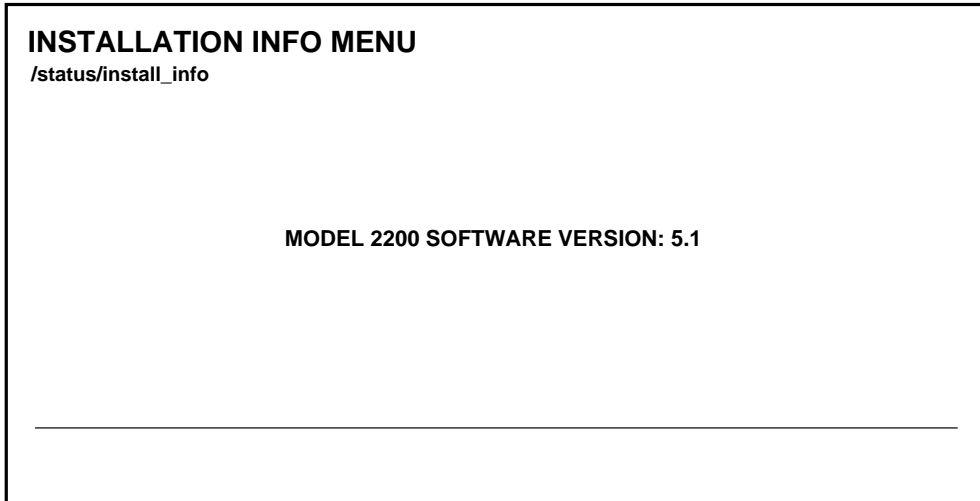
**System Log>** — Opens the log of system errors.

**INSTALL INFO >** — Opens the Install Info Status menu, which displays the version of the software installed.

**DIAGS >** — Opens the Diagnostics menu. This menu is not installed at this time.

### Installation Information Menu

From the Status menu select **install info>** to see the currently installed switcher software.



Press **exit** to return to the Status menu.

## System Log Menu

The system log is intended mainly for use by GVG personnel for fault identification. GVG may ask customers to search the log for a specific message, or ask customers to read back the last few messages. This information can help in isolating a fault or discovering a software bug.

The contents of the system log *do not* necessarily indicate a problem with the switcher. Routine information and warning messages normally appear in the log. Normally, switcher operation is not affected by events that generate log messages.

The log can contain messages from before a system reset or power up. This may allow GVG personnel to debug a problem if an error was logged prior to the system locking up.

Each time the system is reset, a special message is entered in the log indicating the time of the reset. These messages tend to separate sections of the log.

**SYSTEM LOG MENU**

----- MESSAGE LOG CLEARED BY USER AT 15:57:24 ON JAN 5 1995

SCROLL

---

PAGE UP	PAGE DOWN	FIRST PAGE	LAST PAGE	LAST RESET	CLEAR LOG
------------	--------------	---------------	--------------	---------------	--------------

The System Log menu selections are:

The **PAGE UP** and **PAGE D OWN** buttons allow you to scroll up and down the log on page at a time.

**PAGE UP,PAGE DOWN, FIRST PAGE, LAST PAGE** — Use these page scrolling buttons as required to view the desired messages.

If you press the **FIRST PAGE** button, the beginning of the log displays.

If you press the **LAST PAGE** button, the most recently logged messages will display. This is often the most useful button to press for fault determination. (This button is not available when you are already displaying the last page.)

The **SCROLL** soft knob allows you to scroll up or down the screen one line at a time.

**CLEAR LOG** — Erase all current error messages.

The **LAST RESET** button (System Log Menu) brings the first message after the last system power up or reset to the top of the display.

There may be no **SYSTEM RESET** message in the log because:

Someone cleared the log (**CLEAR LOG** button). In this case, a “MESSAGE LOG CLEARED BY USER AT...” message will be the first entry in the log.

The message log overflowed. Only the most recent messages are retained if an overflow occurs, so the **SYSTEM RESET** message may not be present.

## Keyer Menu

Press the **keyer** button to select the Keyer menu. This menu is used to make key characteristic adjustments that are not available on the control panel. The statuses of these characteristics are displayed on each key bus of the selected M/E. (Only Key 1 and Key 2 are shown when in Standard mode.)

### KEYER MENU

keyer

M/E 1	KEY 1	OFF
	KEY 2	AUTO
	KEY A	AUTO
	KEY B	AUTO

M/E 1
M/E 2

KEY 1
KEY 2

ON
OFF
AUTO

OPACITY  
= 100.00%

HORIZ KEY POSITION  
= 0.00 clocks

M/E SELECT
KEYER SELECT
SHAPING
KEYER COPY >
CALIBRATE
VIDEO PROCESS >
KEY 1 NAM >

The following selections are accessible through the Keyer menu:

**M/E SELECT** — Selects the M/E to be adjusted.

**KEYER SELECT** — Selects the keyer to be adjusted.

**SHAPING** — Forces shaped **ON** or unshaped **OFF** video for the selected key bus, regardless of the current Configuration menu setting, or allows the current Configuration setting to apply **AUTO**.

**OPACITY** — Adjusts the opacity of the selected key.

**HORIZ KEY POSITION** — Adjusts the horizontal position of the selected key.

**KEYER COPY>** — Opens the Keyer Copy menu to allow keyer parameters to be copied from one keyer to another.

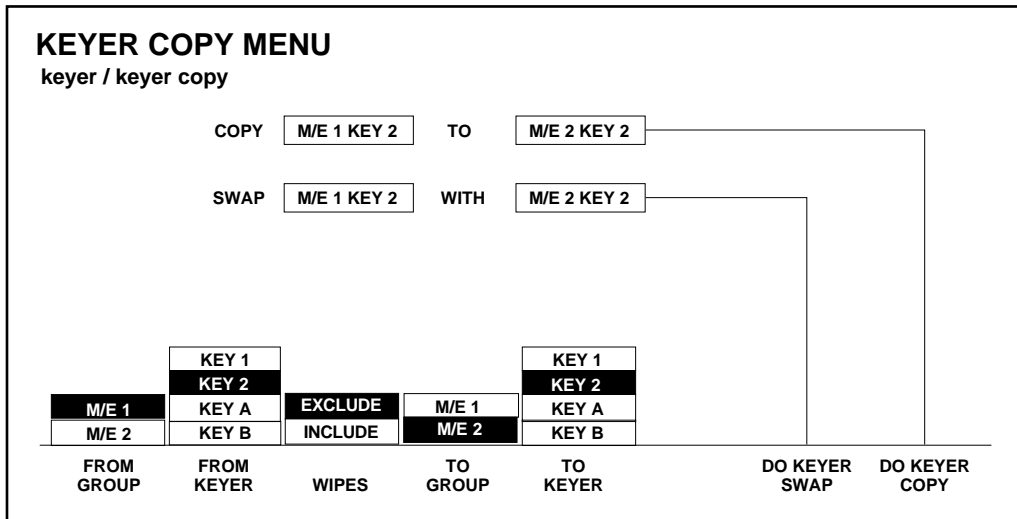
**CALIBRATE** — Resets all functions that turn on the Source Select **UNCAL** lamp to their default values (includes **CORING** and **OPACITY**).

**VIDEO PROCESS>** — Opens the Video Process menu, which allows adjustment of the luminance gain, chroma gain, and DC offset for the individual key bus selected.

**KEY 1 NAM>** — Opens the Key 1 NAM menu, which allows non-additive mixing (NAMing) of Key 2 into Key 1 on the selected M/E

## Keyer Copy Menu

From the Keyer menu, press **keyer copy>** to select the Keyer Copy menu. This menu is used to copy keyer parameters from any keyer to another.



**FROM GROUP** and **FROM KEYS** — Select the Keyer whose setup parameters are to be copied.

**WIPES** — Allows you to include or exclude Wipe settings that may be associated with the selected keyers.

**TO GROUP** and **TO KEYS** — Select the destination Keyer that is to receive the copied keyer setup.

**DO KEYS SWAP** — Initiates the keyer Swap currently selected.

**DO KEYS COPY** — Initiates the keyer Copy currently selected.

**NOTE:** An **UNDO** function appears in the menu after a Copy or Swap operation has been initiated. The Undo must be performed before exiting the menu in order to take effect.

**NOTE:** If the destination Keyer has different parameters than the source Keyer, those parameters are set to default values in the destination Keyer.

Press **exit** to return to the Keyer menu.

### Video Process Menu

From the Keyer menu, press **video process>** to select the Video Process menu. This menu is used to adjust luminance gain, chroma gain, and D.C. offset for the selected bus.

<b>VIDEO PROCESS MENU</b>				LUM GAIN = 1.00
keyer / video process				
M/E 2	KEY 1	OFF	OFF	
	KEY 2	ON	ON	CHROMA GAIN = 1.00
	A	ON	OFF	
	B	OFF	ON	
				DC OFFSET = 0.00 IRE
M/E 1		ON	ON	
M/E 2	KEY 2	OFF	OFF	CORING = 7.50 IRE
M/E SELECT	BUS SELECT	VIDEO PROCESS	CORING	RESTORE DEFAULTS

The Video Process menu selections are:

**M/E SELECT** — Selects the M/E to be adjusted.

**BUS SELECT** — Selects the bus to be adjusted.



**VIDEO PROCESS** — Enables or disables the Video Processing adjustments listed below for the selected bus.

**LUM GAIN** — Sets luminance gain of the selected bus.

**CHROMA GAIN** — Sets chroma gain of the selected bus.

**DC OFFSET** — Sets D.C. offset of the selected bus.

**CORING** — Enables or disables the coring function for linear keys on the selected key bus (applies only to Key 1 and Key 2 buses in Standard mode and A and B buses in Layered mode).

**CORING** — Adjusts M/E background video in key area to ensure that video is fully removed.

**RESTORE DEFAULTS** — Restores default adjustments of the selected soft knob functions.

Press **exit** to return to the Keyer menu.

## **Key 1 NAM Menu**

From the Keyer menu, press **key 1 nam>** to select the Key 1 Nam menu. This menu is used for NAMing Key 2 into Key 1. NAM stands for Non-Additive Mix. Refer to to the Glossary in this manual for a NAM definition.

## KEY 1 NAM MENU

keyer / key 1 nam

M/E 1	KEY 1	ON
M/E 2	KEY 1	OFF

M/E 1
M/E 2

ON
OFF

---

M/E SELECT
NAM K2 INTO K1
RESTORE DEFAULTS

NAM SOFTNESS = 0%

NAM OFFSET = 50%

Selections in the Key 1 NAM menu are as follows:

**M/E SELECT** — Selects the M/E to be set.

**NAM K2 INTO K1** — Enables or disables NAMing Key 2 into Key 1.

When NAMing Key 2 into Key 1, Key 2 will be on the M/E output but not indicated by a key ON indicator. (The crosspoint button tally will be correct.)

**Restore Defaults** — Restores default conditions to selected M/E.

**NAM SOFTNESS** — Adjusts the video signal transition area between two video signals for the selected M/E.

**NAM OFFSET** — Set the transition level in the case where two or more video signals are present, the signal with the largest instantaneous amplitude is passed.

Press **exit** to return to the Keyer menu.

## Chroma Key Menu

Press the **Chroma key** button to select the Chroma Key menu. This menu is used to select and adjust a variety of chroma key parameters.

### CHROMA KEY MENU

/chrKey

FOREGROUND CORING  
= 7.50 IRE

ME 1 KEY 1	ON	ON	OFF
ME 1 KEY 2	ON	ON	FIXED
ME 2 KEY 1	ON	ON	VARIABLE
ME 2 KEY 2	ON	ON	OFF

SHADOW GAIN  
= 50%

SHADOW CLIP  
= 50%

	ON	ON	VARIABLE				
ME 2 KEY 1	OFF	OFF	FIXED				

---

CHR KEY SELECT

FOREGROUND VIDEO

BACKGROUND VIDEO

FOREGROUND CORING

SECONDARY COLOR >

HUE MODS >

KEY ADJUST >

SETUP >

The Chroma Key button selections are:

**CHR KEY SELECT** — Selects the M/E Keyer to be adjusted.

**FOREGROUND VIDEO** — Turns the foreground on and off. When off, the foreground image is replaced with black.

**BACKGROUND VIDEO** — Turns the background on and off. When on, the foreground image is a full raster image.

**FOREGROUND CORING** — Turns foreground coring on and off. Coring replaces the key area of the background with black to ensure a clean key when background and fill are additively keyed together.

**VARIABLE** provides a **FOREGROUND CORING** adjustment knob.

**FIXED** provides a factory default foreground coring level.

**OFF** must be selected to enable the Chroma Key panel **BKGD SUPR LUM** and **CHROMA** knobs.

**SHADOW GAIN** — May be used to adjust the clip level of the Chroma Key shadow after the function has been turned on by the **SHDW ON** button on the Chroma Keyers subpanel.

**SHADOW CLIP** — May be used to adjust the clip level of the Chroma Key shadow after the function has been turned on by the **SHDW ON** button on the Chroma Keyers subpanel.

**SECONDARY COLOR >** — Opens the Secondary Color menu. Adjust the secondary color suppression angle, secondary color selectivity, and secondary chroma suppression level.

**HUE MODS >** — Opens the Hue Modifications menu. Adjust the secondary hue angle, separate hue suppression, flare suppression, and flare suppression offset.

**KEY ADJUST >** — Opens the CK Key Adjust menu. Adjust the chroma key position, width, and key softness.

**SETUP >** — Opens the CK Setup menu. Chroma Key Auto Setup allows you to use the Positioner joystick to select the color to be suppressed.

## Chroma Key Secondary Color Menu

From the Chroma Key menu, press the **secondary color>** button to select the Secondary Color menu. This menu is used to select and adjust secondary color suppression angle, selectivity, chroma and luminance suppression level and fringe control.

**CK SECONDARY COLOR MENU**  
chr key/secondary color

SEC COLOR SUPPRESS ANGLE  
= 370.0 degrees  
(0.0 degrees CW from Primary)

SEC COLOR SUPPRESS SELECTIVITY  
= 50%

SEC CHROMA/LUM SUPPRESS LEVEL  
= 30%

FRINGE CONTROL  
= 30%

ME1 KEY 1	OFF
ME1 KEY2	ON
ME2 KEY1	ON
ME2 KEY 2	OFF

	ON	CHROMA
ME2 KEY1	OFF	LUMA

---

CHR KEY SELECT	SEC COLOR SUPPRESS	SUPPRESS MODE
-------------------	-----------------------	------------------

The CK Secondary Color menu selections are:

**CHR KEY SELECT** — Delegates the chroma keyer to be adjusted.

**SECONDARY COLOR SUPPRESS** — Enables or disables secondary color suppress and the following soft knobs:

**SEC COLOR SUPPRESS ANGLE** — Provides an offset adjustment to the primary chroma key hue setting.

**SEC COLOR SUPPRESS SELECTIVITY** — Adjusts selectivity of the chroma key hue control.

**SEC CHROMA/LUMA SUPPRESS LEVEL — CHROMA:**

Changes a second color in the foreground that may have been affected by the primary color suppression. For example, if the video set is a person with blond hair standing in front of a blue background, individual strands of the blond hair may appear bluish after suppressing the blue background. By adjusting the secondary chroma suppression level, you can adjust the hair color back to its normal blond. **LUMA:** Control the luma contribution of the background to the foreground part of the scene.

**FRINGE CONTROL** — Use to restore color to the gray portions of the foreground color resulting from adjustments to the **SEC CHROMA SUPPRESS LEVEL**.

**SUPPRESS MODE** — Suppresses either chroma or luma modes for the selected chroma key.

Press **exit** to return to the Chroma Key menu.

## Chroma Key Hue Modifiers Menu

From the Chroma Key menu, press the **hue mods>** button to select the Hue Modifiers menu. This menu is used to select and adjust hue selectivity and flare suppression.

**CK HUE MODIFIERS MENU**  
/chr\_key/hue\_mods

SEPARATE HUE SUPPRESS ANGLE  
= 127 degrees  
(150.5 degrees CCW from Primary)

FOREGROUND FLARE SUPPRESS  
= 75%

ME1 KEY 1	ON	ON	OFF
ME1 KEY2	OFF	ON	OFF
ME2 KEY1	ON	ON	HIGH
ME2 KEY 2	ON	ON	OFF

			HIGH
			MEDIUM
	ON	ON	LOW
ME2 KEY1	OFF	OFF	OFF

CHR KEY SELECT
SEP HUE SUPPRESS
FLARE SUPPRESS
FGD NOISE SUPPRESS

The CK Hue Modifiers menu selections are:

**CHR KEY SELECT** — Delegates the chroma keyer to be adjusted.

**SEP HUE SUPPRESS** — Enables or disables suppression of the selected hue from background and foreground. Also enables or disables the **SEPARATE HUE SUPPRESS** soft knob.

**SEPARATE HUE SUPPRESS** — Adjusts hue suppression applied to background and foreground.

**FLARE SUPPRESS** — Enables or disables suppression of the selected hue from the foreground. Also enables or disables the **FOREGROUND FLARE SUPPRESS** soft knob.

**FOREGROUND FLARE SUPPRESS** — Used to adjust the amount of foreground glare caused by a camera lens.

**FGD NOISE SUPPRESS** — Corrects for color impurities in video tape. For example, if you are keying out blue in your source tape and the white on the tape is blue-shifted, you will also key out the white. The offset suppression adjustment allows you to change the origin of the suppression space, so that the blue-shifted white is not included in the suppression.

Press **exit** to return to the Chroma Key menu.

### Chroma Key Adjust Menu

From the Chroma Key menu, press the **key adjust**> button to select the Key Adjust menu. This menu is used to adjust the chroma key horizontal position, key width, and softness.

**CK ADJUST MENU**  
/chr\_key/key\_adjust

**KEY WIDTH**  
= 1.0 CLOCKS  
(69.8 nsecs)

**KEY SOFTNESS**  
= 50%

**HORIZ KEY POSITION**  
= -2.0 CLOCKS  
(-139.6 nsec)

ME1 KEY1	ON	ON	ON	ON	ON
ME1 KEY2	ON	OFF	OFF	ON	OFF
ME2 KEY1	ON	ON	ON	ON	ON
ME2 KEY2	ON	ON	ON	ON	ON

	ON	ON	ON	ON	ON
ME2 KEY1	OFF	OFF	OFF	OFF	OFF

---

CHR KEY SELECT	KEY WIDTH	KEY SOFTNESS	KEY POSITION	FGD RESHAPE	KEY S-SHAPING
-------------------	--------------	-----------------	-----------------	----------------	------------------



Chroma Key Adjust menu selections are:

**CHR KEY SELECT** — Delegates the chroma keyer to be adjusted.

**KEY WIDTH** — Enables or disables the **KEY WIDTH** soft knob.

**KEY WIDTH** — Adjusts width of the chroma key.

**KEY SOFTNESS** — Enables or disables the **KEY SOFTNESS** soft knob.

**KEY SOFTNESS** — Use to adjust the foreground edges to the key cut into the background. When off, horizontal and vertical softness are forced to zero.

**KEY POSITION** — Enables or disables the **Horiz. Key Position** soft knob.

**HORIZ KEY POSITION** — Adjusts the horizontal position of the chroma key.

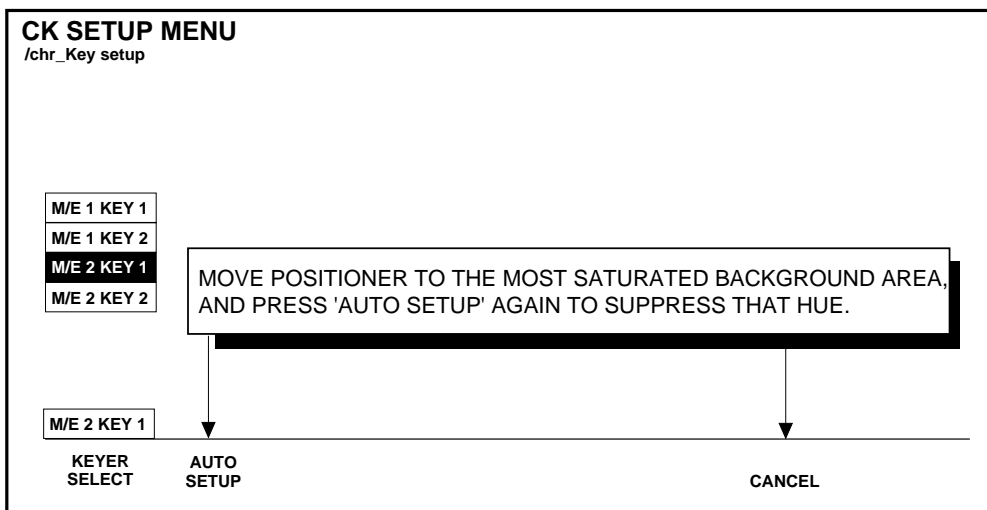
**FGD RESHAPING** — When **ON**, causes the shaped fill out of the chroma keyer to be multiplied by the key signal out of the chroma keyer. Depending upon the picture(s), **FGD RESHAPING** may improve the appearance of the chroma key.

**KEY S-SHAPING** — Enables an S-shape chroma compression function. Chroma compression helps remove slight transparencies in the foreground, and low-level noise in the background.

Press **exit** to return to the Chroma Key menu.

## Chroma Key Setup Menu

From the Chroma Key menu, press the **setup** button to select the Key Setup menu. This menu is used to select a chroma key suppress color from a chroma key signal. Use the Positioner joystick to position the cursor on the color to be suppressed.



