

ASWR 8150 Component Digital Switcher

**Operations
Manual**

PN 9100-0204-06

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Table of Contents

Introduction

System Description	1-1
About This Manual	1-5
Scope of Manual	1-5
How to Use This Manual	1-8
Manual Conventions	1-9
Control Panel Button Groups	1-10
Menu Buttons	1-10
The Menu Screen	1-11
Menu Display	1-11
Submenu Labels and Controls	1-11
The Keypad Buffer	1-12
Entering and Changing Settings	1-13
Default Values and UNDO MENU	1-14
Program/Preset Buttons	1-15
Transition Control Buttons	1-16
Quick Keyframe Buttons	1-17
TimeFrame™ Effects Editor Buttons	1-18
Delegation Buttons	1-19
Timeline Buttons	1-20
DVE / Miscellaneous Buttons	1-21
Video and Key Signal Paths	1-22

Getting Started

Powering Up Your 8150	2-1
Preview Output and Menu Recall ...	2-3
Source Selection and Basic Transitions	2-6
Basic Keys and Key Source Selection	2-9
Joystick Lock	2-12
Using Multiple Control Panels	2-14
The ACQUIRE Button	2-14
Troubleshooting Hints	2-15
The Status Menu	2-16
Fortune	2-18

Transition Control

Introduction	3-1
The 8150 Control Panel	3-2
Overview	3-2
M/E, SHIFT, and Crosspoint Buttons	3-4
Transition Button Color Coding	3-5
Creating a Cut Transition	3-6
Creating a Mix Transition	3-7
Creating a Wipe Transition	3-8
Creating an Effect Transition	3-8
Creating a Split Trans. on PGM/PST	3-9
Creating a Split Trans. on the M/E	3-11
Ultamix™ General Guidelines	3-12
Changing Auto Transition Rates	3-13
Changing Transition Curves	3-15

Transition Controls	3-16
Bus Row Delegation Buttons	3-16
BKND	3-17
KEY 1	3-17
KEY 2	3-17
PRIORITY	3-17
PGM PST	3-17
DSK	3-18
KEY BUS DELEGATION	3-18
Transition Buttons	3-18
MIX	3-18
WIPE	3-18
EFFECT	3-19
NAM	3-19
CUT	3-20
AUTO TRAN	3-20
FTB	3-21
FADER BAR.....	3-21
Keying	
Introduction.....	4-1
Setting Up a Luma (Luminance) Key ..	4-2
Traditional Chroma Keying	4-4
The 8150 Chroma Keying Process	4-6
Setting Up a Basic Chroma Key	4-13
Chroma Key with Color Pick	4-13
Chroma Key without Color Pick	4-17
NAM Mode Keys	4-19
Key Mode Versus Matte Mode	4-20
Two Connotations of Matte.....	4-20
Key Mode and Matte Mode	4-20
Shaped and Unshaped Foregrounds	4-22

Chroma Keys in Matte Mode	4-27
Coring	4-28
Source Memory and Memory Copying	4-29
Copying from One Keyer to Another	4-30
Copying within the Same Keyer	4-31
Direct Copy Using Bus Based Mode	4-31
Copy to User Keyer Register	4-32
Source Memory and Effects Recall	4-33
Resave as a User Keyer	4-33
Change Keyer Parameter	4-34
The Keyer Menu	4-35
Main Submenu	4-37
Key Type	4-37
Mode	4-38
Opacity	4-40
Mask Enable	4-40
Key Invert	4-40
Source Memory	4-40
Basic Chroma Key Submenu	4-42
Mode	4-42
Hue Adjust	4-42
Sat Adjust	4-43
Supprsn	4-44
Post Process	4-45
Pick Color	4-45
Advanced Chroma Key Submenu	4-49
Key Type	4-49
High Sat Adjust	4-51
Luma Adjust	4-51
Patch Control	4-51
Options	4-55
Source Memory	4-56

Attributes Submenu	4-56
Size Position	4-56
Defocus	4-56
Opacity	4-57
ASPIK™	4-57
Wipe Border	4-58
Key Mask Submenu	4-59
Internal Mask	4-59
Internal Mask Mode	4-60
External Mask	4-61
External Mask Mode	4-61
Wipe Trans	4-63
Sources /User Keyer Submenu	4-64
Source	4-64
Key Fill	4-68
Color Pick	4-69
Save	4-70
Recall	4-70
Clear	4-70
Key Borders	
Introduction.....	5-1
The Key Borders Menu	5-3
Border Type Submenu	5-4
Border	5-4
Extrude/Trail	5-6
Shadow	5-7
Misc	5-8
Border Fill Submenu	5-9
Border Fill	5-9
Color Pick	5-11
Key Fill Submenu	5-12
Key Fill	5-12

Wipes

Introduction	6-1
Setting Up a Wipe Transition	6-2
Using a Wipe as a Key Mask.....	6-3
Advanced Wipe Option	6-5
Multiply	6-6
Perspective, Rotation, and Magnification	6-6
Horizontal and Vertical Modulation	6-7
Matrix Wipe Patterns	6-8
Mixing Pri. and Sec. Patterns	6-10
Preset Pattern	6-12
The Wipe Menu	6-13
Patterns Submenu	6-14
Attributes Submenu	6-15
Position	6-15
Aspect	6-17
Multiply (Advanced Wipe Only).....	6-18
Pattern Split	6-18
Trans	6-19
Auto Center	6-19
Border Submenu	6-20
Border Adjust	6-20
Border Fill	6-21
Color Pick	6-22
Border Modes	6-23
Background Border	6-24
Border Boost.....	6-24
Special Submenu (Advanced Wipe Only)	6-25
Horizontal/Vertical Modulation	6-25
Shape Modifier One	6-26

Shape Modifier Two	6-26
Pattern Mix	6-27
Preset Pattern	6-29
Matrix Submenu (Advanced Wipe Only)	6-30
Pattern	6-30
Shape Modifier One/Two (M/E Wipes Only)	6-31
User Wipes Submenu	6-32
Save	6-33
Recall	6-33
Clear	6-33
Miscellaneous Functions	
Introduction.....	7-1
Creating a SuperMatte Background .	7-3
The Miscellaneous Menu	7-4
SuperMatte Patterns Submenu	7-4
Pattern Select	7-4
Position	7-4
Aspect	7-5
Trans	7-6
SuperMatte Adjust	7-7
SuperMatte Attributes Submenu	7-8
Matrix (Advanced Wipe Only)	7-8
Multiply (Advanced Wipe Only).....	7-9
Pick Color	7-9
SuperMatte Adjust	7-9
User SuperMatte Submenu	7-10
Aux Buses Submenu	7-12
.....	7-16
Effects Loop Inputs	7-16
Preview Bus Control & Misc Submenu	7-21

Analog Monitor	7-21
Source	7-21
Auto Trans Submenu	7-24
Autotrans Rates	7-24
Trans	7-25
Color Correction	
Introduction	8-1
The Color Corrector Menu	8-5
Main Submenu	8-6
Color Corrector Mode	8-6
Adjust Gain/Offset/Gamma/Knee ...	8-8
Adjust Black Clip/White Clip	8-9
Proc Amp Controls	8-10
RGB - YUV Convert	8-10
Source Memory	8-10
Effects Submenu	8-11
Color Corrector Mode	8-11
Solarize	8-11
Luma Tinting	8-12
False Coloring	8-12
Invert Gain	8-13
Source Memory	8-13
Clear Submenu	8-14
Clear This CCR	8-14
Clear All CCRs	8-15
Clear All Memory	8-15
User CCRs Submenu	8-16
Save	8-17
Recall	8-17
Clear	8-17

Framestores

Introduction	9-1
Basic Framestore Operations	9-3
Freezing Video	9-3
Unfreezing Framestore Video	9-4
Creating a Stroboscopic Effect	9-5
Drawing into the Framestores	9-7
Key Mask Drawing	9-8
Replacing Colors	9-11
The Framestore Menu	9-16
Framestore Submenu	9-17
Framestore #1 Freeze	9-17
Framestore #1 Mode	9-17
Framestore #2 Freeze	9-17
Framestore #2 Mode	9-17
Adjust	9-18
Locks Submenu	9-19
Test Patterns Submenu	9-20
Frame Store #1 (#2) Pattern	9-20
Drawing Submenu	9-23
Frame Store	9-24
Draw	9-24
Flood Fill	9-25
Clear Store	9-27
Brush & Paint	9-28
Color Pick	9-28

Timelines

Introduction	10-1
Snapshot Effects	10-1
Timelines	10-2
Timeline Effects	10-2

Running Timeline Effects with an Editor	10-3
Saving and Recalling Timeline Effects ..	10-3
Saving and Recalling Snapshot Effects ...	10-4
Saving Snapshot Effect Reg. to Disk	10-6
Recalling Snapshot Reg. from Disk ..	10-7
Creating Timeline Effects	10-9
Basic Timeline Operations	10-9
The Timeline Display	10-11
The Master Timeline	10-12
Delegating Timelines	10-13
Creating Timeline Effects	10-14
Motion Path Types	10-18
Assigning Path Types	10-26
Triggering GPI Outputs (GPOs)	10-27
Pausing an Effect	10-29
Looping an Effect	10-30
Defeating Crosspoint Memory in an Effect	10-30
Forcing or Inhibiting a Transition ..	10-31
Editing Timeline Effects	10-32
Using LINC	10-38
Adding a DVE to a Timeline Effect	10-38
Adding a DDR to a Timeline Effect	10-39
Saving and Recalling Timeline Effects	10-41
Saving Timeline Effect Registers to Disk	10-42
Recalling Timeline Registers from Disk	10-44
The Timeline Menu	10-45
Display Timelines Submenu	10-46
TimeLine	10-47

Assign Timelines Submenu	10-49
Add	10-51
Delete	10-51
Keyframe Events Submenu	10-52
M/E Trans	10-52
P/P Trans	10-53
Pause	10-53
Toggle GPO	10-54
Global Events Submenu	10-55
Loop	10-55
XPoints	10-56
Paths Submenu	10-57
Select	10-58
LINC Submenu	10-59
Dev Enable	10-59
Play	10-60
Stop	10-60
The Effect Menu	10-61
Converting Snapshots Created with Earlier Software	10-62
Timeline Effects Submenu	10-64
Save (Name Eff)	10-64
Recall (Recall Eff)	10-65
Protect	10-66
Copy Current	10-66
Confirm	10-66
Snapshot Effects Submenu	10-67
Save (Save Eff)	10-67
Recall (Recall Eff)	10-68
Delete (Delete Eff)	10-68
Protect	10-69
Confirm	10-69

Disk Operations

Introduction	11-1
Saving Files to Disk	11-2
Setting the Date and Time	11-2
Formatting a Floppy or Jaz Disk	11-3
Saving Files to Disk	11-5
Recalling Files from Disk or Jaz	11-9
Deleting Files from Disk or Jaz	11-11
Saving and Recalling File Comments	11-13
Saving and Recalling a Range of Files	11-15
Saving a Range of Files.....	11-15
Recalling a Range of Files	11-16
Copying Single Files between Disks	11-19
Copying All Files Between Disks	11-21
The Disk Menu	11-23
Save Recall Submenu	11-23
Drive	11-23
Show Comment	11-24
Set Comments	11-25
Save	11-25
Recall	11-26
Confirm	11-26
Directory Submenu	11-27
Drive	11-27
Make Directory	11-27
Remove Directory	11-28
Change Directory	11-28
Confirm	11-28

Delete Copy Submenu	11-29
Drive	11-29
From	11-29
To	11-30
Delete	11-30
Confirm	11-30
Format Submenu	11-30
Drive	11-31
Format	11-32
Confirm	11-30
Miscellaneous Submenu	11-33
Date	11-33
Time	11-33
(Set) Date & Time	11-34
Personality	
The Personality Menu	12-1
Input Names Submenu	12-2
Inputs	12-3
Current Selection	12-3
Name	12-3
Input Assign Submenu	12-4
Assigning Crosspoints	12-5
User Keys & MISC Submenu	12-6
Recording a Macro	12-7
Auto Menus	12-8
MENU UNDO Key	12-9
GPIs Submenu	12-10
GPIs	12-11
Assign	12-11
Input GPI Functions	12-11
Remote Port Enables Submenu	12-14
Port 1	12-14
Port 2	12-14

Port 3	12-15
GPIs	12-15
GPOs	12-15
Preview Monitor Overlays Submenu ..	12-16
Safe Action	12-16
Grid Overlay	12-17
Overlay Color	12-17
Reference Lines	12-17
Cursor	12-18
Cursor & Reference Line Color	12-18

Engineering

Introduction	13-1
The Engineering Menu	13-2
Communications Submenu	13-3
Input Submenu	13-6
Effects Loop Inputs	13-6
Setup Inputs	13-8
Input Bits	13-9
Analog Input Setups	13-9
Composite Input Setups	13-15
Key Input Setups	13-19
Output Submenu	13-21
Output Delay	13-21
Output Bits	13-22
H Blanking	13-22
V Blanking	13-23
Output Phase	13-24
Key Mode	13-25
Miscellaneous Submenu	13-26
Video Standard	13-26
Aspect Ratio	13-27
Display	13-27
Timing	13-28

Aux/Txt Retime	13-31
Lamp Saver	13-36
Software Update Submenu	13-37
Confirm	13-38
Update	13-38
Diags Submenu	13-40

Remote Operations

Introduction.....	14-1
Controlling the 8150 from an Editor ..	14-2
RS-422 Serial Communications	14-2
Single Monitor Editing	14-3
GPI Inputs	14-5
GPI Input Functions	14-5
Aux Bus A/B (Front/Back) Switching	14-8
Controlling other Devices with the 8150	14-9
LINC Serial Control	14-9
GPI Outputs (GPOs)	14-10
External Input Source Tallies	14-10

Control Panel

Control Panel Buttons	15-1
* (DECIMAL POINT)	15-1
+/- (PLUS/MINUS)	15-1
ACQUIRE	15-1
ALIGN	15-1
ALL	15-2
AUTO TRAN	15-2
BKND	15-2
BORDERS	15-2
CLEAR	15-3
CLEAR KEYFRAME	15-3

COLOR CRCTR	15-3
COPY	15-3
CROSSPOINTS	15-3
CURSOR	15-4
CUT	15-4
DELETE (Quick Keyframes)	15-4
DELETE (Effects Editor)	15-4
DISK	15-4
DSK	15-5
DVE	15-5
DVE Channel Select Buttons	15-5
DVE FREEZE	15-5
EFFECT (Transition Type)	15-6
EFFECT (Menu)	15-6
EFFECT TRANS (Menu)	15-6
END (FF)	15-6
ENG	15-7
ENTER	15-7
F1, F2, F3	15-7
FADER BAR	15-7
FAM (Transition Type).....	15-7
FIELD	15-7
FRAMESTORE	15-8
FTB	15-8
INSERT	15-8
INSERT NEXT	15-8
JOYSTICK	15-8
JOYSTICK LOCK	15-9
KEY	15-9
KEY BUS DELEGATION	15-9
KEY 1	15-9
KEY 2	15-10
M/E	15-10
MISC	15-10

MIX (Transition Type)	15-10
MODIFY (Quick Keyframes)	15-10
MODIFY (Effects Editor)	15-11
NAM (Transition Type)	15-11
NEXT	15-11
NUMERIC KEYPAD	15-11
PATH	15-11
PATH PREVIEW	15-12
PERSONALITY	15-12
PGM PST	15-13
PREVIOUS	15-13
PRIORITY	15-13
PUSHKNOBS	15-13
RECALL KEYFRAME	15-14
REMOVE	15-14
REV	15-14
RUN	15-14
SAVE KEYFRAME	15-14
SHIFT	15-15
SHOW STATUS	15-15
SOFTKEYS	15-15
START (REW)	15-15
STOP NEXT	15-15
THIS	15-16
TIMELINE 1 – 4	15-16
TIMELINE (Menu)	15-16
TO	15-16
TRIM	15-16
UNDO KF EDIT	15-17
UNDO MENU	15-17
WIPE (Transition)	15-17
WIPE (Menu)	15-18

Appendix A

Glossary A-1

Index

Section 1

Introduction

System Description

The ASWR8150 is a 10-bit component digital video post production switcher that supports both the 525 and 625 line television standards. Plug-in input modules allow the 8150 to support several video formats, including serial component digital, parallel component digital, and component analog (RGB and several variations of Y/R-Y/B-Y), and composite analog. Four serial digital inputs (two input modules) are standard; additional input modules are optional.

Also standard are two serial component digital program outputs and one serial component digital preview output, with a component analog (SMPTE/EBU N10 Y/R-Y/B-Y) monitor output. Two or four serial component digital Aux bus outputs, used for feeding external devices, are available. You can configure the 8150 system with a maximum of four auxiliary outputs with up to 14 inputs, or with two auxiliary outputs with up to 16 inputs.

The 8150 offers an optional twin-channel DVE board, based on DVEOUS™ technology, that resides in the 8150 signal chassis. The 8150 DVE is a 10-bit, frame-based, digital video effects system that uses a "twin channel" processing configuration. A detailed description of features and operation of the DVE is provided in the 8150 DVE Operations Manual (9100-0254-00).

The Enhanced (Frame Delay) Output module supplies the component analog monitor output, plus one digital program output that has a fixed output delay of one frame from reference (for re-entry into other devices), one digital program output that is switchable between a one-frame delay and a 34-line delay (for preread editing), and one digital preview output that is switchable between one frame and 34 lines of delay. This module also provides switchable one-frame delays for the Aux 1 and Aux 2 outputs.

The 8150 has one Mix/Effect (M/E) bank and a Program/Preset (PGM/PST) bank. Through delegation, the three rows of crosspoint buttons control seven buses.

MIX / EFFECT	PROGRAM / PRESET
Key 1 Fill bus	DSK Fill bus
Key 2 Fill bus	Program bus
Background A bus	Preset bus
Background B bus	

Each bus row has nine buttons. The **SHIFT** button lets you access nine alternate sources for a total of 18 user-assignable sources.

Five transition types are available on the M/E and PGM/PST buses: mix, wipe, NAM (Non Additive Mix), and Effect, which is only active with the internal DVE option installed. With the Ultamix™ split transition feature, you can transition the background as a wipe while simultaneously transitioning the keyer(s) as a mix, all with a single fader bar throw.

The 8150 system has three full-function μline linear keyers: Key 1 and Key 2 in the M/E bank, and the DSK (DownStream Keyer) in the PGM/PST bank. You can create a luminance key, a chroma key, or a combination of the two, in either key mode or matte mode, with each keyer. You can also create an internal box mask

or rotational mask with each keyer, and bring in an external key mask at the same time.

There are three types of key memory:

- **Source Based** – The settings for a given source apply no matter which keyer the source is selected on.
- **Bus Based** – The settings for a given keyer apply no matter which source is selected on that keyer.
- **Source By Bus Based** – The settings for a given source apply only to that source on that key bus. The same source selected on another bus can have different settings, and different sources selected on the same bus can have different settings.

Advanced key processing lets you size and position key sources horizontally and vertically with sub-pixel resolution and variable defocus. The sub-pixel resolution mBoss™ border generator features drop shadows (with variable softness and transparency), outline borders, extrusions, embossing, and trails.

The standard 8150 has three wipe pattern generators: one for the M/E buses, one for the PGM/PST buses, and one dedicated to the SuperMatte background generator. Each generator offers 28 patterns, including controls for wipe aspect ratio, position, rotation, and direction. Wipe border controls include width, opacity, softness, symmetry, and live video fill.

The Advanced Wipe option includes more complex wipe pattern features like rotary wipes, matrix wipes, pattern multiplication, pattern modulation, and pattern morphing. This option provides two wipe pattern generators for the M/E buses, for a total of four wipe generators for the system.

The 8150 Control Panel includes a 3.5" high density (1.44MB) MS-DOS format floppy disk drive. You can use floppy disks to store and recall switcher personality, effects, engineering, and image files. You can use an optional external floppy disk drive if

the Control Panel is installed so as to block access to the internal floppy disk drive.

A 1GB SCSI hard drive is available, which you can use to save and recall all 8150 disk files. With the Dual Framestore option, you can save and recall full-frame video images with the hard drive as TIFF (compressed 8-bit RGB format), YUV (full bandwidth 8-bit YUV or A60 format), or Y10 (full bandwidth 10-bit YUV format) files.

The reTouch™ Color Corrector option provides seven independent color correctors, one for each key fill bus, one for each background bus, and one each for the PGM and PST buses. Like the keyers, the color correctors can utilize source based, bus based, or source-by-bus based memory. The Framestore option provides two independent full-color, full-resolution video framestores.

TimeFrame™ Effects editing provides a powerful way to create, store, recall, edit, and run complex switcher effects with frame accuracy and digital repeatability. With the standard 8MB of battery-backed memory, you can store about 100 Timeline effects on-line. You can run Timeline effects manually from the Control Panel, by GPI trigger, or by RS-422 serial remote control from a variety of edit controllers.

The 8150 uses RS-422 serial remote control interfaces to emulate the GVG Model 200, Sony VTRs, and an extended SMPTE protocol. It can also control other devices using LINC (Locally Integrated Node Control), a protocol developed by Accom to integrate DVEs and DDRs into switcher Timeline effects. There are also GPI (General Purpose Interface) inputs and outputs (eight of each) and 16 tally outputs, one for each input.

About This Manual

Scope of Manual

This manual has tabbed sections to help you find the information you need. Each section includes a diagram of the menu(s) covered, a list of the related controls with a brief description of their functions, and, wherever possible, tutorials with examples that illustrate concepts or functions. Section 15 – Control Panel is an alphabetical list of all Control Panel buttons with a description of their functions. The tabbed sections cover functional topics, as described below.

Section 1 – Introduction

This section is an overview of the system. It also discusses the information in this manual, and methods for getting the most out of it. The Control Panel button groups, and the menu layout and controls, are also briefly discussed. There is a description of the video and key signal paths at the end of this section.

Section 2 – Getting Started

The Getting Started section covers, step-by-step, setting up the 8150 system and checking out basic functions.

Section 3 – Transition Control

This section discusses navigating the 8150's seven bus rows and transition controls. It also covers creating Ultamix™ split transitions, such as a simultaneous background wipe and key mix. Steps for creating all types of mix transitions, including non-additive and full additive mixes, appear here. This section also explains the differences between a normal mix and NAM (non additive mix).

Section 4 – Keying

This section covers the 8150's µline keying features, how to use them, and the differences between conventional chroma keying and the 8150's µline keying technology. Other topics include key masking, separate key and fill sources, key edge controls, using the Color Pick function, and an in-depth discussion of the differences between key mode and matte mode.

Section 5 – Key Borders

The Borders section explains the mBoss™ key borders and their controls.

Section 6 – Wipes

This section covers all wipe functions, including selecting wipe patterns, modifying patterns, using wipe patterns as key masks, using the Advanced Wipe features, setting transition rates, and creating partial wipes.

Section 7 – Miscellaneous Functions

This section discusses the SuperMatte generator, input assignments for the optional Aux buses, preview monitor output control, and the transition rate and trajectory curve settings.

Section 8 – Color Correction

This section details using the reTouch™ Color Corrector option, including using source based versus bus based memory modes.

Section 9 – Framestores

This section covers freezing video and creating stroboscopic effects, and drawing masks and holdback mattes in the framestores.

Section 10 – Timelines

Section 10 covers saving and recalling "snapshots" of the switcher status, and creating and editing TimeFrame™ Timeline effects.

Section 11 – Disk Operations

This section explains all the built-in floppy disk drive and optional SCSI hard drive functions.

Section 12 – Personality

This section shows how to customize your 8150, including naming and assigning sources to crosspoint buttons and assigning GPI input functions.

Section 13 – Engineering

This section discusses setting up inputs, outputs, and editor ports, installing software updates, and configuring the 8150 system.

Section 14 – Remote Operations

This section details using the 8150 with edit controllers and other external devices.

Section 15 – Control Panel

This is an alphabetized list, with descriptions, of all Control Panel buttons, the joystick, and the fader bar.

Appendix A – Glossary of Terms

This is a glossary of terms commonly used with the 8150.

Index

Use the Index to quickly locate information on general topics or specific 8150 controls and features.

How to Use This Manual

This manual is designed for easy reference. Everything you need for any function appears in its own tabbed section: button and control descriptions, plus tutorials that take you step-by-step through the function. (Functions of the DVE option are discussed in the 8150 DVE Operations Manual.)

For a description of button functions, see the alphabetized descriptions in Section 15 – Control Panel. Menus, submenus, and their functions and settings are covered in detail in the section for that function. Because each section focuses on a specific area, you may need to use more than one section for more complex operations. For example, to mask a color corrected key with a wipe pattern, you might need to refer to the Color Corrector, Wipes, and Keying sections.

This manual assumes that you have a properly installed and configured switcher, and some knowledge of crosspoint configurations. Please see the 8150 Technical Guide for details on setup procedures.

If you are not familiar with the terminology used, see the glossary of switcher terms in Appendix A.

Manual Conventions

In this manual, the Mix Effects bus appears as M/E, the Program/Preset bus as PGM/PST, and the DownStream Keyer as DSK.

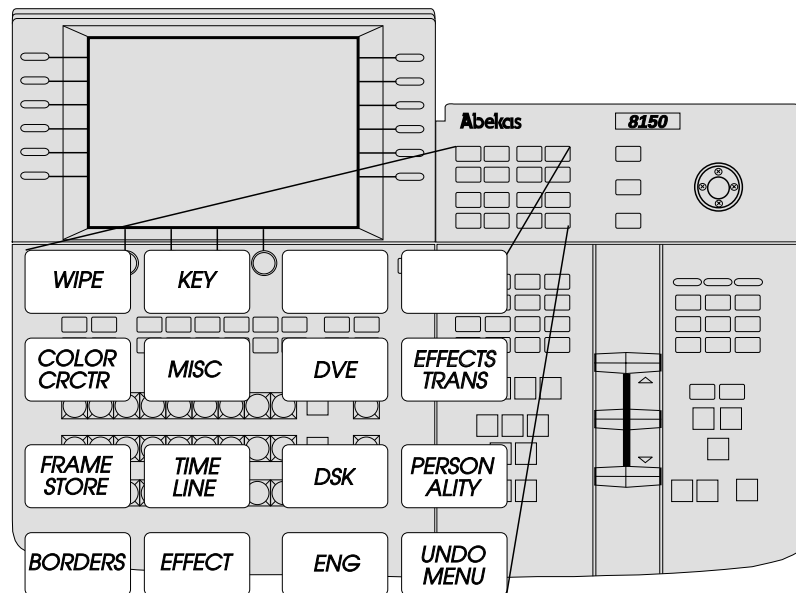
All Control Panel keys are called buttons to avoid confusion with the video keying process. Keycap labels appear in bold capital letters: the **WIPE** button, the **NAM** button. Menu and submenu names are capitalized: the Wipe menu, the Attributes submenu. Softkey labels are in bold upper and lower case italics: the ***Pattern Position*** softkey. Pushknob labels appear in bold upper and lower case letters: the **High Clip** pushknob. Otherwise, pushknobs appear as pushknob 1, pushknob 2, pushknob 3, and pushknob 4, starting on the left with pushknob 1.

Operations requiring holding one button down and pressing another appear with a plus: hold **KEY 1** and press the **BKND** button appears as **KEY 1 + BKND**. A sequence of button presses appears with long dashes (—) separating the buttons: **MODIFY — ALL — ENTER**.

Control Panel Button Groups

A brief description of all button groups and where they are located on the Control Panel follows.