The Chroma Key Setup menu selections are:

**KEYER SELECT** — Delegates the chroma keyer to setup.

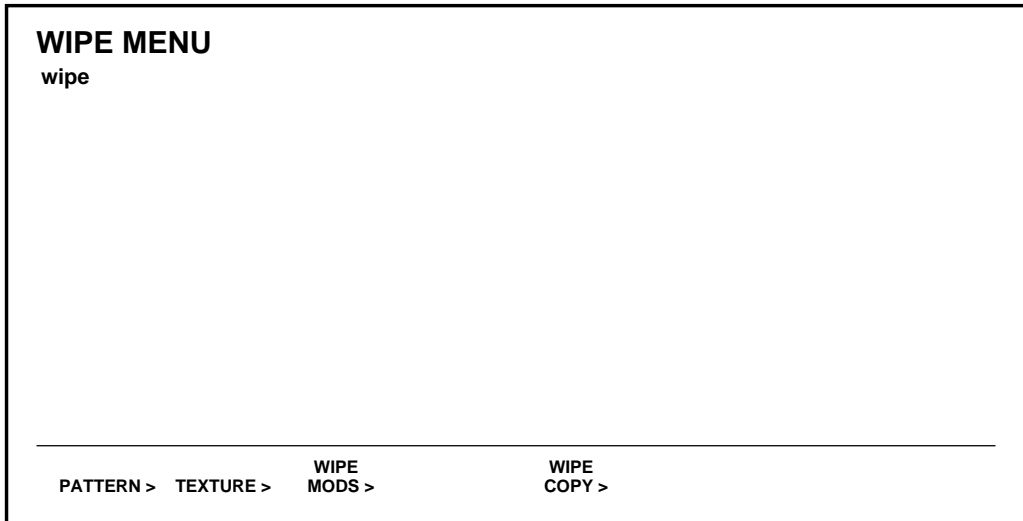
**AUTO SETUP** — Use to begin or complete an Auto Setup session. Auto Setup mode is entered after you press the Auto Setup button. In this mode, use the Positioner to move the cursor displayed on the Preview monitor. Place the cursor on the color to be suppressed, then press the **AUTO SETUP** button again to complete; or press **CANCEL** to abort. Auto Setup mode will also be aborted if you exit the menu, or if the delegated keyer is not of the type CHROMA KEY.

**CANCEL** — Use to abort an Auto Setup in progress.

Press **exit** to return to the Chroma Key menu.

## Wipe Menu

Press the **wipe** button to select the Wipe menu.



The following menu selections are accessible through the Wipe menu:

**PATTERN>** — Opens the Wipe Pattern menu.

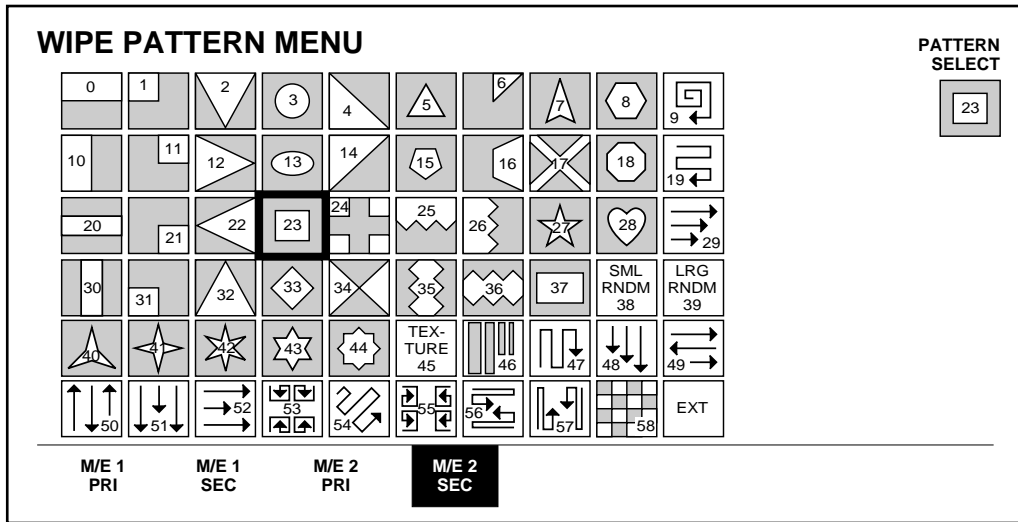
**TEXTURE>** — Opens the Wipe Texture menu.

**WIPE MODS>** — Opens the Wipe Modifiers menu.

**WIPE COPY>** — Opens the Wipe Copy menu.

## Wipe Pattern Menu

From the Wipe menu, press the **pattern>** button to select the Wipe Pattern menu. This menu is used to assign a variety of wipe patterns to a selected wipe generator.



**M/E 1 PRI** — Assigns the **PATTERN SELECT** soft knob to the M/E 1 Primary Wipe Generator.

**M/E 1 SEC** — Assigns the **PATTERN SELECT** soft knob to the M/E 1 Secondary Wipe Generator.

**M/E 2 PRI** — Assigns the **PATTERN SELECT** soft knob to the M/E 2 Primary Wipe Generator.

**M/E 2 SEC** — Assigns the **PATTERN SELECT** soft knob to the M/E 2 Secondary Wipe Generator.

**PATTERN SELECT** soft knob selects the pattern for the selected M/E.

**NOTE:** The **Menu** button in the wipe select area must be pressed for the selected pattern to be available to the M/E.

Press **exit** to return to the Wipe menu.

### Wipe Texture Menu

From the Wipe menu, press the **texture>** button to select the Wipe Texture menu. This menu is used to adjust the appearance of the video texture.

WIPE TEXTURE MENU							
wipe / texture							
M/E 1 PRI		1:1	2:1	NONE	3	1	6
M/E 1 SEC		1:1	FREE RUN	NOTCH	6	1	6
M/E 2 PRI		6:1	2:1	NOTCH	5	2	1
M/E 2 SEC		2:1	1:1	SMOOTHING	2	4	3

	1:1	1:1		1		1
	2:1	2:1		2		2
	3:1	4:1		3	1	3
	4:1	6:1	SMOOTHING	4	2	4
	6:1	8:1	NOTCH	5	3	5
M/E 2 PRI	8:1	FREE RUN	NONE	6	4	6

WIPE GEN SELECT	HORIZ STRETCH	VERT MODE	FILTER MODE	LENGTH A	LENGTH B	SOURCE
-----------------	---------------	-----------	-------------	----------	----------	--------

The Wipe Texture menu selections are as follows for the selected wipe generator:

**HORIZ STRETCH** — Selects one of the horizontal stretch ratios listed in the menu.

**VERT MODE** — Selects one of the vertical stretch ratios listed in the menu.

**FILTER MODE** — Selects one of the filtering modes listed in the menu.

**LENGTH A** — Selects one of the lengths listed in the menu.

**LENGTH B** — Selects one of the lengths listed in the menu.

**SOURCE** — Selects one of the sources listed.

Press **exit** to return to the Wipe menu.

### Wipe Modifiers Menu

From the Wipe menu, press the **wipe mods>** button to select the Wipe Modifiers menu. This menu is used to assign several different wipe modifiers to each wipe generator.

WIPE MODIFIERS MENU					SPLIT OFFSET = 0%
wipe / wipe mods					
ME 1 PRI	MIX	TEXTURE	ON	REVERSE	
ME 1 SEC	MIX	NORMAL	OFF	NORMAL	
ME 2 PRI	NAM -	NORMAL	ON	NORMAL	
ME 2 SEC	NAM+	TEXTURE	ON	REVERSE	

	NAM -				
	NAM+	TEXTURE	ON	REVERSE	
ME 2 PRI	MIX	NORMAL	OFF	NORMAL	
WIPE GEN SELECT	PTN MIX TYPE	PTN MIX SOURCE	SPLIT OFFSET	PST PTN DIRECTION	WIPE MODULATE >

The Wipe Modifiers menu selections are as follows for the selected wipe generator:

**WIPE GEN SELECT** — Selects the desired wipe generator.

**PTN MIX TYPE** — Selects the type of pattern mix.

**PTN MIX SOURCE** — Selects the pattern mix source.

**NORMAL** — Selects a mix between the primary and secondary wipe generators. This selection is prohibited if the secondary wipe option is not installed.

**TEXTURE** — Selects a mix between the texture pattern and the primary wipe generator.

**SPLIT OFFSET** button — Enables or disables the split wipe offset function.

**SPLIT OFFSET** soft knob — Adjusts the offset of split wipes.

**PST PTN DIRECTION** — Selects the direction of the preset pattern for the selected wipe generator.

**WIPE MODULATE>** — Opens the Wipe Modulation menu.

Press **exit** to return to the Wipe menu.

### Wipe Modulation Menu

From the Wipe Modifiers menu, press the **wipe modulate>}** button to select the Wipe Modulation menu. This menu is used to assign modulation characteristics to the wipe generators

.

### WIPE MODULATION MENU

wipe / wipe mods / wipe modulate

MODULATION AMPLITUDE  
= 50%

M/E 1 PRI	HORIZ	SINE
M/E 1 SEC	VERT	SINE
M/E 2 PRI	HORIZ	SINE
M/E 2 SEC	LOCK	TRIANGLE

MODULATION FREQUENCY  
= 0.50 cycles/screen

	LOCK	
	HORIZ	
	VERT	TRIANGLE
M/E 2 PRI	OFF	SINE

WIPE GEN  
SELECT

MODULATE

MODULATE  
WAVEFORM



The Wipe Modulation menu selections are as follows for the selected wipe generator:

**WIPE GEN SELECT** — Selects the desired wipe generator.

**MODULATE** — Turns wipe modulation **ON** or **OFF**. When **OFF**, no other buttons or knobs on this menu are available.

**MODULATE WAVEFORM** — Selects the modulation waveform, either **TRIANGLE** or **SINE**.

**MODULATION AMPLITUDE** — Adjusts the amplitude of the modulation signal.

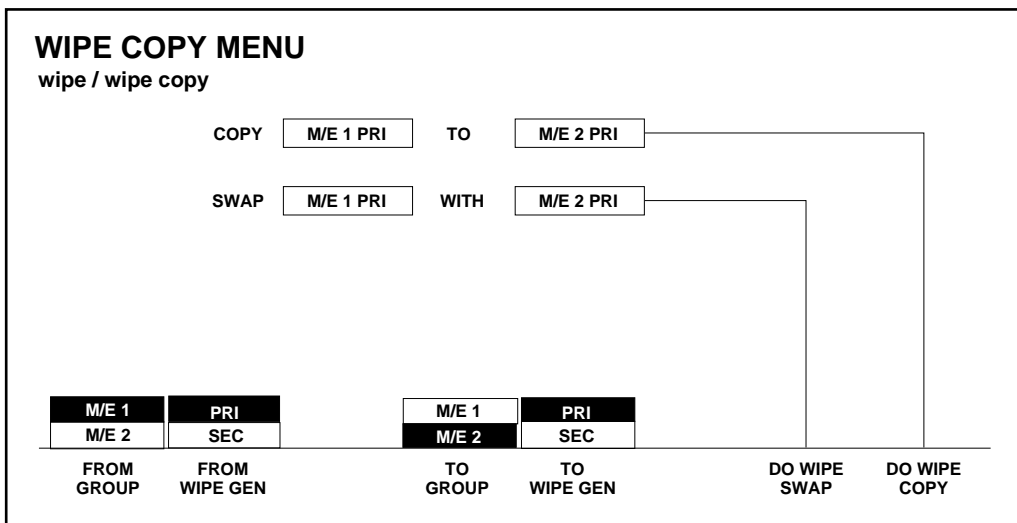
**MODULATION FREQUENCY** — Adjusts the frequency of the modulation signal.

Press **exit** to return to the Wipe Modifiers menu.

Press **exit** again to return to the Wipe menu.

## Wipe Copy Menu

From the Wipe menu, press the **wipe copy>** button to select the Wipe Copy menu. This menu is used to copy or swap Primary (PRI) or Secondary (SEC) wipe generator settings between M/Es



The Wipe Copy menu selections are as follows:

**FROM GROUP** — Selects the M/E to copy or swap from.

**FROM WIPE GEN** — Selects either the PRI or SEC Wipe Generator to copy or swap from.

**TO GROUP** — Selects the M/E to copy or swap to.

**TO WIPE GEN** — Selects either the PRI or SEC Wipe Generator to copy or swap to.

**DO WIPE SWAP** — Initiates the wipe swap currently selected.

**DO WIPE COPY** — Initiates the wipe copy currently selected.

---

**NOTE:** An **UNDO** function appears in the menu after a Copy or Swap operation has been initiated. The Undo must be performed before exiting the menu in order to take effect.

---

Press **exit** to return to the Wipe menu.

## E-MEM Menu

Press the **e-mem** button to select the E-MEM menu. This menu is used to display the status of several parameters on all levels of the E-MEM register selected on the E-MEM panel, and sets up the switcher to inhibit crosspoint changes when E-MEM recalls are done.

**E-MEM MENU**  
E-MEM

E-MEM LEVEL	REG	ENABLE STATUS	LOCK STATUS	SEQ LINK	SEQ DELAY	KEYFRAMES USED	KEYFRAMES AVAILABLE
M/E 1	07	ON	ON	08	000	000	698
M/E 2	07	-	-	08	-	-	698
BKGD	07	-	-	08	-	-	698
MISC	07	-	-	08	-	-	403
CHAN 1	07	-	-	08	-	-	403
CHAN 2	07	-	-	08	-	-	403
GLOBAL	07	-	-	08	-	-	403
CAMERA	07	-	-	08	-	-	397

ENABLE  
DISABLE

ENABLE  
DISABLE

---

REGISTER>
SOURCE HOLD>
PERIPH DEVICES>
RUN LEVER
KEYFRAME EDITING
KF PATH >
GPI & PBUS TRIGGERS>

The following selections are available under the E-MEM Menu:

**REGISTER>** — Displays the E-MEM Register Menu.

**SOURCE HOLD>** — Displays the Source Hold Menu.

**PERIPH DEVICES>** — Displays the Peripheral Devices Menu.

**RUN LEVER** — Enables or disables the Run lever arm to manually move the Time Cursor along the timeline and manually run keyframe effects. **DISABLE** may be used in a live situation to avoid problems that might arise from bumping the lever arm.

**KEYFRAME EDITING** — Enables/disables keyframe editing mode. This activates the effects editing buttons on the E-MEM panel, allowing multiple-keyframe effects to be built and modified.

**ENABLE** — Enables keyframe editing mode, which activates the effects editing buttons on the E-MEM panel (low tally) and allows multiple-keyframe effects to be built and modified.

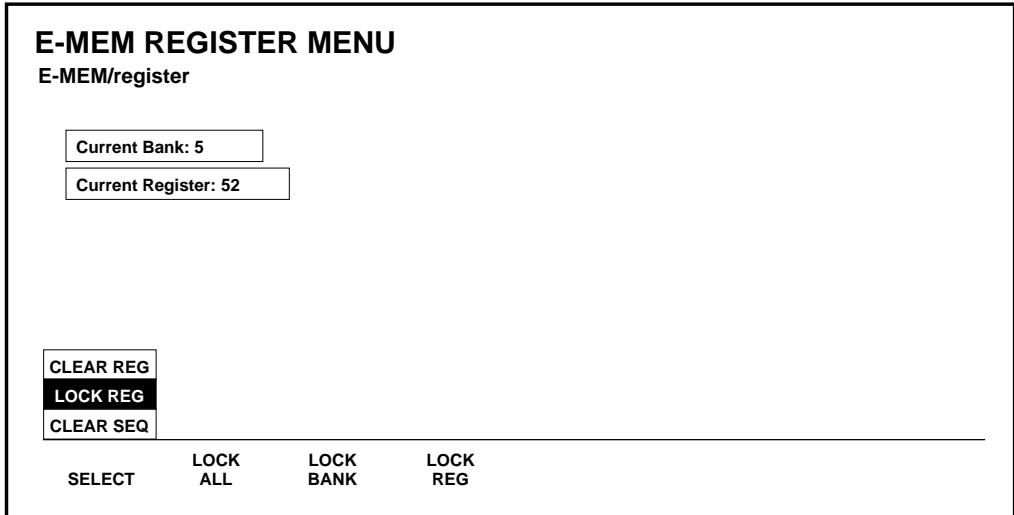
**DISABLE** — Disables keyframe editing and turns off the effects editing buttons.

**KF PATHS>** — Displays the Keyframe Paths Menu, which allows the type of path to be set for interpolation of parameters between keyframes.

**GPI & PBUS TRIGGERS** — Displays the GPI and PBUS Trigger Menu.

## E-MEM Register Menu

From the E-MEM menu, press the **register>** button to select the E-MEM Register menu. This menu is used to lock and unlock registers, and to clear effects sequences.



**SELECT** — Enables either locking/unlocking E-MEM registers or clearing sequences from registers.

For **CLEAR REG**:

**CLEAR ALL** — Clears all information for all 100 registers for all enabled levels. After **CLEAR ALL** is pressed, a submenu comes up to allow you to **CONFIRM** or **CANCEL** the operation.

**CLEAR BANK** — Clears all information for all registers in the bank whose number is displayed in the menu for all enabled levels. After **CLEAR BANK** is pressed, a submenu displays with a **CONFIRM** or **CANCEL** choice.

**CLEAR REG** — Clears all information for the register whose number is displayed in the menu for all enabled levels. After **CLEAR REG** is pressed, a submenu displays with a **CONFIRM** or **CANCEL** choice.

For **LOCK REG**:

**LOCK ALL, UNLOCK ALL** — Locks or unlocks all 100 registers for all currently enabled “levels.” (Levels are enabled with the Enable buttons on the E-MEM panel - for a definition of levels, refer to Enable Buttons, Effects Memory Subpanel, this section.) If any registers are unlocked, a **LOCK ALL** selection is displayed; if any or all registers are locked, an **UNLOCK ALL** selection is displayed.

**LOCK BANK, UNLOCK BANK** — Locks or unlocks all registers in the currently displayed bank and register for all currently enabled levels. Note that the current bank displayed may not be the same as the current bank for independent E-MEM levels. If that is the case, the current bank will not get locked on those levels, but the selected bank will.

If any currently enabled E-MEM level has an unlocked register in the bank, a **LOCK BANK** instruction is displayed for the currently displayed bank number. When all registers in the bank are locked, an **UNLOCK BANK** instruction is displayed.

**LOCK REG, UNLOCK REG** — Locks the register whose number is displayed in the menu for all currently enabled levels. Note that this may not be the current register for some levels. If that is the case, the current register will not get locked on those levels, but the selected register will.

If any currently enabled E-MEM register level is unlocked, a **LOCK REG** instruction is displayed for the currently displayed register number. When all of the enabled E-MEM register levels are locked, an **UNLOCK REG** instruction is displayed.

For **CLEAR SEQ**:

**CLEAR ALL** — Clears only sequence information for all 100 registers for all enabled levels. After **CLEAR ALL** is pressed, a submenu comes up to allow you to **CONFIRM** or **CANCEL** the operation.

**CLEAR BANK** — Clears only sequence information for all registers in the bank whose number is displayed in the menu for all enabled levels. After **CLEAR BANK** is pressed, a submenu displays with a **CONFIRM** or **CANCEL** choice.

**CLEAR REG** — Clears only sequence information for the register whose number is displayed in the menu for all enabled levels. After **CLEAR REG** is pressed, a submenu displays with a **CONFIRM** or **CANCEL** choice.

Press **exit** to return to the E-MEM menu.



## Source Hold Menu

From the E-MEM menu, press the **source hold>** button to select the Source Hold menu. This menu is used to inhibit crosspoint changes on individual buses during E-MEM recalls.

**SOURCE HOLD MENU** BUS  
= ME 1 A

E-MEM/source hold

BUS	HOLD	BUS	HOLD	BUS	HOLD	BUS	HOLD
ME 1 A	<b>HOLD</b>	ME 1 B	-	ME 1 K1	-	ME 1 K2	-
ME 2 A	-	ME 2 B	-	ME 2 K1	-	ME 2 K2	-
PGM	-	PST	-	DSK 1	-	DSK 2	-
PVW	-	MASK	-	AUX 1	-	AUX 2	-
AUX 3	-	AUX 4	-	AUX 5	-	AUX 6	-
AUX 7	-	AUX 8	-	AUX 9	-		-

Menu changes delegated E-MEMs only.

<b>ON</b>
OFF

---

CLEAR ALL  
HOLDS

ALL  
HOLD

SOURCE  
HOLD

**BUS = ... soft knob** — Selects the bus to which the source hold is to be applied.

**CLEAR ALL OFF** — Clears all Source Holds.

**ALL Hold** — Sets all Source Holds.

**SOURCE HOLD** — Enables or disables the Source Hold feature on the selected bus. When **ON**, all crosspoints (video and key) on the bus are held; that is, the state of the crosspoints does not change when E-MEM recalls are done.

Press **exit** to return to the E-MEM menu.

## Peripheral Devices Menu

From the E-MEM menu, press the **periph devices>** button to select the Peripheral menu. This menu is used to select the peripheral devices you want included in E-MEM learns and recalls.

**PERIPHERAL DEVICES MENU**  
E-MEM/periph devices

DEVICE NO.	STATE	DEVICE NO.	STATE	DEVICE NO.	STATE
0	OFF	8	OFF	16	OFF
1	ON	9	OFF	17	OFF
2	OFF	10	OFF	18	OFF
3	OFF	11	OFF	19	OFF
4	OFF	12	OFF	20	OFF
5	OFF	13	OFF	21	OFF
6	OFF	14	OFF	22	OFF
7	OFF	15	OFF	23	OFF

Set the peripheral devices which are to be affected by E-MEM Learn and Recall operations.

DEVICE NUMBER = 1

ON

OFF

---

CLEAR ALL  
OFF

SET ALL  
ON

DEVICE  
1

**CLEAR ALL OFF** — Turns **OFF** learn and recall operations to all devices on the peripheral bus.

**SET ALL ON** — Turns **ON** learn and recall operations to all devices connected to the peripheral bus.

**DEVICE Number= ... soft knob** — Selects the Device Number to be turned **ON** or **OFF** with regard to E-MEM learn and recall operations.

**DEVICE ...** — Turns **ON** or **OFF** learn and recall operations to the selected device.

Press **exit** to return to the E-MEM menu.

## Keyframe Path Menu

From the Keyframe Menu, press the **kf paths>** button to display the Keyframe Path Menu. This menu is used to set the type of path for interpolation of parameters between keyframes.