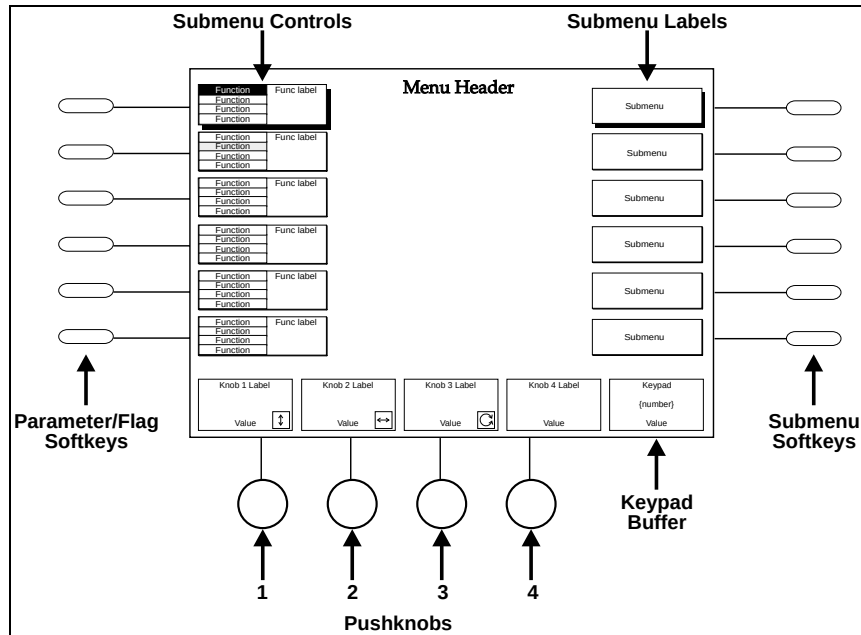
Menu Buttons



The Menu Buttons

The menu buttons are the group of green buttons to the right of the menu display, and are labeled "MENUS." All 8150 menus have two levels: the main (top level) menu and a set of submenus. Access a top level menu by pressing its labeled button. Pressing a menu button does not change any switcher settings, except the **UNDO MENU** button, which reverses the last button press.

The Menu Screen



The Menu Screen & Controls

Menu Display

You can adjust the menu display brightness and contrast with the two thumbwheels set into the left side of the Control Panel (near the Quick Keyframe buttons).

Submenu Labels and Controls

A top level menu can have up to six submenus. The softkey labels for submenus appear on the right side of the menu screen. Bring up a submenu by pressing the softkey next to its label. Pressing a submenu softkey does not change any switcher settings. When you press a submenu softkey, a black drop shadow appears to indicate that that submenu is active. The submenu controls (parameters and flags) appear on the left side of the menu screen.

Press a parameter/flag softkey (left side of the menu display) to select a control or toggle a flag or function. When you press a

softkey, a black drop shadow appears to indicate that control is active, and up to four settings for that function may appear at the bottom of the menu screen, above the pushknobs. You can adjust these settings with the pushknobs.

The Keypad Buffer

The keypad buffer is a temporary storage register used to enter and copy values from the keypad or from a pushknob to another pushknob. The keypad buffer display appears in the lower right corner of the menu. The keypad buffer can display one of the following:

- Empty (default) – nothing stored in the keypad buffer.
- A value – enter a number in the numeric keypad, or press a pushknob to copy its value into the buffer. Pressing a pushknob loads the keypad buffer value into the pushknob control.
- A cycling display of two-character abbreviations – when you press the **PATH** button, the buffer toggles the motion path types: JP, LN, SL, T1, T2, and SM. See Section 10 – Timelines for details on motion path types.
- A value and the word "Trim" – enter a value in the numeric keypad and press the **TRIM** button; pressing a pushknob trims its value by the amount in the buffer.
- The word "Align" – pressing the **ALIGN** button clears any value in the buffer, and sets the value of the next pushknob you press to the nearest 1/8 of the full range for that value.
- The word "Clear" – pressing the **CLEAR** button clears any value in the buffer, and clears the next pushknob you press.
- The "+/-" symbol – press the +/- button; this inverts the sign of any value in the buffer, or, if pressed by itself, inverts the sign of the value of the next pushknob that you press.

Entering and Changing Settings

You can change menu values or settings several ways:

- Turn the pushknob below its label.
- Enter a value in the numeric keypad, then press a pushknob to set the value. For pushknobs that select sources, use the crosspoint number to select a source, not its physical input number.
- Use the joystick to change pushknob settings that have arrow graphics. Adjust pushknobs with left/right arrows by moving the joystick left and right. Adjust settings with up/down arrows by moving the joystick up and down. Adjust pushknob settings with circular arrows by twisting the joystick handle.

NOTE: If there is a mouse connected to the Control Panel RS-232 port, it can emulate the joystick's H and V axes. Press and hold the left mouse button and move the mouse to change settings that have left/right or up/down arrows. You can press the right mouse button to toggle the active softkey, if applicable.

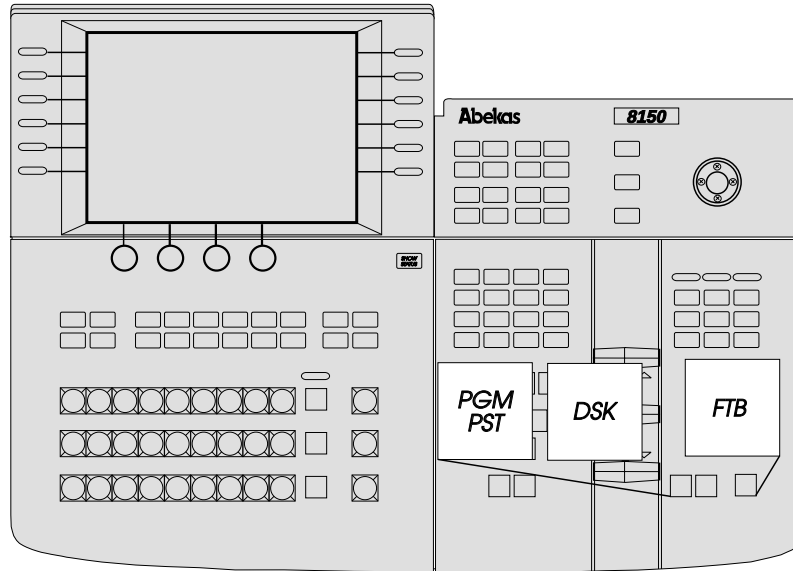
- You can copy a pushknob value to the keypad register, then to another pushknob. For example, to copy the value in pushknob 1 to pushknob 2, press pushknob 1, then pushknob 2. Note the value in the keypad register when copying settings this way.
- You can invert a value's sign by pressing the +/- button, then the pushknob. Use this for settings that accept negative values.
- You can also use **TRIM** to trim a value: press **1 — TRIM—Rotation** (in the Wipes menu, Attributes submenu) to add 1 to the value in the rotation setting. You can also hold down **TRIM** and press a pushknob multiple times to repeat the trim.

Default Values and UNDO MENU

There are several ways to reset values and entire menus to their defaults:

- Press **CLEAR**, then a pushknob to reset the value to default.
- Press and hold **CLEAR** and press one or more pushknobs to clear multiple controls to default.
- Press and hold **CLEAR** and press a softkey to clear all the values for that softkey to default. This resets both the softkey setting (if it is a toggle or flag), and any pushknob values.
- Press and hold **CLEAR** and press a submenu softkey to clear all the values for that submenu to default. This resets all softkey settings (if they are toggles or flags) and all pushknob values.
- Press and hold **CLEAR** and press a menu button to reset all the values for that menu to default. This resets all submenus, softkeys, and pushknob values.
- Press the **UNDO MENU** button to "undo" the last button press. Pressing **UNDO MENU** again steps backward again by one button press. This continues back until the point at which the unit was last rebooted, or to the point at which you enabled this function. The default state is *Enable*, but you can disable the **UNDO MENU** button in the Personality menu: press the *User Keys & MISC* softkey and toggle the *MENU UNDO Key* softkey to *Disable*. Rebooting or power cycling the 8150 Main Chassis does not change this setting. If you disable the **UNDO MENU** button, you cannot automatically "undo" button presses.
- Press **CLEAR + UNDO MENU** to step forward through all the steps previously undone. If you press any other button, the undo buffer jumps back to the current settings and you cannot step forward again by pressing **CLEAR + UNDO MENU**.

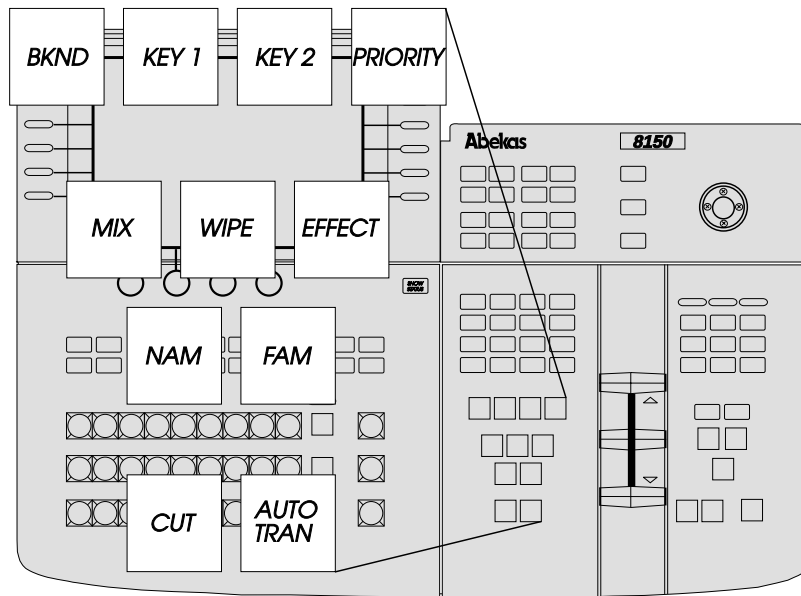
Program/Preset Buttons



The Program/Preset Buttons

The Program/Preset button group includes the **PGM PST**, **DSK**, and **FTB (Fade-To-Black)** buttons. They are in the lower right corner of the Control Panel.

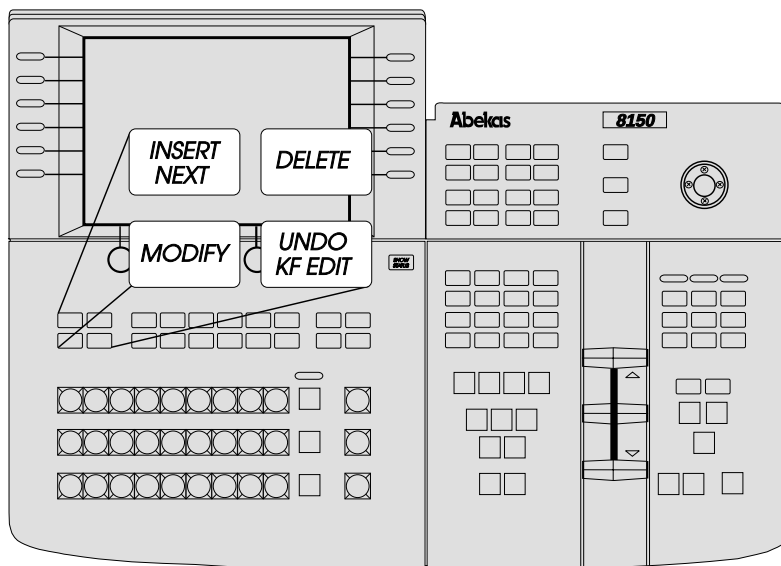
Transition Control Buttons



The Transition Control Buttons

The Transition Control button group has four rows of buttons. Lit LEDs in the buttons indicate the current transition settings. The top row **BKND**, **KEY 1**, and **KEY 2** buttons select the bus(es) for which the transition is active. **PRIORITY** lets you transition the two keyers' priority. **MIX**, **WIPE**, **EFFECT**, and **NAM** select the type of transition. Use **CUT**, **AUTO TRAN**, or the fader bar to execute the transition.

Quick Keyframe Buttons

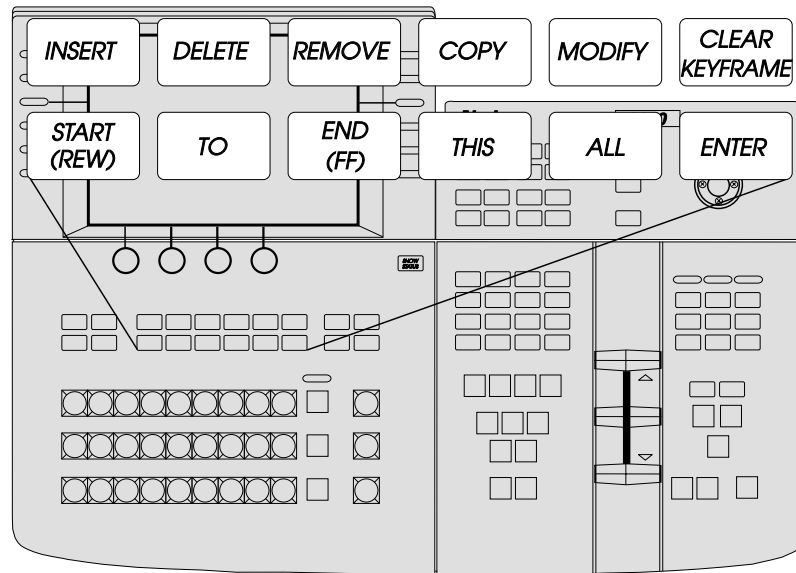


The Quick Keyframe Buttons

The Quick Keyframe button group includes the **INSERT NEXT**, **DELETE**, **MODIFY**, and **UNDO KF EDIT** buttons. All are located on the left side of the Control Panel, below the pushknobs. They only affect the current keyframe(s) in the delegated Timeline(s).

INSERT NEXT inserts a keyframe on the timeline immediately after the current keyframe. **DELETE** removes the current keyframe, including its duration, from the timeline. **MODIFY** changes the current keyframe to the current switcher settings. **UNDO KF EDIT** "undoes" the last keyframe or effect operation that you performed.

TimeFrame™ Effects Editor Buttons

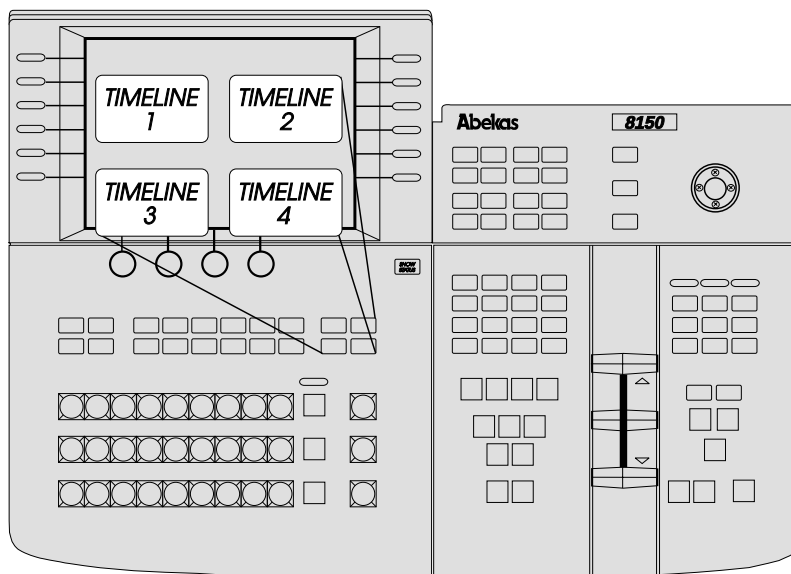


The TimeFrame Effects Editor Buttons

The TimeFrame Effects Editor buttons, located below the pushknobs, include **INSERT**, **DELETE**, **REMOVE**, **COPY**, **MODIFY**, **CLEAR KEYFRAME**, **START (REW)**, **TO**, **END (FF)**, **THIS**, **ALL**, and **ENTER**. Use these buttons to edit and modify Timeline effect keyframes.

See Section 10 – Timelines for more information on the function of each button.

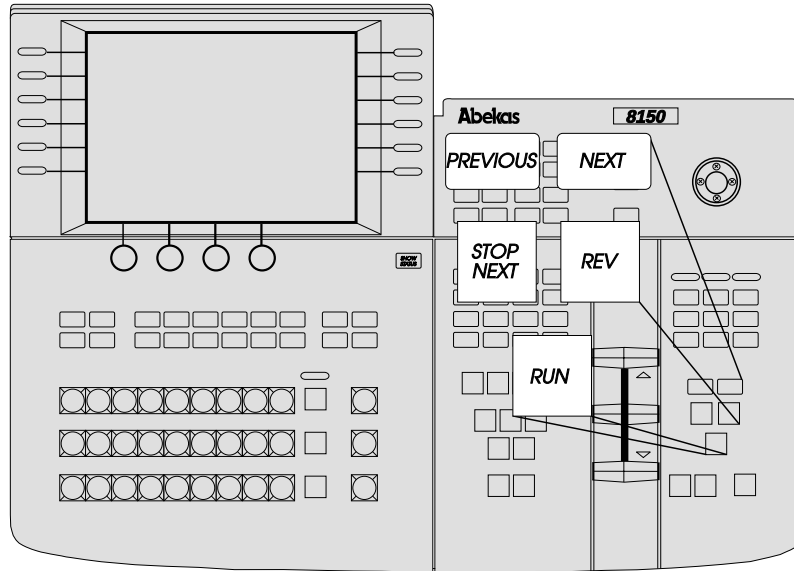
Delegation Buttons



The Delegation Buttons

The Delegation buttons are toggles. Use them to select or deselect control of the four effect Timelines. All keyframe editing commands apply only to the Timeline or group of Timelines that is/are currently delegated. Lit LEDs in the Delegation buttons indicate the currently delegated Timeline(s). All Timelines in an effect run whether they are delegated or not.

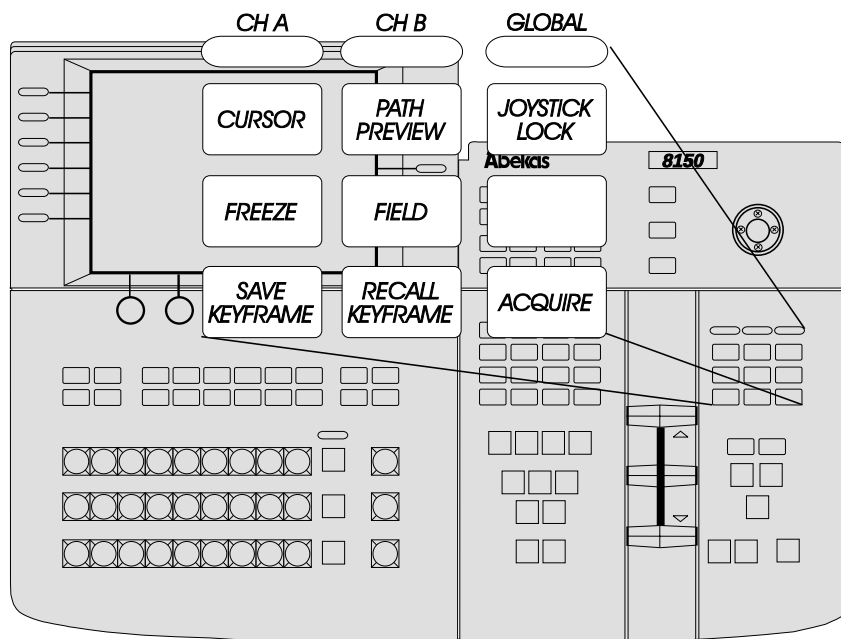
Timeline Buttons



The Timeline Buttons

The Timeline button group includes the **PREVIOUS**, **NEXT**, **STOP NEXT**, **REV**, and **RUN** buttons. All are in the lower right corner of the Control Panel. Use these buttons to run and pause Timeline effects and go to specific keyframes in a Timeline.

DVE / Miscellaneous Buttons



The DVE / Miscellaneous Buttons

The DVE / Miscellaneous button group includes the **CH A**, **CH B**, **GLOBAL**, **CURSOR**, **PATH PREVIEW**, **FREEZE**, and **FIELD** buttons, which are associated with the optional internal DVE operations. Also in this group are the **JOYSTICK LOCK**, **SAVE KEYFRAME**, **RECALL KEYFRAME**, and **ACQUIRE** buttons, which are used for miscellaneous operations. All are located immediately below the joystick.

See the 8150 DVE Operations manual for information on the DVE operations buttons, or see Section 2 – Getting Started, and Section 10 – Timelines, for descriptions of the miscellaneous operations buttons.

Video and Key Signal Paths

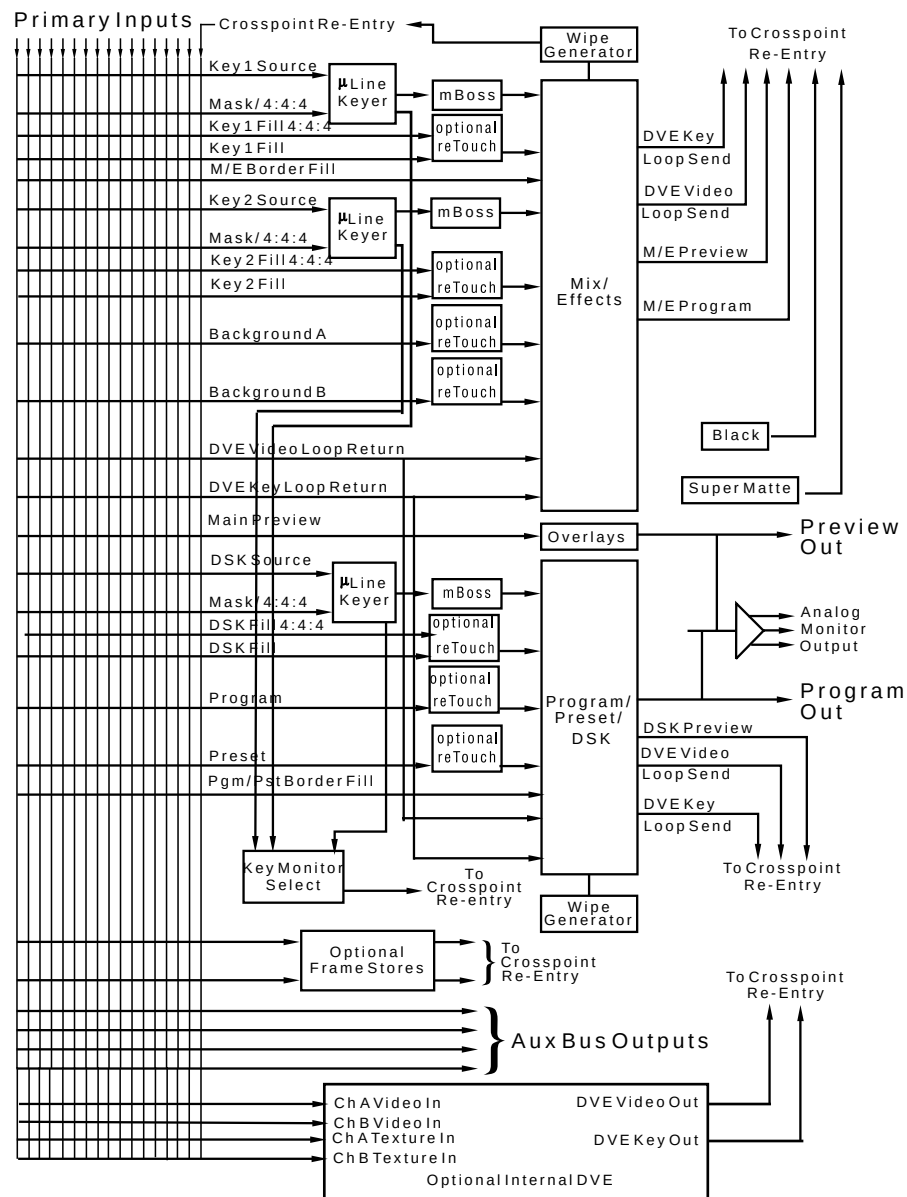
This section is an overview of the video and key signal flow paths. Understanding the 8150 video and key signal flow will give you a better idea of how the 8150 works. See the 8150 block diagram below to view the system video and key signal paths.

The 8150 has several functional sections. These sections include input modules, output modules, optional framestores, optional color correctors, the optional twin channel DVE, the wipe generators, the internal crosspoint matrix, an M/E processor, and a PGM/PST/DSK processor.

After processing, the external inputs pass to the internal crosspoint matrix. The system uses the crosspoint matrix to send any of the 32 available sources (external inputs, framestore outputs, wipe patterns, processed key and fill signals, etc.) to the framestores, key and border extractors, the M/E processor, the PGM/PST/DSK processor, and the preview and Aux outputs. There is one exception: the program output comes directly from the PGM/PST/DSK processor and is not available on the internal matrix, although you can select main program on the main preview output for preview switching and other editing purposes.

With the reTouch™ Color Corrector option installed, the system has a total of seven color correctors. Each color corrector is located in the signal path between the crosspoint matrix and the bus row that the matrix feeds. If the Color Corrector option is not installed, a bypass module completes the signal paths.

MIX / EFFECT	PROGRAM / PRESET
Key 1 Fill bus	DSK Fill bus
Key 2 Fill bus	Program bus
Background A bus	Preset bus
Background B bus	



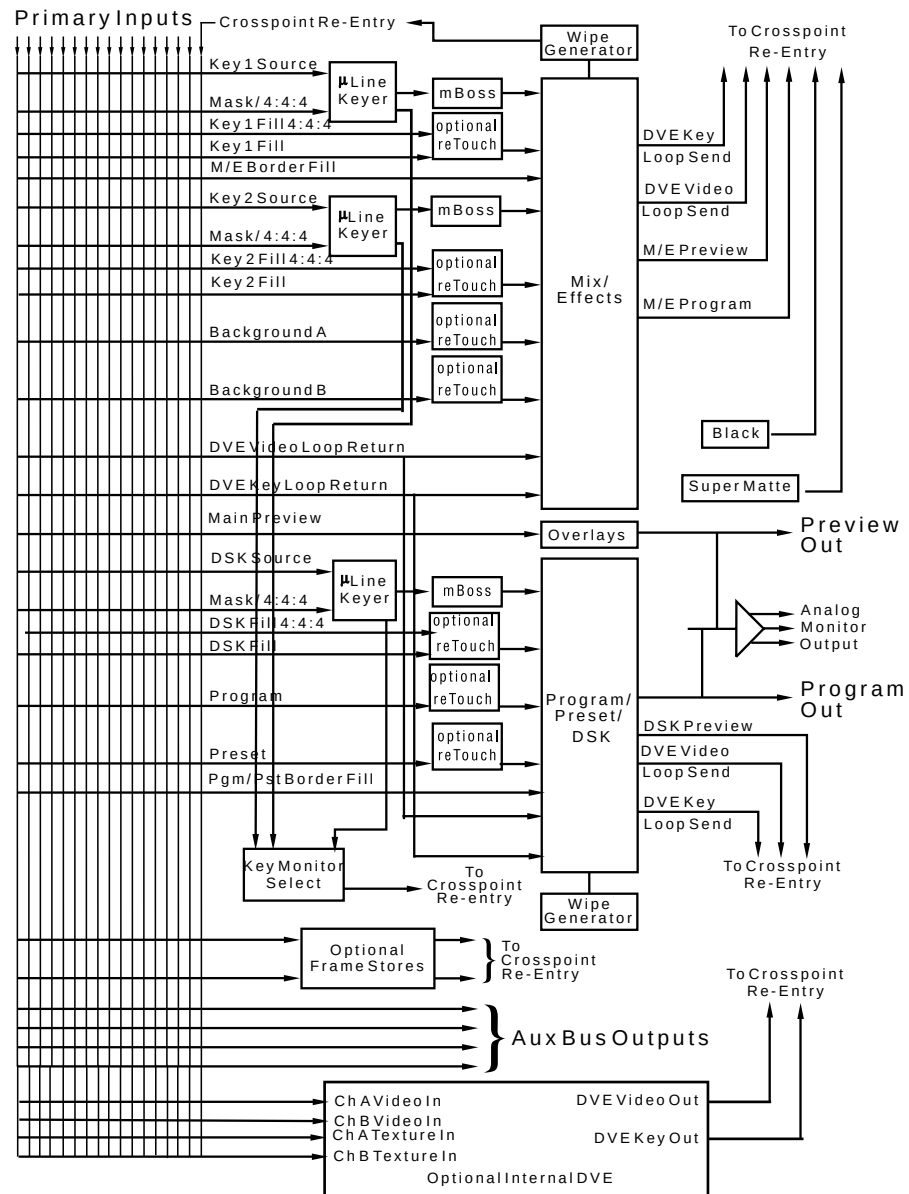
8150 Simplified Block Diagram

When you select a key or mask source, the crosspoint matrix routes that source to the key and border extractors, where the signal is clipped, sized, positioned, softened, bordered, etc., before passing to the M/E or PGM/PST/DSK module.

The internal DVE option uses the "twin channel" architecture of the Accom DVEOUS digital video effects unit, integrating two full video channels, or one video/key and one shadow channel, into the switcher processing paths for performing Effects transitions and Effects Loops. This option includes the same light source modeling capabilities, including Surface FX™ texturing, that DVEOUS uses, as well as full control of the 62 UltraWarp™ non-linear transform shapes, many of which interact with the light source modeler to create realistic highlight and shadow effects.

The 8150 creates Effects Loops by "breaking away" the processed key and fill signals just before they are composited over the background. It sends them to the internal DVE, if installed, or out two Aux bus outputs to an external DVE, where you can manipulate them. The DVE video and key outputs then re-enter the 8150 at the point from which the processed key and fill originally came, and they are composited over the background using the same keyer. With this feature you can also place keyer 1 over the M/E backgrounds, route this entire composite to the DVE, and re-enter it in keyer 2, with full control over the background video as well as the DSK.

The standard wipe generator has three pattern generators: one for the M/E buses, one for the PGM/PST buses, and one dedicated to the SuperMatte generator, which is a three color background matte that you can route anywhere in the 8150. The Advanced Wipe option provides a fourth pattern generator, for the M/E buses, and has advanced features such as matrix patterns, modulation, and pattern mixing and morphing. You can also route wipe patterns to the rest of the system with the internal crosspoint matrix.



8150 Simplified Block Diagram

The Dual Framestore option has two full-color, full-bandwidth framestores that you can use just like any other source. Because the crosspoint matrix feeds their inputs, you can send any source available to the 8150 to either framestore to freeze it or give it a "strobe" effect. You can also draw masks and holdback mattes in the framestores for use with the keyers. You can save framestore video to floppy disk or to the optional 1GB SCSI hard drive for later recall. The 8150 supports TIFF, YUV, and Y10 format image files.

The Aux bus outputs are available to route any source in the 8150 to external devices, such as DVEs, VTRs, DDRs, or monitoring equipment.

The analog monitor output, where you can route either the main program or main preview video, is a Y/R-Y/B-Y component video output intended only for monitoring purposes, and is not a broadcast quality output.

Section 2

Getting Started

This section outlines the basic steps for powering up and checking out your 8150 system. While reviewing this section, you may find it helpful to refer to Section 15 – Control Panel so you can locate the Control Panel buttons and menu controls, and gain a basic understanding of their functions.

Powering Up Your 8150

This procedure assumes your 8150 system is properly installed and configured. For setup details, see the 8150 Technical Guide. Power up the 8150 as follows:

- STEP 1:** The power switch for the Main Chassis is at the front in the lower right corner, behind a small cover in the Main Chassis front panel. Push the switch toward the "1" to turn on the power. The Main Chassis takes about five seconds to load its operating software, then it is ready to use.
- STEP 2:** The Control Panel has no power switch; plugging in its external power supply powers up the Control Panel. The external power supply plugs into the 8-pin DIN connector at the rear of the panel. (The external power supply is auto-ranging and can use mains power from 100 volts AC to 240 volts AC.) The Control Panel takes about eight seconds to load its operating software. When the Keyer 1 menu appears in the menu

display, the Main Chassis and Control Panel are communicating, and you can begin using the system.

NOTE: If there is a floppy disk in the Control Panel disk drive when you power up the Control Panel, the 8150 prompts you to update the system software by pressing SHIFT + M/E. Most of the time, you will not do this. You can either wait for the countdown to time out and boot up, or press the flashing FTB button to bypass the countdown and boot up immediately.

When the Signal Chassis first boots up, this error message may appear:

Control Panel has lost Communication with chassis!

1. Check serial connection from control panel to chassis.
2. Check for power at chassis.
3. Press reset button on main switcher board.

If the Status menu or Key menu menu does not appear, try the above steps, in the stated order, to establish communications between the Control Panel and the Main Chassis.

Preview Output and Menu Recall

You can configure the 8150 preview output several ways. The serial digital preview output has three operating modes:

- **Auto** – a "look-ahead preview" which shows the results of the current transition before you actually perform it.
- **Select** – a manual selection that you can use to view any source in the internal crosspoint matrix.
- **Program** – sends the main program video to the preview output so that you can use the preview output as a single all-purpose edit monitor when using an edit controller. This also allows you to place the internal cursors and safe area overlays over the program video.

You can configure the component analog (SMPTE/EBU N10 Y/R-Y/B-Y) monitor output, which is not broadcast quality, to show a duplicate of the digital preview output or a duplicate of either of the digital program outputs.

You can also recall certain menus automatically without having to press their menu buttons separately. Configure the preview outputs and automatic menu recall as follows:

STEP 1: Press the **MISC** menu button to bring up the Miscellaneous menu. Press the *Pvw Bus Ctrl & Misc* softkey on the right side of the menu.

STEP 2: The *Source* softkey on the left side of the menu toggles **Auto**, **Select**, and **Program**. **Auto** enables the "look-ahead preview," which shows the results of the next transition, either on the M/E buses or the PGM/PST buses, whichever is active. **Select** lets you manually route any source available in the internal crosspoint matrix to the preview output, according to the source list below. **Program** sends the main program signal to the preview output.

In *Select* mode, you can enter the source number at the numeric keypad and press the **Source** pushknob to view any source in the 8150, as listed below.

<u>Src No.</u>	<u>Source Name</u>	<u>Src No.</u>	<u>Source Name</u>
1	black	17	input 16
2	input 1	18	SuperMatte
3	input 2	19	Framestore 1
4	input 3	20	Framestore 2
5	input 4	21	DVE Video
6	input 5	22	DVE Key
7	input 6	23	M/E Key Send
8	input 7	24	DSK Preview
9	input 8	25	DSK Vid Send
10	input 9	26	DSK Key Send
11	input 10	27	Key Monitor
12	input 11	28	Wipe Pattern
13	input 12	29	M/E Vid Send
14	input 13	30	M/E Program
15	input 14	31	M/E Preview
16	input 15		

STEP 3: The *Analog Monitor* softkey toggles *Preview* (default), *Program 1*, and *Program 2*. Select any of these three main outputs that you want to view on the analog monitor output.

STEP 4: Press the **PERSONALITY** menu key. Toggle the *Auto Menus* softkey to *On* to automatically recall menus when you press one of the following transition control buttons:

- **KEY 1** recalls the Keyer 1 menu
- **KEY 2** recalls the Keyer 2 menu

- **DSK** recalls the DSK Keyer menu
- **WIPE** recalls the M/E Wipes menu when the M/E buses are active, or the Program/Preset Wipe menu when the PGM/PST buses are active
- **EFFECT** recalls the DVE Misc menu if the optional internal DVE is installed

With *Auto Menus Off*, you must press the dedicated menu buttons to access these menus. Set this according to your preference.

After you set the preference in the four previous steps, they are stored in battery backed memory, and are active after a system reboot or power down. Note the following exceptions:

- If the preview output is in *Select* mode, the source setting defaults to **M/E Preview** after a reboot or power down.
- If the preview output is in *Program* mode, it returns to *Select* mode after a reboot.

Source Selection and Basic Transitions

After power up, you can verify the video sources feeding your system and transition between them as follows:

STEP 1: Press the **PGM PST** button to select control of the PGM/PST buses. The green displays above the three bus rows show, from top to bottom, "DSK," "PROGRAM," and "PRESET."

STEP 2: Look at the 8150 program output and press each crosspoint button on the Program bus to verify that the correct sources appear. The nine crosspoint buttons in each bus row default to black (the leftmost button) and the first eight external inputs in order. Pressing and holding the **SHIFT** button accesses the other nine crosspoints, which default to:

- the SuperMatte generator – **SHIFT** + the leftmost button
- the internal DVE video output (if installed) – external inputs 9 through 14
- the outputs of Framestore 1 and Framestore 2 (if installed)

If you need the shifted crosspoints only, you can double press the **SHIFT** button on any bus row to lock it in Shift mode. In this mode, pressing a crosspoint button selects the shifted crosspoint instead of the unshifted one. Press and release the **SHIFT** button once to return to normal mode; the next crosspoint button you press is unshifted.

STEP 3: Look at the preview output and press each crosspoint button on the Preset bus to verify that the correct sources appear. The sources should appear on the same crosspoint buttons as on the Program bus row.

- STEP 4:** Press the **MIX** button, lighting the **PGM PST** button yellow. Select a source on the Program bus and a different source on the Preset bus. The Program bus source is the "from" source, and the Preset bus source is the "to" source.
- STEP 5:** Look at the program output and move the fader bar from one end of its range to the other. You should see a dissolve, or "mix," from the Program bus source to the Preset bus source. At the end of the mix transition, the sources on the buses "flip-flop," making the original "to" source (on Preset) the new "from" source (on Program) for the next transition. On the preview output, you only see a cut from the current "to" source to the old "from" source: the preview output, in Auto or "look-ahead preview" mode, shows the results of the next transition.
- STEP 6:** Press the **WIPE** transition button, lighting the **PGM PST** button green. Press **CLEAR +** the **WIPE** menu button to reset the menu to default. (The + means hold while pressing the next button.) Press the **WIPE** menu button and use the **Pattern** pushknob to select a wipe pattern.
- STEP 7:** Look at the program output and move the fader bar from one end of its range to the other. You should see the wipe pattern move across the Program bus source, revealing the Preset bus source. At the end of the wipe transition the "from" and "to" sources on the buses flip-flop, making the original "to" source (on Preset) the new "from" source (on Program) for the next transition. For more details on the Wipe controls, see Section 6 – Wipes.

- STEP 8:** If the internal DVE option is installed, press the **EFFECT** transition button, lighting the **PGM PST** button red. Move the fader bar from one end of its range to the other. You should see the the Program bus source "squeeze" down to the center of the picture over the Preset bus source. At the end of the transition, the buses "flip flop" for the next transition. See the 8150 DVE Operations manual for more information on the use of the internal DVE.
- STEP 9:** Press the **M/E** button to select the M/E output as a source on the Program and Preset buses. This re-enters the M/E output on the Program bus so that it is visible on the main program output.
- STEP 10:** Press the **BKND** button to select control of the M/E buses. The green displays above the three bus rows show, from top to bottom, "KEY 1," "BKGND A," and "BKGND B."
- STEP 11:** Repeat steps 2 through 8 for the M/E buses, substituting the Background A bus for the Program bus and the Background B bus for the Preset bus.

NOTE: If you enable control of the M/E buses without M/E selected as the source on the Program bus, the three M/E crosspoint buttons flash to indicate that the M/E output is not visible on the main program output. To stop the flashing, select the M/E on the Program bus by pressing PGM PST, then the M/E button on the Program bus.

For more information on Transitions, see Section 3 – Transition Control.

Basic Keys and Key Source Selection

Familiarize yourself with simple keying and key source selection as follows:

- STEP 1:** Press **PGM PST** to select control of the PGM/PST buses. Select **M/E** on the Program and Preset bus rows. This sends the M/E output to the program output.
- STEP 2:** Press **BKND** in the Transition Control group to select control of the M/E buses. Press a crosspoint button on the Background A bus row to select a background source. Try using a simple, lightly colored source, such as the SuperMatte, so you can see the key edges. To select the SuperMatte, press **SHIFT +** the leftmost crosspoint button.
- STEP 3:** Press the **KEY 1** button in the Transition Control group. Press **CLEAR +** the **KEY** menu button to reset the menu to default. Press the **KEY** menu button to bring up the Key 1 menu. The "KEY 1" display above the Key bus lights.
- STEP 4:** Press a crosspoint button on the Key 1 bus row to select a key fill source. This also selects that source as the key cut source, i.e., the "hole cutter."
- STEP 5:** Press the *Sources/User Keyer submenu softkey*.
- STEP 6:** Press the *Source* softkey on the left side of the menu. Four pushknob labels appear in the lower part of the display: **Keyer**, **Key Cut Source**, **Key Mask Source** and **User Keyer**.

A luminance (luma) key source is a monochrome (black and white) signal; most character generators have a dedicated key output intended for this use. To select a different input for the key source ("hole cutter")

than the one selected on the Key bus, press and hold the crosspoint button for that source on the Background B bus and press the **Key Cut Source** pushknob. This enters the source name directly. You can also enter the source number (see the list earlier in this section) in the numeric keypad and press the **Key Cut Source** pushknob, or turn the **Key Cut Source** pushknob to select the source.

- STEP 7:** Press the *Main* submenu softkey. The *Source Memory* softkey on the left, when set to *Src Based* (default), remembers the **Key Cut Source** pushknob setting and recalls it whenever you select that fill source on any Key bus. When set to *Bus Based*, that key cut source is recalled regardless of the fill source, but only for that Key bus. When set to *Src by Bus*, you can select different key cut sources for the same fill source on different Key buses.
- STEP 8:** Move the fader bar to its opposite position, or press the **CUT** button, to light "KEY ON" below the **KEY 1** button.
- STEP 9:** The default settings for a Luma key are fully linear. If the key needs adjusting, press the *Key Type* softkey (make sure *Luma* is highlighted) and adjust the **Low Clip** and **Low Gain** pushknobs to get a good key. To reset a parameter to default, press **CLEAR**, then the pushknob for the parameter. Leave **High Clip** at 110.00 and **High Gain** at 100.00.
- STEP 10:** Press the *Sources/User Keyer* submenu softkey and toggle the *Key Fill* softkey to highlight *Matte*. This selects an internally generated color field to replace the selected fill video source. There are pushknobs for the matte fill hue, saturation, and luminance.

STEP 11:

Toggle the **Key Fill** softkey again to highlight **Video** as the key fill. The **Key Fill Source** pushknob shows the name of the source selected on the Key bus. As you turn the **Key Fill Source** pushknob, note that the Key bus crosspoint button tallies change to indicate the new fill video selected. This is known as a breakaway key, and it is not saved in the source memory. If you press another crosspoint button on the Key bus, then select the previous source, its fill reverts to the one selected by the crosspoint button.

STEP 12: Keyer 2 and the DSK operate identically to Keyer 1; repeat steps 3 through 11 to check out Keyer 2. To check out the DSK, press **PGM PST**, select a background source on the Program bus, then press **DSK** and repeat steps 4 through 11.

NOTE: Since the M/E crosspoint button is available with the PGM/PST buses selected, you can select the output of the M/E processor as a fill and key source for the DSK by pressing the M/E button on the DSK fill bus row.

For more information on the keyers, see Section 4 – Keying.

Joystick Lock

It can be convenient to simultaneously adjust settings in two different menus. For settings that let you use the joystick to adjust them, you can use **JOYSTICK LOCK** to "lock" the joystick to control one set of parameters, then move to another menu and use the pushknobs to make other adjustments.

In many menus, the pushknob labels have arrow graphics that show which direction to move the joystick to adjust the setting. If the pushknob label does not have an arrow icon, you cannot use the joystick to adjust that setting.

Use **JOYSTICK LOCK** as follows:

- STEP 1:** Bring up the submenu with the settings you want to adjust with the joystick. You may need to press the softkey on the left side of the menu display to recall the pushknob controls you want.
- STEP 2:** Press the **JOYSTICK LOCK** button, located below the joystick and above the **ACQUIRE** button. The LED in the button lights, and a message appears in the lower left corner of the menu display. The message displays the parameters that are "locked" to joystick control.

NOTE: If you press **JOYSTICK LOCK** while in a submenu that does not have arrow graphics in the pushknob labels, you cannot enable the Joystick Lock feature, the LED does not light, and the joystick status message does not appear in the menu display.

- STEP 3:** Bring up any other menu or submenu that has pushknob controls. You can adjust the joystick-controlled settings and the current pushknob settings simultaneously, no matter which menu you are in.
- STEP 4:** To disable the Joystick Lock feature, press the **JOYSTICK LOCK** button. The joystick status message disappears, the LED in button turns off, and the joystick reverts to the current menu's control functions.

Using Multiple Control Panels

You can connect multiple Control Panels to a single 8150 Main Chassis. While only one Control Panel controls the Main Chassis, all Control Panels connected to the chassis still communicate with it. The non-controlling panels reflect the crosspoint button status, the transition type, and all menu displays that are current on the controlling panel. See the 8150 Technical Guide for information on physically connecting multiple Control Panels.

The ACQUIRE Button

The **ACQUIRE** button, located above the Timeline button area at the right side of the Control Panel, selects the active Control Panel. With a single Control Panel, the **ACQUIRE** button LED lights automatically when you power up or reboot the Control Panel. Double pressing this button turns off the LED and disables control of the Main Chassis. The Control Panel, however, still receives communications, and reflects the current state of the switcher crosspoint buttons, transition buttons, and menu display. A single press of **ACQUIRE** re-establishes control.

When more than one Control Panel is connected to a Main Chassis, only one Control Panel can be active, or acquired, at a time. The active Control Panel has a lit **ACQUIRE** button. It must relinquish control before another panel can acquire control of the main chassis. To change to another Control Panel, double press **ACQUIRE** on the active Control Panel to turn the LED off. This disables control from this Control Panel and makes control available to any other panel. Press **ACQUIRE** on the Control Panel that you want to use. The LED lights, and the new Control Panel has now acquired control of the Main Chassis and is ready for use.

When a multiple Control Panel 8150 system is first powered up, no Control Panel is acquired. Press the **ACQUIRE** button once to acquire a panel. Once the system is running, it remembers which Control Panel is acquired, so a Control Panel or Main Chassis reset does not clear the current acquired status of any panel.

Troubleshooting Hints

There may be cases where the Control Panel display shows an error message indicating the the Main Chassis is not communicating with the Control Panel. If you see this message, press one of the green menu buttons or the **SHOW STATUS** button to recall a menu. In most cases, the selected menu appears, indicating normal operation.

If your Control Panel does not control the Main Chassis, but still displays the menu, check the **ACQUIRE** button LED to make sure that it is lit. If not, press it once to re-acquire control. If the Main Chassis has multiple Control Panels connected, another Control Panel may currently be acquired, so you cannot acquire control at this panel.

If the LED is lit but you cannot control the Main Chassis, reboot the Control Panel by pressing the **RESET** button at the rear connector panel to re-establish communications. If, after resetting, the menu display indicates that it is not communicating with the Main Chassis, follow the steps in the menu display to regain control:

- STEP 1:** Check the cable connection between the Main Chassis and the Control Panel.
- STEP 2:** Check that the Main Chassis is turned on.
- STEP 3:** Reboot the Main Chassis by pressing the Switcher board reset button.

The Status Menu

Status Menu			
Fortune		Status	
Wipes Primary Secondary Pgm/Pst Matte			
Key 1 Key Type : Luma Key Fill : black Key Src : black Int Mask : Off Ext Mask : Off Mask Src : wipePatOut Opacity : 100.00		Key 2 Key Type : Luma Key Fill : black Key Src : black Int Mask : Off Ext Mask : Off Mask Src : wipePatOut Opacity : 100.00	
Aux Aux 1 : black Aux 2 : black Aux 3 : black Aux 4 : black		System Serial 1 : Enabled Serial 2 : Enabled Serial 3 : Enabled GPI : Disabled Software Versions Chassis : 1.90 Panel : 1.90 Memory : 8 Mbytes	
Autotrans M/E Rate : 1:00 P/P Rate : 1:00 FTB Rate : 1:00		DSK Key Type : Luma Key Fill : black Key Src : black Int Mask : Off Ext Mask : Off Mask Src : wipePatOut Opacity : 100.00	
Framestores FS 1 : Pass Thru Source : mePvwOut FS 2 : Grab Source : input 2		Color Correctors Bgd A : Unity Bgd B : Unity Program : Unity Preset : Unity Key 1 : Unity Key 2 : Unity DSK : Unity	
You can't have everything. Where would you put it ?			
Keypad			

The Status Menu

You can see the current status of every major 8150 function at a glance. Press the blue **SHOW STATUS** button below the right menu softkeys to bring up this display. The menu is constantly updated in real time, and shows the indicated settings' current status.

Status boxes show the system's major functional areas: Wipes, System, Key 1, Key 2, DSK, Aux, Framestores, Color Correctors, and Autotrans.

Wipes

This status box has four icons. Primary is the selected M/E wipe pattern (or the Primary M/E pattern if the Advanced Wipe option is installed). Secondary is the selected Secondary M/E wipe pattern, which is present only if the Advanced Wipe option is installed. Pgm/Pst is the selected Program/Preset wipe pattern. Matte is the pattern selected for the SuperMatte generator.

System

This status box shows the state of the three RS-422 serial remote ports and the GPI port. It also shows the Main Chassis and Control Panel software versions, and the size of the DRAM memory: 4MB (8100 only) or 8MB (standard in the 8150).

Key 1, Key 2, DSK

These three status boxes show the current state of each keyer, including the key type; the fill, key, and mask sources; the internal and external masking function status; and the border type.

Aux

This status box shows the sources selected for the four Aux bus outputs, whether the options are installed or not.

Framestores

This status box shows the framestores' current state, whether the option is installed or not, and shows whether the framestore is frozen, strobing, or in pass-through mode, and its input source.

Color Correctors

This status box shows the current states of the seven color correctors, whether the option is installed or not. This includes the color correctors for Background A, Background B, Program bus, Preset bus, Keyer 1 fill, Keyer 2 fill, and DSK fill. Unity means that the color corrector is transparent, or not modified. YUV means that the color corrector is modified and set to YUV mode. RGB means that the color corrector is modified and set to RGB mode.

Autotrans

This status box shows the current auto transition durations for M/E bus transitions, PGM/PST bus transitions, and the fade-to-black (FTB) transition.

Fortune

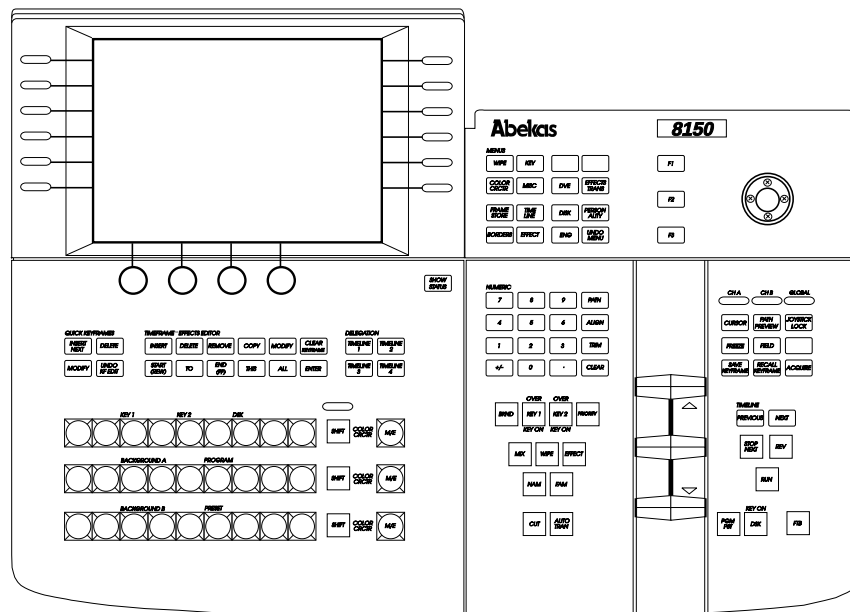
Press this softkey to display an inspirational message. Press **SHOW STATUS** while in this menu to clear the fortune display.

Section 3

Transition Control

Introduction

This section describes the four transition types and the controls used to execute transitions for both the M/E buses and the PGM/PST buses.



The 8150 Control Panel

The 8150 Control Panel

Overview

The 8150 is a one M/E plus Program/Preset/DSK switcher. This architecture is also known as a "one and a half M/E" layout, because the Program/Preset/DSK section works identically to the M/E section, except that it has one keyer instead of two like the M/E section. Functionally, it gives you more than 50 percent more keying and layering power than a traditional one M/E switcher.

The three crosspoint bus rows control seven buses by means of the bus row delegation buttons: **BKND**, **KEY 1**, **KEY 2**, **PGM PST**, **DSK**, and the Key Bus Delegation button.

Pressing the **PGM PST** or **DSK** button (or both) enables the Program, Preset, and DSK Fill bus rows, which feed the 8150 main program outputs. With either the **PGM PST** or **DSK** buttons lit, all crosspoint buttons and transition controls are dedicated to the PGM/PST/DSK buses. The green display above the middle bus row shows "PROGRAM" to indicate that it is the Program bus. The display above the bottom bus row shows "PRESET" to indicate that it is the Preset bus. The green display above the top bus row shows "DSK" to indicate that it is the DSK Fill bus.

Because the program output is "downstream" of, or is processed after, the M/E output, you can re-enter the M/E output as a source in a PGM/PST transition. Pressing the **M/E** button on a PGM/PST/DSK bus row selects the M/E output as a source that you can use in a PGM/PST/DSK transition. Pressing the **M/E** button on the Program bus while on the PGM/PST buses routes the M/E output directly to the program output.

NOTE: You must select the M/E crosspoint button on the Program bus to see the M/E video output in the 8150 program output. If you select any other source, it appears on the program output, and the M/E output is not visible. To remind you of this, the three M/E crosspoint buttons flash when you select control of the M/E buses without selecting the M/E output on the Program bus.

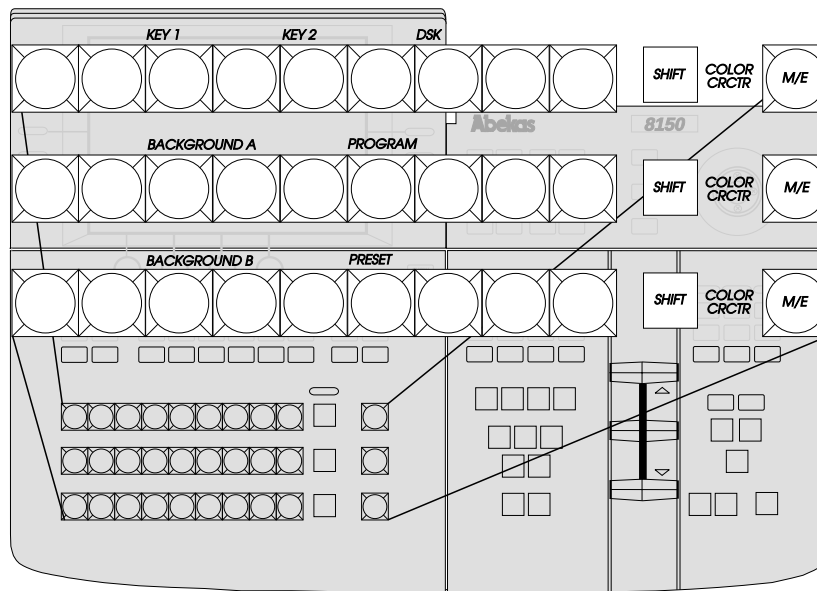
The other four bus rows (Background A, Background B, Key 1 Fill, and Key 2 Fill) are the M/E buses. Pressing the **BKND**, **KEY 1**, **KEY 2**, or **PRIORITY** button (or any combination) enables the M/E bus rows. With any of these buttons lit, you are working with the M/E buses. The green display above the middle bus row shows "BKGND A," and the display above the bottom bus row shows "BKGND B." The green display above the top bus row shows either "KEY 1" or "KEY 2" to indicate that it controls either the Key 1 Fill or Key 2 Fill bus. Toggling the Key Bus Delegation button (the green oval button above the **SHIFT** buttons) assigns the top bus row as either "KEY 1" or "KEY 2." You can also select "DSK" with this button to access the downstream keyer while keeping the M/E bus rows active. You can also adjust Key 1 or Key 2 while the PGM/PST bus rows are active by toggling the Key Bus Delegation button to select the appropriate bus.