**KEYFRAME PATH MENU** Register: 52 Keyframe: 2

E-MEM / kf path

TRANSITION	S-LINEAR
KEY 1	LINEAR
KEY 2	S-LINEAR
KEY A	HOLD
KEY B	HOLD
WIPE	S-LINEAR
WIPEXFORM	S-LINEAR
ALL	

M/E 1
<b>M/E 2</b>
MISC
BKGD
CHAN 1
CHAN 2
GLOBAL
CAMERA

ON
<b>OFF</b>

TRANSITION
------------

HOLD
LINEAR
<b>S-LINEAR</b>

SELECT LEVEL	PAUSE	SELECT GROUP	PATH TYPE
--------------	-------	--------------	-----------

**LEVEL SELECT** and **GROUP SELECT** — Select the register level and the functional group to which the path type is to be applied. Each functional group of each keyframe can have its own path type. When **ALL** is selected, the same path type can be applied to all functional groups simultaneously.

**PATH TYPE** — Selects the algorithm to be used for interpolating between keyframes for the selected group. The available path types are Linear, S-Linear, and Hold.

**LINEAR** — Causes a constant change in parameter values between keyframes, with no acceleration or deceleration.

**S-LINEAR** — Causes the change to each parameter to begin slowly as it leaves the starting keyframe, to move faster through the midrange of the keyframe duration, then to decelerate as it approaches the destination keyframe.

**CURVE** — Provides three knobs to control the three parameters of the path vector: **TENSION**, **CONTINUITY**, and **BIAS**. These knobs act on the vector parameters to adjust the path into (entry) and out of (exit) the keyframe. The path through KF2 is parallel with an imaginary line drawn between KF1 and KF2.

**TENSION** — Controls the length of the tension vector. At a setting of 0, the imaginary line extends an equal distance into and out of the keyframe, and the path through the middle keyframe is curved. At 1.00, the Tension vector is shortened to non-existence through KF2. At -1.00, the effect is a lengthening of the Tension vector, causing the path through the middle keyframe to be longer and broader.

**CONTINUITY** — Determines the angle of the path into and out of the keyframe. At 1.00, the effect is that of motion dropping into and then out of the keyframe, similar to a bouncing ball. At -1.00, the paths between the keyframes become straight lines, accelerating through the keyframe.

**BIAS** — Determines whether the path will be “pulled” towards the previous or the following keyframe. At 0, the curve through the keyframe is gentle. At 1.00, the path is pulled towards the previous keyframe. Entrance and exit to the keyframe are on a straight line from the previous keyframe, and the path of the effect travels completely through KF2 before turning towards KF3. At -1.00, the path is pulled towards the following keyframe. Entrance and exit to the keyframe are a straight line pointed to the following keyframe.

**HOLD** — Causes all parameters to hold at their starting values throughout the keyframe duration. All changes occur at the end of the keyframe duration, with no interpolation between keyframes.

Press **exit** to return to the Keyframe menu.

## GPI and PBUS TRIGGERS Menu

From the E-MEM Menu, press the **KF TRIGGERS>** button to display the GPI and PBUS Triggers Menu. This menu is used to attach GPI triggers or peripheral triggers to E-MEM registers so that the triggers will fire when the registers are recalled. The triggers may be tested after setting them up.

### GPI & PBUS TRIGGERS MENU

E-MEM / gpi & pbus triggers Effect:    Keyframe:

PERIPHERAL TRIGGERS (PBUS 2)				GPI OUTPUT TRIGGERS	
E-MEM LEVEL	DEVICE	FUNCTION		E-MEM LEVEL	
A	-	1	6	1	-
B	-	-	-	2	-
C	-	-	-	3	-
D	-	-	-	4	-
E	-	-	-	5	-
F	-	-	-	6	-
G	-	-	-	7	-
H	-	-	-	8	-

A
MISC OFF

SELECT PERIPH    ATTACH PERIPH

1
MISC OFF

SELECT GPI    ATTACH GPI

FIRE A

FIRE ATTACHED

FIRE 1

FIRE ATTACHED

**SELECT GPI** — Selects the GPI Output (1 through 8) to which you may attach an E-MEM recall trigger. The trigger numbers correspond to the physical connections made to the GPI Output connectors on the rear of the switcher frame.

**ATTACH** — Attaches the selected trigger to the indicated E-MEM register **ON**, or turns the trigger **OFF**.

**FIRE GPI** — Test fire the selected (highlighted) GPI.

**FIRE ATTACHED** — Test fire all attached GPIs (set to **ON**) simultaneously, regardless of what is currently selected.

Press **exit** to return to the E-MEM Menu.

**TRIGGER SELECT** — Selects the Peripheral trigger (A through H) which you may attach to an E-MEM recall. The triggers are defined in the Peripheral Triggers submenu under Configuration.

**ATTACH** — Attaches the selected trigger to the indicated E-MEM register (**ON**), or turns the trigger **OFF**.

**FIRE X** — Causes the selected (highlighted) trigger to fire (for testing purposes).

**FIRE ATTACHED** — Causes all attached triggers (set to **ON**) to fire simultaneously, regardless of the current selection (for testing purposes).

---

**NOTE:** *The Effect: is the currently selected E-MEM register.  
(Keyframe: is the currently selected keyframe.)*

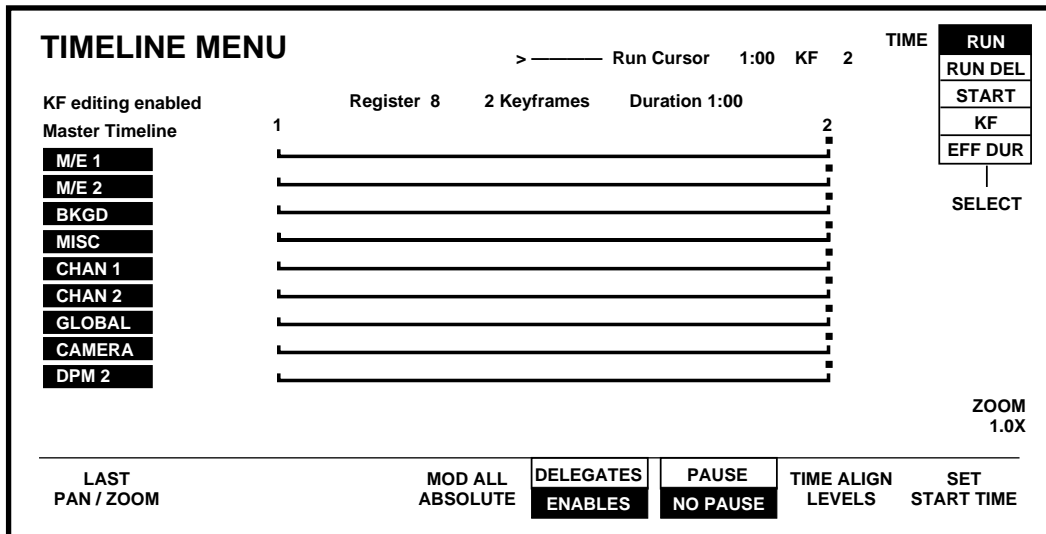
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Press **exit** to return to the Keyframe menu.

## Keyframe Menu

The Keyframe “top level” menu button invokes the Timeline menu. The Timeline Menu provides a graphical display of the keyframe positions for all enabled levels in the current E-MEM register. This menu allows you to view changes to the effect in the selected register while you add, remove, and edit keyframes.

The Timeline Menu can be accessed either by pressing the **KEYFRAME** button on the main menu panel, or by pressing the **TIME CURSR** button on the E-MEM effects editing panel.



The appearance of the Timeline Menu is determined by the state of the current E-MEM register. Parameters that affect the appearance of the menu include the following:

- The number of the current E-MEM register selected on the E-MEM keypad
- Which levels are enabled and which are delegated
- The number, location, and duration of keyframes stored in the register
- The position of the Time Cursor on the timeline

The menu illustrated is for a Model 2200-2 Integrated switcher with all levels enabled, two keyframes in the effect, and keyframe editing enabled.

**MOD ALL ABSOLUTE** — Performs a Mod operation (see Effects Editing section) which causes the values in all keyframes to be replaced with the current values in the Current Working Buffer. This modifies all keyframes on a given level to a single value (for example, changing the background to Blue in all keyframes on that level).

### Delegates and Enables

**ENABLES** — Provides a timeline for each level that is enabled by the E-MEM **ENABLE** buttons. The **ENABLE** button of each enabled level is high-tallied and the name of each enabled level is highlighted in the menu.

**DELEGATES** — Allows individual enabled levels to be delegated for modification while keeping the timelines of the other enabled levels in the display.

When **DELEGATES** is selected, the names of the enabled levels become unhighlighted in the menu and the buttons of the enabled levels go to low tally on the E-MEM Enable panel. Then, pressing one or more of the Enable buttons will delegate the selected levels for timeline editing. The buttons of the *delegated* levels will go to high tally and the names of the delegated levels will be highlighted in the menu. (The buttons of the undelegated *enabled* levels will remain at low tally.)

**PAUSE** — Allows you to insert a pause at a keyframe. When a pause is added to a keyframe and a run is performed, the run will stop at that keyframe on any level that has the pause programmed. The presence of a pause at any keyframe and on any timeline is indicated by a sloped line following the keyframe marker. Each pause marker will also appear on the Master Timeline.

The rules for adding a pause or inserting a keyframe that contains a pause are the same as for changing any other parameter. You



can add a pause to an existing keyframe by parking on that keyframe, enabling **PAUSE**, and doing a **Mod**. Or you can insert a keyframe with a pause by enabling **PAUSE**, then doing an **Insert After** or **Insert Before**.

Software version 5.2 adds the ability to insert a pause at a keyframe. When a pause is added to a keyframe and a run is performed, the run stops at that keyframe on any level that has the pause programmed. The presence of a pause at any keyframe and on any timeline is indicated by a sloped line following the keyframe marker. Each pause marker also appears on the Master Timeline.

The rules for adding a pause or inserting a keyframe that contains a pause are the same as for changing any other parameter. You can add a pause to an existing keyframe by parking on that keyframe, enabling **PAUSE**, and doing a **Mod**. Or you can insert a keyframe with a pause by enabling **PAUSE**, then doing an **Insert After** or **Insert Before**.

The basic rules for **Auto Run** on/off remain the same, but the results of running effects appear differently when pauses are programmed.

### TIMELINE MENU

KF editing enabled

Master Timeline

M/E 1

M/E 2

BKGD

> — Run Cursor 0:00 KF 1

Register 8 8 Keyframes Duration 7:00

TIME

RUN
RUN DEL
START
KF
EFF DUR
SELECT

ZOOM 1.0X

---

LAST PAN / ZOOM

MOD ALL ABSOLUTE

DELEGATES
ENABLES

PAUSE
NO PAUSE

TIME ALIGN LEVELS

SET START TIME

### Example 1 – Inserting a Pause

1. Press the **Keyframe** button on the top menu panel or the **Time Cursor** button on the Effects Editing panel to bring up the Timeline Menu.
2. Recall an empty register or one that you can write over.
3. If in Enable Mode, enable **M/E 1**, **M/E 2**, and **Bkgd**. If in Delegate mode, delegate **M/E 1**, **M/E 2**, and **Bkgd**.
4. Set up a Timeline Menu similar to that shown above; that is, with staggered keyframes on the various levels, staggered independent timeline lengths, and a total of about 8 keyframes. We will discuss adding the pauses in a moment. (If you don't know how to set up these timelines and keyframes, refer to the Effects Editing portion of your User Guide or Operator's manual.)
5. Select **DELEGATES** in the Timeline Menu if not in this mode already.
6. Undelegate **M/E 2** and **Bkgd** (in the above example). (Turn off **M/E** and **Bkgd** on the E-MEM panel.)
7. Rewind the effect, then press **Next KF** to move to Keyframe 2.
8. In the Timeline menu, undelegate the levels you do not wish to modify, and delegate those levels you do wish to modify.
  - a. Press **PAUSE/NO PAUSE** button until the desired state appears highlighted.
  - b. Press **MOD**.

---

**NOTE:** *If the pause state of all delegated levels are not identical, neither PAUSE or NO PAUSE is selectable.*

---

### Example 2 – Inserting a Pause

1. Press **E-MEM** on the top menu panel to bring up the E-MEM menu, then the soft **KF PATHS** button in the E-MEM menu to access the Keyframe Path menu. Note (in the upper right corner of the menu) that we are still on Keyframe 2 in the selected register.
2. Select **M/E 1** with the **SELECT LEVEL** button in the E-MEM Keyframe Path Menu, then turn **ON** the **PAUSE** function.

**KEYFRAME PATH MENU** Register: 8 Keyframe: 2

E-MEM / kf path

M/E 1		TRANSITION	S-LINEAR	
M/E 2		KEY 1	LINEAR	
M/E 3		KEY 2	S-LINEAR	
PGM PST		KEY A	HOLD	
DSK		KEY B	HOLD	
MISC		WIPES	S-LINEAR	
BKGD		WIPEXFORM	CURVE	
DPM 1		ALL		
DPM 2		FSTOREXFRM		
DPM 3	ON		HOLD	TENSION = 0.00
DPM 4	OFF	WIPEXFORM	CURVE	CONTINUITY = 0.00
SELECT LEVEL	PAUSE	SELECT GROUP	PATH TYPE	BIAS = 0.00

For 2200-2i, delete M/E3, PGM/PST, DSK; change DPMs

3. Press **Last Menu** on the top menu panel to return to the Keyframe Menu.
4. Press **Mod.** This modifies the selected keyframe (2) on the delegated level (M/E 1) to now include the programmed pause.
5. Move to keyframe 4 with the **Next KF** button and, in the same manner, add a pause to the **BKGD** level. (Undelegate **M/E 1** and delegate **Bkgd.**)
6. Note that an easy way to move back and forth between the Keyframe Menu and the E-MEM Menu is with the **Last Menu** button.
7. Press **Rewind**.

### Effect Run with Auto Run Off (Master Timeline Enabled)

8. Turn off **Auto Run** if it is on.
9. Press **Run**.

Note that when a run is performed while **Auto Run** is off (**Auto Run** pushbutton not lit), the run is performed on the Master Timeline; therefore, the run stops at any keyframe that has a pause programmed on *any* level. Thus, in the example, the run stops on all levels at Keyframe 2.

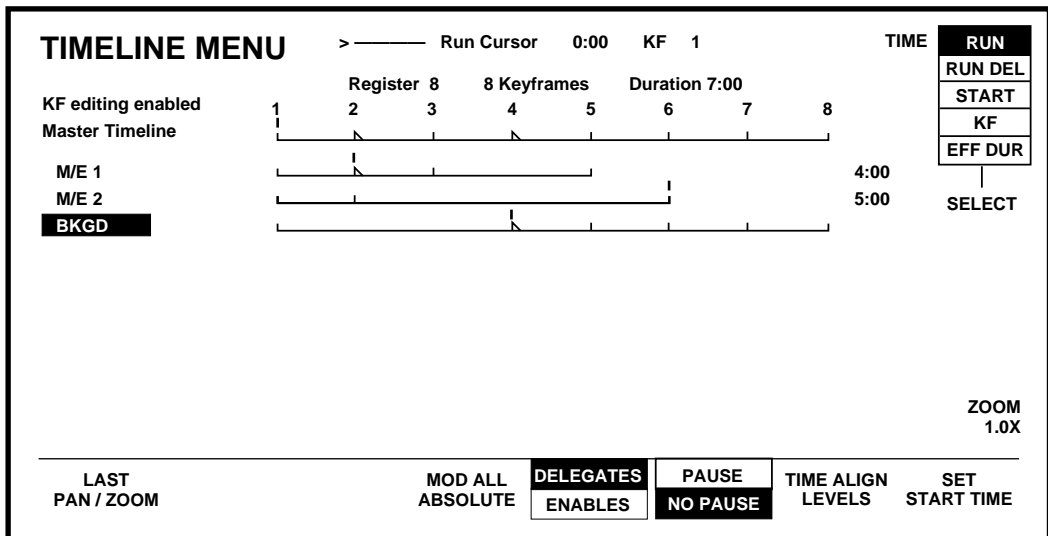
The screenshot shows the **TIMELINE MENU** interface. At the top, it displays "Run Cursor 1:00 KF 2". Below this, it shows "Register 8 8 Keyframes Duration 7:00". The main area is a timeline with 8 keyframes (1-8). A vertical dashed line indicates the Run Cursor at keyframe 2. Three levels are visible: "Master Timeline", "M/E 1", and "M/E 2". The "BKGD" level is highlighted. On the right, a "TIME" column shows 4:00 for M/E 1 and 5:00 for M/E 2. A vertical stack of buttons on the right includes **RUN** (highlighted), RUN DEL, START, KF, EFF DUR, and SELECT. At the bottom right, "ZOOM 1.0X" is displayed. The bottom bar contains several buttons: LAST PAN / ZOOM, MOD ALL ABSOLUTE, **DELEGATES ENABLES** (highlighted), **PAUSE NO PAUSE** (highlighted), TIME ALIGN LEVELS, and SET START TIME.

10. Press **Run** again. The run proceeds to the pause programmed at keyframe 4 on the **BKGD** level.
11. Press **Run** again. All levels of the effect run to the end of the effect (keyframe 8).

**Effect Run with Auto Run On (Independent Timelines Enabled)**

12. Turn on **Auto Run** and rewind the effect.
13. Press **Run**.

Note that when a run is performed while **Auto Run** is on (**Auto Run** pushbutton lit), runs are made on the enabled independent timelines (regardless of delegation), not on the Master Timeline. In the example, the **M/E 1** and **BKGD** levels run to their respective pauses and stop, while the **M/E 2** effect runs to the end of its timeline. See [Figure 4](#).



14. Press **Run** again. The **M/E 1** and **BKGD** levels run to the end of their independent timelines, while the **M/E 2** effect remains at the end of its timeline.

**NOTE:** During a Run, independent timelines stop and remain at their respective last keyframe. If all timelines are at their end, then the next Run command restarts all timelines in sync from the beginning of the timeline.

---

**NOTE:** *With Auto Run on and Independent Timelines running, the Master Timeline remains at its first Keyframe (or zero time). When the Independent Timelines arrive at their last keyframe, the Independent Timelines are “skewed” from the Master Timeline position, and all Timeline edits are disabled. For you to enable a Keyframe edit, press **REWIND** or **GO TO KF** and the Master and Independent Timelines sync, allowing further Timeline editing.*

---

### Lever Arm Scaling

- Run the effect with the lever arm.
- Note that each partial run to the next pause is scaled to full scale of the lever arm. This is true whether **Auto Run** is on or off.

### Keyframe Runs in a Sequence

Remember that you must have **Auto Run** on when you Run a sequence in order for the keyframe effects in the recalled registers to run when the sequence is recalled.

Note that, with **Auto Run** on, any Recalled effect that has a pause programmed at any enabled keyframe causes the effect in only that level—and the sequence—to pause.

### Pause on First or Last Keyframe

A Pause on the first keyframe with **Auto Run** on causes the effect on that level to not run. Occasions on which the presence of a pause on the first or last keyframe becomes significant are as follows:

- If the first keyframe on a timeline has a pause and a new keyframe is inserted before it, the second keyframe will then have a pause that *will* affect the running of the effect

- If the last keyframe on a timeline has a pause and a new keyframe is inserted after it, the next-to-last keyframe will then have the pause.
- If the first keyframe on an individual level's timeline has a pause and the beginning of that timeline is skewed with respect to the beginning of the overall effect, the effect stops on that pause if the effect is running on the Master Timeline (**Auto Run off**).
- If the last keyframe on an individual level's timeline has a pause and that timeline is not as long as the overall effect, the entire effect stops on that pause if the effect is running on the Master Timeline (**Auto Run off**).

**TIME ALIGN LEVELS** — Adjusts the start times of all delegated levels so that their current times align.

**SET START TIME** — Sets the start time (time of the first keyframe) of all delegated levels to the time of the cursor. The relative timing of all keyframes within a level remains unchanged; only the start times of delegated levels are changed.

**TIME SELECT** — Selects the function of the **TIME** knob, as follows:

**RUN** — Runs the current effect with the delegated soft knob. Usage is the same as the E-MEM subpanel **RUN** button. Only enabled levels are activated in this operation.

**RUN DEL** — Runs multiple keyframe effects in their relative time position.

**START** — Adds a delay to where the keyframe begins.

**KF** — “Slides” a delegated keyframe timeline relative to the next/previous keyframe. Durations remain fixed. If **CONST DUR** is set, the overall effect duration is unaffected.

**EFF DUR** — “Slides “ the overall effect duration; scales the delegated levels.

---

**NOTE:** *Other soft button and soft knob functions that appear in the Timeline Menu under specific conditions are discussed in the User Guide.*

---

## Aux Menu

Press the **aux bus** top level menu button to select the Aux Bus Menu. Use this menu to select looping mode on Aux Buses 1 and 2 (when used with the Effects Send feature), or to deselect looping mode.

AUX MENU				
/aux bus				
PVW BUS	PVW	-	1	-
MASK BUS	MASK	-	2	-
AUX BUS 1	AUX BUS 1	EXT LOOP	ME/ 1	3
AUX BUS 2	AUX BUS 2	EXT LOOP	-	-
AUX BUS 3	AUX BUS 3	EXT LOOP	-	-
<b>AUX BUS 4</b>	<b>AUX BUS 4</b>	<b>FRAMESTORE</b>	<b>16</b>	<b>S/16</b>
AUX BUS 5	AUX BUS 5	-	-	-
AUX BUS 6	AUX BUS 6	-	-	-
AUX BUS 7	AUX BUS 7	-	-	-
AUX BUS 8	AUX BUS 8	-	-	-
AUX BUS 9	AUX BUS 9	-	-	-
LOGICAL	PHYSICAL		VIDEO XPT	KEY XPT
		NO LOOP		
		EXT LOOP		
AUX BUS 4		<b>FRAMESTORE</b>		
LOG AUX SELECT		EFX LOOP MODE		TAKE

VIDEO = 16  
KEY = S/16

The following selections are available from the Aux Menu:

**BUS SELECT** — Selects the physical aux bus to be used in the effects send loop.

Both the logical and physical Aux Bus numbers are displayed on the Aux Bus Menu in the **BUS SELECT** column. Logical buses are those bus numbers that are assigned to physical buses via control panel and software menus. Physical buses are the actual bus outputs. Physical buses are assigned to logical buses (that is, physical buses can be moved; logical buses may not). In the **BUS SELECT** column, the physical bus is shown in parentheses.



**EFX LOOP MODE** — Turns the effects send loop on **EXT LOOP** or off **NO LOOP**.

The **E-MEM CONTROL** column activates E-MEM recalls for the **BUS SELECT** choice. You must assign the Aux Bus to MISC, or a DPM level, on the Config/Extern IF/DPM Setup/Map Aux Buses Menu.

PVW and MASK recall control may be disabled, but they are always assigned to the MISC E-MEM level.

---

**NOTE:** *Buses assigned to Kaleidoscope or Krystal are under their control and are not effected by the switcher's E-MEM system. Therefore, E-MEM recall control is not possible with those buses.*

---

If the Aux Bus Menu is delegated to Kaleidoscope, the Near Side, Far Side, and Both Side selections are enabled.

**NEAR SIDE** — the **NEAR SIDE** column indicates which side you will be changing the input to.

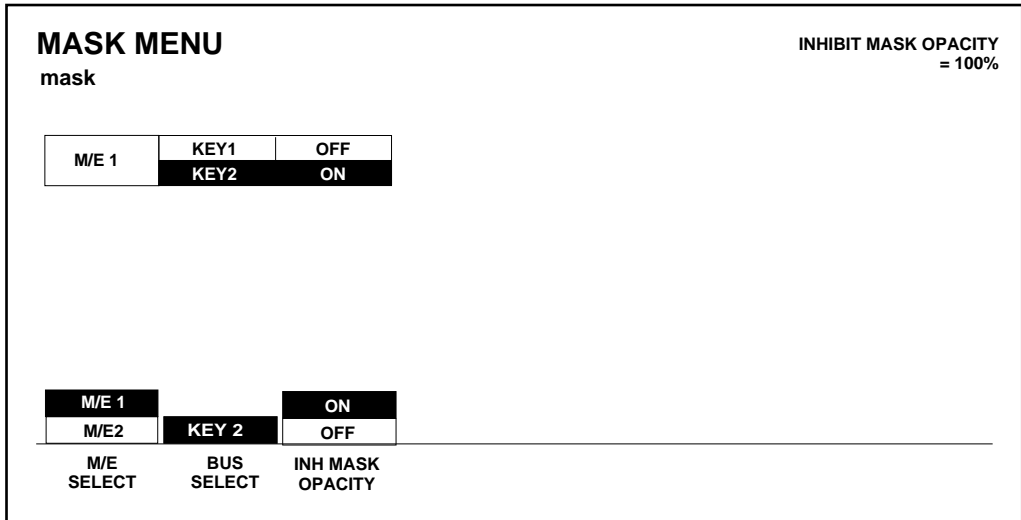
**FAR SIDE** — the **FAR SIDE** will be changing to the opposite side or the side you don't see. If **FRONT** is visible (displayed in the **NEAR SIDE** column), then **BACK** is the **FAR** side.

**BOTH SIDES** — Use **BOTH SIDES** if you want to use the same video image on both Near and Far sides (default selection).

**TAKE** — Source changes may be made with the Aux button row on the Control Panel, a Remote Aux Panel, or the **TAKE** button on the Aux Bus Menu. The selection that will be acted upon next is shown by a highlighted menu button, and in the **APPLY CHANGES TO** column on the Aux Bus Menu.

## Mask Menu

Press the **mask** button to select the Mask menu. Use this menu to adjust the opacity of the inhibit mask and turn the chroma trap on or off.



The Mask menu selections are:

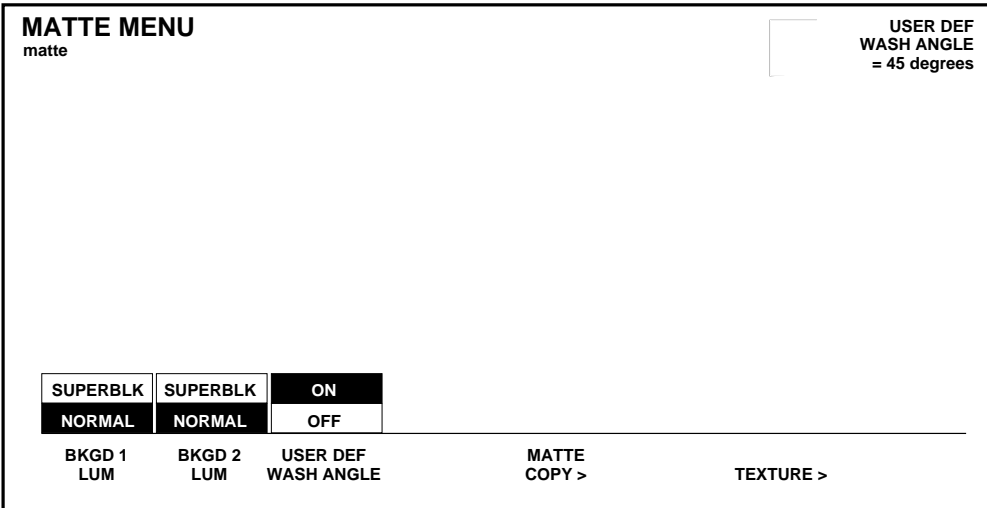
**KEYER SELECT** — Delegates a keyer for the following selections.

**INH MASK OPACITY** — Enables or disables the **INHIBIT MASK OPACITY** soft knob.

**INHIBIT MASK OPACITY** — Adjusts opacity of the inhibit mask. Available only for Key 1 and Key 2 in the M/Es.

## Matte Menu

Press the **matte** button to select the Matte menu. Use this menu to adjust the luminance level of Backgrounds 1 and 2 down to superblack, and to adjust the user-definable wash angle.



The following menu selections are accessible through the Matte menu:

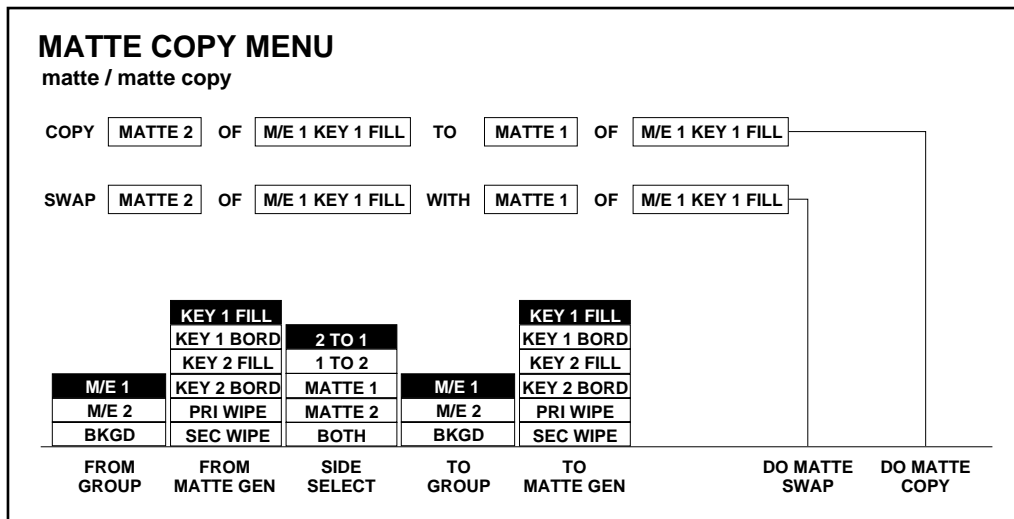
**BKGD 1 LUM** and **BKGD 2 LUM** — Enables or disables luminance adjustment down to superblack with the Background 1 and/or Background 2 **LUM** controls.

**USER DEF WASH ANGLE** — Enables the **WASH ANGLE** soft knob.

**matte copy>** — Open the Matte Copy menu.

## Matte Copy Menu

From the Matte menu, press the **matte copy>** button to display the Matte Copy menu. This menu is used to copy or swap all Matte settings from one Matte Generator to another.



The following menu selections are accessible through the Matte Copy menu:

**FROM GROUP** — Selects the M/E to copy or swap from.

**FROM MATTE GEN** — Selects the Matte Generator to copy or swap from.

**SIDE SELECT** — Selects the source and destination mattes for copying or swapping. (Each Matte Generator has two mattes.)

**TO GROUP** — Selects the M/E to copy or swap to.

**TO MATTE GEN** — Selects the Matte Generator to copy or swap to.

**DO MATTE SWAP** — Initiates the matte swap currently selected.

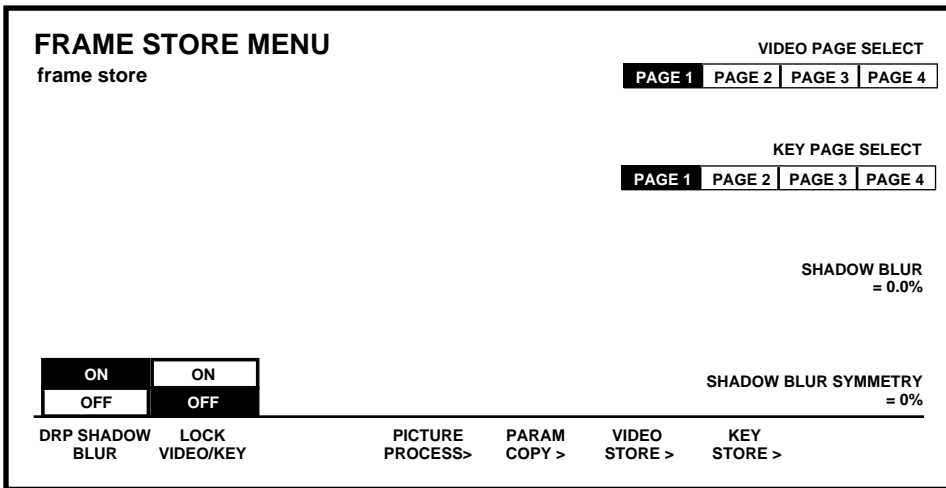
**DO MATTE COPY** — Initiates the matte copy currently selected.

**NOTE:** An **UNDO** function appears in the menu after a Copy or Swap operation has been initiated. The Undo must be performed before exiting the menu in order to take effect.

Press **exit** to return to the Matte menu.

## Frame Store Menu

The Frame Store menu and submenus include operational settings for the Frame Store Option.



**DRP SHADOW BLUR** — Turns on or off the Frame Store Drop Shadow blur and enables the shadow blur adjustment knobs.

**SHADOW BLUR** — Adjusts the amount of blur to be applied to the Drop Shadow.

**SHADOW BLUR SYMMETRY** — Adjusts the ratio of vertical to horizontal blur on the Drop Shadow. When set to 0.0, the vertical and horizontal blur are equal.

**LOCK VIDEO/KEY** — Causes the key store to follow any parameter change that you make in the associated video store.

**PICTURE COPY>** — Opens the Picture Copy menu. Use to copy or swap picture settings.

**PARAM COPY>** — Opens the Parameter Copy menu. Use to copy or swap parameter settings.

**VIDEO STORE>** — Opens the Video Store menu.

**KEY STORE>** — Opens the Key Store menu.

### Frame Store Picture Process Menu

The Frame Store Picture Process Menu is used to enhance Frame Store image manipulation.

Compress, Filter, Bevel, and Copy functions are available on this menu.

## FRAME STORE MENU

frame store

AUX 2 feeds the Frame Store

VIDEO PAGE SELECT

PAGE 1	PAGE 2	PAGE 3	PAGE 4
--------	--------	--------	--------

KEY PAGE SELECT

PAGE 1	PAGE 2	PAGE 3	PAGE 4
--------	--------	--------	--------

SHADOW BLUR  
= 0.0%

SHADOW BLUR SYMMETRY  
= 0%

ON	ON
OFF	OFF

DRP SHADOW BLUR	LOCK VIDEO/KEY
--------------------	-------------------

PICTURE  
COPY >

PARAM  
COPY >

VIDEO  
STORE>

KEY  
STORE >

MASK  
STORE >

**Compress** — The Compress operation will compress the FROM page to the TO page. The compressed image will end up in the upper left-hand corner of the TO page.

The key from the corresponding FROM page in the Key Store can be processed in one of three ways.

**Create** — This will make a 4x3 key in the corresponding TO Key Store page that is the same size as the compressed video. Use this option if the FROM video is a full-screen image. Set up the Frame Store to output Shaped video in this mode.

**Compress** — Use this option to compress titles and other keys. This will compress the corresponding FROM Key Store page the same as the Video Store page.

**None** — This selection does nothing with or to the Key Store pages.

When using Compress, it is best to lock the key to the video. Also, if the edges have blanking the Crop function is useful. It is also useful to note the repositioning of compressed video will run in realtime.

---

**NOTE:** *Compress works only on still frozen video.*

---

**Filter** — Filter only affects the luma of the video page. You can select one of the following filter options. You will want to experiment with them to achieve the desired effect.

---

**NOTE:** *For a better looking Emboss effect, Soften the image first before using Emboss.*

---

- Emboss — Use for image edge enhancement and shading; gives image a 3D appearance.
- Sharpen — Sharpens the image.
- Soften — Softens the image.

With the filter type selected, press the **DO FILTER** soft button as many times as applicable to implement the effect.

---

**NOTE:** *Multiple button pushes are stored in a buffer. The buffer will continue to increment even if you have finished pressing buttons. It may take up to 30 seconds to complete five passes.*

---

**Bevel** — Bevel gives an image a “lighted picture frame” in a 3-D type of effect. The **BRIGHTNESS** soft knob controls the quantity of light projected on the frame. **BEVEL WIDTH** controls the width of the frame. The **LIGHT SOURCE** button selects where the light comes from: Bottom, Top, Right, or Left.

---

**NOTE:** *This should be used on a full 4x3 image. The results may look strange otherwise.*

---

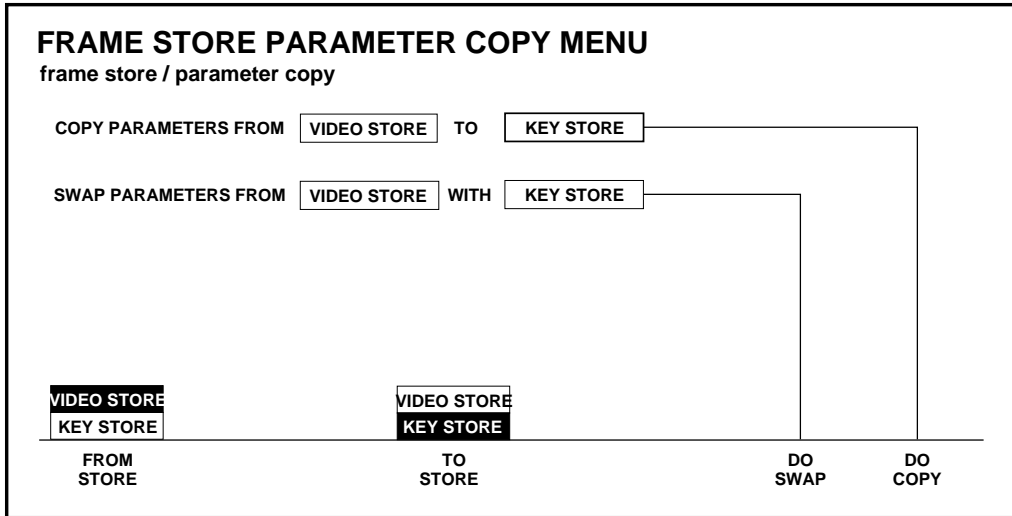
**Copy** — Use **COPY** from the **PROCESS** choices to copy or swap to and from video and key store pages.

**Lock Video/Key** — When ON, the Key Store> selection button is disabled (invisible).



## Parameter Copy Menu

Use the Parameter Copy menu to copy or swap all parameter settings from video to video, key to key, or video to key.



The Parameter Copy menu selections are:

**FROM STORE** — Selects the store to copy/swap from.

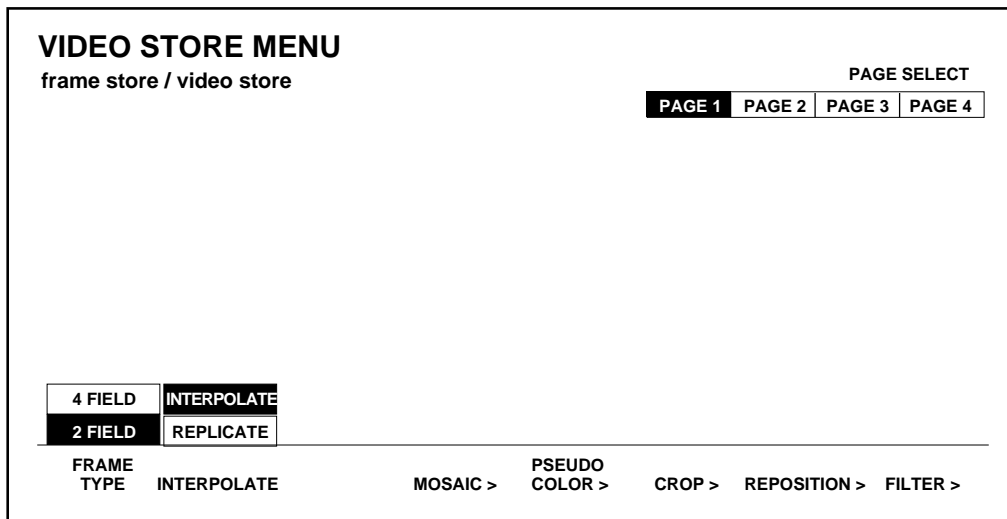
**TO STORE** — Selects the store to copy/swap to.

**DO SWAP** — Initiates the Picture swap currently selected.

**DO COPY** — Initiates the Picture copy currently selected.

## Video Store Menu

The Video Store menu allows you to select the page, set the strobe period, and provides access to Video Store positioning and pseudo color controls.



**Interpolate** — Select how the video data is to be interpreted. For example, **interpolate** evaluates screen lines 1 and 3 and averages them to get line 2. **Replicate** copies line 1 to create line 2, line 3 to create line 4, etc.

**STROBE** — When **ON** is selected, Strobe is activated. Strobe alternates between a frozen Frame Store image and a selected source image with the frequency set by the soft knobs described below. The difference between the time settings is what varies the strobe effect.

**STROBE TIME PERIOD** — Sets the time (in fields) for the delegated video source to be displayed. Minimum time period is 4 fields.

**STROBE FREEZE PERIOD** — Sets the time (in fields) during which the frozen frame store is displayed. Minimum time period is 8 fields.

**PAGE SELECT** — Selects one of four pages (frames) of the video image.

**MOSAIC>** — Opens the Video Store Mosaic menu.

**PSEUDOCOLOR>** — Opens the Video Store Pseudo Color Menu.

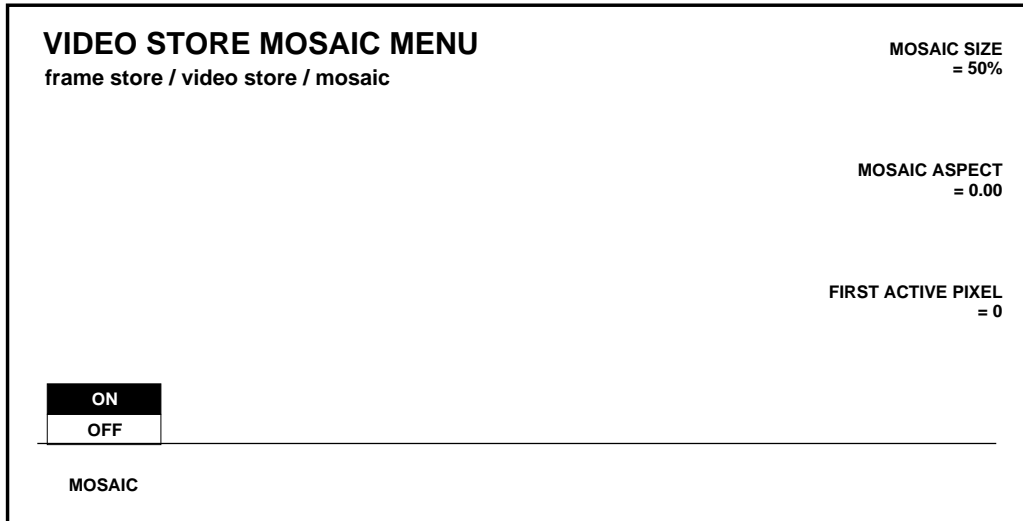
**crop>** — Opens the Video Store Crop menu.

**REPOSITION>** — Opens the Video Store Reposition menu.

**FILTER>** — Opens the Video Store Filter menu.

## Video Store Mosaic Menu

This menu allows you to apply and adjust a mosaic pattern to the video store video.



**MOSAIC** — Turns on the mosaic feature and enables the mosaic adjustment soft knobs.

**MOSAIC SIZE** — Adjusts the width of the mosaic area, up to 100% of the screen.

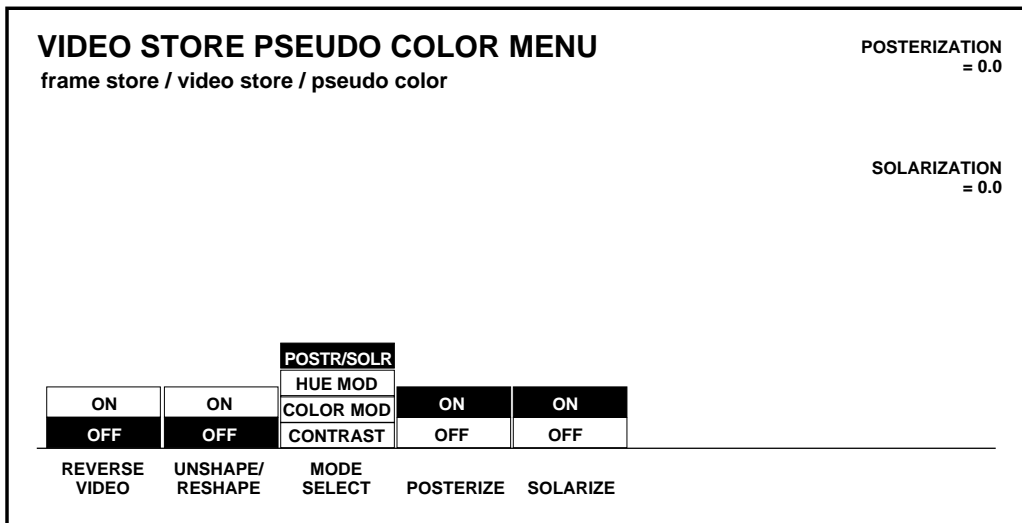
**MOSAIC ASPECT** — Adjusts the vertical-to-horizontal aspect of the mosaic area.