If you have control of the PGM/PST/DSK buses and want to change control to the M/E buses, the first press of any M/E bus delegation button (**BKND**, **KEY 1**, **KEY 2**, or **PRIORITY**) selects the M/E buses for control, but does not change their delegation from their previous settings. If it did not work this way, you would have to remember the exact bus delegations selected the last time you controlled them, and then press those buttons while changing control from PGM/PST buses to M/E buses, and vice versa.

To change the bus delegation once the buses are selected for control, press the needed delegation button(s) again. The same applies to recalling control of the PGM/PST/DSK buses while controlling the M/E buses.

M/E, SHIFT, and Crosspoint Buttons

Each bus row has nine crosspoint buttons. Each selects a different source as the input for that bus. For each bus row, the far left button is crosspoint 1, which defaults to internal black. The next button is crosspoint 2, which defaults to input 1. The rest of the buttons are crosspoints 3 through 9, which default to inputs 2 through 8. Press any crosspoint button on a bus row to select that source as the input for that bus.



The Bus Row Buttons

Press and hold the **SHIFT** button to access nine more sources with the same nine crosspoint buttons. Pressing **SHIFT** + a crosspoint button accesses crosspoints 10 through 18, which default to the SuperMatte generator (crosspoint 10), inputs 9 through 13 (crosspoints 11 through 15), the internal DVE video output (crosspoint 16), Framestore 1 (crosspoint 17), and Framestore 2 (crosspoint 18). The **SHIFT** button stays lit to indicate that you selected one of the shifted crosspoints.

If you need the shifted crosspoints only, you can double press the **SHIFT** button on any bus row to lock it in Shift mode. In this mode, pressing a crosspoint button selects the shifted crosspoint instead of the unshifted one. Press and release the **SHIFT** button once to return to normal mode; the next crosspoint button you press is unshifted.

You can assign sources other than the default sources to the crosspoint buttons, remapping any source to any crosspoint button. See Section 12 – Personality for details.

Transition Button Color Coding

The transition buttons are color coded to make it easy to recognize the currently selected transition type, especially when using the Ultamix™ split transition feature. The **MIX** and **NAM** transition buttons light yellow, the **WIPE** button lights green, and the **EFFECT** button lights red. However, the six bus row delegation buttons (**BKND**, **KEY 1**, **KEY 2**, **PRIORITY**, **PGM PST**, and **DSK**) change color to reflect the transition type assigned to them. For example, when you select a background wipe transition, the **BKND** and **WIPE** buttons light green. When you select a background mix transition, the **BKND** and **MIX** buttons light yellow. When you select an Effect transition, the **BKND** and **EFFECT** buttons light red. Crosspoint buttons light yellow for any transition.

Press and light one or more bus row delegation buttons to include the bus rows in a transition. For example, press **BKND + KEY 1**, then press **WIPE** to enable a wipe transition of the Background A, Background B, and Key 1 Fill bus rows together.

Creating a Cut Transition

- STEP 1:** Press **PGM PST** to select the PGM/PST buses.
- STEP 2:** Press a crosspoint button on the Program bus and another on the Preset bus. The crosspoint buttons light to indicate that they have been selected. Note that the crosspoint button on the Program bus is brighter than the one on the Preset bus; this is known as "high tally" and "low tally," respectively. The high tally indicates that the source currently feeds the 8150 program output (is "on air"). The low tally indicates that the source is not on air currently, but will be during and after the current transition. As the bus names imply, a source on the Program bus is "on air" at the main program output, and a source on the Preset bus is the "next" source: it will be "on air" next.
- STEP 3:** Press the **CUT** button to perform the cut transition. This swaps the sources on Program and Preset: they "flip-flop," making the "to" source (previously on Preset) the new "from" source (now on Program). The new source on the Program bus is lit high tally, and the Preset source is lit low tally.

Another way to cut is to select the new source directly on the Program bus. This is known as a "hot switch."

- STEP 4:** For a cut transition on the M/E buses, select **M/E** on the Program and Preset buses, press **BKND**, then follow steps 2 and 3 for the M/E buses. With the M/E buses selected, Background A is the "on air" bus, and Background B is the "next" bus.
- STEP 5:** For a cut transition on any keyer bus, select the desired bus by pressing its button (**KEY 1**, **KEY 2**, or **DSK**). Pressing **CUT** toggles the selected keyer on and off.

Creating a Mix Transition

Create a Mix, or NAM transition as follows:

- STEP 1:** Select a source on the Program bus and another source on the Preset bus.
- STEP 2:** Press the **MIX** button to select a mix (dissolve) or the **NAM** button for a non-additive mix.
- STEP 3:** Press the **AUTO TRAN** button or move the fader bar.
- STEP 4:** For a mix transition on the M/E buses, press the **M/E** button on the Program and Preset buses, then the **BKND** transition button. Use steps 2 and 3 for the Background A and Background B buses.
- STEP 5:** For a mix transition on any keyer bus, select the desired bus by pressing its button (**KEY 1**, **KEY 2**, or **DSK**). Pressing **AUTO TRAN** or moving the fader bar mixes the selected keyer on and off.

NOTE: You can only execute a NAM transition on the M/E BKND buses and the PGM PST buses. A NAM transition is not possible for any of the keyer buses, nor for keyer priority.

Creating a Wipe Transition

Create a wipe transition as follows:

- STEP 1:** Select a source on the Program bus and another source on the Preset bus.
- STEP 2:** Press the **WIPE** transition button.
- STEP 3:** Press the **AUTO TRAN** button or move the fader bar to wipe with the current pattern. To change the wipe shape, press the **WIPE** menu button, then the *Patterns* softkey. Use the **Pattern** pushknob to select a wipe shape. If you know the wipe pattern number, enter it in the numeric keypad and press the **Pattern** pushknob to set the pattern.
- STEP 4:** For a wipe transition on the M/E buses, press the **M/E** button on the Program and Preset buses, then the **BKND** transition button. Use steps 2 and 3 for the Background A and Background B buses.
- STEP 5:** For a wipe transition on any keyer bus, select the desired bus by pressing its button (**KEY 1**, **KEY 2**, or **DSK**). Pressing **AUTO TRAN** or moving the fader bar wipes the selected keyer on and off.

Creating an Effect Transition

If the optional internal DVE is installed, you can create an Effect transition as follows:

- STEP 1:** Select a source on the Program bus and another source on the Preset bus.
- STEP 2:** Press the **EFFECT** transition button.
- STEP 3:** Press the **AUTO TRAN** button or move the fader bar to perform a "squeeze to infinity" transition. To change the effect type, press the **EFFECT TRANS** menu button, then the *Save-Recall* softkey. Press the *Recall*

softkey and turn the **Scroll** softknob to access effects 20 through 50; a group of icons below the effect list shows the type of DVE movement that the selected effect performs. When you have selected an effect, press the **Confirm** softkey to load it. Moving the fader bar executes the new effect transition.

- STEP 4:** For an Effect transition on the M/E buses, press the **M/E** button on the Program and Preset buses, then the **BKND** transition button. Use steps 2 and 3 for the Background A and Background B buses.
- STEP 5:** For an Effect transition on any keyer bus, select the desired bus by pressing its button (**KEY 1**, **KEY 2**, or **DSK**). Pressing **AUTO TRAN** or moving the fader bar transitions the selected keyer on and off with the current DVE effect.

NOTE: You cannot use an Effect transition to change M/E keyer priority.

Creating a Split Transition on PGM/PST

A basic requirement on any switcher is that there is always an active transition selected for at least one bus row. The 8150 goes a step further by being able to execute two different transition types simultaneously in the same operation. This is known as an Ultamix™ transition.

To add a second transition type to the current one, press and hold the second transition type button (**MIX**, **WIPE**, or **NAM**.) and press the bus delegation button to which you want to apply the second transition type. Note that, for any Ultamix™ split transition in which a wipe is involved, the **PGM PST** or **BKND** transition must be a wipe. The following is an example:

- STEP 1:** Press **PGM PST** to select control of the PGM/PST buses.
- STEP 2:** Select different sources on the Program and Preset buses.
- STEP 3:** Press the **WIPE** transition button. Press the **WIPE** menu button, then the *Patterns* submenu softkey. Select a wipe pattern with the **Pattern** pushknob or enter the pattern number in the numeric keypad and press the pushknob.
- STEP 4:** Press the **DSK** button. If you have *Auto Menus* enabled, the DSK Keyer menu appears. If not, press the **KEY** menu button. Move the fader bar to light "KEY ON" above the **DSK** button.
- STEP 5:** Select a source on the DSK Fill bus row suitable for keying over the PGM/PST buses. Since the DSK is on, the key appears as soon as you select it. For more on setting up a key, see Section 4 – Keying.
- STEP 6:** Press **MIX + DSK**, then **WIPE + PGM PST**. **DSK** and **MIX** light yellow, and **PGM PST** and **WIPE** light green. This color code combination indicates that this transition is a simultaneous PGM/PST bus wipe and a DSK mix.
- STEP 7:** Press the **AUTO TRAN** button or move the fader bar to perform the split transition. You should see the key dissolve (mix) over a wipe between the Program and Preset bus sources.

Creating a Split Transition on the M/E

You can create the following split transitions on the M/E buses with the 8150 Ultamix™ feature:

- Background wipe with a Key 1 mix or Key 2 mix or both.
- Background wipe with a Key 1 mix and Key 2 wipe, or vice versa.
- Key 1 mix and Key 2 wipe or vice versa.
- Background NAM with a Key 1 mix or Key 2 mix or both.

Note that, for any Ultamix™ split transition in which a wipe is involved, the **PGM PST** or **BKND** transition must be a wipe. Also, **PRIORITY** transitions are either excluded or nonfunctional with the Ultamix™ feature. The following is an example:

- STEP 1:** Press **PGM PST**, then **M/E** on the Program and Preset buses. If the DSK is on, press **DSK**, then the **CUT** button to turn it off.
- STEP 2:** Press **BKND** to select control of the M/E buses.
- STEP 3:** Select different sources on Background A and Background B.
- STEP 4:** Press and light the **WIPE** transition button.
- STEP 5:** Press the **WIPE** menu button, then the *Patterns* submenu softkey. Select a wipe pattern with the **Patterns** pushknob.
- STEP 6:** Press the **KEY 1** button. The Key Fill bus shows "KEY 1." Move the fader bar to light "KEY ON" below the **KEY 1** button.
- STEP 7:** Select a source on the Key 1 Fill bus. Since the keyer is on, the key appears as soon as you select it. For more on setting up a key, see Section 4 – Keying.

- STEP 8:** Press **BKND + KEY 1**, which light green because **WIPE** is the selected transition type. Press **MIX + KEY 1**. The **MIX** and **KEY 1** buttons light yellow. This color code combination indicates a simultaneous background wipe and Key 1 mix.
- STEP 9:** Press **AUTO TRAN** or move the fader bar to dissolve (mix) Key 1 over a wipe between Background A and Background B.
- STEP 10:** You can now select a source for Key 2 and mix it on by pressing **MIX + KEY 1 + KEY 2**. This lights **BKND** green, and **KEY 1** and **KEY 2** yellow. Or you can wipe Key 2 on by pressing **WIPE + BKND + KEY 2**. This lights **BKND** and **KEY 2** green, and **KEY 1** yellow.

Ultamix™ General Guidelines

Here are a few general rules that may help to avoid confusion when using split transitions:

- If a wipe is one of the transition types included in a split transition, and **PGM PST** or **BKND** are included in the transition, they must be selected as a wipe transition. The other buses in the transition may be either a mix or a wipe.
- Only **PGM PST** or **BKND** may be selected as a NAM transition, and any other buses in the transition must be a mix.
- If **BKND** and **PRIORITY** are simultaneously included in any transition, they must be of the same type—both a mix or both a wipe. Therefore, the simultaneous transitioning of Priority as a wipe and one or both keyers as a mix is allowed but is not visible, as both keyers must be on in order to see the result of any Priority transition.
- You cannot use an Effect transition as part of a split transition.

Changing Auto Transition Rates

You can execute a transition manually with the fader bar, or automatically with the **AUTO TRAN** button. To set an auto transition rate other than one second (default), enter the duration in the numeric keypad and press the **AUTO TRAN** button. This loads the new duration but does not execute the transition. To actually execute the transition, press **AUTO TRAN** again. You can view the current auto transition rates in the Show Status menu Autotrans status box.

The 8150 interprets numbers entered for times or durations as frames. For example, it interprets an entry of 1 - 0 - 0 as 100 frames, and displays 3:10 in 525 (4:00 in 625). To enter seconds and frames, enter the seconds, press the decimal (*) button, then enter the frames. For example, it interprets an entry of 1 - * - 0 - 0 as 1 second 0 frames, and displays 1:00 in either line standard. To enter seconds and frames plus one field, enter the seconds, press the decimal button, enter the frames, then press the decimal button again. For example, it interprets an entry of 1 - * - 0 - 0 - * as 1 second, 0 frames, 1 field, and displays 1:00* in either line standard.

NOTE: On the numeric keypad, the decimal point button is labeled with an asterisk.

The following is another way to change auto transition rates:

- STEP 1:** Press the **MISC** menu button to bring up the Miscellaneous menu.
- STEP 2:** Press the *Auto Trans* submenu softkey to access two sets of controls, *Autotrans Rates* and *Trans*, on the left side of the menu screen.
- STEP 3:** Press the *Autotrans Rates* softkey. These transition control pushknobs appear at the bottom of the menu screen: **M/E Rate**, **P/P Rate**, and **FTB Rate**.

STEP 4: To change the M/E auto transition duration, turn the **M/E Rate** pushknob, or enter a duration on the numeric keypad, then press the **M/E Rate** pushknob. The M/E rate affects all transitions performed on the M/E buses with the **AUTO TRAN** button.

To change the PGM/PST/DSK auto transition duration, turn the **P/P Rate** pushknob, or enter a duration on the numeric keypad, then press the **P/P Rate** pushknob. The P/P rate affects all transitions performed on the PGM/PST buses with the **AUTO TRAN** button.

Changing **FTB Rate** affects only the Fade-to-Black transition duration, performed with the **FTB** button.

Changing Transition Curves

All 8150 transitions, both manual and automatic, default to a linear acceleration curve. This means that the speed of the transition is constant from beginning to end. For a manual transition, the percentage of completion of the transition is directly proportional to the percentage of fader bar movement.

You can set nonlinear transition curves for the M/E, PGM/PST, and FTB transitions. In the Miscellaneous menu, press the **Auto Trans** softkey, then the **Trans** softkey. Pushknob controls for **M/E Trans**, **P/P Trans**, and **FTB Trans** appear. **Linear**, as described above, is the default setting. A **Log** trajectory transition starts quickly and slows at the end, approximating a logarithmic curve. The **Antilog** trajectory is the opposite of **Log**. The **Exponential** trajectory is an exaggerated version of **Antilog**: it starts very slowly, and accelerates quickly at the end, approximating an exponential curve. The **S_Curve** trajectory accelerates at the start and symmetrically decelerates at the end of the transition.

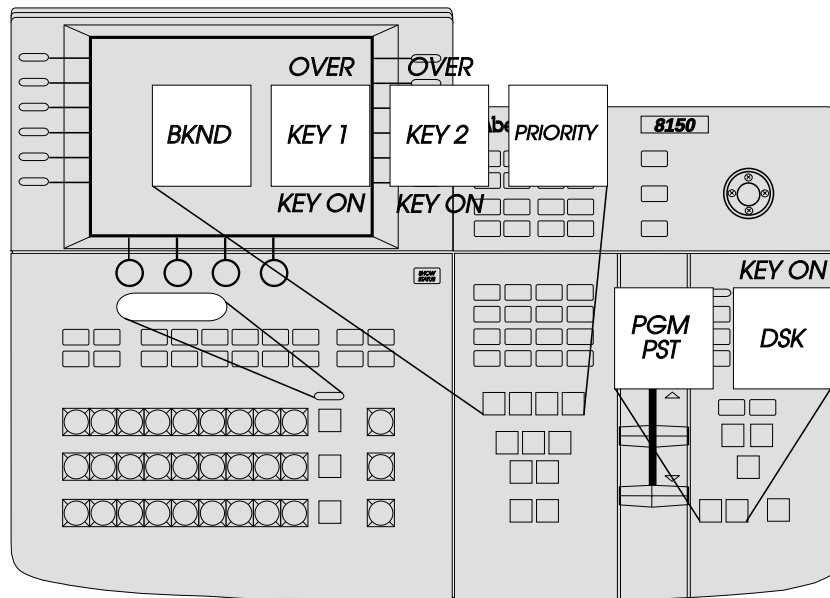
The acceleration curves apply to the transition whether you use an auto transition or the fader bar. In a nonlinear (Log, Antilog, or Exponential) manual transition, the percentage of completion of the transition is not directly proportional to the percentage of fader bar movement.

Transition Controls

This section discusses the controls used to set up and execute transitions.

Bus Row Delegation Buttons

The bus row delegation buttons are below the numeric keypad, next to the fader bar. In the M/E, you can enable any combination of **BKND**, **KEY 1**, **KEY 2**, and **PRIORITY** for the same transition type, by pressing the buttons at the same time. In PGM/PST, you can enable any combination of **PGM PST** and **DSK** for the same transition type, by pressing the buttons at the same time. For example, to include both background buses and both key buses in a transition, press **BKND + KEY 1 + KEY 2**. Note that you cannot have M/E bus and PGM/PST bus transitions active at the same time.



Bus Row Delegation Buttons

BKND

Pressing **BKND** enables a transition from the Background A bus to the Background B bus. With **BKND** lit, the Background A source transitions to the Background B source with the currently selected transition type (**MIX**, **WIPE**, **EFFECT**, or **NAM**) when you press **CUT**, move the fader bar, or press **AUTO TRAN**.

KEY 1

Pressing **KEY 1** enables a Key 1 transition. With **KEY 1** lit, Key 1 transitions on or off with the currently selected transition type (**MIX**, **WIPE**, or **EFFECT**) when you press **CUT**, move the fader bar, or press **AUTO TRAN**. You cannot transition any keyer as a **NAM**.

KEY 2

Pressing **KEY 2** enables a Key 2 transition. With **KEY 2** lit, Key 2 transitions on or off with the currently selected transition type (**MIX**, **WIPE**, or **EFFECT**) when you press **CUT**, move the fader bar, or press **AUTO TRAN**. You cannot transition any keyer as a **NAM**.

PRIORITY

In the M/E, one key is always "on top of" or "in front of" the other, i.e., has priority over the other, even if neither is turned on. The "OVER" displays above the **KEY 1** and **KEY 2** buttons indicate the current priority. A priority transition inverts the relative priority of Key 1 and Key 2. Pressing the **PRIORITY** button enables this transition, which occurs when you press **CUT**, move the fader bar, or press **AUTO TRAN**. A priority transition can be only a mix or wipe.

PGM PST

Pressing **PGM PST** enables a transition from the Program bus to the Preset bus. With **PGM PST** lit, the Program bus source transitions to the Preset bus source with the currently selected transition type (**MIX**, **WIPE**, **EFFECT**, or **NAM**) when you press **CUT**, move the fader bar, or press **AUTO TRAN**.

DSK

Pressing **DSK** enables a downstream keyer transition. With **DSK** lit, the DSK transitions on or off with the currently selected transition type (**MIX**, **WIPE**, or **EFFECT**) when you press **CUT**, move the fader bar, or press **AUTO TRAN**. You cannot transition any keyer as a **NAM**.

KEY BUS DELEGATION

You can change the key bus delegation with the small green oval button above the **SHIFT** buttons. Toggle this button to select a key bus row for control: Key 1 Fill, Key 2 Fill, or DSK Fill. The top bus row display shows the key fill bus you are controlling. As you toggle the Key Bus Delegation button, the Key and Border menu displays show the menu settings for the selected keyer, and the active key signal in the key monitor output changes to reflect the selected keyer.

Transition Buttons

These buttons select the type of transition that occurs when you move the fader bar or press **AUTO TRAN**.

MIX

Press the **MIX** button to select a mix transition for the selected bus row(s) (**BKND**, **KEY 1**, etc., lit). The bus row delegation buttons light yellow to indicate that the transition type is a mix.

WIPE

Press the **WIPE** transition button to select a wipe transition for the selected bus row(s). The bus row delegation buttons light green to indicate that the transition type is a wipe.

EFFECT

If the optional internal DVE is installed, press the **EFFECT** button to select a DVE type transition for the selected bus row. The bus row delegation buttons light red to indicate that the transition type is an Effect.

NOTE: You cannot use Effect to transition M/E keyer priority. Also, you cannot select an Effect transition on both the M/E and PGM PST busses simultaneously.

NAM

Press the **NAM** button to select a nonadditive mix transition for **PGM PST** and **BKND** only. The bus row delegation button lights yellow to indicate that the transition type is a nonadditive mix.

A NAM transition actually performs two types of transition at once. At the beginning of the transition, the "from" source is up full. During the first half of the transition, the "to" source fades up from black; at the same time, its luminance level, or brightness, is compared on a pixel-by-pixel basis to that of the "from" source, and whichever of the two has a higher luminance level appears on screen, while the darker of the two is invisible. At the halfway point of the transition, both sources are compared at their full levels, again with the brighter of the two appearing, and the darker of the two invisible. During the second half of the transition, the "from" source fades to black; at the same time, its luminance level is compared to that of the "to" source, and whichever of the two has the higher luminance level again appears on screen, while the darker of the two is invisible. At the end of the transition, the "to" source is up full.

NOTE: If the Color Corrector option is not installed, the fade from black and fade to black described above does not occur; both the "from" and "to" sources remain at full level throughout the NAM transition as their luminance levels are compared.

CUT

Press the **CUT** button to instantly flip flop the Background A and B or Program and Preset bus sources, to instantly turn the selected key(s) on or off, or to instantly toggle the M/E keyer priority. Pressing **CUT** cuts the sources regardless of the transition type selected.

AUTO TRAN

Pressing the **AUTO TRAN** button executes the current transition at a preprogrammed rate. The default duration is one second, but you can set any duration from one field to 5000 frames (two minutes, 46 seconds, 20 frames [2:46:20] in 525, or three minutes, 20 seconds [3:20:00] in 625). You can use **AUTO TRAN** with any transition type.

You can set the auto transition rate by entering the duration value in the numeric keypad and pressing **AUTO TRAN**. This loads the duration, but does not execute the transition. Press **AUTO TRAN** again to execute the transition. You can also change the rate in the Miscellaneous menu, with separate controls for M/E and PGM/PST transitions. (See the discussion "Changing Auto Transition Rates" on page 3-11 for details on entering durations.) The current auto transition rates for both the M/E and PGM/PST appear in the Show Status menu Autotrans status box.

Pressing **AUTO TRAN** before the auto transition is complete pauses it, and the button flashes to remind you that the transition is paused. Press **AUTO TRAN** again to complete the transition from the point at which it was paused. If you move the fader bar to start a transition, but stop before reaching the other end, pressing **AUTO TRAN** continues the transition from that point. Also, moving the fader bar after pausing an auto transition "picks up" the transition from where it was paused, and you can either finish it or return it to its starting point.

FTB

Pressing the **FTB** button mixes the main program output, including the DSK, to black, regardless of the bus rows you are controlling. You can set the duration for the fade-to-black by entering the duration in the numeric keypad and pressing **FTB**. This loads the duration but does not execute the fade-to-black. Press **FTB** again to execute the transition. You can also change the fade-to-black duration in the Miscellaneous menu, with separate controls for M/E and PGM/PST transitions. (See the discussion "Changing Auto Transition Rates" on page 3-11 for details on entering durations.) The current auto transition rate for the fade-to-black appears in the Show Status menu Autotrans status box.

FADER BAR

Use the fader bar to manually perform any transition except a cut. As you move the fader bar, a small green arrow LED lights next to it to indicate the direction the fader bar has traveled and must travel to complete the transition. This is a reminder that you have only partially completed the transition, and in which direction you were moving the fader bar before pausing.

Transition Controls

8150 Operations

Section 4

Keying

Introduction

The 8150 offers very advanced keying features. There are three full-function linear keyers:

- Keyer 1 and Keyer 2 are associated with the M/E buses
- DSK (**D**own**S**tream **K**eyer) is associated with the PGM/PST buses

Abekas' μ line (micro line) keying technology gives precise control over keys, including the ability to soften, position, and resize the key signal. All three keyers are identical—all functions in the M/E keyers are also available in the DSK. This section describes the basic steps for setting up keys, discusses some concepts behind this new technology, and covers the menu controls. For information on the mBoss™ key borders, see Section 5 – Borders.

A useful tool is the ability to monitor the processed key signal ("hole cutter") of the keyer selected on the Key bus (Keyer 1, Keyer 2, or DSK) as you adjust it. To enable this feature, press the **MISC** menu button, then the *Pvw Bus Ctrl & Misc* submenu softkey. Toggle the **Source** softkey to **Select**, and use the **Source** pushknob to select **Key Monitor**. This sends the key signal, after the 8150 extracts and processes it for use in the final composited key, to the preview output. It is helpful to monitor this signal when setting up chroma keys or complex masked keys.

There are also 20 "user keyer" registers that you can use to save and recall keyer setups to on-line memory and disk. These user keyers are independent of Snapshot effect keyframes and Timeline effect keyframes.

Setting Up a Luma (Luminance) Key

This example keys the output of your character generator over light colored background video. Create a luma key as follows:

- STEP 1:** Press the **PGM PST** button and select **M/E** as the source on the Program and Preset buses.
- STEP 2:** Press the **BKND** button to control the M/E buses and select a Background A source. Using a light color background, such as the SuperMatte generator, makes it easier to see the key edges.
- STEP 3:** Press the **KEY 1** button in the transition group. If the Keyer 1 menu does not appear (*Auto Menus* is turned off in the Miscellaneous menu), press the **KEY** menu button. The menu appears on the menu screen, and the "KEY 1" display above the Key Fill bus lights.
- STEP 4:** Select your character generator video output as the key fill source on the Key bus row.
- STEP 5:** Move the fader bar to its opposite position, or press the **CUT** button, to light the "KEY ON" display below the **KEY 1** button.
- STEP 6:** Press and hold **CLEAR** and press the **KEY** menu button. This resets the keyer settings for a unity gain luminance key.
- STEP 7:** Note that the key is a self-key; it uses the fill video to create its own key signal. You will normally use the external key signal from the character generator. To select a different key source, press the *Sources* softkey to access the Sources submenu.
- STEP 8:** Press the *Source* softkey on the left side of the menu display. Four pushknob labels appear: **Keyer**, **Key Cut Source**, **Key Mask Source**, and **User Keyer**. Use the **Key Cut Source** pushknob to select a key source that

is different from the selected fill source. This is known as an external key. For this example, select your character generator key output as the key source.

If the character generator key signal is assigned to one of the crosspoint buttons, you can press and hold that button on the Background B bus row and then press the **Key Cut Source** pushknob. This sets the source directly; you do not have to dial through other sources to find the one you want.

STEP 9: Press the *Main* submenu softkey to return to that submenu. Toggle the *Key Type* softkey to *Luma*. The **High Clip**, **Low Clip**, **High Gain**, and **Low Gain** pushknobs appear. If needed, adjust low clip and low gain to fine tune the key.