**FIRST ACTIVE PIXEL** — Adjusts the positioning of the left edge of the mosaic area.

## Video Store Pseudo Color Menu

The Pseudo Color menu allows you to select normal or reversed video, and several pseudocolor modes. The mode selected determines the functions of the fourth and fifth soft buttons and the soft knobs.

The following illustration is the appearance of the Video Store Pseudo Color menu when **POSTR/SOLR** is selected.



**REVERSE VIDEO** — Turns reverse video on or off, which inverts the luminance (white and black are reversed) and places each hue 180° away from its original color.

**UNSHAPE/RESHAPE** — Allows shaped video (of a video/key pair) to be unshaped before being bitmapped, then reshaped after bitmapping. This button appears only if Key Store is configured as Key.

**MODE SELECT** — Selects one of four pseudocolor modes, as described on the following pages.

### Posterization/Solarization

Selecting **POSTR/SOLR** mode provides adjustment of the posterization and solarization parameters.

**POSTERIZE** — Causes the luminance values of a frozen image to be changed from a continuous scale to a limited (adjustable) number of steps.

**POSTERIZATION** — Adjusts the number of steps of luminance.

**SOLARIZE** — Causes the chrominance values of a frozen image to be changed from a continuous scale to a limited (adjustable) number of steps.

**SOLARIZATION** — Adjusts the number of steps of chrominance.

### Pseudo Color Hue Modification

The following illustration is the appearance of the Pseudo Color menu when **HUE MOD** is selected.

**VIDEO STORE PSEUDO COLOR MENU**  
 frame store / video store / pseudo color

HUE MOD START PHASE  
= 0.0

HUE MOD END PHASE  
= 0.0

HUE MOD SATURATION  
= 0.0

ON	ON	POSTR/SOLR	ON	CW
OFF	OFF	<b>HUE MOD</b>	OFF	CCW
REVERSE VIDEO	UNSHAPE/ RESHAPE	COLOR MOD CONTRAST	HUE MOD	HUE MOD PATH

**HUE MOD** — Enables the hue modification feature, which strips chroma from the stored image and substitutes a spectrum of colors for the resulting black and white. Also enables the soft knobs for adjustment of the colors to be substituted.

**HUE MOD START PHASE** and **HUE MOD END PHASE** — Adjust the starting color and ending color of the spectrum to be substituted for black and white.

**HUE MOD SATURATION** — Adjusts the saturation of the color spectrum to be substituted.

**HUE MOD PATH** — Sets the direction of the hue substitution from black to white, as viewed on a vectorscope.

### Pseudo Color Modification

The following illustration is the appearance of the Pseudo Color menu when **COLOR MOD** is selected. This menu provides adjustment of the color modification parameters.

**VIDEO STORE PSEUDO COLOR MENU**  
 frame store / video store / pseudo color

BLACK HUE  
= 0.0

BLACK SAT  
= 0.0

BLACK BRIGHT  
= 0.0

ON	ON	POSTR/SOLR	ON
OFF	OFF	HUE MOD	OFF
REVERSE VIDEO	UNSHAPE/ RESHAPE	MODE SELECT	COLOR MOD
OFF	OFF	CONTRAST	OFF

BLK/WHT DELEGATE

**COLOR MOD** — Enables the color modification feature, which strips chroma from the stored image, then substitutes two colors for the black and white limits of the resulting image.

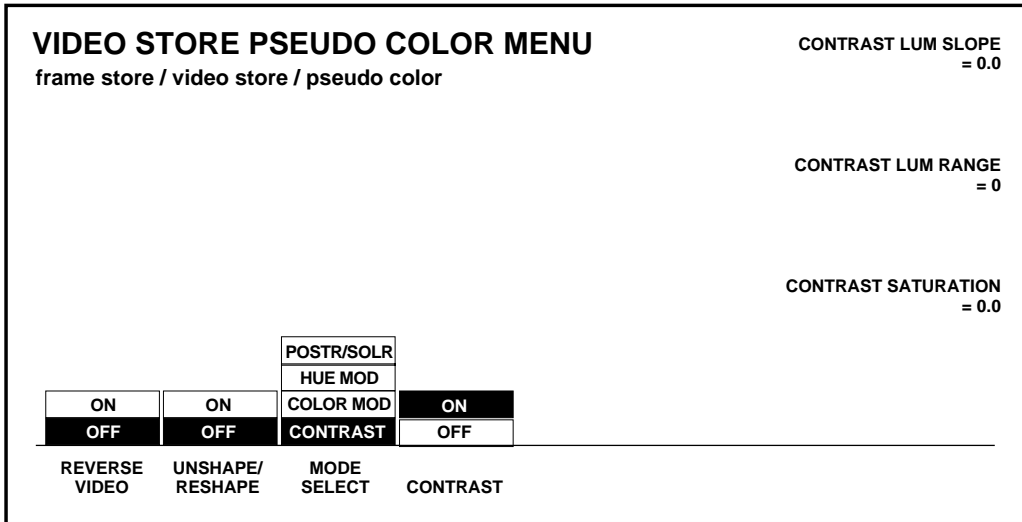
**BLK/WHT DELEGATE** — Delegates the soft knobs for adjustment of the color to be substituted.

**BLACK HUE, BLACK SAT, and BLACK BRIGHT or WHITE HUE, WHITE SAT, and WHITE BRIGHT** — Adjust the color and luminance of the colors to be substituted for the black and white portions of the signal.

Pseudo Color Contrast



The following illustration is the appearance of the Pseudo Color menu when **CONTRAST** is selected.



**CONTRAST** — Turns on the contrast function and enables the contrast adjustment knobs. Adjustment of these controls is highly subjective and depends on the characteristics of the image and the desires of the operator.

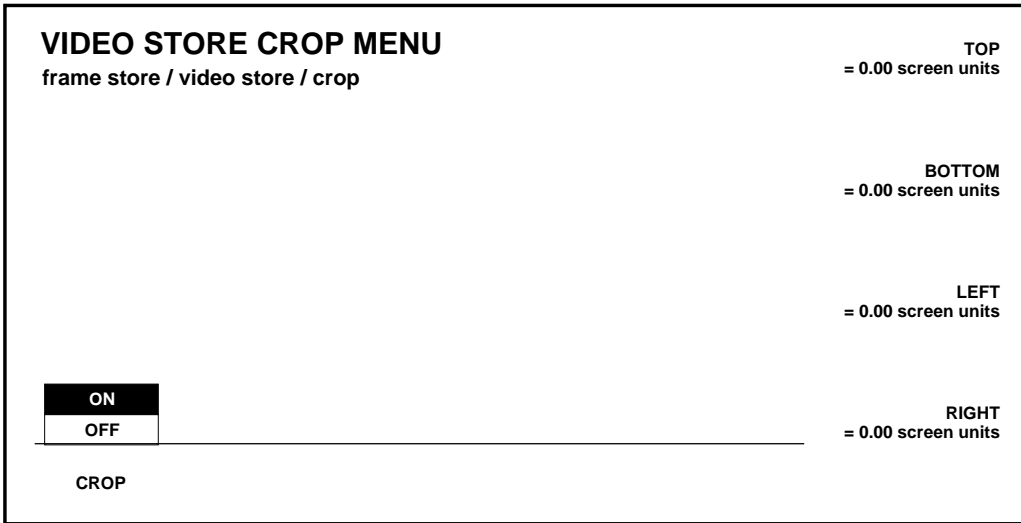
**CONTRAST LUM SLOPE** — Adjusts the luminance contrast of the stored video.

**CONTRAST LUM RANGE** — Adjusts the luminance offset of the video.

**CONTRAST SATURATION** — Adjusts the saturation of the video chrominance.

### Video Store Crop Menu

This menu allows you to crop (mask) portions of the stored video.



**CROP** — Turns on the crop feature and enables the soft knob adjustments for positioning the crop.

**TOP, BOTTOM, LEFT, and RIGHT** — Adjust the limits of the crop for the stored video.

## Video Store Reposition Menu

This menu allows positioning of the video store output image.

**VIDEO STORE REPOSITION MENU**  
frame store / video store / reposition

Blur is currently ON.  
Position values are limited to  
4 Line, 1 Pixel boundaries

			Coarse Adjust Horizontal						
			= 0.0000 Screen Units (0.00 Pixels)						
			Fine Adjust Horizontal						
			Coarse Adjust Vertical						
			= 0.0000 Screen Units (0.00 Lines)						
			Fine Adjust Vertical						
<table border="1" style="margin: 0 auto;"> <tr><td style="background-color: black; color: white;">ON</td><td style="background-color: black; color: white;">ON</td><td style="background-color: white; color: black;">ON</td></tr> <tr><td style="background-color: white; color: black;">OFF</td><td style="background-color: white; color: black;">OFF</td><td style="background-color: black; color: white;">OFF</td></tr> </table>	ON	ON	ON	OFF	OFF	OFF			
ON	ON	ON							
OFF	OFF	OFF							
HORIZONTAL POSITION	VERTICAL POSITION	PIXEL DETENT	RESTORE DEFAULTS						

**HORIZONTAL POSITION** — Enables or disables horizontal positioning of the stored (frozen or unfrozen) image.

**Coarse Adjust Horizontal and Fine Adjust Horizontal soft knobs** — Adjust the horizontal position of the image.

**VERTICAL POSITION** — Enables or disables vertical positioning of the stored (frozen or unfrozen) image.

**Coarse Adjust Vertical and Fine Adjust Vertical soft knobs** — Adjust the vertical position of the image.

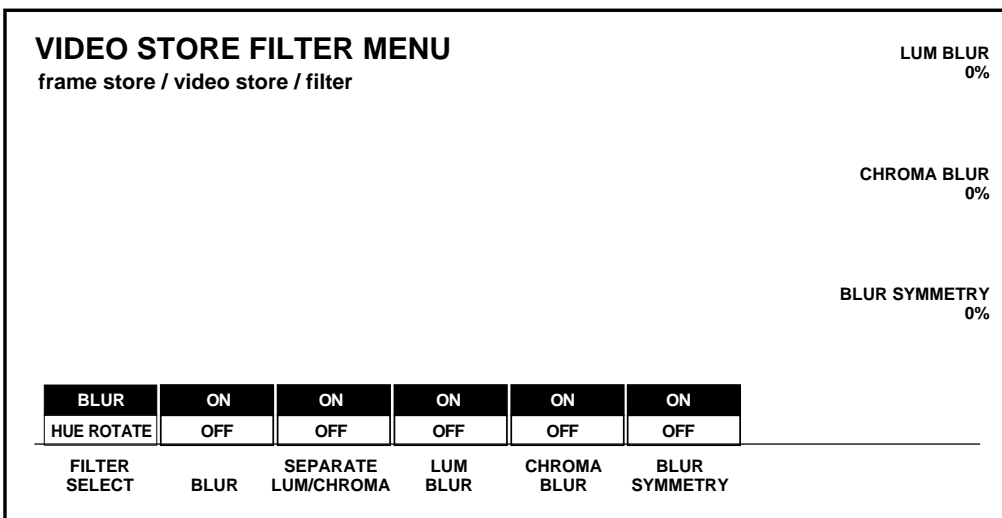
**RESTORE DEFAULTS** — Returns the image to the original position.

### Video Store Filter Menu (Blur)

The Video Store Filter menu allows you to apply either a blur or hue rotate to the video store output image.

**FILTER SELECT** — Selects either **BLUR** or **HUE ROTATE** filter mode.

Following is the appearance of the menu when **BLUR** is selected.



**BLUR** — Turns on the blur filter mode.

**SEPARATE LUM/CHROMA** — Allows separate adjustment of luminance blur and chrominance blur applied to the video store image.

**LUM BLUR** — Enables the **LUM BLUR** adjustment.

**LUM BLUR** — Adjust the amount of luminance blur applied to the image.

**CHROMA BLUR** — Enables the **CHROMA BLUR** adjustment.

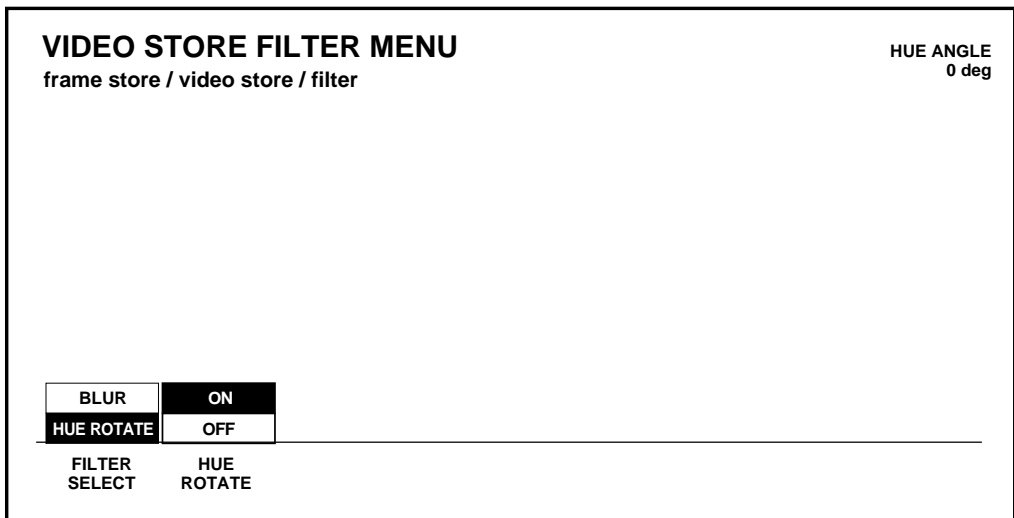
**CHROMA BLUR** — Adjusts the amount of chrominance blur applied to the video store image.

**BLUR SYMMETRY** — Enables the **BLUR SYMMETRY** horizontal adjustment.

**BLUR SYMMETRY** — Adjusts the vertical proportions of luminance and chrominance blur.

### Video Store Filter Menu (Hue Rotate)

This is the appearance of the Video Store Filter menu when **HUE ROTATE** is selected.



**HUE ROTATE** — Turns on the hue rotate filter mode which rotates the chrominance as observed on a Vectorscope.

**HUE ANGLE** — Adjusts the angle of hue rotation.

## Key Store Menu

The Key Store menu allows you to select the page, set the strobe period, and provides access to Key Store positioning.

The screenshot shows the 'KEY STORE MENU' interface. At the top left, it says 'KEY STORE MENU' and 'frame store / key store'. On the top right, there is a 'PAGE SELECT' section with four buttons: 'PAGE 1' (highlighted in black), 'PAGE 2', 'PAGE 3', and 'PAGE 4'. Below this, the 'STROBE TIME PERIOD' is set to '= 20'. Further down, the 'STROBE FREEZE PERIOD' is set to '= 10'. At the bottom center, there is a toggle switch for 'STROBE' with 'ON' selected (highlighted in black) and 'OFF' below it. At the bottom right, there are three menu options: 'CROP >', 'REPOSITION >', and 'FILTER >'.

**STROBE** — When **ON** is selected, Strobe is activated.

**STROBE TIME PERIOD** — Sets the time for the Strobe.

**STROBE FREEZE PERIOD** — Sets the time for the Strobe to freeze.

**PAGE SELECT** — Selects one of four pages (frames) of the key image.

**CROP>** — Opens the Key Store Crop menu.

**REPOSITION>** — Opens the Key Store Reposition menu.

**FILTER>** — Opens the Key Store Filter menu.

## Key Store Crop Menu

This menu allows you to crop (mask) portions of the stored key.

**KEY STORE CROP MENU**  
frame store / key store / crop

TOP  
= 0.00 screen units

BOTTOM  
= 0.00 screen units

LEFT  
= 0.00 screen units

RIGHT  
= 0.00 screen units

ON  
 OFF

---

CROP

**CROP** — Turns on the crop feature and enables the soft knob adjustments for positioning the crop.

**TOP, BOTTOM, LEFT, and RIGHT** — Adjust the limits of the crop for the stored key.

## Key Store Reposition Menu

This menu allows positioning of the key store output image.

KEY STORE REPOSITION MENU			Coarse Adjust Horizontal
frame store / key store / reposition			= 0.0000 Screen Units 0 Pixels)
Blur is currently ON. Position values are limited to 4 Line, 1 Pixel boundaries			Fine Adjust Horizontal
			Coarse Adjust Vertical
			= 0.0000 Screen Units (0 Lines)
			Fine Adjust Vertical
<input type="checkbox"/> ON <input type="checkbox"/> OFF	<input type="checkbox"/> ON <input type="checkbox"/> OFF	<input type="checkbox"/> ON <input type="checkbox"/> OFF	
HORIZONTAL POSITION	VERTICAL POSITION	PIXEL DETENT	RESTORE DEFAULTS

**HORIZONTAL POSITION** — Enables or disables horizontal positioning of the stored key.

**Coarse Adjust Horizontal and Fine Adjust Horizontal soft knobs** — Adjust the horizontal position of the key.

**VERTICAL POSITION** — Enables or disables vertical positioning of the stored (frozen or unfrozen) key.

**Coarse Adjust Vertical and Fine Adjust Vertical soft knobs** — Adjust the vertical position of the key.

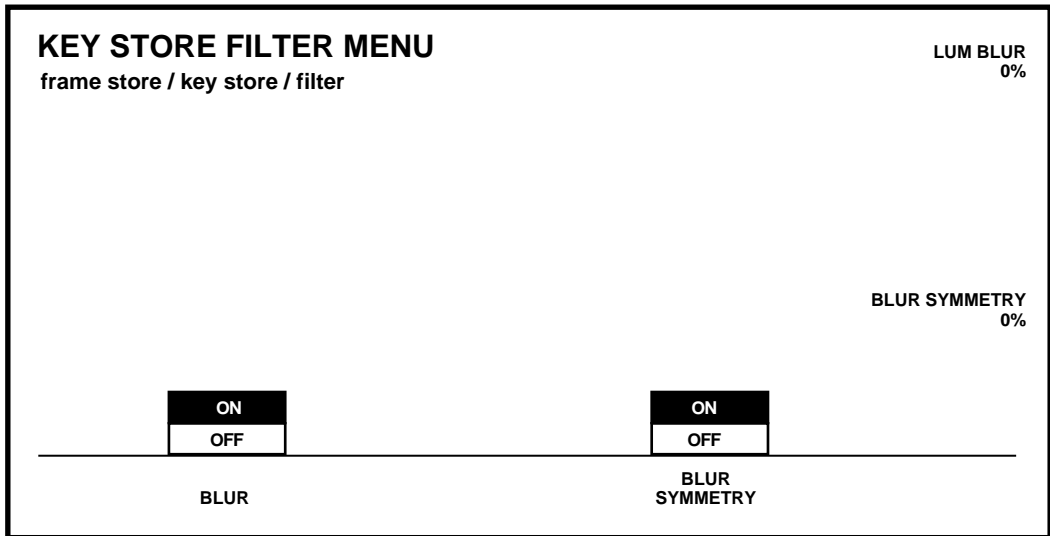
**RESTORE DEFAULTS** — Returns the key to the original position.



## Key Store Filter Menu (Blur — Video Mode)

The Key Store Filter menu allows you to apply a blur to the key store output.

Following is the appearance of the menu when **BLUR** is selected.



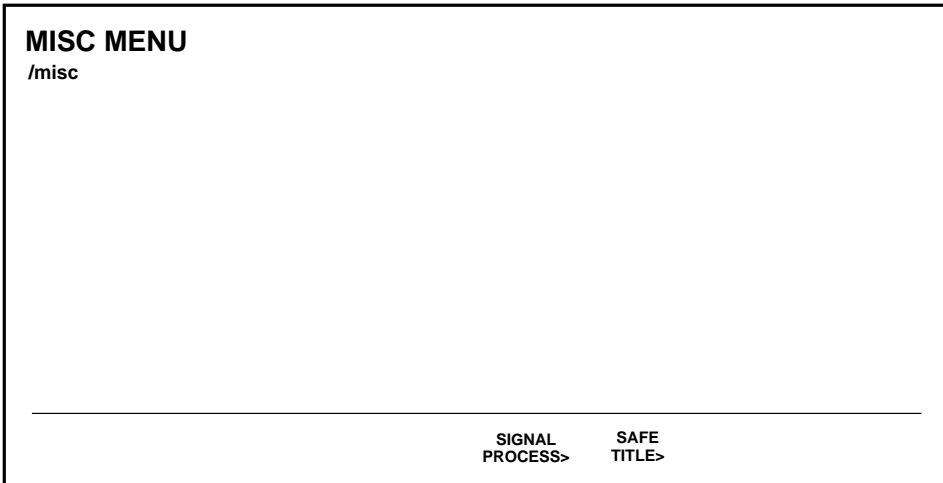
**BLUR** — Turns on the blur filter mode.

**BLUR SYMMETRY** — Enables the **BLUR SYMMETRY** adjustment.

**BLUR SYMMETRY** — Adjusts the proportions of horizontal and vertical blur.

## Miscellaneous Menu

Press the **MISC** button to select the Misc menu.



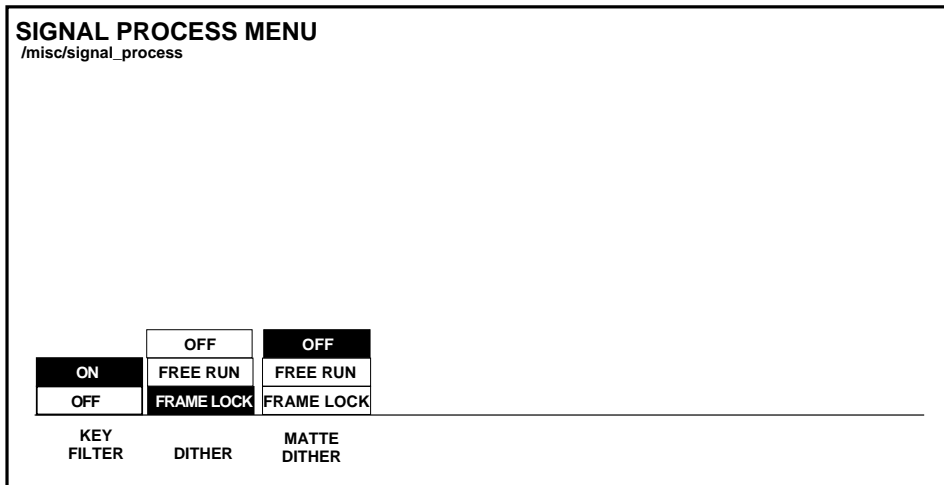
The following menu selections are accessible through the Miscellaneous menu:

**SIGNAL PROCESS >** — Opens the Signal Process menu, which allows you to select Key Filter and Dither modes.

**SAFE TITLE >** — Opens the Safe Title menu, which allows you to turn on or off safe title and select a safe title pattern.

## Signal Processing Menu

From the Miscellaneous menu, press the **signal Processing>** button to display the Signal Processing menu. Use the Signal Processing menu to turn Key Filter, Dither and Matte Dither modes on or off.



The Signal Processing menu selections are as follows:

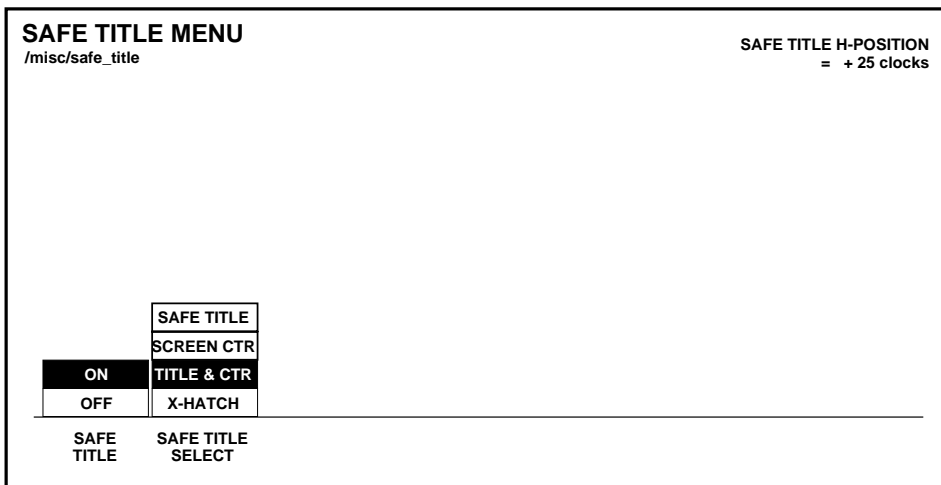
**KEY FILTER** — Enables/disables Key Filter mode.

**DITHER** — Selects Frame Lock, Free Run, or Off for 8-bit digital outputs.

**MATTE DITHER** — Selects Frame Lock, Free Run, or Off for 8-bit digital outputs for the matte signals.

### Safe Title Menu

From the Miscellaneous menu, press the **safe title>** button to display the Safe Title menu. Use this menu to turn the Safe Title mode on or off, select a safe title pattern, and adjust safe title horizontal position. The functions of this menu appear only if the Safe Title option is installed.



The Safe Title menu selections are:

**SAFE TITLE** — Turns the Safe Title Generator preview monitor display on or off.

**SAFE TITLE SELECT** — Selects a safe title pattern. This soft button appears only when **SAFE TITLE** is on.

**SAFE TITLE H-POSITION** — Positions safe title horizontally. This soft knob appears only when **SAFE TITLE** is on.

Press **exit** to return to the Miscellaneous menu.

## Disk Menu

Press the **disk** button to select the Disk menu. Use this menu for disk and file management functions such as creating directories, and loading and saving files.

The initial **DISK** menu appears as shown below when there is no disk in the drive.

MARKED FILES		CURRENT DIRECTORY		TOTAL BYTES		FILE SELECT
# FILES	# BYTES	/FLOPPY		0		
0	0	FILENAME	EXT	BYTES	DATE	TIME
		FLOPPY		<DEV>		

---

CHILD DIRECTORY UTILS >

**CHILD DIRECTORY** — Causes the system to read a diskette in the disk drive and to list the parent directory of the diskette.

Pressing **CHILD DIRECTORY** re-displays the menu with additional functions, such as in the sample menu below:

DISK MENU		CURRENT DIRECTORY		TOTAL BYTES	FILE SELECT		
/disk		/FLOPPY		0			
MARKED FILES		FILENAME	EXT	BYTES	DATE	TIME	
# FILES	# BYTES	/FLOPPY				<DEV>	
0	0						
						VIEW BY NAME	
LIST DIRECTORY	PARENT DIRECTORY	LOAD FILE >	SAVE FILE >	MARK FILE FOR DELETE	DELETE >	UTILS >	

**LIST DIRECTORY** — Causes the system to re-read the directory of the diskette in the disk drive.

**PARENT DIRECTORY** — Backs out from a subdirectory to the parent directory.

**LOAD FILE>** — Invoke the Load File menu. If a subdirectory is selected (see **FILE SELECT** below), the **CHILD DIRECTORY** label appears instead of **LOAD FILE>**.

**SAVE FILE>** — Invokes the Save File menu.

**MARK FILE FOR DELETE** — Marks files so that they may be deleted simultaneously. (Does not enable simultaneous loading or saving of files.)

**DELETE>** — Invokes the Confirm Delete menu which allows you to **DO DELETE** or **CANCEL**. Either a single selected file or a number of marked files can be deleted.

**UTILS>** — Opens the Utilities menu.

**FILE SELECT** — Moves the selection box through the list of files in the directory to select the file or directory to be acted upon by subsequent operations.

**VIEW BY NAME/EXT/DIR** — Allows the directory to be listed in alphabetical order by file name or by extension, or to just list subdirectories. The display changes automatically as the new selection is made.

After the diskette directory has been read, the display may look something like the following example:

## DISK MENU

/disk

FILE  
SELECT

MARKED FILES		CURRENT DIRECTORY	TOTAL BYTES
# FILES	# BYTES	/FLOPPY	8004
0	0		

FILENAME	EXT	BYTES	DATE	TIME
BOOT	ABS	45548	FEB 10 1994	09:20
COMM1	CMP	52665	FEB 10, 1994	08:31
COMM2	CMP	55817	FEB 10, 1994	22:27
.	.	.	.	.
.	.	.	.	.
.	.	.	.	.

---

LIST DIRECTORY
PARENT DIRECTORY
LOAD FILE >
SAVE FILE >
MARK FILE FOR DELETE
DELETE >
UTILS >

## Load File Menu

From the Disk menu, press the **Load file>** button to display the Load File menu. This menu will only display if the selected file is an E-MEM register.

**LOAD FILE MENU**  
disk / load file

Load file:  
/FLOPPY/ABLE.R01

NO LOAD	NO LOAD
LOAD	LOAD

NO LOAD	NO LOAD	NO LOAD
LOAD	LOAD	LOAD

M/E 1
M/E 2

MISC
BKGD
DPMs 1-4

E-MEM REGISTER	E-MEM BANK	E-MEM ALL
----------------	------------	-----------

E-MEM LOAD SELECT

DO LOAD
---------

**M/E 1 through DPMs 1-4** — Include or omit portions of the selected file before loading it from disk into the switcher.

**E-MEM LOAD SELECT** — Enables loading of the selected **E-MEM REGISTER**, the **E-MEM BANK** containing the selected register, or **E-MEM ALL** (all 100 E-MEM registers).

---

**NOTE:** It takes approximately 6 minutes to load all 100 registers, even if most of them are empty. You may prefer to load only specific banks.

---

**DO LOAD** — Brings up the Confirm File Load menu, which allows you to **DO LOAD** or **CANCEL**.



If the selected file is a Configuration file instead of an E-MEM file, the Load File menu displays as follows:

LOAD FILE MENU						
disk/load file						
Load file:/FLOPPY/NEWS.CFG						
NO LOAD	NO LOAD	NO LOAD	NO LOAD	NO LOAD	NO LOAD	
LOAD	LOAD	LOAD	LOAD	LOAD	LOAD	
USER PREFS	SYSTEM PARAMS	INPUTS	OUTPUTS	EXTERNAL INTERFACE	CLR WK BUF	DO LOAD

**USER PREFS** through **EXTERN I/F** — Include or omit portions of the selected file or buffer before loading it into the switcher.

**DO LOAD** — Invokes the Confirm File Load menu, which allows you to **DO LOAD** or **CANCEL**.

Press **exit** to return to the Disk menu.

## Save File Menu

From the Disk menu, press the **save file>** button to display the Save File menu. This menu is used to save selected portions of E-MEM register data or Configuration data to disk. You can also choose the type of save, the number of registers to be saved, and invoke the Name File sub-menu.

SAVE FILE MENU						
/disk/save_file						
CURRENT DIRECTORY				TOTAL BYTES		REGISTER = 24
/FLOPPY				8004		
SYSTEM		<b>E-MEM REGISTER</b>	E-MEM BANK	E-MEM ALL		SAVE SELECT
NO SAVE	<b>NO SAVE</b>	NO SAVE	<b>NO SAVE</b>	NO SAVE	NO SAVE	
<b>SAVE</b>	<b>SAVE</b>	<b>SAVE</b>	<b>SAVE</b>	<b>SAVE</b>	<b>SAVE</b>	
ME 1	ME 2	PGM-PST DSK	MISC	BKGD	DPMs 1-4	NAME FILE >

**M/E 1 through DPMs 1-4** — Select portions of the E-MEM register data or switcher Configuration data to be included or omitted when saving it to disk.

**SAVE SELECT** — Selects the type of save to be done.

**REGISTER =** — Selects a single register to be saved. When **E-MEM BANK** is selected, 10 registers at a time can be saved. When **E-MEM ALL** is selected, all 100 registers may be saved in one operation.

**NAME FILE>** — Invokes the Name File menu in order to name the file(s) that you wish to create on the disk. For an E-MEM file, an automatic extension is added to the file name on the disk (for example, R24 for register 24). If an E-MEM bank of all E-MEM registers is saved, a separate file is created on the disk for each E-MEM register.

If **CONFIG** is selected in the Save File menu, the menu looks like this:

**SAVE FILE MENU**  
disk/save file

CURRENT DIRECTORY	TOTAL BYTES
/FLOPPY	8004

CONFIG	E-MEM REGISTER	E-MEM BANK	E-MEM ALL
--------	----------------	------------	-----------

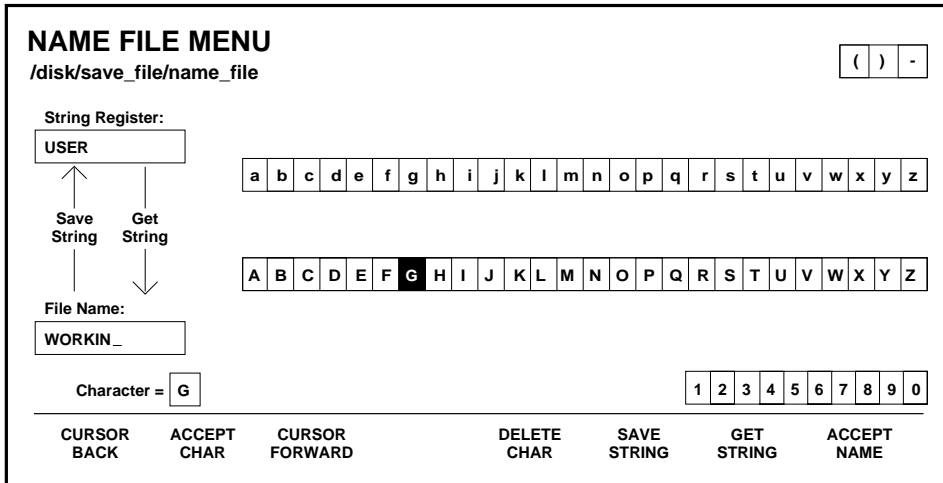
NO SAVE	NO SAVE	NO SAVE	NO SAVE	NO SAVE	NO SAVE	
SAVE	SAVE	SAVE	SAVE	SAVE	SAVE	
USER PREFS	SYSTEM PARAMS	INPUTS	OUTPUTS	EXTERNAL INTERFACE	CLR WK BUF	NAME FILE >

**USER PREFS** through **Cur Wk Buf** — Select portions of the switcher Configuration data to be included or omitted when saving it to disk.

**NAME FILE>** — Invokes the Name File menu to name the file you wish to create on the disk. For a Configuration file, an automatic extension of CFG is added to the file name on the disk.

### Name File Menu

From the Save File menu, press the **name file>** button to display the Name File menu. This menu is used to name files to be saved.



When **ACCEPT NAME** is pressed, the Confirm File Save menu displays, allowing you to **DO SAVE** or **CANCEL**. If a file with the same name already exists in the directory, you will be warned of that fact and given a third alternative, **OVER WRITE**, which will write the new file over the existing file on the disk (the existing file will be erased).

## Utilities Menu

From the Disk menu, press the **utils>** button to display the Utilities menu. This menu is used to format disks and create subdirectories in order to organize your saved files.

**UTILITIES MENU**  
/disk/utls

CURRENT DIRECTORY	TOTAL BYTES
/	0

DISK USAGE			
KBYTES USED	% USED	KBYTES AVAIL	% AVAIL

---

CREATE  
DIR >

FORMAT  
720K >

FORMAT  
1.44M >

**FORMAT 720K** and **FORMAT 1.44M** — Format a blank or previously used disk in the appropriate format. (A 720K disk has one write-protect tab; a 1.44M disk has two write-protect tabs.)

---

**NOTE:** *Be sure to have the write-protect tab(s) set to off (closed) to allow writing to the disk.*

---

**CREATE DIR>** — Invokes the Name Directory menu, which allows you to create subdirectories on the disk. This menu uses the same format as the Name File menu.

Pressing **CREATE DIR>** to open the Name Directory menu. Press **ACCEPT NAME** to either **DO CREATE** or **CANCEL**. If a duplicate directory name already exists in the parent directory a warning is issued and the Confirm Create Directory menu allows you to **RENAME** or **CANCEL**.

To save files to a subdirectory, first create the subdirectory, then have it open when you save the files that you wish to be in it. (To open the subdirectory, select it with the **FILE SELECT** knob in the next higher directory and press **CHILD DIRECTORY**.)

# 4 Menu Trees

## Introduction

Many switcher features are accessed via software menus that are displayed on the Menu Display. This display can show both alphanumeric text and graphics.

## Top Level Menu Buttons

The menu system is divided into groups of related menus. Any particular group of menus can be accessed by pressing one of the top level menu buttons located at the left of the menu display.

Each main menu button (except **LAST MENU**) brings up a main menu, under which there may be sub-menus that allow selection of less-frequently used options. (Some top level menus have no sub-menus, or contain only one or two levels of sub-menus.)

Pressing a top level menu button causes the soft button assignments in the display to change specifically for that menu.

<i>Effect</i>		<i>Switcher</i>	
Effect Config	Picture	Mixer Config	M/E Mode
Panel Setup	Picture Frame	Keyer	Chroma Key
Effect Oper	Key/Stencil	Status	Wipe
	View	E-MEM	Key Frame
Run Control	Input/Output	Mask	Matte
Graphic Display	Path	Aux Bus	Frame Store
	Clear Menu	Disk	Misc

## Soft Buttons

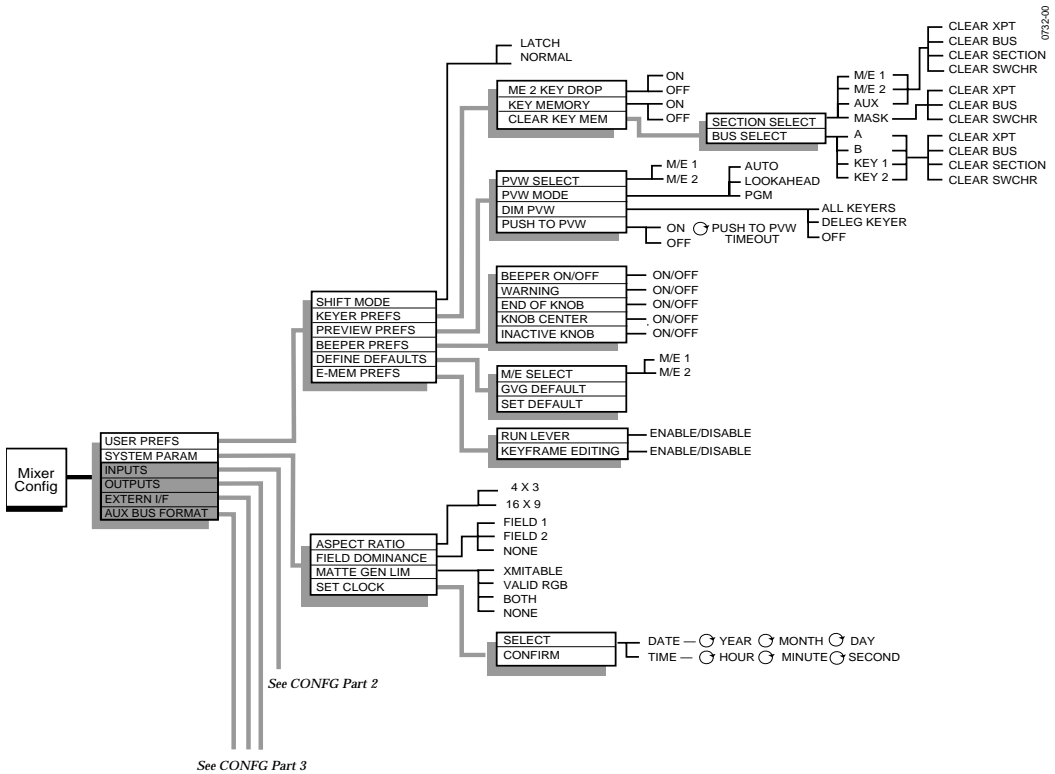
The eight “soft” buttons located below the menu display allow you to make function and sub-menu selections from menus displayed on the screen. The symbol “>” following the name of a soft button indicates that pressing that button will bring up a lower-level menu.

A ninth button in the row is a dedicated **EXIT** button that allows you to leave the menu you are in and return to the next higher menu on the tree.