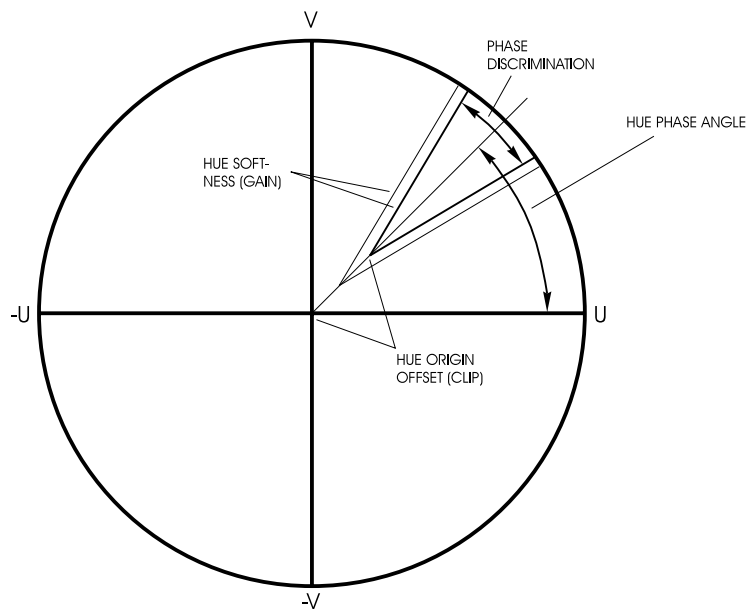
The **Low Clip** and **Low Gain** pushknobs are the same as "clip" and "gain" controls in traditional keyers. Low clip determines the level of the key signal that "cuts a hole" in the background. Low gain adjusts the sharpness or "slope" of the key edges.

High Clip lets you determine another level, above the low clip level, above which the key does **not** "cut a hole" in the background. **High Gain** adjusts the slope of the key edges above the high clip level. Normally, you can leave high clip and high gain at their default settings.

If your character generator can create soft character edges, you may find that keying them results in dark edges around the characters. You can eliminate the dark edges by toggling the *Mode* softkey to *Matte*. This changes the key process from a multiplicative mix to an additive mix (see the discussion "Key Mode Versus Matte Mode" on page 4-20). Notice that the darkened soft edges change to the correct soft edges, and match the character generator's original output.

Traditional Chroma Keying

To better understand how the 8150 handles chroma keying, it may be helpful to review traditional chroma keying. The figure below shows a "color wheel," similar to what you would see on a vectorscope, to illustrate traditional chroma keyer controls.



Traditional Chroma Key Extraction

First, you select the initial color to be keyed out by setting the hue angle. The hue control lets you key out any color. Usually, this is blue or green so the chroma keyer can more easily distinguish between the subject (usually a person or persons) and the background, since flesh tones contain little of these colors.

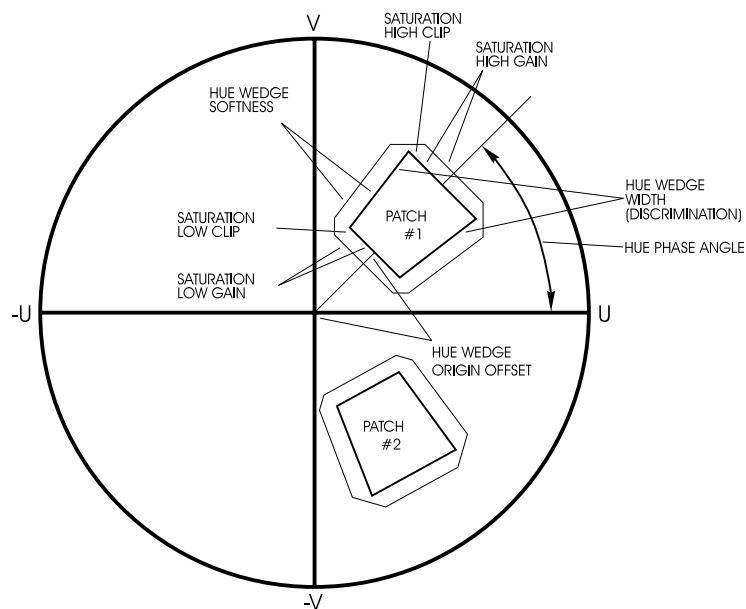
After selecting the hue, adjusting discrimination sets a narrow or wide range of hues around the initial color to be keyed out. Since the object(s) you want to key out are seldom exactly the same hue throughout (because of lighting variations, shadows, etc.), it is often best to set the discrimination as wide open as possible without keying out colors you want to keep.

Adjusting the clip sets a saturation level below which the selected color does not key out. Adjusting the gain determines the softness or "slope" of the chroma key edges.

Traditional chroma key controls (hue, discrimination, clip, and gain) are adequate under ideal lighting conditions: an evenly lit set, where the people and objects do not contain colors close to the chroma key color. However, variations in the chroma key color saturation can cause problems that the clip and gain controls cannot overcome. Less saturated parts of the set tend to look noisy or partially keyed. Of course, ideal lighting conditions are not always available, making a realistic looking chroma key difficult or impossible to set up. 8150 chroma keying improves color control under these less-than-optimum conditions.

The 8150 Chroma Keying Process

The 8150 chroma keyers address traditional chroma key problems, and provide even more control in less-than-ideal lighting situations. The figure below illustrates them. Using "single patch" or "dual patch" chroma key techniques, the 8150 ensures a realistic composite key image despite uneven lighting and difficult subjects.



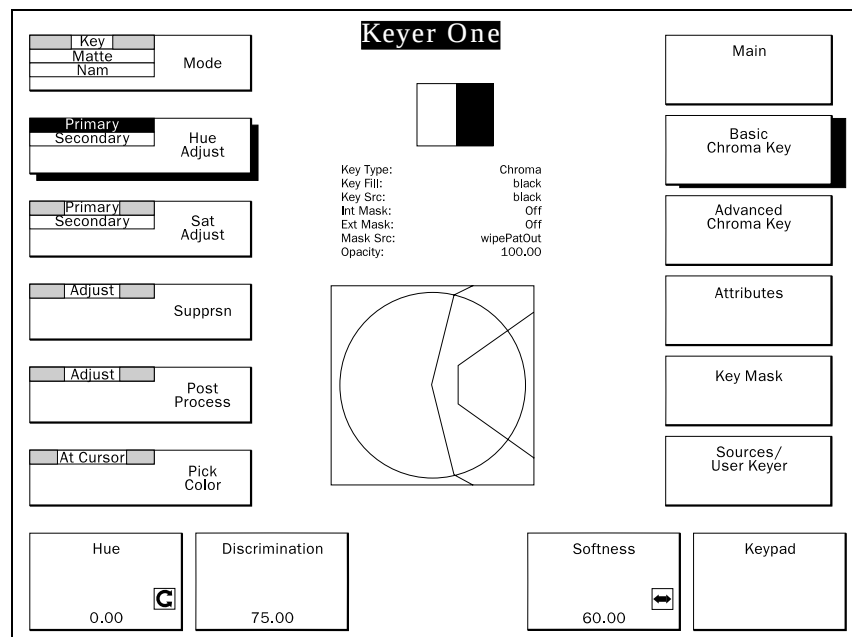
8150 Chroma Key Extraction

The basic chroma keyer works much the same as traditional chroma keyers: it keys out a single color with the standard controls. The 8150 advanced chroma key mode lets you key out two different colors with the same keyer, and also gives you controls to further adjust the key according to luminance levels in the chroma key color.

The Basic Chroma Key submenu has all the traditional chroma key controls, plus a "color pick" feature that lets you choose the chroma key color from the fill video with a cursor. The 8150 uses this color to determine the optimum hue and saturation values to use for chroma keying that fill video. This method is described more fully under the heading "Setting up a Basic Chroma Key" on page 4-13.

For manual control, this submenu has three pushknobs under the **Hue Adjust** softkey: **Hue**, **Discrimination**, and **Softness**.

- **Hue** – selects the initial color to be keyed out. This has a full 360 degree range (0 degrees falls on the vectorscope + U [B-Y] axis, near "true blue"), letting you select any hue for the key color.



The Basic Chroma Key Submenu

- **Discrimination** – sets a range of hues, centered around the initial hue, to be keyed out. A low discrimination value selects only a few degrees of hue variation; a high discrimination value keys out a greater range of hues. The discrimination range is 0 to 179 degrees of hue variation. Normally, you want the discrimination value as high as possible.
- **Softness** – adjusts the sharpness, or slope, of the key at the edges of the discrimination range. Normally, you can leave softness at its default level of 60.00.

With a properly lit chroma key set, the *Hue Adjust* pushknobs may be all that you need. For more adjustment, you can use the pushknobs under the *Sat Adjust* softkey: **Low Clip**, **Low Softness**, and **Offset**.

- **Low Clip** – sets the threshold for the less saturated parts of a scene: variations of the selected key color with a saturation below the low clip level do not key out, but all other hue settings do not change. This setting is different from **Offset**, described below: it affects only the low saturation threshold, without changing the other saturation levels. Normally, you want this setting as low as possible.
- **Low Softness** – adjusts the sharpness, or slope, of the key edge at the low clip level only. Normally, you want this setting as high as possible.
- **Offset** – lets you exclude or include less saturated colors in the key by offsetting the chroma keyer's saturation sensitivity. A negative offset will bias the settings toward higher saturation levels; a positive offset includes less saturated levels of the key color. This is different from saturation **Low Clip**, described above. It affects all levels of saturation equally, not just the low saturation threshold.

If color fringing on the edges of the chroma key is a problem, you can suppress it to black, or change the color of the processed key fill to more closely match the predominant color in the background over which you are keying. The *Supprsn*

(suppression) softkey accesses pushknobs to suppress the key edges: **Suprs Sat**, **Suprs Luma**, and **Suprs Hue**. With these controls, you can neutralize the original chroma key color before it is layered over the background image, rendering it invisible or, at the very least, unnoticeable, in the final composited image.

Suprs Sat changes the saturation level of the processed key fill. **Suprs Luma** changes the luminance level of the processed key fill. **Suprs Hue** changes the hue of the processed key fill.

The **Post Process** softkey accesses clip and gain controls "downstream" of the main controls discussed above. They let you fine tune the key signal, if needed, after optimizing it with the main controls.

The highest quality chroma key, though, is not a normal key, but a matte key. The **Mode** softkey in this submenu toggles **Key**, **Matte**, and **NAM**. **Key** is a standard multiplicative mix. **Matte** is an additive mix. The differences between the two modes are described under the heading "Key Mode Versus Matte Mode" on page 4-20. When you use matte mode to set up a chroma key, luminance and chrominance coring controls let you remove any residual noise in low luma and chroma levels left over from the matte keying process.

The Advanced Chroma Key submenu gives you control over the highly saturated parts of the chroma key color and the luminance levels of that color. It also lets you key out an independent secondary chroma key color, with the same controls used on the primary color.

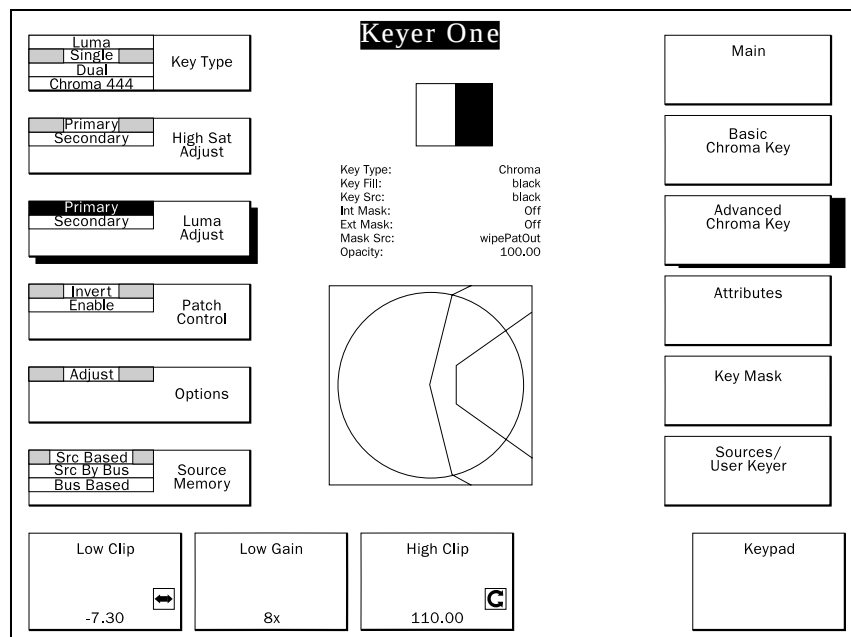
The **High Sat Adjust** softkey accesses the **High Clip** and **High Softness** pushknobs.

- **High Clip** – sets the threshold for parts of a scene with higher saturation: variations of the selected key color with a saturation above the high clip level do not key out. Normally, you want this setting as high as possible.

- **High Softness** – adjusts the sharpness, or slope, of the key edge above the high clip level only. Normally, you want this setting at its default level of 0.00.

The *Luma Adjust* softkey accesses the three luminance pushknob controls: **Low Clip**, **High Clip**, and **Low Gain**.

- **Low Clip** – sets the threshold for the key color according to its luminance (brightness) level: you can clip out variations of the key color with low luminance levels so they do not "cut a hole" in the background. Normally, you want this setting as low as possible.
- **High Clip** – sets the threshold for high luma levels of the key color, above which they do not "cut a hole" in the background. Normally, you want this setting at its default level of 110.00.



The Advanced Chroma Key Submenu

- **Low Gain** – adjusts the sharpness, or slope, of the key edges at both the luma low clip and luma high clip levels. This pushknob has preset levels of 8x, 16x, 32x, and 64x. Normally, you want this setting as low as possible.

Also in the Advanced Chroma Key menu is the **Key Type** softkey, which toggles three types of chroma key derivation: **Single**, **Dual**, and **Chroma 444**. (The **Luma** selection is locked out with **Chroma** selected as the **Key Type** in the Keyer Main submenu.)

- **Single** – selects a single chroma key color for key extraction. With this key type, you cannot toggle to **Secondary** on any of the chroma key adjustments; the error message "Select Dual Chroma Key Type first" appears.
- **Dual** – selects two separate and independent chroma key colors for key extraction in the same keyer. With this key type selected, you can toggle **Primary** / **Secondary** on all chroma key settings to choose the chroma key color you want to extract.
- **Chroma 444** (if the 444 Chroma Keyer option is installed) selects a wide band path for high resolution graphics or film-to-video transfers sampled at a 4:4:4 rate to be used as the Chroma Key fill source. With this key type, you cannot toggle to **Secondary** on any of the chroma key adjustments; the error message "Select Dual Chroma Key Type first" appears.

Also available in this menu is **Patch Control**. With **Enable** highlighted, the default mode turns on both the Primary and Secondary chroma "patches," or extraction circuits, and leaves the Luma patch turned off. Turn on the Luma patch to combine a luminance key with the chroma key, using the same fill video to derive both key types. You can then use the main **Luma** key controls (low clip and gain, high clip and gain) to extract a key signal from the entire fill image. This is unlike the **Luma Adjust** clip and gain controls for the chroma patches, which affect only the chroma key color, not the entire image. The **Keyer Combiner** pushknob selects different ways of combining the three patches. See the discussion on combining the patches later in this section.

The *Options* softkey accesses pushknobs for changing the preset limits for the color pick feature: **Display Color Wheel**, **Low Clip Boundary Width**, **High Clip Boundary Width**, and **Hue Boundary Width**. The three Boundary Width pushknobs let you change the default limits on these three parameters when you set up a chroma key with the color pick feature. When you set **Display Color Wheel** to **On**, it temporarily loads the Chroma Patch test pattern into the framestore currently being used for color picking and displays this framestore as the key source. This lets you more easily see the effects of adjusting these boundary widths.

The color pick operation selects the color information from the entire frame, and the chroma key values are derived from a histogram (graphical analysis of distribution of values) of that full-frame chrominance information, resulting in a more accurate chroma key setup.

If both framestores are selected on any of the seven buses, or if both framestores are "locked," the 8150 cannot perform its full-frame color pick as described above, and instead picks the color values from the single pixel over which the cursor is located. It cannot expand the color pick operation, nor can it pick a color for the secondary chroma key. This condition is indicated in the Keyer menu with the error message "Can't use Selected Framestore." If you see this error message, unlock one frame store, or select another source on the bus on which one of the framestores is selected.

Setting Up a Basic Chroma Key

For this example, you need a video source suitable for chroma keying. There are two procedures described: one that uses the Pick Color function in the Basic Chroma Key submenu, and one that uses manual adjustments in the same submenu.

Chroma Key with Color Pick

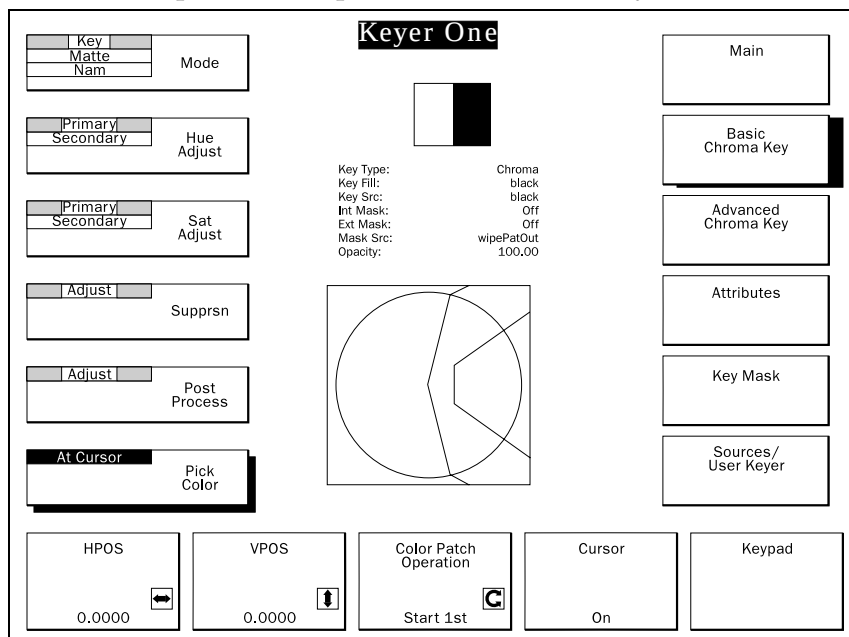
- STEP 1:** Press the **PGM PST** button and select the **M/E** crosspoint button on the Program and Preset buses. Press the **KEY 1** button to enable control of Keyer 1 and the M/E buses. Select a light color background source (the SuperMatte generator, for example) on the Background A bus.
- STEP 2:** Set all keyer settings to default by pressing and holding **CLEAR** and pressing the **KEY** menu button.
- STEP 3:** Press the *Main* submenu softkey, and toggle the *Key Type* softkey to *Chroma*.
- STEP 4:** Select the chroma key video source on the Key 1 bus.

NOTE: At least one of the framestores must be unlocked and not selected on any bus for the following steps to work. See Section 9 – Framestores for more information.

- STEP 5:** With Key 1 still off ("KEY ON" display under the **KEY 1** button off), you should see the initial chroma key, over the selected background, on the preview output. (Ensure the preview output is set to auto mode; see Section 2 – Getting Started.) To pick a color from the original unkeyed video source, press **CUT** to turn the key on ("KEY ON" lights beneath the **KEY 1** button). Press **BKND + KEY 1**, and select the same fill video on

the Background B bus. The initial chroma key appears in the program output, and the original unprocessed fill video appears in the preview output with the Color Pick cursor.

STEP 6: Press the *Basic Chroma Key* submenu softkey, then the *Pick Color* softkey. Set the **Color Patch** pushknob to **Start 1st**. Use the joystick or pushknobs to move the cursor over the color to be keyed out. Press the *Pick Color* softkey again. The 8150 automatically sets many chroma key parameters to values that normally produce a good key, including, but not limited to: hue, discrimination, offset, low clip, low softness, and suppression values. If the key is turned off, the preview output shows how the key will look when



The Basic Chroma Key Submenu

you turn it on. If the key is turned on, you can see it on the program output.

STEP 7: After picking the initial color, the **Color Patch** pushknob setting automatically changes to **Expand 1st**. You can now select more areas on the screen to key out. If you pick the wrong color, or want to start again, select **Start 1st**, reposition the cursor, and press *Pick Color* again.

NOTE: If the error message "Can't use Selected Framestore" appears, this indicates that the framestores are either locked or selected on another bus. To remove this condition, unlock one framestore or select another source on the bus on which a framestore is currently selected.

STEP 8: If the key is not already on, you can send it to the program output by turning it on (press **CUT** or move the fader bar to light "KEY ON" under the **KEY 1** button.)

In most cases, you should have a clean chroma key at this point. The following steps demonstrate the matte keying mode, including luma and chroma coring.

STEP 9: Select matte mode by toggling the *Mode* softkey to *Matte*. This changes the key mode from a normal key to a matte key. See the discussion "Key Mode Versus Matte Mode" on page 4-20.

- STEP 10:** Because matte mode is an additive mix of the foreground signal, there may be background noise visible. If so, you can use luma and/or chroma coring to remove it. With **Coring Control** set to **Luma On**, **Chroma On**, or **Both On**, it automatically suppresses to black any parts of the fill video (luma, chroma, or both, as selected) that would be fully keyed out in key mode.
- STEP 11:** Set the **Gain** pushknob to its maximum (1600.00) and adjust the **Chroma Core** and/or **Luma Core** pushknobs to suppress noise on the chroma key edges. Set these pushknobs only as high as needed; excessively high levels may remove too much of the luminance or chroma from the fill video.

Chroma Key without Color Pick

- STEP 1:** Press the **PGM PST** button and select **M/E** on the Program and Preset buses. Press the **KEY 1** button to enable control of Keyer 1 and the M/E buses. Select a light color background source (the SuperMatte generator, for example) on the BKGND A bus.
- STEP 2:** Set all keyer settings to default by pressing and holding **CLEAR** and pressing the **KEY** menu button.
- STEP 3:** Press the *Main* submenu softkey and toggle the *Key Type* softkey to *Chroma*.
- STEP 4:** Select the chroma key video source on the Key 1 bus.
- STEP 5:** Turn the key on by pressing the **CUT** button or moving the fader bar to the other end of its range. The "KEY ON" display lights under the **KEY 1** button.
- STEP 6:** Press the *Basic Chroma Key* softkey, then press the *Hue Adjust* softkey.
- STEP 7:** Set the **Discrimination** pushknob to 0.00. This allows the finest adjustment of the chroma key hue.
- STEP 8:** Watch the program output and use the **Hue** pushknob to key out the greatest amount of the chroma key color (the background is visible through it). You will not remove all of the chroma key color yet.
- STEP 9:** When you find the correct hue, set **Discrimination** to 179.00. If this discrimination value keys out colors besides the chroma key color, lower it until only the desired chroma key color keys out.
- STEP 10:** If colored edges are still visible around the subject, slowly increase the **Offset** value until the edges disappear or are least visible. If areas of the fill video begin to key out, decrease the **Offset** value until they reappear.

The color suppression adjustment is available in either key mode or matte mode. In key mode it is used to blend the color of the key edges with the predominant color of the background over which you are keying. In matte mode it is used to suppress the chroma key color to black. Since it may be difficult to see the chroma key color in key mode, you can temporarily defocus the key signal to let more of the chroma key color (the color you are changing to match the key background) show through, as follows:

NOTE: Since color suppression is intended to "null out" the chroma key color, adjustment is much easier if you use a waveform monitor and vectorscope to monitor the 8150 program or preview output.

- STEP 11:** Press the *Attributes* softkey, then the *Defocus* softkey. Turn the **Both** pushknob clockwise to set key defocus to maximum. You should now be able to see the chroma key color as a "halo" around the key.
- STEP 12:** Press the *Basic Chroma Key* softkey, then the *Supprsn* softkey. Watching the vectorscope, adjust the **Suprs Sat** and **Suprs Hue** pushknobs to match as closely as possible the predominant color of the part of the background over which you are keying.
- STEP 13:** Watching the waveform monitor, adjust the **Suprs Luma** pushknob to match as closely as possible the predominant luminance level of the part of the background over which you are keying.
- STEP 14:** When the chroma key color and the background color are matched, press *Attributes* again and turn **Both** counterclockwise to remove the key defocus.

In most cases, you should have a clean chroma key at this point. The following steps demonstrate the matte keying mode, including luma and chroma coring.

STEP 15: Select matte mode by toggling the *Mode* softkey to *Matte*. This changes the key mode from a normal key to a matte key.

STEP 16: If there is background noise, you may need luma and/or chroma coring. With **Coring Control** set to **Luma on**, **Chroma on**, or **Both on**, it automatically suppresses any parts of the fill video (luma, chroma, or both, as selected) that would be fully keyed out in key mode. This leaves only the fill edges for the color suppression controls to suppress.

STEP 17: Set the **Gain** pushknob to its maximum (1600.00) and adjust the **Chroma Core** and/or **Luma Core** pushknobs to suppress noise on the chroma key edges. Set these pushknobs only as high as needed; excessively high levels adversely affect the fill video.

NAM Mode Keys

The 8150 performs a *NAM* (non-additive mix) key by comparing, on a pixel-by-pixel basis, the processed fill video and the background over which you are keying it; this mode does not use a key signal at all. A NAM key is processed identically whether the selected key type is Luma or Chroma.

A **Progress** control appears when you select a NAM key. Moving this adjustment through its range is similar to performing a NAM transition of the Background A and B or Program and Preset buses, except that it only fades up the foreground video and does not fade out the background. See Section 3 – Transitions for a more complete description of a NAM transition.

Key Mode Versus Matte Mode

When using the 8150's keyers, it is very important to understand the difference between key mode and matte mode. This section explains the two modes and their differences. It defines the two modes in terms used both industry-wide and with Accom products in particular.

Two Connotations of Matte

The term "matte" may be confusing at first. In the context of matte mode, matte refers to a compositing method—a method of laying one image over another. The other meaning of matte (as in matte fill) describes an internally generated color. Originally, both meanings came from film production. They referred to methods of compositing film layers. In video, the two meanings of "matte" have little to do with each other.

Key Mode and Matte Mode

Usually, "key" mode is multiplicative: both the background image and the foreground image have their edges shaped by multiplying them with the key signal before the keyer adds them together. "Matte" mode is additive: the keyer multiplies, or shapes, only the background image with the key signal. The keyer adds the foreground image directly to the background without first processing its edges or shaping it. This is also called a "matte key."

You can use key mode or matte mode on both luminance-based keys and chrominance-based keys. Again, the terms used can be confusing. Luminance keys can also be linear or nonlinear, but some manufacturers refer to a nonlinear key as a "luma key" and a matte key as a "linear key."

To avoid confusion, we have defined the following terms:

- **Key:** The generic term for the process of compositing or layering one image over another.

- **Background:** The video over which another image is composited or layered.
- **Foreground:** The image that is shaped and layered over the background video; otherwise known as the fill signal.
- **Key signal:** A companion signal to the foreground, often called the "hole cutter" (it "cuts the hole" in the background image). The keyer can derive the key signal from the luminance or chrominance in the foreground, or an external device can generate it specifically for use as a key signal.
- **Key mode:** A multiplicative process that shapes both the foreground and background edges with the key signal before combining them.
- **Matte mode:** An additive process that shapes only the background edges with the key signal before combining it with the foreground (also called a matte key).
- **Matte fill:** A single color, generated in the switcher, that you can use as the foreground for the key. You can use a matte fill in key mode only, not in matte mode(see below for the reason).
- **Linear key:** A high quality key (either key mode or matte mode) that can distinguish subtle differences in the level of the key signal. If coming from a character generator, it usually means an anti-aliased key and normally does not need clip or gain adjustments.
- **Nonlinear key:** A more basic key that may not have anti-aliased edges, and usually needs clip and gain adjustments. These keys sometimes require extra processing for clean edges (the 8150 uses ASPIK™ [Adaptive Sub-Pixel Intelligent Keying] for this). Use key mode, not matte mode, for nonlinear keys.
- **Luminance (luma) key:** A key that uses the luminance parts of either the foreground image or a separate key source as the "hole cutter." You can use either key mode or matte mode for luma keys.

- **Chrominance (chroma) key:** A key that uses the chrominance parts of the foreground as the "hole cutter." You can use either key mode or matte mode for chroma keys.
- **Shaped video:** Foreground video that enters the keyer already properly shaped by an external device. This is intended for use in matte mode, since the keyer does not shape the foreground video in this mode. An example is a character generator that outputs anti-aliased text along with its associated key signal.
- **Unshaped video:** Foreground video that has not been shaped externally. This is often wider than the key signal, or does not match the key (also known as an uncorrelated key). This is intended for use in key mode, since the keyer shapes the foreground video in this mode. For example, a camera shoots a black and white art card, and the keyer fills the hole with a marble texture taken from a still store.

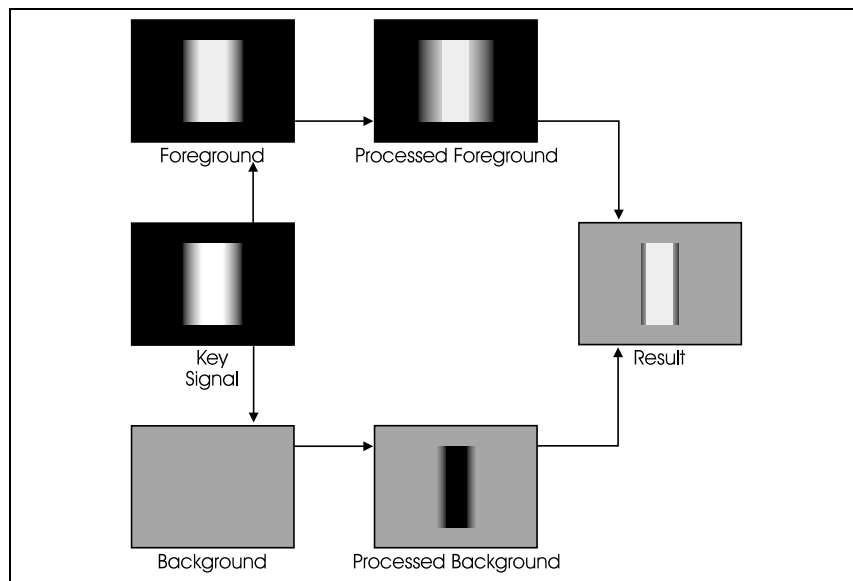
For the most part, you can use this rule of thumb: if the foreground video is shaped, use matte mode. If the foreground video is unshaped, use key mode.

Shaped and Unshaped Foregrounds

To understand the need to shape video before keying, think of a keyer as a precision jigsaw. Imagine that you have two photos, and want to superimpose one (the foreground) over the other (the background) while maintaining the same two-dimensional flatness of the originals. To do this, you cut away anything in the foreground photo that you do not want in the final composite. You must also cut a hole in the background photo to let the foreground fit into it, instead of sitting on top. To cut the unwanted parts away precisely, you need a hole-cutter template that you can use with both the foreground and background. In other words, you must "shape" the two photographs to fit them together. This is the same idea behind the keying process: it shapes both the foreground and background images so they combine with no overlaps. The key signal is the hole-cutter

template used to cut away the parts of the background and foreground that we do not want.

To visualize matte mode, imagine that you receive the photos and the template and find that the foreground is already cut to the shape needed. You still need to cut a hole in the background. However, if you shape the foreground with the template (key signal), you cut away too much, and the final composite has gaps around the foreground's edges. If the edges are cut straight, the gaps are fairly small. If the edges are angled or rounded, the gaps are very obvious. This is what happens if you combine shaped video in key mode instead of matte mode: the foreground gets shaped twice, which results in dark edges. Double shaping noticeably affects softened foreground edges, similar to the rounded or angled edges in the photo.

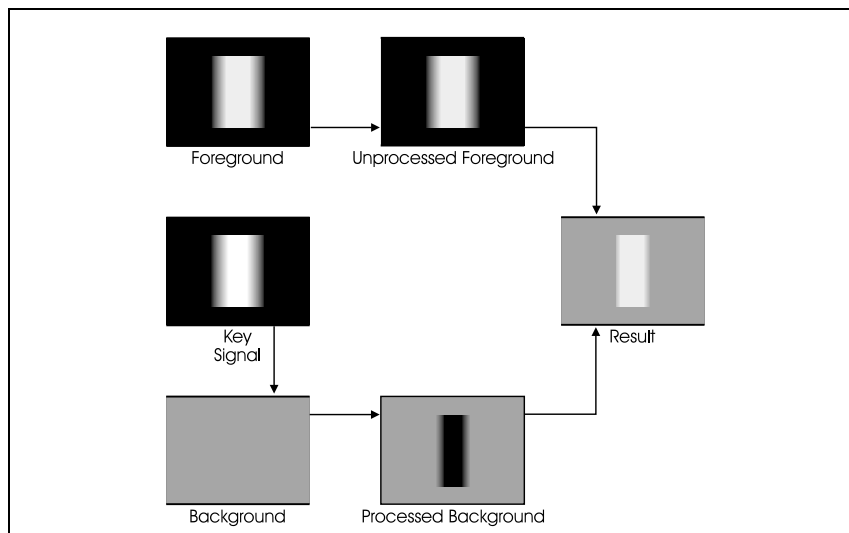


Key Mode With Shaped Fill

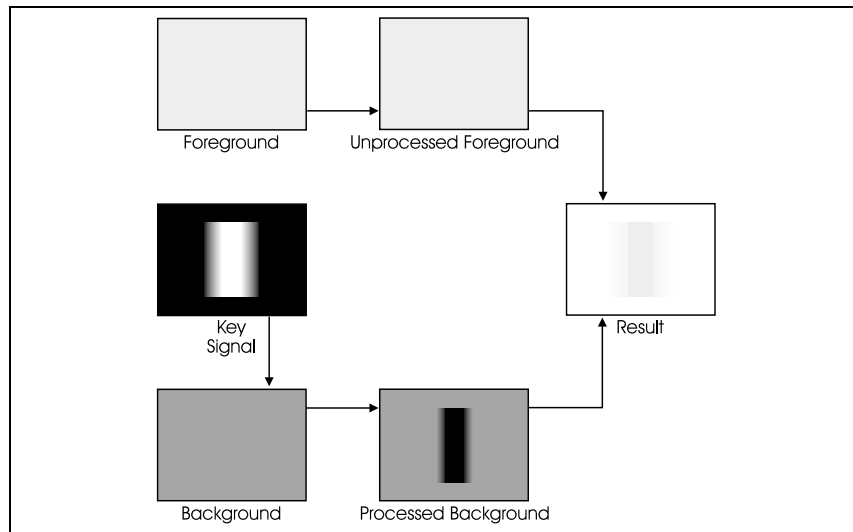
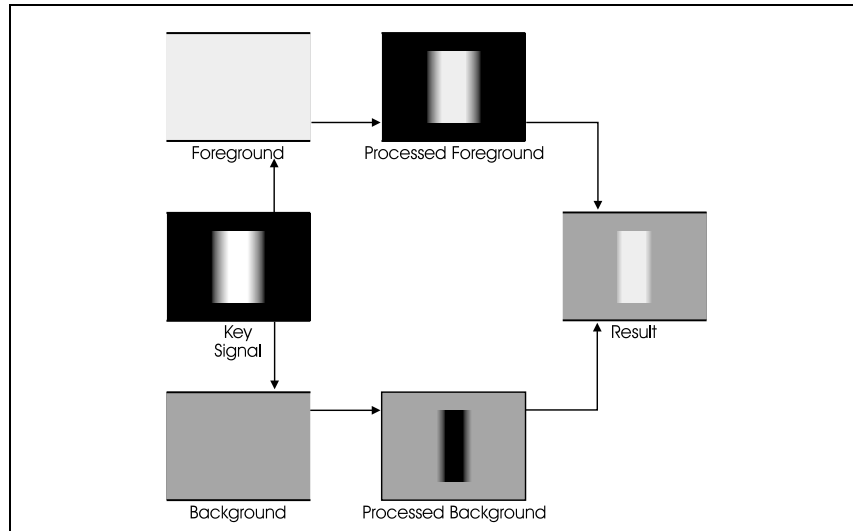
Now imagine that you get an unshaped foreground and template. If you use the template to cut only the background, the two will overlap when you combine them, which is not what you want. This is the same as trying to key unshaped video in matte mode: the foreground and background overlap, resulting in an unsightly matte key.

Remember that you cannot use a "matte fill" (internally generated color field) for a matte key. In matte mode, the keyer does not shape the matte fill (foreground). Using a full-color field as the foreground simply adds it over the background, not only filling the hole, but overlapping the rest of the background image as well.

This example illustrates that shaping the foreground video only once along the signal path is extremely important. For example, if you feed the output from a character generator into a DVE, and then feed the DVE into the 8150, you must ensure that only one device shapes the foreground.



Matte Mode With Shaped Fill

Key Mode With Unshaped Fill**Matte Mode With Unshaped Fill**

If you are using an Accom A72 character generator and an A57 DVE with your 8150, use the following chart to determine which combinations work and which do not:

- **8150:** Key mode shapes the foreground, Matte mode does not.
- **A57:** Keyed mode shapes the foreground, Unkeyed mode does not.
- **A72:** Color Spread off shapes the foreground, Color Spread on does not.

8150 Mode	A57 Mode	A72 Color Spread	Results
1. Key	Unkeyed	CS On	Good. Only 8150 shapes foreground.
2. Key	Unkeyed	CS Off	Bad. Both A72 and 8150 shape foreground.
3. Key	Keyed	CS On	Bad. Both A57 and 8150 shape foreground.
4. Key	Keyed	CS Off	Very Bad. All three devices shape foreground.
5. Matte	Unkeyed	CS On	Bad. No foreground shaping.
6. Matte	Unkeyed	CS Off	Good. Only A72 shapes foreground.

7. Matte	Keyed	CS On	Good. Only A57 shapes foreground.
8. Matte	Keyed	CS Off	Bad. Both A72 and A57 shape foreground.

The best option is 6, because it is best to shape the foreground at its origin, instead of farther down the signal path. With Color Spread off in the A72, it originates and shapes the foreground signal, so it can go through the rest of the process without more shaping.

Chroma Keys in Matte Mode

In either key mode or matte mode, a chroma key is a self-key, and the 8150 extracts the key signal from the foreground video. It extracts the key signal exactly the same way with either a key or a matte. The difference is how it processes the foreground. In key mode, the 8150 shapes both the foreground and background, just as in a luma key. In matte mode, the 8150 does not shape the foreground. This means the color that "cuts the hole" in the background remains in the foreground. For this reason, a chroma key foreground (in matte mode only) must go through an extra process called suppression.

Suppression subtracts the color being keyed out (usually blue or green) from the foreground, leaving black where the key color was. With the foreground over black (and the edges properly shaped by subtracting the chroma key color, rather than multiplying the foreground edges) you can now matte key it just like a luma key.

You can also use suppression when performing a normal chroma key (not in matte mode) to suppress or change the color of any key edges that may still be visible. For example, if there is a blue edge around the foreground subject, you can use suppression to

change the blue color to more closely match the predominant color of the background video, rendering the blue edge either invisible or much less apparent.

Coring

In either a luma or chroma matte key, the foreground video must be pre-shaped with the parts of the image that you do not want to remove, and replaced with black. When combining the foreground and background, the black areas in the foreground are not visible. This is because black, for matting purposes, can be thought of as "zero video." However, anything that is not black, including any noise in or above black, is visible in the final composite. This is where "coring" comes in.

Coring, or "noise coring," is so called because it is very much like coring an apple: it removes parts of the apple that you do not want, leaving the rest of it intact. In matte keying, coring removes part of the foreground signal, usually a small range of luminance levels at or near black, and replaces it with pure, digitally generated black. Black is used because it is "zero video," and any signal that is not black is visible in the matte key. Coring removes the "almost black" noise, and replaces it with noise-free black. This effectively removes any noise in the matte key background due to noisy black in the foreground.

The 8150 coring adjustments let you "dial in" the amount of coring (luminance, chrominance, or both) needed. The coring levels determine the key signal level below which the fill is forced to black. Above these levels, the fill video appears in full. With coring gain set to its default (1600), the dividing line between black and fill is very small. Lower values of coring gain may cause a mix between black and the fill video to become visible. In most cases, you can leave coring gain at 1600.

Source Memory and Memory Copying

Source memory in the 8150 works by storing the current keyer parameters in a separate memory for each source, if in source based mode; in a separate memory for each key bus, if in bus based mode; or in a separate memory for each combination of source and key bus, if in source by bus mode.

In source based or source by bus modes, you recall a source memory for a particular source by pressing its crosspoint button on the key fill bus. Once recalled, you can change any parameter in the keyer menu. When you change a parameter, the 8150 then automatically copies all key parameters to the memory for that source. In source by bus mode, this affects only that source on that key fill bus. However, in source based mode, this means that you can set up a key on one keyer, then select that fill source on another keyer; its setup parameters are identical to those of the first keyer.

In bus based mode, there is only one memory for each keyer; any fill source that you select for that keyer has the same setup parameters as any other fill source on that keyer.

Often, when using multiple keyers and multiple sources, you need to copy the setup parameters from one keyer to another. The 8150 does this automatically when the key source memory mode is source based. However, sometimes you need to copy the setup from one source to another source on the same keyer. The 8150 also supports this copy function.

Copying from One Keyer to Another

When the source memory mode is source based (the default), it stores all key parameters for each fill source independently and recalls those parameters whenever you recall that fill source for any keyer. The following demonstrates this:

- STEP 1:** In the Keyer One menu, toggle the *Source Memory* softkey to *Src Based*.
- STEP 2:** Set up a key on Keyer 1, apply a border or mask to it, then turn it off.
- STEP 3:** Select the same source on Keyer 2 or the DSK and turn it on.

Note that this keyer now has the identical setup as Keyer 1, including mask configurations, borders, etc. Also if you adjust this keyer, it copies all keyer parameters to the source memory. However, it does not change those parameters in Keyer 1 unless you press the crosspoint for that fill source on the Keyer 1 Fill bus. This reloads the new memory for that source (which you changed on Keyer 2) into Keyer 1.

The above example shows that whenever you press a crosspoint button on any key fill bus, it recalls the source memory for that fill source. This is important because it means that you can have the same source selected on two different keyers, but have different parameters applied to them, even in source based mode, as long as you do not press the fill source crosspoint button. Since the source memory always stores the entire setup whenever you change any parameter for that keyer, when you press the fill source crosspoint button on another key fill bus, it recalls the current source memory and loads it into that keyer. This effectively removes the earlier setup and replaces it with the current one from the source memory.

The exception to this is if you create a "breakaway" key by selecting another fill source with the **Key Fill Source** pushknob in the Sources submenu. In this case, the breakaway fill source is temporary and is not saved with the source memory. Pressing the original fill source crosspoint recalls the original fill source, clearing the breakaway fill source. Also, pressing the crosspoint button for the breakaway fill source recalls the source memory for that source, and does not recall the breakaway key.

Copying within the Same Keyer

There are two methods of copying keyer settings within one keyer. Described below are both methods.

Direct Copy Using Bus Based Mode

Copy the settings from one source to another source in the same keyer as follows:

- STEP 1:** Toggle the *Source Memory* softkey to *Src Based*. On the Key Fill bus, press the crosspoint button of the fill source that you want to copy from.
- STEP 2:** Toggle the *Source Memory* softkey to *Bus Based*. This lets you retain the current key parameters while selecting a different fill source.
- STEP 3:** Select the new fill source by pressing its crosspoint button. As long as the source memory mode remains bus based, you can select as many different fill sources as you want, and each has the same keyer parameters applied to it.
- STEP 4:** To save the new parameters to the new fill source, toggle the *Source Memory* softkey to *Src Based*, but do not press any crosspoint buttons on the Key Fill bus row.

STEP 5: Because this type of a source memory copy transfers all parameters, including the key cut source, to the new fill source, you will most likely want to change to the appropriate key cut source in the Sources submenu. The easiest way to do this is to press the **CLEAR** button, then the **Key Cut Source** pushknob. This sets the key cut source to the selected fill source. It also copies the entire source memory to the new source, because you have made a change to the keyer setup.

NOTE: Copying parameters from one source to another, but then not making any adjustments to the new source, does NOT update the source memory for the new fill source. Pressing the crosspoint button for that fill source recalls the old source memory.

To disable all key parameter copying, toggle the *Source Memory* softkey to *Src By Bus*. This stores source memories for all sources and all buses separately and does not allow copying between sources or buses.

Copy to User Keyer Register

Another method of copying keyer parameters within on keyer is to use the User Keyer registers. Follow these steps to copy keyer settings:

- STEP 1:** Select the fill source on the fill bus whose parameters you want to copy.
- STEP 2:** Press the *Sources/User Keyer* softkey and turn the **User Keyer** pushknob to select one of the 20 user registers into which to copy the current settings. Make sure that you select a register that reads "empty" – one that reads "used" already contains a keyer setup.

- STEP 3:** Press the *Save* softkey to save the current keyer setup to the register. Its label changes from "empty" to "used."
- STEP 4:** On the fill bus, select the source to which you want to copy these settings.
- STEP 5:** Press the *Recall* softkey to load the contents of the current register into the keyer for the new source. This also updates the keyer memory for this source, meaning that you do not have to make a change to the keyer in order for the new settings to be saved.

Source Memory and Effects Recall

When you recall a Snapshot or Timeline effect, it updates only the current keyer settings; it does not change the current source memory. Recalling an effect that has a key with a different setup than the current source memory, then pressing the same fill source crosspoint recalls the current source memory. This clears the key parameters from the effect and replaces them with the key parameters from the current key source memory. Of course, recalling the effect again reloads the key parameters from the effect.

Conversely, recalling a user keyer register does update the source memory, and overwrites the current keyer memory for that source or bus (depending on the keyer memory mode selected). There are two ways to recall Snapshot or Timeline effects and save those parameters to the current source memory:

Resave as a User Keyer

This method temporarily stores the keyer settings to a user keyer register after recalling a keyframe or effect, then recalls the user keyer register to update the source memory.

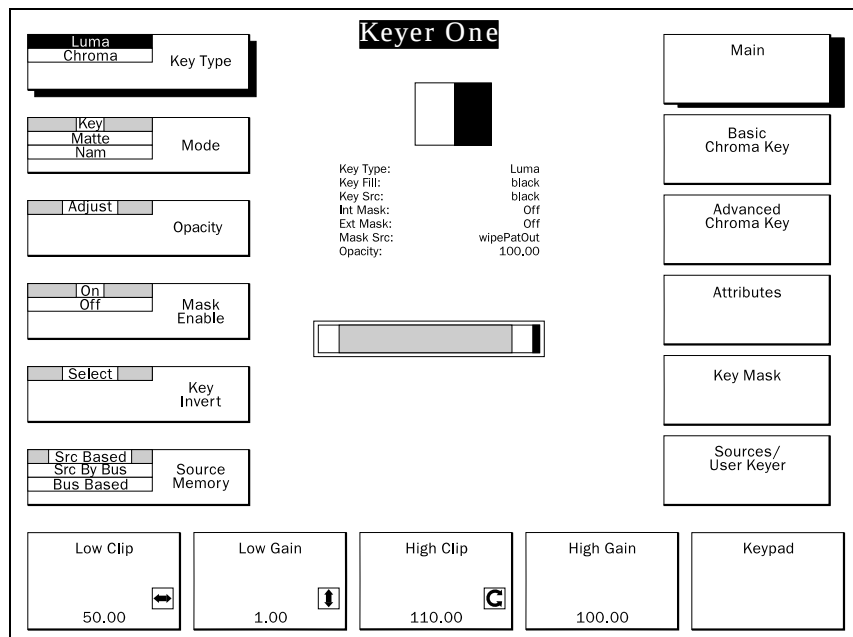
- STEP 1:** Recall the Snapshot effect or Timeline effect register with the key setup.
- STEP 2:** Save the current key setup as a user keyer register.
- STEP 3:** Toggle the *Source Memory* softkey to *Src Based*. Recall the user keyer register that you just saved. The source memory now has the keyer settings from the original Snapshot or Timeline effect.

Change Keyer Parameter

With this method, you must change a keyer parameter after recalling a keyframe or effect to directly update the source memory.

- STEP 1:** Recall the Snapshot effect or Timeline effect register with the key setup.
- STEP 2:** Toggle the *Source Memory* softkey to *Src Based*. Adjust any parameter in the current key setup by one step, then back to where it was. This saves all current keyer parameters to the source memory.

The Keyer Menu



The Keyer Menu

Press the **KEY** menu button to bring up the Keyer menu. Use this menu to control Keyer 1, Keyer 2, and the DSK. There is a separate menu for borders. You can access any submenu in the Keyer menu by pressing its softkey on the right side of the menu display.

All Keyer menus have a graphic at the center of the display that shows clip and gain settings for luma keys, and hue and discrimination settings for chroma keys. The luma key display shows a light gray bar for the low clip and gain adjustments. The width of the bar indicates the low gain setting (the higher the gain, the thinner the bar). The horizontal position of the bar indicates the low clip setting (the higher the clip, the further to the right the bar is positioned). The darker bar indicates high gain and high clip by its width and position, respectively.

The chroma key display is a circle that represents a vectorscope display, and shows a wedge inside it. The angle of rotation of the wedge indicates the chroma key hue setting. Like a vectorscope, the right side is the bluish region, the left side is yellowish, up is reddish, and down is greenish. The width of the wedge angle indicates the discrimination setting (the larger the discrimination value, the wider the wedge angle).

You can also view the keyer status in the Show Status menu, where each keyer has its own status box showing the key type, fill source, cut source, mask source, internal/external mask status, and border status.

Main Submenu

Pressing the *Main* submenu softkey brings up controls for selecting the key type, adjusting a luma key, selecting the key mode, adjusting the key opacity, turning the masking on and off, and selecting the source memory mode.

Key Type

Press the *Key Type* softkey to select the key type: *Luma* or *Chroma*. With *Luma* selected, the luminance keyer pushknobs (**Low Clip**, **Low Gain**, **High Clip**, and **High Gain**) appear. These pushknobs are active with a normal luminance key, and also when combining a Luma patch with either or both Chroma patches. Except for **High Gain**, you can use the joystick to adjust these settings. With *Chroma* selected, the chroma keyer controls appear in the Basic and Advanced Chroma Key submenus.

Keyer One

Key Type: Luma
Key Fill: black
Key Src: black
Int Mask: Off
Ext Mask: Off
Mask Src: wipePatOut
Opacity: 100.00

Left Panel Controls:

- Key Type:** Luma (selected), Chroma
- Mode:** Key, Matte, Nam
- Opacity:** Adjust
- Mask Enable:** On, Off
- Key Invert:** Select
- Source Memory:** Src Based, Src By Bus, Bus Based

Right Panel Buttons:

- Main
- Basic Chroma Key
- Advanced Chroma Key
- Attributes
- Key Mask
- Sources/User Keyer

Bottom Panel Controls:

- Low Clip:** 50.00
- Low Gain:** 1.00
- High Clip:** 110.00
- High Gain:** 100.00
- Keypad

The Main Submenu

The **Low Clip** and **Low Gain** pushknobs are the same as clip and gain in traditional switchers. **Low Clip** adjusts the luminance level of the key signal above which the foreground video appears. **Low Gain** adjusts the sharpness, or slope, of the key signal edges. The **High Clip** and **High Gain** pushknobs remove the brightest parts of the key signal. At its default level of 110.00, **High Clip** lets all luminance levels of the key "cut the hole" in the background. As you bring it below 110.00 it removes, or "clips," the parts of the key signal with the highest luminance levels. **High Gain** controls the sharpness, or slope, of the key signal above the high clip point.

Mode

Press the *Mode* softkey to select one of three ways to combine the foreground (key fill) with the background. The *Key* and *Nam* softkeys access the **Luma Core** pushknob. *Matte* accesses the **Luma Core**, **Chroma Core**, **Gain**, **Coring Control** pushknobs for turning on or off one or both coring circuits.

The default key mode is a normal multiplicative key. In this mode, the key signal shapes both the foreground and background.

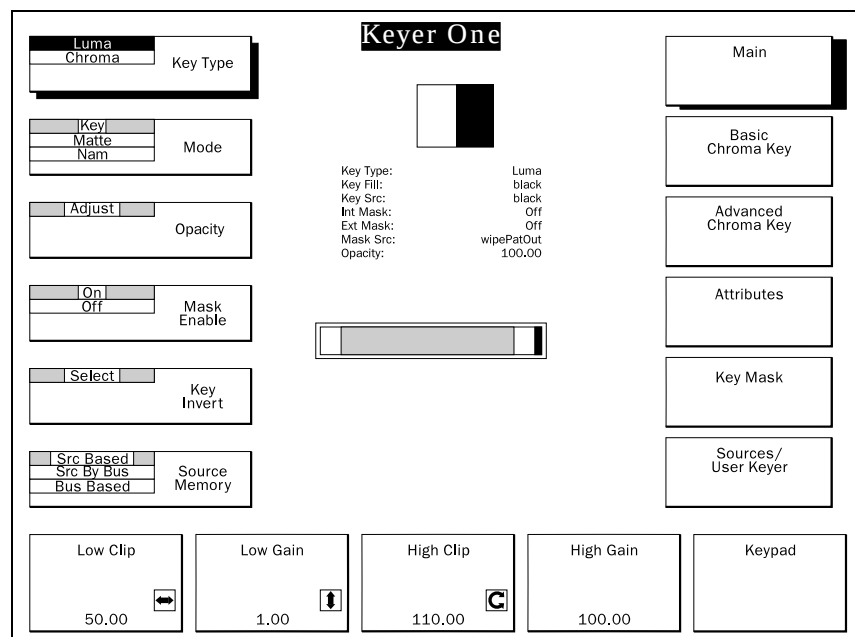
In matte mode, the key signal does not shape the foreground. Instead, the keyer additively mixes the foreground and background video. You can use matte mode with either a luma key or a chroma key. Since the chroma key foreground is unprocessed, you must remove the chroma key color with either color suppression or coring in this mode. If you select a dual patch chroma key, you can only suppress the primary chroma key color.

Since a mask is intended to shape the fill video, but by definition the fill is unshaped in a matte mode key, you cannot apply a mask in this mode, as described in the Key Mask submenu discussion later in this section.

The coring control pushknobs that appear with matte mode selected are **Chroma Core**, **Luma Core**, **Gain**, and **Coring Control**. In a luma key or chroma key in matte mode, coring

removes luminance and/or chrominance levels near black (which tend to be the regions with the most noise) and replaces them with internally generated noise-free black. See the chroma key examples that start on page 4-13 for more information on these controls.

In NAM mode, the luminance levels of the key fill and the background are compared pixel-by-pixel, and the brighter one appears. This is commonly known as a nonadditive mix, or NAM. The clip and gain adjustments let you force other parts of the fill signal to appear, even if they have lower luminance levels than the background. There is an exception: if either the background or fill video has luminance levels at or below 0 percent at the same point on screen, the other signal always appears. It is not possible to have luminance levels below 0 percent in a NAM key unless both background and fill luminance levels are below 0 percent at



The Main Submenu

the same place on the screen. You can use the NAM mode with either a luma key or a chroma key.

Opacity

Press the *Opacity* softkey to access the **Opacity** pushknob. After setting clips and gains, you can use this control to make the key partially or fully transparent. This control also works when the key is in matte mode.

Mask Enable

Press the *Mask Enable* softkey to toggle on or off the key masking parameters set in the Key Mask submenu.

Key Invert

Press the *Key Invert* softkey to access two pushknobs: **Luma Invert** and **Key Invert**. The **Luma Invert** pushknob inverts only luminance-derived key signals, and it inverts them upstream of any masking operation. (This pushknob has the same function as the **Luma Invert** pushknob under the *Patch Control* softkey in the Advanced Chroma Key submenu.) The **Key Invert** pushknob is a final key invert, which affects all aspects of the key signal, including masking.