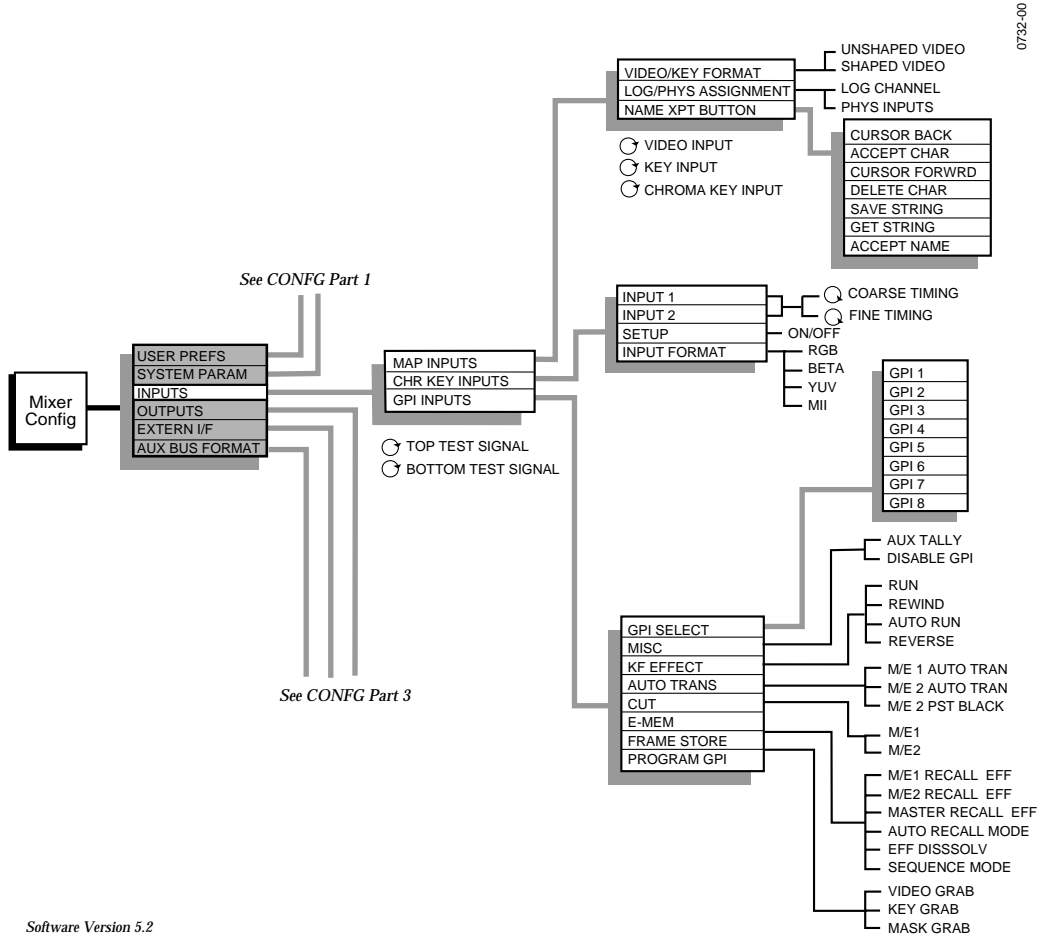
# Menu Tree Structures

Tree-structure diagrams are presented on the following pages for the top level menu buttons



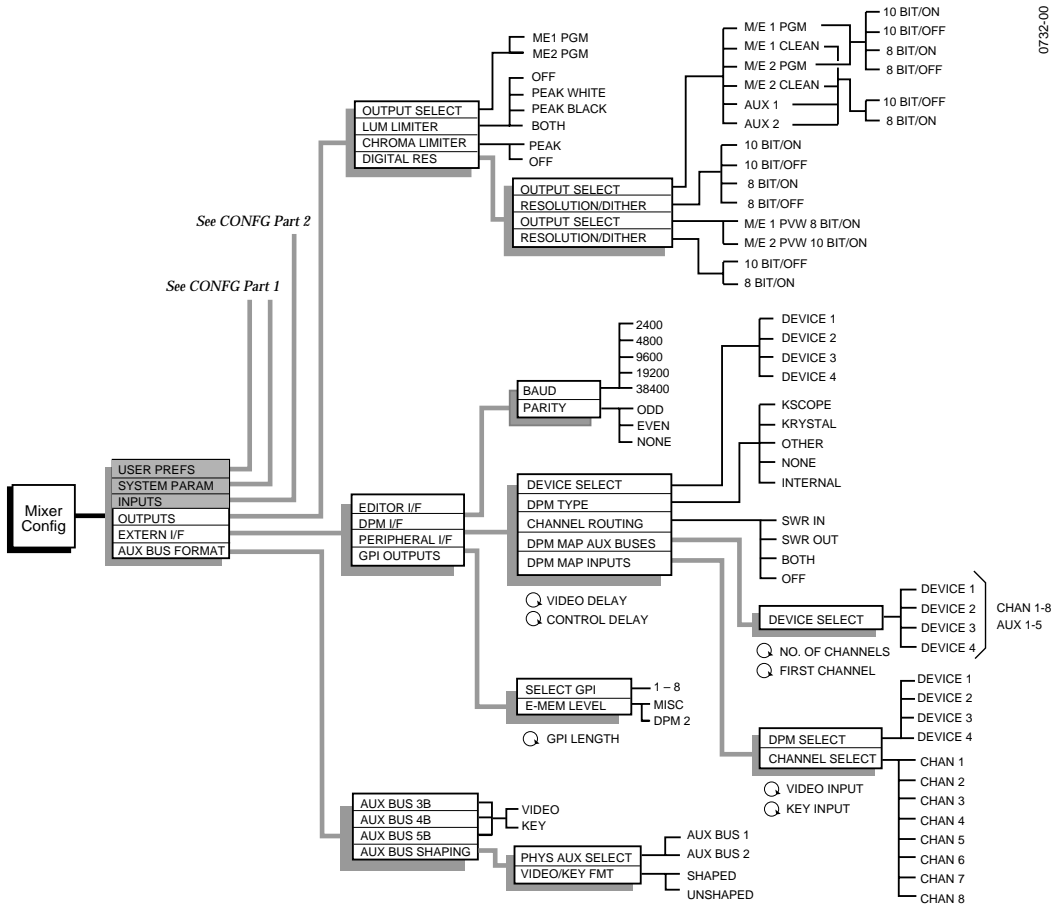
Software Version 5.2

Figure 4-1. Mixer Config Menu Tree (Part 1)



Software Version 5.2

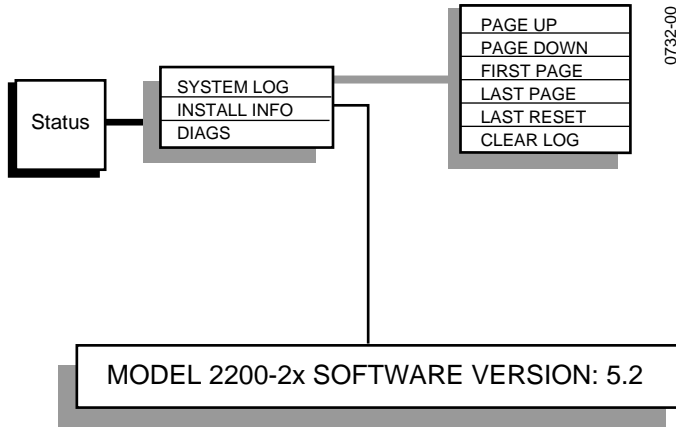
Figure 4-2. Mixer Config Menu Tree (Part 2)



07932-00

Software Version 5.2

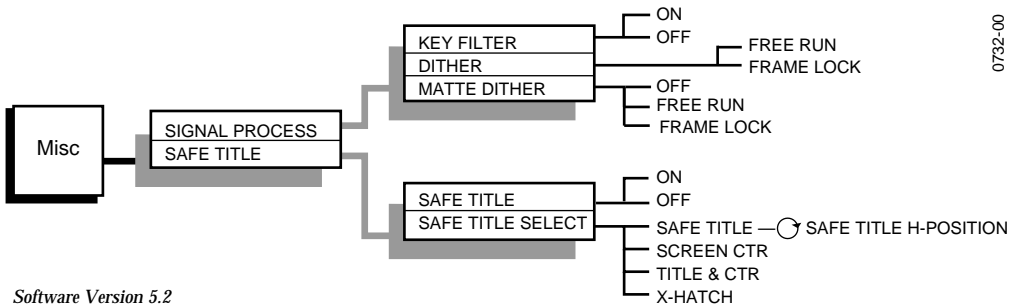
Figure 4-3. Mixer Config Menu Tree (Part 3)



0732-00

Software Version 5.2

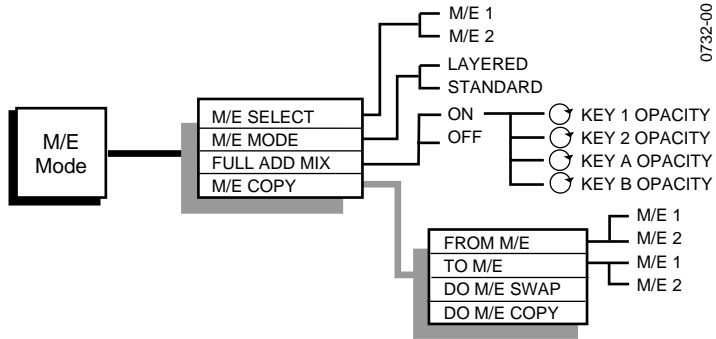
**Figure 4-4. Status Menu Tree**



0732-00

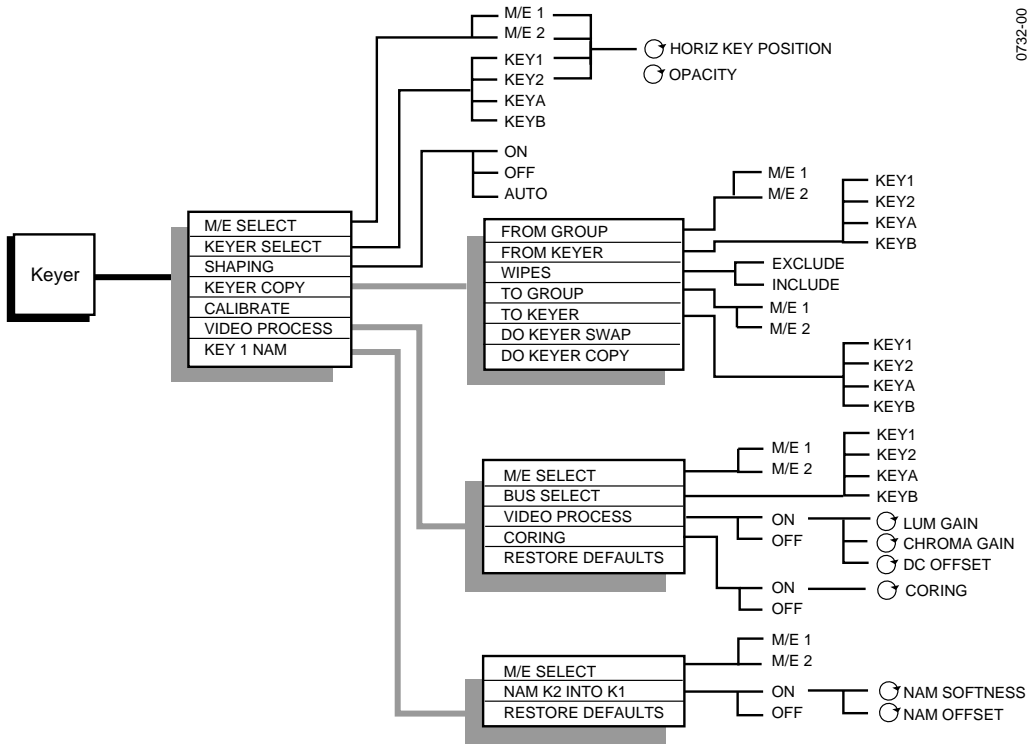
Software Version 5.2

**Figure 4-5. Misc Menu Tree**



Software Version 5.2

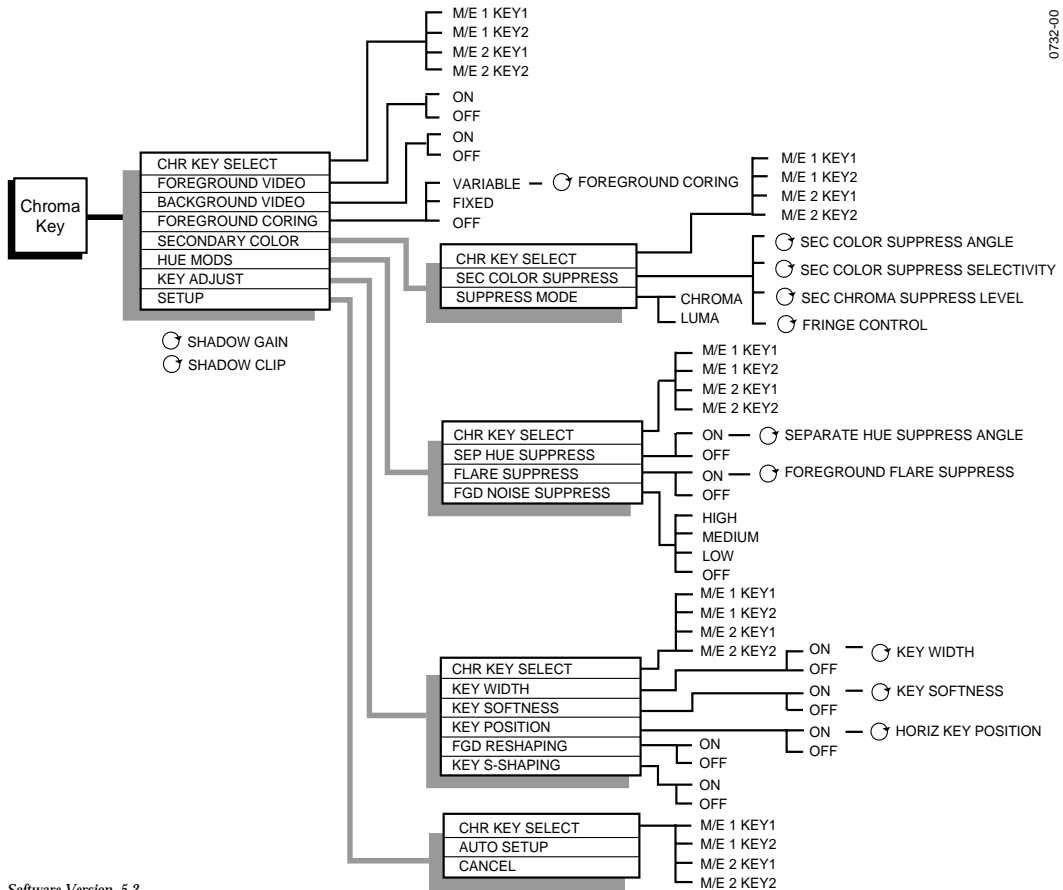
**Figure 4-6. M/E Mode Menu Tree**



0732-00

Software Version 5.2

Figure 4-7. Keyer Menu Tree



Software Version 5.2

Figure 4-8. Chroma Key Menu Tree

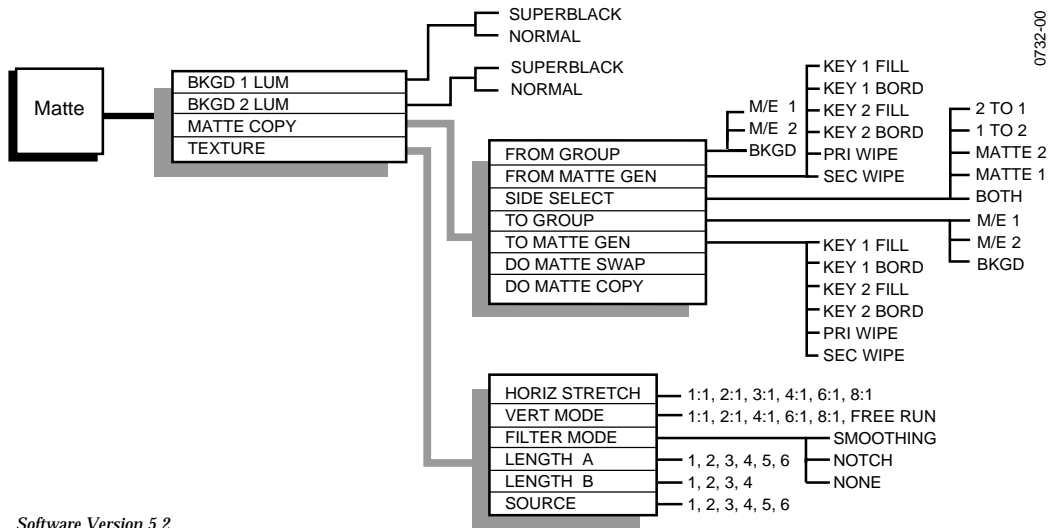
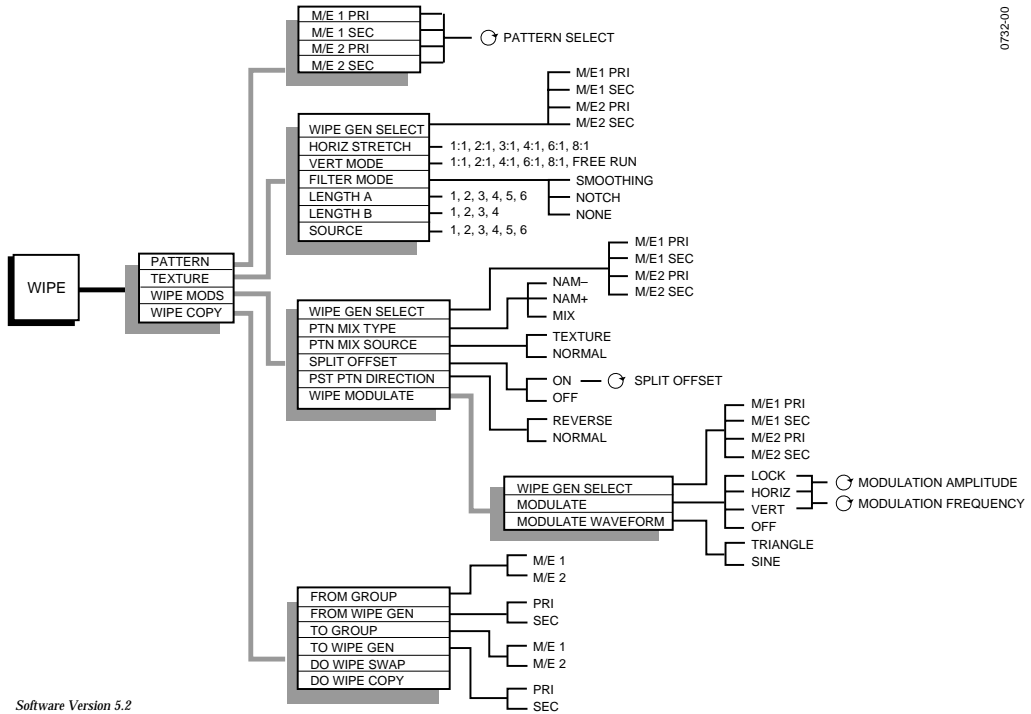