Source Memory

The 8150 has three key memory modes. The *Source Memory* softkey toggles *Src Based*, *Src By Bus*, and *Bus Based*:

Src Based (default) – is a separate memory for each fill source available to the three keyers. After you set up a key using a certain source, it remembers the settings when you select that source on any keyer. In this mode, the setup memory is based on the fill source and not the key bus on which it is selected. You can copy key source parameters from one key bus to another in this mode.

Bus Based – is a separate memory only for each of the keyers. After you set up a key, it remembers the settings no matter what source you select. In this mode, the setup memory is based on the

key bus, not on the source selected on that bus. You can copy key bus parameters from one source to another in this mode.

Src By Bus – combines the other two modes; it saves a separate memory for each combination of source and bus. In this mode, the setup memory is based on both the key bus and the source selected on that bus. You cannot copy key parameters from one source or bus to another in this mode.

Basic Chroma Key Submenu

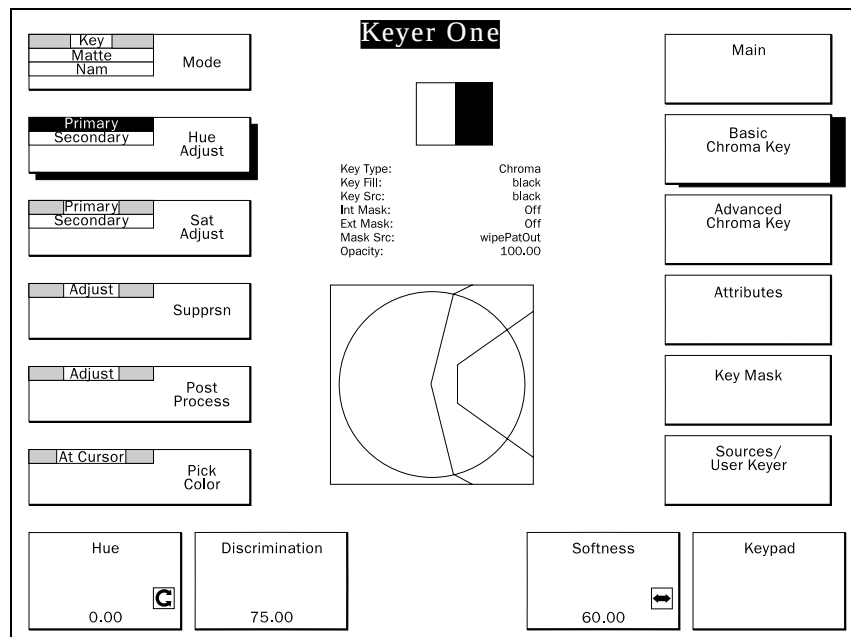
Press the **Basic Chroma Key** softkey to bring up controls for the key mode, normal chroma key hue and saturation, color suppression, postprocessing clip and gain, and the Color Pick feature.

Mode

This has the same function as the **Mode** softkey in the Main submenu; it toggles **Key**, **Matte**, and **Nam**.

Hue Adjust

Press the **Hue Adjust** softkey to access the primary and secondary chroma key hue controls. Pushknobs control softness, discrimination (the hue angle width), and hue. See the examples that start on page 4-13 for details on how and in what order to use these controls.

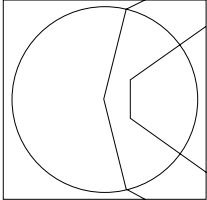


The Basic Chroma Key Submenu

NOTE: Several chroma key controls toggle between Primary and Secondary. Primary is the default, and the only one that is active in Single and Chroma 444 chroma key operations. If you try to toggle to Secondary with either of these key types active, the error message "Select Dual Chroma Key Type first" appears to indicate that this setting is active only for dual patch chroma key operations. See the discussion of the Advanced Chroma Key submenu on page 4-47 for more information.

Sat Adjust

Press the *Sat Adjust* softkey to access the **Low Clip**, **Low Softness**, and **Offset** pushknobs. **Low Clip** sets a saturation threshold; any saturation level of the chroma key color below the low clip point remains in the image and is not "clipped out." **Low**

Keyer One			
Key Matte Nam Mode	Primary Secondary Hue Adjust		Main
Primary Secondary Sat Adjust	Key Type: Key Fill: Key Src: Int Mask: Ext Mask: Mask Src: Opacity: Chroma black black Off Off wipePatOut 100.00		Basic Chroma Key
Adjust Supprsn			Advanced Chroma Key
Adjust Post Process			Attributes
At Cursor Pick Color			Key Mask
Hue 0.00 C	Discrimination 75.00	Softness 60.00 ⬅️	Sources/ User Keyer
		Keypad	

The Basic Chroma Key Submenu

Softness controls the sharpness, or slope, of the key edge at the low clip point. **Offset** changes the sensitivity to the saturation of the chroma key color at all saturation levels, bringing them all closer to, or further away, from the clip threshold. A negative offset makes the chroma keyer less sensitive to low saturation levels. A positive offset makes the chroma keyer more sensitive to low saturation levels. For a detailed explanation of these controls, see the 8150 chroma keying discussion that starts on page 4-6. You can only select *Secondary* when the chroma key type is *Dual*. See the discussion of the Advanced Chroma Key submenu that starts on page 4-47 for more information.

Supprsn

Press the *Supprsn* softkey to access the **Suprs Sat**, **Suprs Luma**, and **Suprs Hue** pushknobs. Suppression is active in both key and matte modes. In key mode, it is often used to change the chroma key color to blend in with the background color. In matte mode it is used to suppress the foreground chroma key color to black. Because you can suppress only one chroma key color, any color keyed out using the secondary patch in a dual chroma key is not suppressed in either key mode or matte mode.

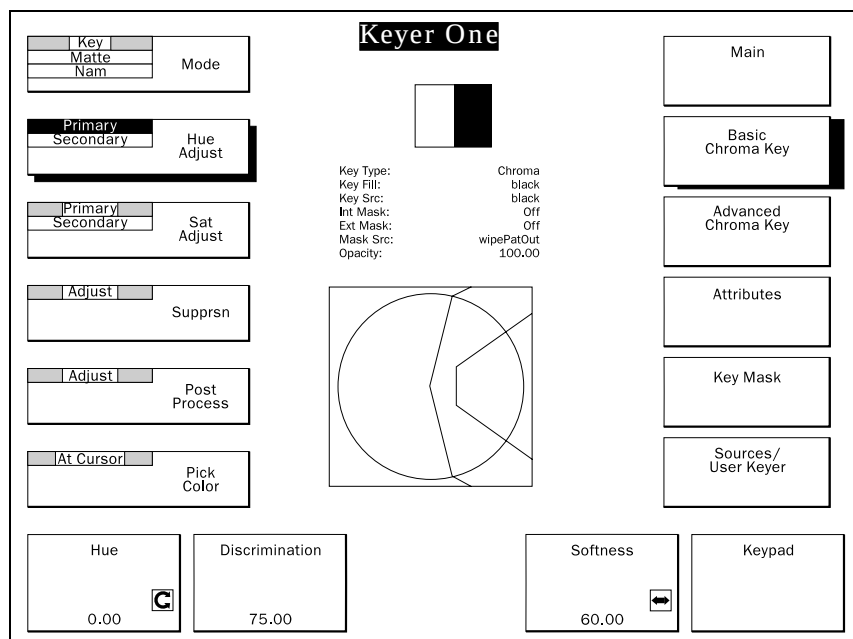
Using a vectorscope and waveform monitor, you can adjust the saturation and hue of the chroma key color to match it to the predominant color of the background. Otherwise, you can null it to gray, then pull the luminance level of the chroma key color to black for matte keying. (Making these adjustments with the fill video keyed over black makes it much easier.) In key mode, suppression changes the key color to more closely match the background video. In matte mode, suppression "pre-shapes" the fill video so the 8150 can additively mix it with the background video. See the chroma key examples that start on page 4-13 for a step-by-step explanation of suppression.

Post Process

Press this softkey to access the **Clip** and **Gain** pushknobs for the post key process, which is the last stage the processed key signal goes through before it shapes the foreground and background video. Use these adjustments to fine tune the key after setting up the main clips and gains on either a luma key or a chroma key. The default values are 0.00 for clip and 100.00 for gain.

Pick Color

Press the *Pick Color* softkey to bring up a crosshair cursor in the preview monitor. You can use the **HPos** and **VPos** pushknobs or the joystick to move the cursor on the screen. **Color Patch Operation** lets you select the color patch you are picking a color for, and the **Cursor** pushknob lets you turn the cursor on and off.



The Basic Chroma Key Submenu

Since the Color Pick cursor is visible only in the preview output, there are three ways you can use Color Pick:

- With the preview output source selected as Auto, turn the keyer off but select it as the transition (**KEY 1**, **KEY 2**, or **DSK** button lit, but "KEY ON" display for that keyer is not lit). The key is visible over the background in the preview output.
- With the preview output source selected as Auto, turn the keyer on ("KEY ON" display lit for the current keyer), press **BKND + KEY 1** for Keyer 1, **BKND + KEY 2** for Keyer 2, or **PGM PST + DSK** for the DSK. Select the fill source on the Background bus (for the M/E keyers) or Preset bus (for the DSK), to bring it up in the preview output.
- With the preview output source selected as Program, turn the keyer on ("KEY ON" display lit for the current keyer).

See Section 2 – Getting Started, or Section 7 – Miscellaneous Functions, for more information on the preview output.

NOTE: Color Pick functions by grabbing and placing the image into one of the frame stores and analyzing the distribution of color in the image. If the framestores are selected on any of the buses, or if they are "locked," they cannot be used for a Color Pick. In this case, the 8150 will still perform a Color Pick, but only the Start 1st operation (described below) is functional. This is indicated, when other operations are attempted, by an error message reading "Can't use Selected Framestore." To gain access to the other operations, select a source other than the framestore on the bus, or unlock one of the framestores.

The **Color Patch Operation** pushknob toggles six settings:

- **Start 1st:** The 8150 picks the initial chroma key color at the current cursor position when you press the *Pick Color* softkey. This automatically changes the pushknob to **Expand 1st**.
- **Expand 1st:** If there are areas where the chroma key color was not picked the first time, move the cursor to that area and press *Pick Color* again. This expands the range of chroma key colors for the primary chroma patch.
- **Start 2nd:** The 8150 picks a second chroma key color, unrelated to the first one. Move the cursor and press *Pick Color* again. *Key Type* changes automatically to *Chroma 2*, and the pushknob changes to **Expand 2nd**.
- **Expand 2nd:** If there are areas where the second chroma key color was not picked the first time, move the cursor to that area and press *Pick Color* again. This expands the range of chroma key colors for the secondary chroma patch.

NOTE: Even though each keyer has two chroma patches, there is only one background suppression circuit, which is applied to the primary patch. If you use the secondary patch, background suppression for the primary color is applied to the secondary color as well. For this reason, a dual patch chroma key should always be used in key mode and not matte mode.

- **Start 4Gnd (foreground):** The 8150 uses the secondary chroma patch to force parts of the foreground video to appear. Use this when the foreground color is close to the primary chroma key color, but you do not want to key it out. Move the cursor over the foreground color that you do not want to key out, and press the *Pick Color* softkey. This forces that color to reappear and changes the pushknob label to **Expand 4Gnd**.

- **Expand 4Gnd (foreground):** If **Start 4Gnd** did not force the color to completely reappear, move the cursor to an area that is still not visible, and press the *Pick Color* softkey again.

NOTE: The **Start 4Gnd** and **Expand 4Gnd** settings invert the secondary chroma patch to force the foreground over the primary chroma patch. This mode does not allow a normal dual patch chroma key. Furthermore, the forced foreground will still have background suppression applied to it.

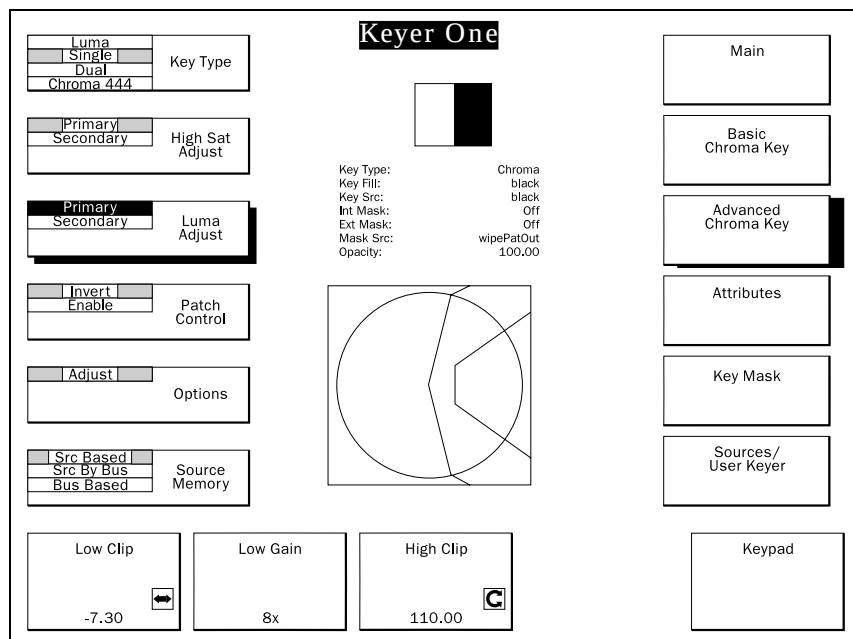
Advanced Chroma Key Submenu

Press the *Advanced Chroma Key* softkey to bring up pushknobs for:

- selecting the key type
- adjusting the saturation high clip and softness
- adjusting the chroma key color's luma clip and gain
- using the chroma and luma patches
- adjusting Color Pick boundary presets

Key Type

Press the *Key Type* softkey to toggle *Luma*, *Single*, *Dual*, and *Chroma 444*. With *Luma* selected as the key type in the Main submenu, you can toggle all four settings. With *Chroma* selected



The Advanced Chroma Key Submenu

in the Main submenu, you can toggle only through the three chroma key types in this submenu.

Press the **Key Type** softkey to select the key type: *Single*, *Dual*, or *Chroma 444*. Use the *Single* key type for keying out a single color.

Dual turns on both chroma patches, which may be confusing when first setting up a chroma key. For this reason, you should turn on *Dual* only after you have set up the chroma key first as a *Single*. Then select *Dual* if needed to activate the second patch and the *Secondary* softkey adjustments.

Chroma 444 is an optional single-patch chroma keyer for use with wide band images that have been sampled at the 4:4:4 rate. This requires that the signal enter the 8150 via two standard 4:2:2 inputs. The key fill processor recombines it, extracts a high

Keyer One

Key Type: Single
Key Fill: black
Key Src: black
Int Mask: Off
Ext Mask: Off
Mask Src: wipePatOut
Opacity: 100.00

Chroma: black
black
Off
Off
wipePatOut
100.00

Low Clip: -7.30
Low Gain: 8x
High Clip: 110.00

The Advanced Chroma Key Submenu

resolution chroma key signal from it, and digitally transcodes it to RGB for color correction if that option is installed. See the Sources submenu description for details on setting up these sources for *Chroma 444*.

NOTE: The *Chroma 444* setting only appears if the 4:4:4 Chroma Key option is installed; in addition, the external mask for that keyer is turned off when *Chroma 444* is selected.

High Sat Adjust

Press the *High Sat Adjust* softkey to access the **High Clip** and **High Softness** pushknobs. **High Clip** sets a threshold for the selected chroma key color's saturation. Saturation levels of the chroma key color above the high clip point remain in the image and are not "clipped out." The **High Softness** pushknob sets the sharpness, or slope, of the key edges at the high clip point.

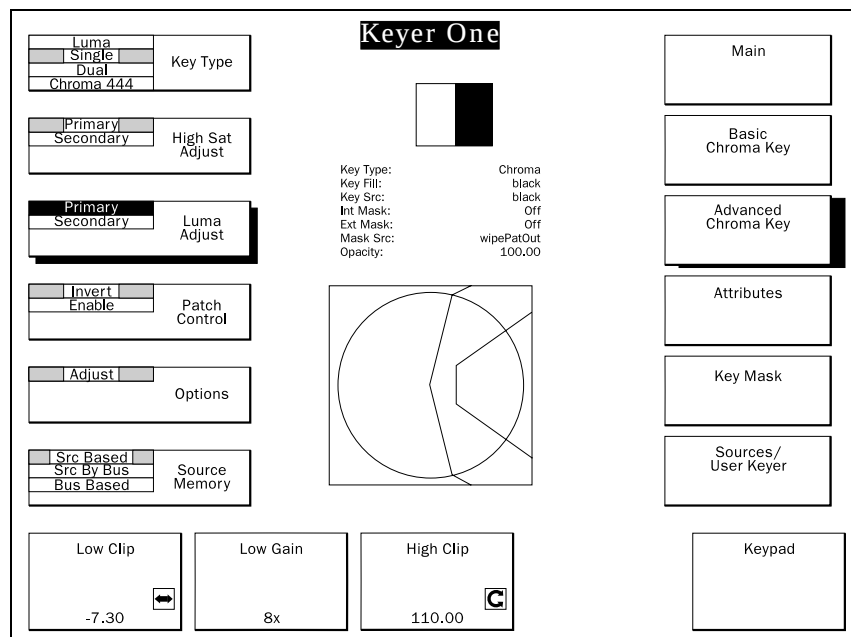
Luma Adjust

Press the *Luma Adjust* softkey to access the **Low Clip**, **Low Gain**, and **High Clip** pushknobs. These controls behave like luminance key controls, except that they act only on the luminance part of the chroma key color, not the entire image. For a detailed explanation of these controls, see the 8150 chroma keying discussion that starts on page 4-6. The *Secondary* setting is active only when the *Key Type* softkey is set to *Dual*.

Patch Control

Press the *Patch Control* softkey to enable and invert the chroma and luma "patches" when chroma keying. The term "patch" refers to the key signal derived from the primary or secondary chroma keyer (the chroma patches) or the key signal derived from the luma keyer (the luma patch). *Invert* lets you selectively invert any or all of the chroma and luma patches or the final combined key signal. *Enable* lets you turn on and off, any or all of the chroma and luma patches. It also lets you combine the patches in several ways.

In a typical chroma key, you want the foreground video to appear everywhere except where the chroma key color is. In those areas, you want the background video to show through. In the 8150 chroma keyers, the "patches" are areas that let the background video show through — the more patches, the more background video you see through the foreground. By inverting one or more patches, you can force the foreground and background to swap the areas on screen where they are visible: the background appears where the foreground normally would, and vice versa. Also, by combining the patches in certain ways, you can force the foreground and background video to appear in different combinations. Some of these combinations can be confusing at first, but practice makes them more intuitive.



The Advanced Chroma Key Submenu

With a dual chroma key, you can see the effect of one patch alone by turning off the other. You can also turn on **Luma Patch** and adjust the luma key clip and gain parameters in the Main submenu to simultaneously extract a luma key from the chroma key fill video.

Toggling to *Invert* brings up the patch inversion pushknobs. Each toggles between **Normal** and **Invert**. Each patch, whether a chroma or luma patch, is a monochrome key signal, which you can invert (swap black for white and vice versa) just like a normal key signal. By inverting a chroma or luma patch, you "fill the hole" cut by that patch with background video instead of foreground video, and show foreground video where background video normally appears. The pushknobs perform the following:

- **Pri Invert** - inverts the primary chroma patch
- **Sec Invert** - inverts the secondary chroma patch
- **Luma Invert** inverts the luma patch.
- **Key Invert** - inverts the entire key signal, downstream of the individual patch inverts

Of course, if any of these patches are not enabled, inverting them has no effect on the key.

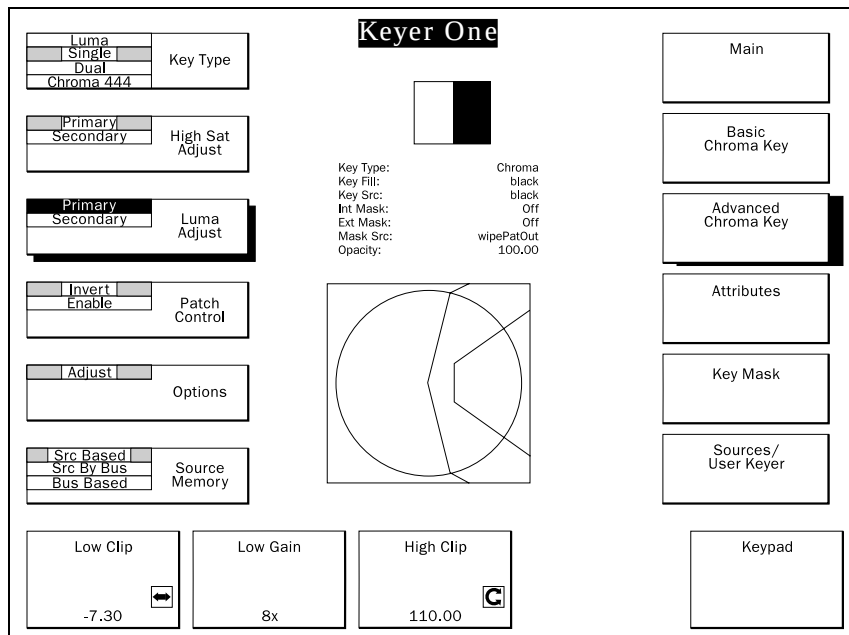
Toggling to *Enable* brings up the patch enables and the keyer combiner controls. Set the *Key Type* softkey to *Dual* to enable the secondary patch. Also, you can enable **Luma Patch** with any type of chroma key, but you cannot turn on the chroma patches with the *Key Type* softkey set to *Luma*.

NOTE: The Luma Patch pushknob differs from the *Luma Adjust* softkey controls in this submenu. The *Luma Adjust* softkey affects only the parts of the fill video that contain the chroma key color; using the Luma Patch lets you adjust luma clip and gain settings for the entire fill video signal.

The **Keyer Combiner** pushknob lets you combine the two chroma patches with the luma patch in different ways. In most cases you can leave it set to $(C1 + C2) + Y$, which is the default. This notation uses C1 and C2 to indicate the chroma patches and Y to indicate the luma patch. A "plus" sign (+) between two elements means that the two are "or'ed" together, i.e., they both appear equally in the key signal. A "times" or "multiply" sign (x) between two elements means that the two are "anded" together—they appear in the key signal only where they overlap each other.

Brief descriptions of the **Keyer Combiner** pushknob settings follow. You can also experiment with patch inversions to see how they interact with these settings.

- $(C1 + C2) + Y$ – All three patches let the background show through wherever they appear.



The Advanced Chroma Key Submenu

- **(C1 x C2) + Y** – The two chroma patches show the background only where they overlap; the luma patch shows the background wherever the luma patch is present.
- **(C1 + C2) x Y** – The two chroma patches show the background, but only where they overlap with the luma patch.
- **(C1 x C2) x Y** – The two chroma patches show the background only where they overlap each other and the luma patch.

Options

Press the *Options* softkey to bring up the Color Pick range pushknobs:

- **Display Color Wheel**
- **Low Clip Boundary Width**
- **High Clip Boundary Width**
- **Hue Boundary Width**

The three **Boundary Width** pushknobs let you preset the saturation low clip, saturation high clip, and hue discrimination ranges for the picked color. The smaller the number, the tighter the range of colors picked.

Turning on **Display Color Wheel** temporarily loads a pattern in Framestore 1 (or Framestore 2, if Framestore 1 is "locked" or selected on one of the buses) that shows virtually the entire range of colors available in component digital video. The pattern corresponds to the display on a vectorscope. There is no chroma in the center of the screen, and it gradually increases in saturation until the outer edges of the screen are fully saturated for every hue. The color wheel display shows the range of colors you picked with the *Pick Color* softkey. When you press *Pick Color* again, the original fill signal reappears, and you can continue picking colors as selected with the **Color Patch Operation** pushknob. Note that the color wheel display is a framestore test pattern, so if the Dual Framestore option is not installed, the color wheel cannot appear.

Source Memory

This softkey has the same function as the *Source Memory* softkey in the Main submenu.

Attributes Submenu

The Attributes submenu has controls for adjusting the size, position, softness, and opacity of the key signal, and lets you select the wipe border mode used when you transition a key with a bordered wipe pattern.

Size Position

Press the *Size Position* softkey to access the **Size H**, **Size V**, **Position H**, and **Position V** pushknobs. **Position H** and **V** let you move the processed key signal ± 8 pixels horizontally and ± 2 lines vertically to compensate for external key timing errors. **Size H** and **V** let you change the horizontal and vertical size of the processed key signal to crop or expand the key edges.

Defocus

Press the *Defocus* softkey to access the **Defocus H**, **Defocus V**, and **Both** pushknobs. You can soften the horizontal edges, the vertical edges, or both, to blend the edges of the key with the background video.

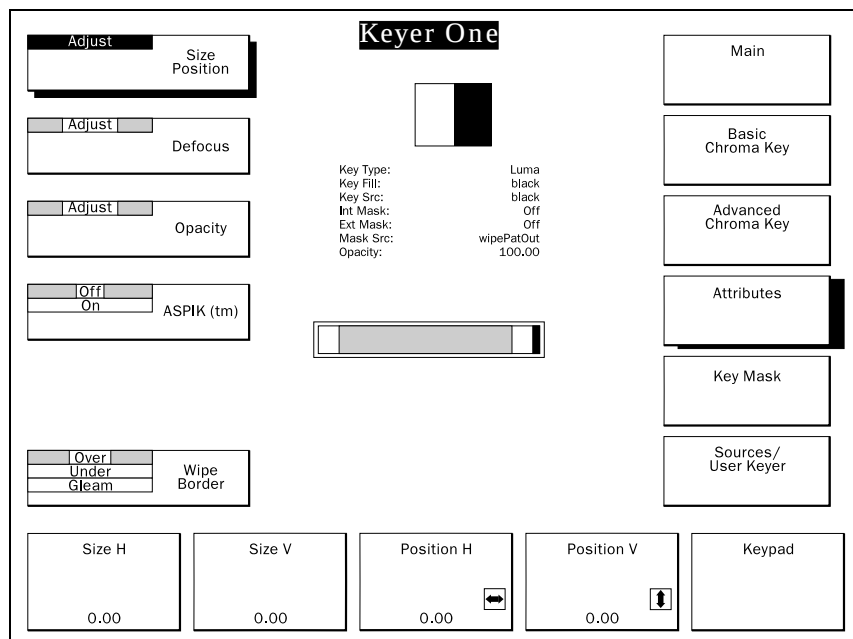
NOTE: The key and border processing in each keyer share the defocus circuitry. Defocusing the key also defocuses any border by the same amount. You can defocus the border without defocusing the key, but you cannot defocus the border a different amount than the key. If you apply a softened (defocused) border to a key, and then defocus the key, the border softness defaults to the key defocus value. For more information, see Section 5 – Borders.

Opacity

Press this softkey to use the **Opacity** pushknob to set the key opacity. A 100 setting makes the key fully opaque; a value of 50 gives a half transparent key over the background; 0 makes the key fully transparent.

ASPIK™

The **ASPIK** softkey enables a method of key-edge interpolation originally developed by Abekas for the A84 layering switcher. Turning **ASPIK** on eliminates the "stair stepping" and ringing that sometimes occurs when using nonlinear key signals in a digital keyer. You should only use this if a linear key signal is not available. The **Threshold** pushknob sets the clip level of the anti-aliased key signal.



The Attributes Submenu

Wipe Border

The *Wipe Border* softkey selects *Over*, *Under*, or *Gleam*. These modes select how the 8150 applies a wipe border when you transition the key on or off with a bordered wipe pattern.