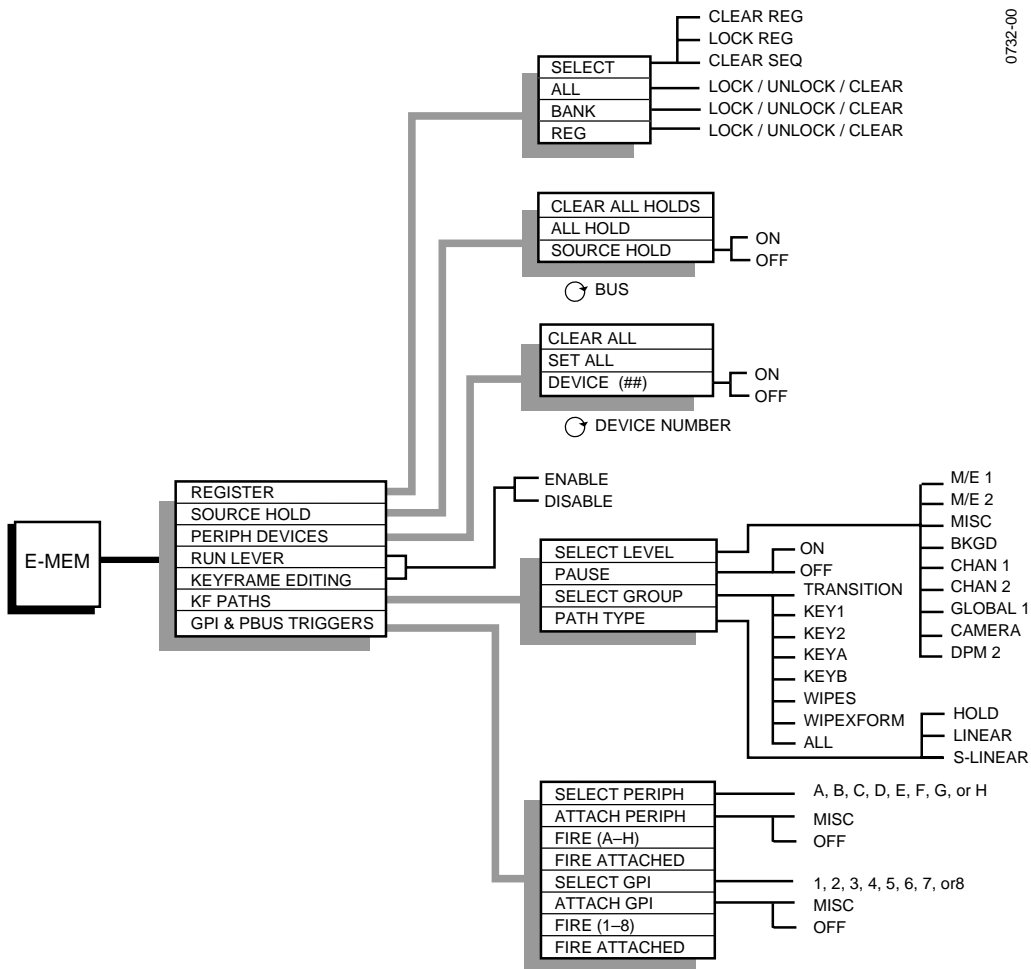
Figure 4-9. Matte Menu Tree





Software Version 5.2

**Figure 4-10. Wipe Menu Tree**



Software Version 5.2

Figure 4-11. E-MEM Menu Tree

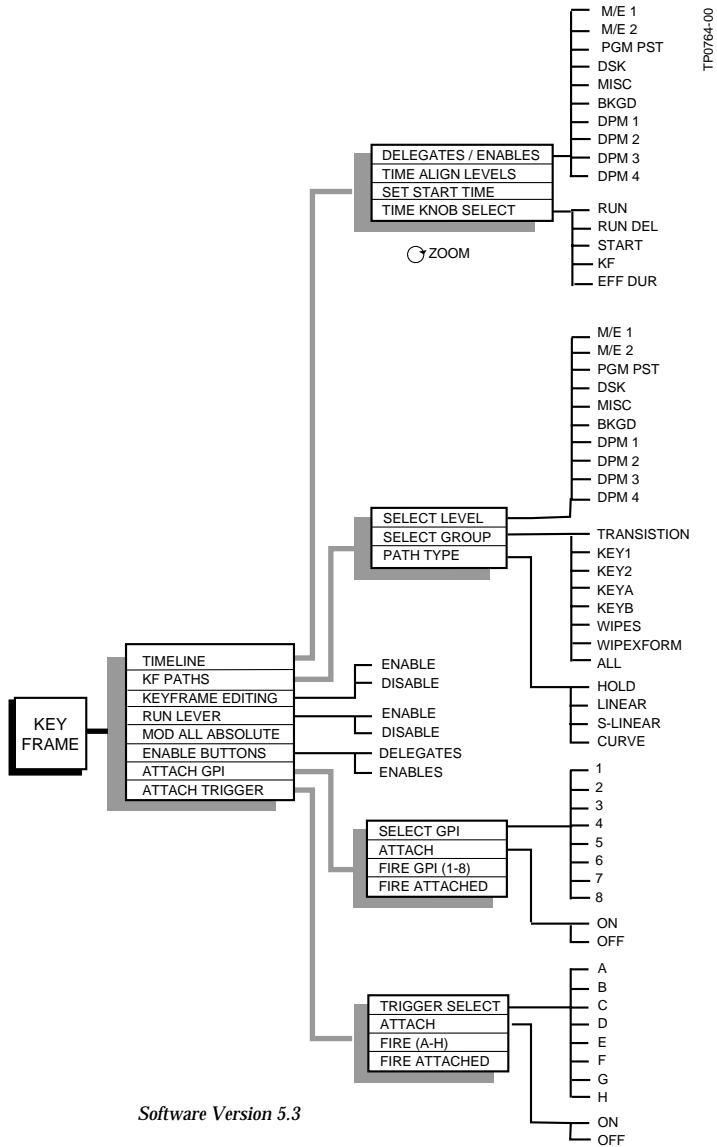


Figure 4-12. Keyframe Menu Tree

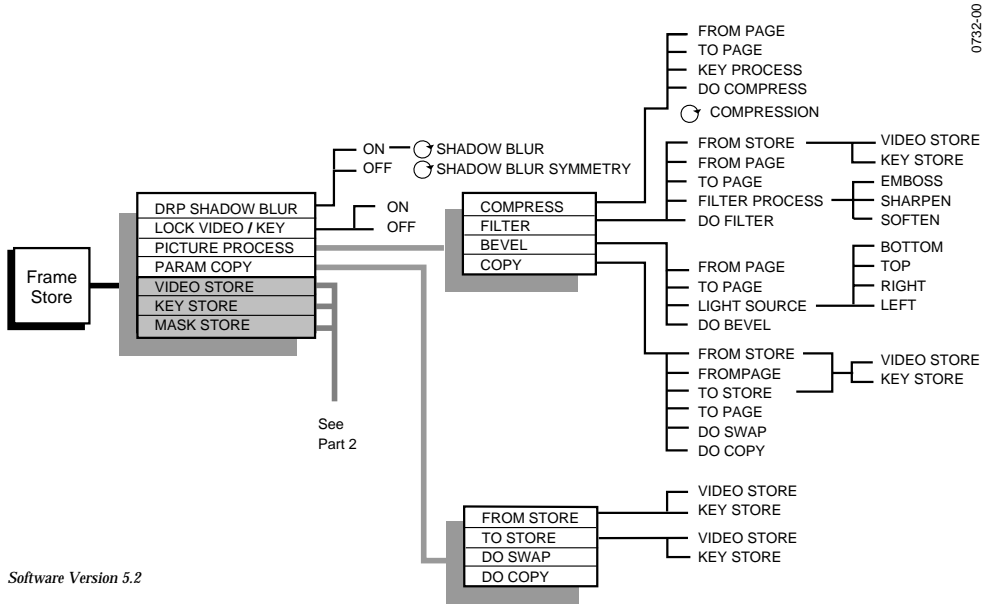
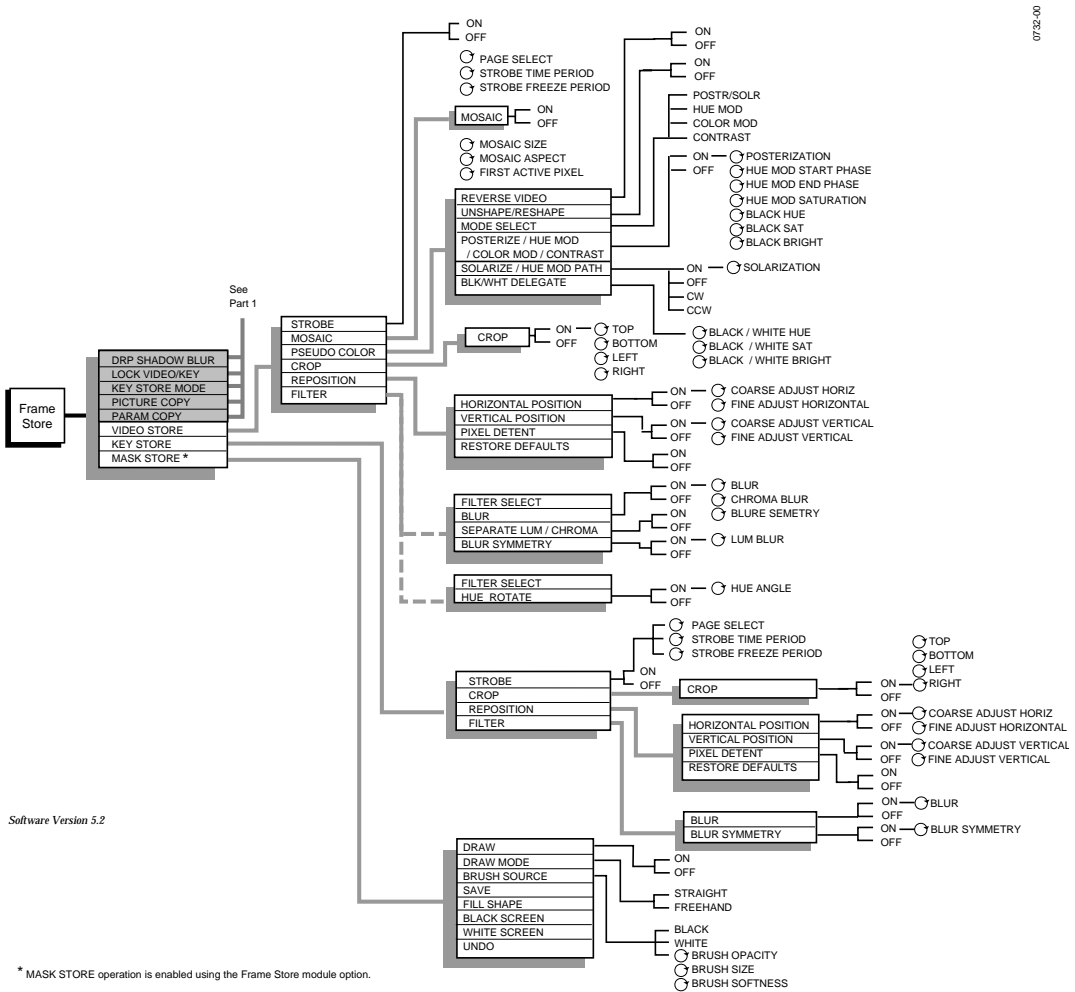


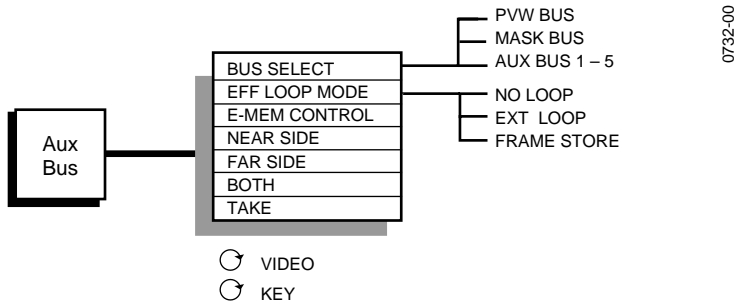
Figure 4-13. Frame Store Menu Tree (part 1)



Software Version 5.2

\* MASK STORE operation is enabled using the Frame Store module option.

Figure 4-14. Frame Store Menu Tree (part 2)



Software Version 5.2

**Figure 4-15. Aux Bus Menu Tree**



# *Appendix A — Keyframe Path Control*

## **Tension, Continuity, and Bias Controls**

The path that an effect takes between keyframes may be adjusted through the *CURVE* path type selection from the Keyframe Path Menu.

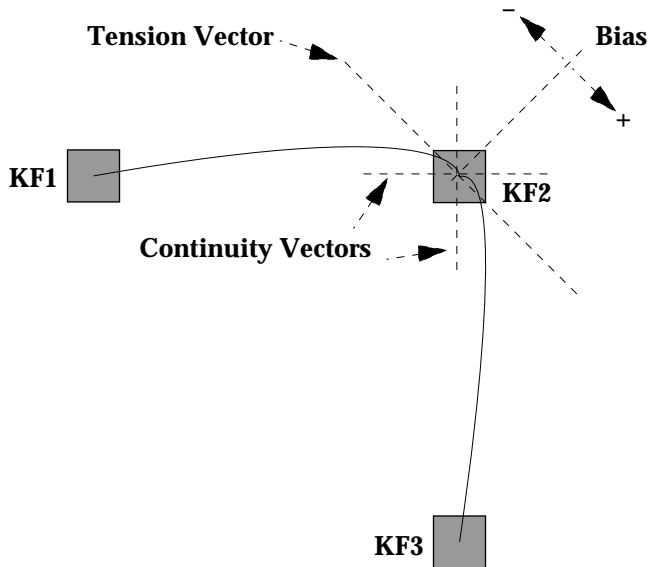
If *CURVE* is selected, three soft knobs are provided to control the three parameters of the vector. These are labeled: Tension, Continuity, and Bias.

The adjustment of these controls can affect the keyframe path in various ways. Interactions between the controls are numerous and each will be described in the following paragraphs. You may want to experiment with the interactions by adjusting the controls in small increments.

In the following examples, a physical path is shown between three keyframes. The first keyframe (KF1) is the upper left square; the last keyframe (KF3) is the lower right square. The adjustments in these examples are applied to the middle keyframe only (KF2).

## Path Vectors

With respect to the path between keyframes, each keyframe is made up of three vector parameters as shown below. The soft knob controls act on these vector parameters to adjust the path into (entry) and out of (exit) the keyframe. The path through KF2 is parallel with an imaginary line drawn between KF1 and KF2.





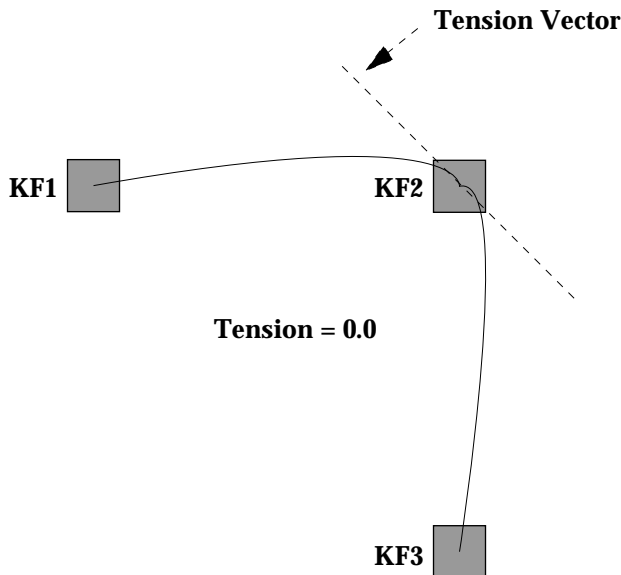
## Tension Control

In the example below, the keyframes are at right angles so the (*TENSION*) control operates on a 45° line drawn through the keyframe. This line is referred to as the Tension Vector and is parallel to a line drawn between adjacent keyframes (see illustration).

The (*TENSION*) soft knob controls the length of the tension vector. At a Tension setting of 0, this imaginary line extends an equal distance into and out of the keyframe, and the path through the middle keyframe is curved.

The unmodified KF2 is said to have a correction value of 0 (see Example 1).

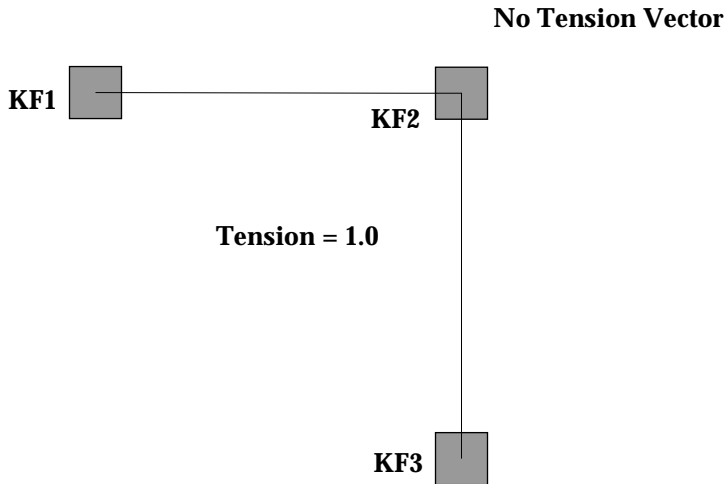
### Example 1



In Example 2, the (*TENSION*) control is increased to 1.00, so that the Tension vector is shortened to non-existence through KF2.

The path enters and leaves the middle keyframe in a straight line as it takes on an S-Linear motion; decelerating as it enters the middle keyframe and accelerating as it leaves.

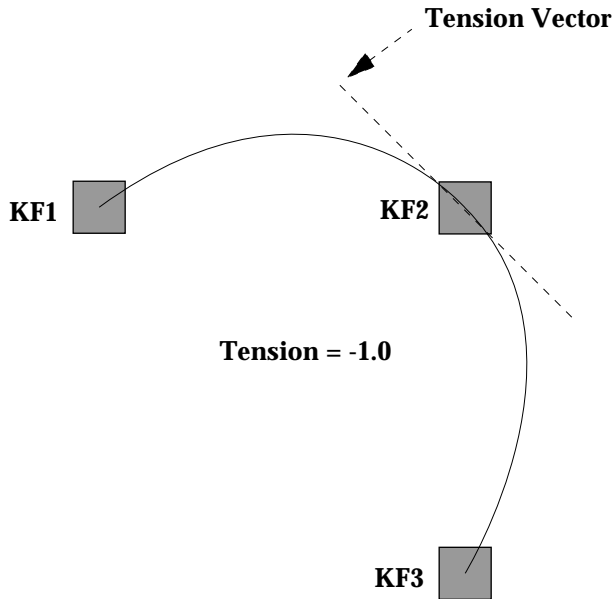
**Example 2**



In Example 3, the (*TENSION*) control has been set to -1.00. This produces an effect of lengthening the Tension vector, causing the path through the middle keyframe to be longer and broader.

The longer path will appear to make the image speed up through KF2 as it travels from KF1 to KF3.

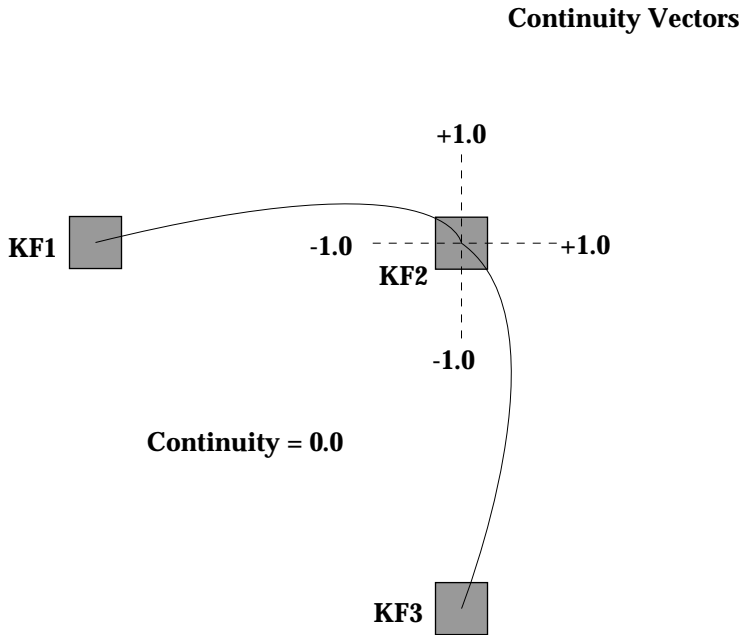
**Example 3**



## Continuity Control

The continuity adjustment determines the angle of the path into and out of the keyframe. It is represented by vectors at 90 degrees to each as shown in Example 4.

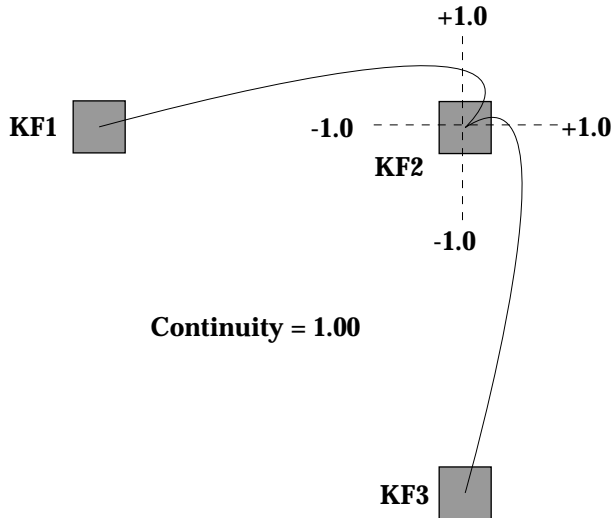
### Example 4



The unmodified path shown above is identical to the unmodified path of the other controls.

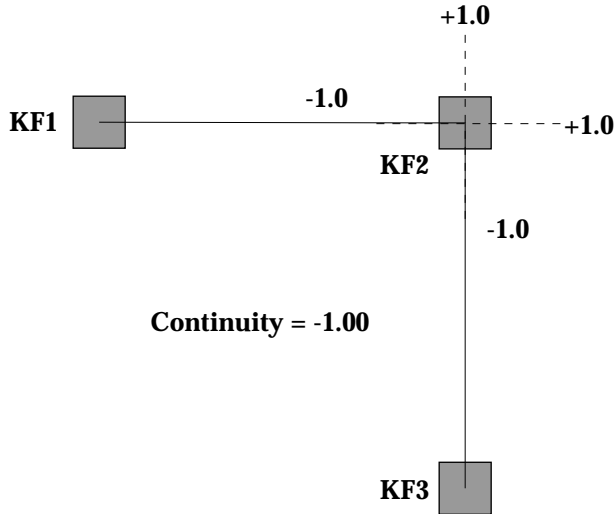
With continuity set to 1.00, the entry path through the keyframe is pulled to point at the following keyframe or exit path. The effect of 1.00 continuity is that of motion dropping into and then out of the keyframe, similar to a bouncing ball (see Example 5).

**Example 5**



With continuity set to -1.00, the paths between the keyframes become straight lines, accelerating through the keyframe (see Example 6).

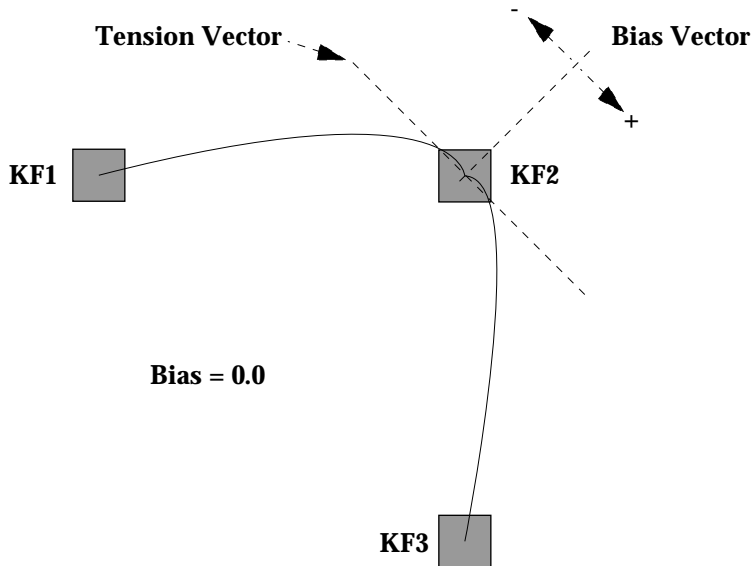
**Example 6**



## Bias Control

The (*BIAS*) control determines whether the path will be “pulled” towards the previous or the following keyframe. With extreme settings, all of the biasing will occur either before or after KF2. With bias set to 0, the curve through the keyframe is gentle as shown in Example 7 below.

### Example 7



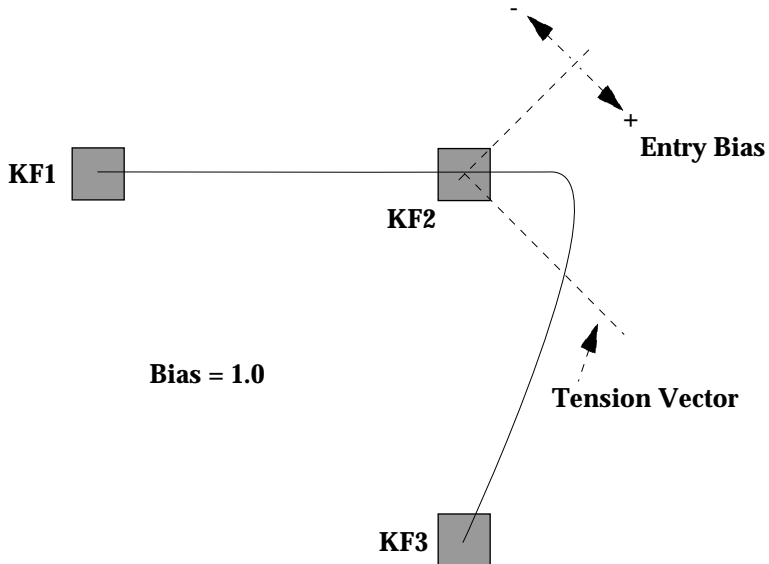
---

**NOTE:** A Tension vector *MUST* be present for Bias control to have an effect.

---

With the bias set to 1.00, the path is pulled towards the previous keyframe. Entrance and exit to the keyframe are on a straight line from the previous keyframe (see Example 8), and the path of the effect travels completely through KF2 before turning towards KF3.

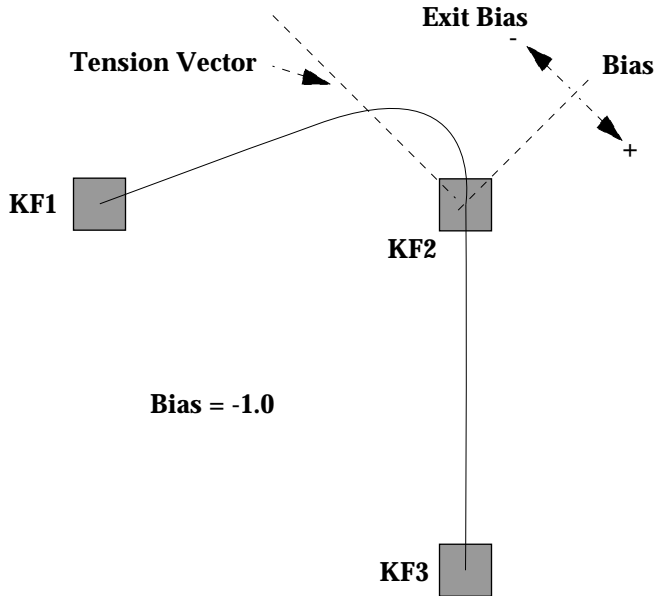
**Example 8**





With the bias set to -1.00, the path is pulled towards the following keyframe. Entrance and exit to the keyframe are a straight line pointed to the following keyframe (see Example 9).

**Example 9**







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