- *Over* (default) – places the wipe border over the key fill video and the background video, making the wipe border fully visible.
- *Under* – places the wipe border "under" the background video, and over the key fill video only, making the wipe border invisible except where it overlaps the key.
- *Gleam* – also places the wipe border over the key foreground only. However, in this mode, the wipe does not transition the key on or off; it only moves the wipe border over the key fill video to simulate a reflection or a "gleam." The key must be fully on ("KEY ON" display lit for that keyer) for *Gleam* to work properly. For a more realistic look, you can soften the wipe border and decrease its opacity in the Wipe menu Border submenu. For more information, see Section 6 – Wipes.

If you leave this menu, you can cancel the gleam by pressing a transition button other than **WIPE** in the transition group (**MIX**, **EFFECT**, or **NAM**).

Key Mask Submenu

The Key Mask submenu has controls for the internal and external key mask. Each keyer has its own internal mask generator. You can also use other sources (such as the wipe generator, framestores, etc.), including external inputs, to create more complex masks.

NOTE: In normal key mode, the key signal "shapes" the fill video. Masking part of the key signal removes the corresponding part of the fill video. However, in matte mode, the key signal does not shape the fill video, so masking the key signal does not remove the corresponding fill video. For this reason, you cannot apply a mask to a matte mode key.

Internal Mask

The *Internal Mask* generator is *Off* until you select *Box* or *Rotational*. The box mask is applied inward from the screen edges. Use the **Left**, **Top**, and **Switch Corners** pushknobs to adjust the box size; **Left** and **Top** change to **Right** and **Bottom** when you turn the **Switch Corners** pushknob. The values for position are in screen units. Since the standard aspect ratio for video is 4 units wide to 3 units high (4:3), the horizontal position range is ± 4 units, vertical is ± 3 units; 0 is the center of the screen. Position values larger than these are off screen. (With the aspect ratio set to 16:9, horizontal position range increases to ± 5.33 units.)

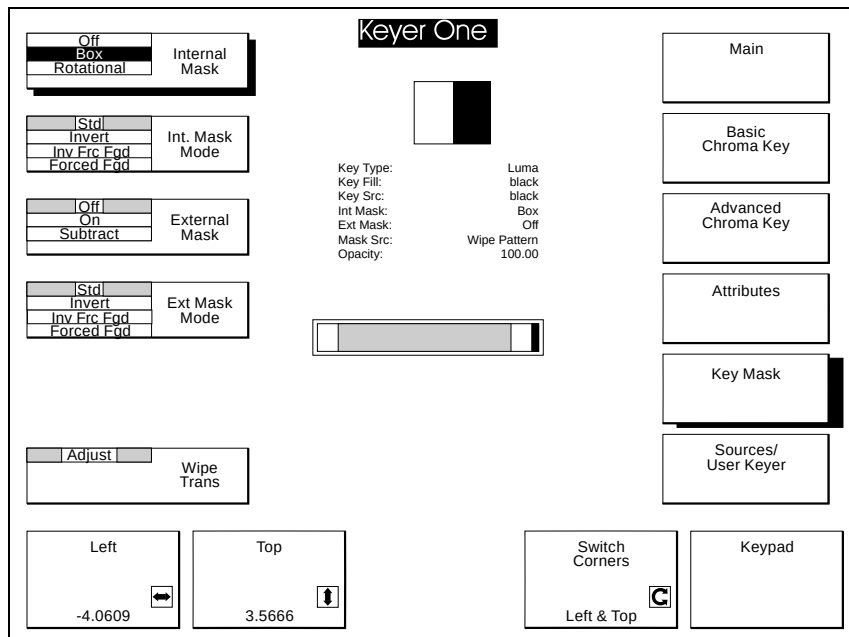
Choosing a *Rotational* mask lets you use **Position** and **Angle** pushknobs. The rotational mask functions like a wipe pattern. **Position** moves the mask at right angles to its edge, and **Angle** rotates the edge. With **Angle** set to 0.00, the mask moves inward from the right edge of the screen. Position values are in percent of picture width, with 0.00 at the center of the screen and ± 50.00 at the edges.

You can use an internal mask alone or in combination with an external mask (described later).

Internal Mask Mode

The *Int Mask Mode* softkey toggles four modes that apply to both the *Box* mask and the *Rotational* mask.

- *Std* – lets only the parts of the key signal that fall inside the mask "cut the hole" in the background.
- *Invert* – lets only the parts of the key signal that fall outside the mask "cut the hole" in the background.
- *Forced Fgd* – lets the full key signal "cut the hole" in the background, as well as adding to the original key signal wherever the mask appears.



The Key Mask Submenu

- **Inv Frc Fgd** – lets the full key signal "cut the hole" in the background, as well as adding to the original key signal wherever the mask does not appear.

Additionally, a **Forced Fill** pushknob appears when **Int Mask Mode** is highlighted. This control affects the forced foreground and inverted forced foreground modes when used with a chroma key. It toggles between **Unsuppressed**, which forces the original (unsuppressed) foreground to be visible, and **Suppressed**, which forces the modified (suppressed) foreground to be visible.

External Mask

The **External Mask** generator is **Off** until you select **On** or **Subtract**. Turning it **On** enables the external mask and brings up **Clip**, **Gain**, and **Mask Source** pushknobs. Selecting **Subtract** effectively inverts the polarity of the external mask source.

The **Clip** and **Gain** pushknobs adjust the mask source's clip and gain independently of the main key clip and gain settings. The **Mask Source** pushknob lets you select any available 8150 source as a mask source. It defaults to **Wipe Pattern**, which is the currently selected M/E wipe pattern for keyers 1 and 2, or the currently selected PGM PST wipe pattern for the DSK. You can adjust the wipe pattern size, position, and rotation with controls under the **Wipe Trans** softkey.

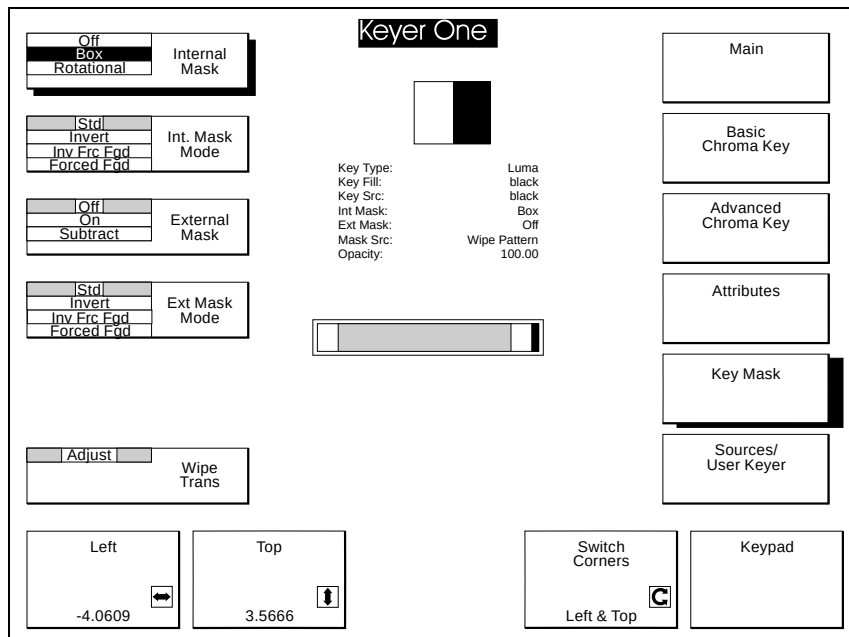
To select a source that is assigned to a crosspoint button, press and hold the source button on the Background B or Preset bus row and press the **Mask Source** pushknob to enter it. You can also enter the source number (see the source number list in Section 2 – Getting Started) in the numeric keypad, then press **Mask Source**. Otherwise, turn the pushknob to select the mask source.

You can use the external mask alone or in combination with the internal mask (described earlier).

External Mask Mode

The **Ext Mask Mode** softkey toggles four modes that are identical to the internal mask modes.

- **Std** – lets only the parts of the key signal that fall inside the mask "cut the hole" in the background.
- **Invert** – lets only the parts of the key signal that fall outside the mask "cut the hole" in the background.
- **Forced Fgd** – lets the full key signal "cut the hole" in the background, as well as adding to the original key signal wherever the mask appears.
- **Inv Frc Fgd** – lets the full key signal "cut the hole" in the background, as well as adding to the original key signal wherever the mask does not appear.



The Key Mask Submenu

NOTE: An external mask is not possible when the key type is set to Chroma 444. In this case, the normal external mask signal path carries the extra chrominance information contained in the 4:4:4 fill signal. However, you can still use the internal mask with a 4:4:4 chroma key.

Additionally, a **Forced Fill** pushknob appears when *Ext Mask Mode* is highlighted. This control affects the forced foreground and inverted forced foreground modes when used with a chroma key. It toggles between *Unsuppressed*, which forces the original (unsuppressed) foreground to be visible, and *Suppressed*, which forces the modified (suppressed) foreground to be visible.

Wipe Trans

With the wipe pattern as the external mask source, press the *Wipe Trans* softkey to bring up **HPos**, **VPos**, **Size**, and **Rotation** pushknobs. Keyers 1 and 2 share the M/E wipe generator as their mask source. The DSK uses the PGM/PST wipe generator as its mask source.

NOTE: Select a transition type other than a wipe (i.e. mix, NAM, or Effect) to enable the Wipe Trans pushknobs. If a wipe is the active transition, the fader bar overrides the Wipe Trans pushknob settings and retimes the wipe pattern for use in the transition.

Sources /User Keyer Submenu

Press the *Sources/User Keyer* softkey to bring up the Sources/User Keyer submenu, where you can select different key and mask sources, create color fields for use as matte fill sources, and save and recall up to 20 user keyer registers. You can also save these user keyer registers to disk as .KEY files. See Section 11 – Disk Operations for more information on saving and recalling user keyer registers to and from disk.

Source

Pressing the *Source* softkey brings up the **Keyer**, **Key Cut Source**, **Key Mask Source**, and **User Keyer** pushknobs.

- **Keyer** – selects **KEY 1**, **KEY 2**, and **DSK**, and changes the Keyer menu, the display above the key bus row, and the key monitor output to indicate the selected keyer.
- **Key Cut Source** – lets you select a key source ("hole cutter") other than the fill source selected on the bus row. The key memory retains this setting by source or by bus, as set with the *Source Memory* softkey. Any properly timed 8150 source is available as a key cut source. If the source is assigned to a crosspoint button, press and hold that crosspoint button on the Background B or Preset bus row and press the **Key Cut Source** pushknob to enter the source. You can also enter the source number (see the source number list in Section 2 – Getting Started) and press **Key Cut Source**. Otherwise, turn the pushknob to select the source.
- **Key Mask Source** – has the same function as the **Mask Source** pushknob in the Key Mask menu: use it to select a separate internal or external signal as a mask source. Any properly timed 8150 source is available as a key mask source. You can press and hold the crosspoint button for that source on the Background B or Preset bus row and press **Key Mask Source** to select it. You can also enter the source number at the numeric keypad and press **Key Mask Source**, or turn the pushknob to

select the source. The key memory retains this setting by source or by bus, as set with the *Source Memory* softkey.

- **User Keyer** – lets you select one of 20 user keyer registers for saving and recalling keyer setups to on-line memory and to disk. The display shows the selected register number and **Empty** if the register does not have a setup stored, or **Used** if the register has a setup stored in it.

The screenshot displays the 'Keyer One' submenu. At the top center, the title 'Keyer One' is shown. Below it is a visual representation of a key: a white rectangle on the left and a black rectangle on the right. To the right of this visual are the following settings: Key Type: Luma, Key Fill: black, Key Src: black, Int Mask: Off, Ext Mask: Off, Mask Src: Wipe Pattern, and Opacity: 100.00. Below these settings is a horizontal slider bar. On the left side, there are several menu items: 'Select Source' (with a dropdown arrow), 'Key Fill' (with a dropdown arrow showing 'Video' and 'Matte'), 'Color Pick' (with a dropdown arrow showing 'Cursor'), 'Save', 'Recall', and 'Clear'. On the right side, there is a vertical list of menu items: 'Main', 'Basic Chroma Key', 'Advanced Chroma Key', 'Attributes', 'Key Mask', and 'Sources/ User Keyer' (which is highlighted with a thick black bar). At the bottom, there are five buttons: 'Keyer' (showing 'KEY 1'), 'Key Cut Source' (showing 'black'), 'Key Mask Source' (showing 'Wipe Pattern'), 'User Keyer' (showing '1 - Empty'), and 'Keypad'.

The Sources/User Keyer Submenu

NOTE: The 4:4:4 Chroma Key option, if installed, lets you feed a high-resolution 4:4:4 image to the 8150 via two standard digital (4:2:2) inputs or the optional wideband component analog input module. The source (graphics, telecine, or the wideband input module) splits the high-resolution 4:4:4 (Y:U:V) signal into two halves; the 4:2:2 half carries all the luminance samples and half the chroma samples. The 0:2:2 half carries the other half of the chroma samples. These enter the 8150 on two inputs, or as a single analog input if the Component Analog + Key input module is installed. The 8150 fill processor then combines them to reconstruct the 4:4:4 signal.

With the 4:4:4 Chroma Key option installed, when you select the Chroma 444 key type, the *Source* pushknob labels change:

- **Keyer** – same as with other key types.
- **Key 444 Cut Source #1** – selects the 4:2:2 part of the 4:4:4 signal. The 8150 combines it with the selected Key 444 Cut Source #2 to reconstruct the original high resolution signal. If the Component Analog + Key module video input is selected as this source, that module's input mode automatically changes from 4:2:2 video plus 4:0:0 key to 4:4:4 video with no key. This means the normal key path in this mode is used for the 0:2:2 part of the 4:4:4 video and the key input is not passed through. However, as soon as you select another Key 444 Cut Source #1, or change the Chroma Key type, this module reverts to normal video plus key mode.

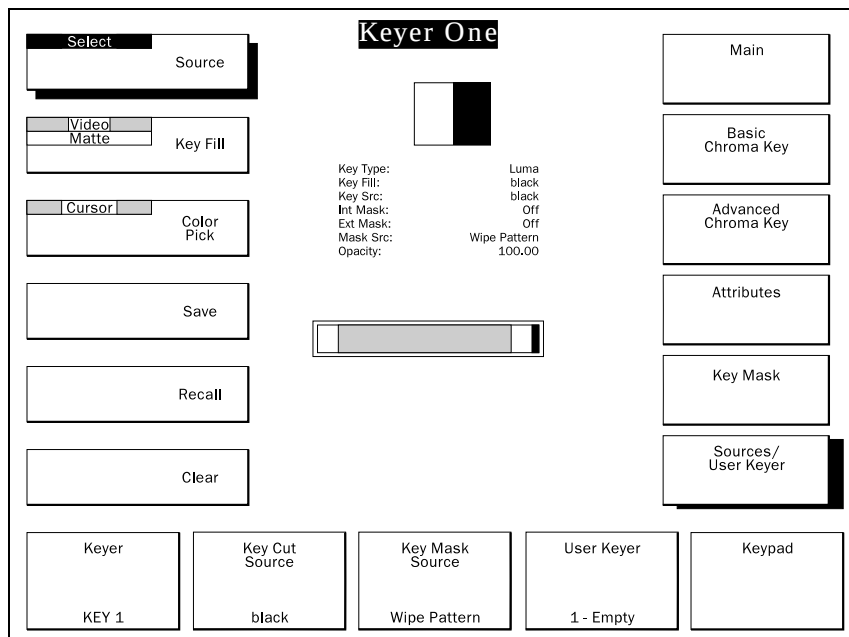
- Key 444 Cut Source #2 – selects the 0:2:2 part of the 4:4:4 signal. The 8150 combines it with the selected Key 444 Cut Source #1 to reconstruct the original high resolution image.

NOTE: You must also toggle the *Color Corrector Mode* softkey to *RGB 444* and the *RGB-YUV Convert* softkey to *Filter* in the Color Corrector menu for the appropriate Key Fill. This eliminates chroma aliasing resulting from RGB to YUV transcoding and downsampling.

Key Fill

The *Key Fill* softkey toggles *Video* and *Matte*.

- *Video* – brings up the **Key Fill Source** pushknob, which temporarily lets you choose another fill source without changing any other keyer settings. This is known as a "breakaway key." As you change the fill source, the appropriate crosspoint button on the key bus row lights to show the selected fill source. You can select a source by pressing and holding its crosspoint button on the Background B or Preset bus row and pressing **Key Fill Source**. You can also enter the source number (see the source number list in Section 2 – Getting Started) in the keypad and press **Key Fill Source**, or turn the pushknob to select the source.



The Sources/User Keyer Submenu

NOTE: Source memory does not store a "breakaway" fill source. If you press the active key bus crosspoint button, the keyer memory changes as it recalls the memory for that source. If you then press the original crosspoint button, the original fill source returns with its original keyer settings.

- **Matte** – changes the key fill from the selected video source to an internal matte color generator. You adjust the color with the matte's **Luma**, **Sat**, and **Hue** pushknobs or the joystick. To fill the key with "super black" (luminance below 0 percent), enter in a negative number in the keypad (range -1 to -7) and press the **Luma** pushknob to enter it. To eliminate the possibility of setting "illegal" values, you cannot select a negative value by turning the pushknob. Also note that negative values below -7 "overflow" to maximum white.

Color Pick

Pressing the *Color Pick* softkey turns on the cursor in the preview output and brings up the **HPos**, **VPos**, and **Cursor** pushknobs. You can move the cursor with the pushknobs or the joystick, then press the *Color Pick* softkey again to pick the color at the cursor location. This color applies to the matte fill that you selected with the *Key Fill* softkey.

NOTE: The Color Pick feature works in all 8150s that have the Enhanced (Frame Delay) Output module installed. If this module is not present, the Dual Framestore option must be installed for Color Pick to function.

Save

Select an **Empty** user keyer register with the **User Keyer** pushknob and press *Save* to store the current keyer setup. If the selected register is **Used**, this overwrites its existing contents.

Recall

Select a user keyer register with the **User Keyer** pushknob and press *Recall* to restore the keyer setup to the current keyer. If the selected register is **Empty**, the current keyer setup does not change.

NOTE: Recalling a user keyer register updates the key source memory for that source or bus (depending on the current source memory mode) and overwrites the current memory for that source or bus. It does not change the current source memory mode.

Clear

Select a user keyer register with the **User Keyer** pushknob and press *Clear* to erase its contents. The display changes from **Used** to **Empty**.

Section 5

Key Borders

Introduction

Use the Key Border menu to access the mBoss™ key border features, such as drop shadow (with variable softness and transparency), outline, extrude, emboss, and trail. You can position these borders with subpixel accuracy, and fill each border with a color matte generator or live video.

Key border generation has two stages. The first stage selects the main border type: full surround border, outline only, or embossed outline. Border mode creates a full-surround border, based on the key signal, around the fill video. Outline mode uses the same full-surround border, but removes the fill video, showing the background both inside and outside the key edge. Emboss mode removes the fill video as in outline mode, but lets you give the remaining border a three-dimensional "raised" look, as if the key were embossed, or pressed into the background from behind. You can soften the embossing and lighten or darken two sides of the border to simulate a light source, with the other two sides filled with the key fill video. Using an outline or emboss border excludes using extrude, trail, or shadow effects.

The second stage of key border generation includes the extrude, trail, and shadow effects. (Enabling any of these forces the border type to **Border**; you cannot apply these effects to an outline or emboss effect.) These effects apply to both the original key and its full-surround border, if any. Extrude mode gives the bordered (or unbordered) key an extruded edge, so that it appears to be raised or extruded from the background video. Adding a trail to

the key gives a ramped trail that recedes gradually toward the bottom of the screen. You can move either the extrusion or the trail within a range of 60 degrees left or right of vertical. You can also apply a decay value, which controls the way the extrusion or trail ramps from opaque to transparent: the lower the decay value, the more quickly the extrusion or trail becomes transparent.

Selecting shadow mode turns off extrude/trail mode and adds a drop shadow based on the size and shape of the bordered (or unbordered) key signal. You can position the shadow anywhere below the original key signal, including partially off-screen. There are controls for shadow softness and transparency that you can use in addition to the main border softness and transparency controls.

The key source memory saves border settings. With source based key memory, each source has its own border settings regardless of the bus it is selected on. With bus based key memory, each key fill bus has its own border settings regardless of the source selected. With source by bus based key memory, each key fill bus source has can have a different border setting for each key fill bus.

The Key Borders Menu

Press the **BORDERS** menu button to bring up the mBoss™ Key Borders menu for the currently active keyer. All Border submenus have a central display that shows the status of the current key borders, including border fill color, border size, position, opacity, softness, decay, and miscellaneous functions.

☐ Off
☒ Border
☐ Outline
☐ Emboss

☐ Off
☒ Extrude
☐ Trail

☐ Off
☒ On

☐ Select

KeyBorders One

	Size	V Pos	H Pos	Soft
Border	4.00	0.00	0.00	0

	Luma	Sat	Hue	Opac
MatFill	50.00	50.00	0.00	100.00
Corner				
Misc	Square	Quick	Off	

Border Type

Border Fill

Key Fill

Size
4.00

V Position
0.00

H Position
0.00

Softness
0

Keypad

The Key Borders Menu

Border Type Submenu

Use this submenu to select and adjust the key border type.

Border

The **Border** softkey is off by default: there is no border on the key. When set to **Border**, you can apply a full-surround border based on the key signal size and shape. An **Outline** is the same as a **Border**, except that the fill video is not visible, leaving only the bordered outline of the original key. **Emboss** simulates a three-dimensional look by brightening one side of the border and darkening the other to give the illusion of light and shadow.

Four pushknobs control the border and outline border type:

- **Size** – changes the border size in subpixel increments. Sizes up to 8.00 remain outside the key fill video; sizes from 8.00 to 16.00

Off	Border
Border	
Outline	
Emboss	

Off	Extrude
Extrude	
Trail	

Off	Shadow
On	

Select	Misc

KeyBorders One

	Size	V Pos	H Pos	Soft
Border	4.00	0.00	0.00	0

	Luma	Sat	Hue	Opac
MatFill	50.00	50.00	0.00	100.00
Corner	Mode	Boost		
Misc	Square	Quick	Off	

Border Type

Border Fill

Key Fill

Size
4.00

V Position
0.00

H Position
0.00

Softness
0

Keypad

The Border Type Submenu

(maximum) cause the border to encroach inward on the key fill video.

- **V Position** – moves the border vertically relative to the key, from four lines below the key to two lines above it.
- **H Position** – moves the border horizontally relative to the key, from eight pixels to the left of the key to four pixels to the right of it.

NOTE: With small border sizes and large position values, it is possible to move the "hole cut" away from its original position so that the fill video overlaps the background video.

- **Softness** – defocuses the outside border edge in eight steps; the inside edge retains its original hardness. If the key already has softness (defocus) applied, the border **Softness** pushknob does not have any effect. Also, if you apply softness to a border, it also applies to any extrude, trail, or shadow effect.

When you toggle the softkey to *Emboss*, the pushknobs change:

- **Size** – changes the size of the embossed border, from one line to three lines high, and from two pixels to six pixels wide.
- **Position** – selects one of eight directions for the border fill in 45 degree increments. Position 0 orients the border fill straight up. Position 1 has the border fill on the upper right corner of the original location of the key. Position 2 has the border fill on the right side of the key, and so on. In each case, the original key fill video fills the other half of the embossed border.
- **Embs Opacity** – sets the opacity of the border edges that have the border fill. This maintains the original opacity of the key fill in the opposite edges.
- **Softness** – an **On** or **Off** toggle that lets you soften the embossed effect for a more realistic look.

Extrude/Trail

Use the *Extrude* softkey to add extrusions or trails to the bordered or unbordered key to give the illusion of depth. *Extrude* creates a border that appears to stand off the background. *Trail* smears or ramps the border completely off-screen. You can apply a decay to either effect to control how fast the border ramps from opaque to transparent. The lower the decay value, the more quickly the extrusion or trail becomes transparent. You can use extrude and trail effects with a border, but cannot use them at the same time as a drop shadow. (See below for more information on shadows.)

Size changes the length of the extrusion from 0 to 15 lines below the original key, but has no effect on trails. **Position** changes the direction of the extrusion or trail, with a range of 60 degrees on either side of vertical below the key (extrusions and trails cannot appear above the original key). **Softness** defocuses the extrusion or trail, in eight steps, while retaining the original key or border

☐ Off
☒ Border
☐ Outline
☐ Emboss

☐ Off
☒ Extrude
☐ Trail

☐ Off
☒ On
 Shadow

☐ Select
 Misc

KeyBorders One

	H Off	V Off	Soft	Opac
Shadow	0.0000	-0.0248	0	50.00
Luma		Sat	Hue	Opac
MatFill	50.00	50.00	0.00	100.00
	Corner	Made	Boost	
Misc	Square	Quick	Off	

Border Type

Border Fill

Key Fill

H offset

0.0000

V offset

-0.0248

Softness

0

Opacity

50.00

Keypad

The Border Type Submenu

hardness. If you softened the original key or border, the extrusion or trail has the same softness. **Decay** determines how quickly the extrusion or trail changes from opaque to transparent. With **Decay** set to 100.00, the extrusion or trail does not ramp at all; a **Decay** value of 0.00 makes the effect transparent immediately.

Shadow

Use this softkey to attach a "drop shadow" to the original key or bordered key. This gives the impression that the key is floating in space above the background by creating a shadow in the shape of the original or bordered key. You can use a shadow with a border, but you cannot use a shadow at the same time as an extrude or trail effect.

- **H Offset** changes the horizontal position of the drop shadow relative to the key, letting you move the drop shadow horizontally, partially off-screen, in either direction.
- **V Offset** changes the vertical position of the drop shadow relative to the key, from 1 to 75 lines below the key. You cannot place the drop shadow above the original key.
- **Softness** defocuses the drop shadow, in eight steps, while retaining the original key and/or border hardness. If you softened the original key or border, the drop shadow is softened by the same amount.
- **Opacity** adjusts the transparency of the drop shadow: an opacity of 100.00 is a fully opaque shadow, 0.00 is fully transparent. The drop shadow cannot be more opaque than the original key or border. If you reduce the key or border opacity, the drop shadow loses the same amount of opacity. You can only reduce the drop shadow opacity from that point.

Misc

The *Misc* softkey accesses three controls that apply to all border types except as noted.

Toggle the **Corners** pushknob to **Square** (the default) to reproduce, in the border, any sharp corners in the original key. **Round** "rounds off" any sharp corners in the borders. Adding a little softness helps give rounded corners a more realistic look.

The **Decay Mode** pushknob affects only the extrude and trail effects. The **Quick** setting gives a consistent border decay from all parts of the key. **Slow** gives more decay from the edges of the key than from the center. This means that the decay is relatively slower from the center of the key, gradually increasing until the decay is relatively quicker at the key edges.

The **Border Boost** pushknob affects the border color saturation. With it **Off** (default), matte-filled border colors are limited to the RGB gamut (legal colors only). If you decrease the key border opacity, however, the border color becomes less saturated. Toggling **Border Boost** to **On** lets you use colors outside the RGB gamut to compensate for the border transparency. Since you can generate illegal colors with this feature, you should normally leave it **Off**.

Border Fill Submenu

The Border Fill submenu lets you select a matte or video source fill for the key border and adjust its opacity. You can select the matte color manually or with Color Pick.

Border Fill

The **Border Fill** softkey (left side of the display) lets you select the border fill. **Matte** (the default) brings up **Brdr Luma**, **Brdr Sat**, **Brdr Hue**, and **Opacity** pushknobs for the matte color. **Video** brings up a **Fill Source** pushknob that lets you select a video source for the border fill. You can adjust the opacity of the video border.

For a "super black" (luminance level below 0 percent) border fill, you can enter a negative number (range -1 to -7) in the keypad and press the **Brdr Luma** pushknob to enter the value. To avoid accidentally selecting an "illegal" color, you cannot set a negative

Matte
Border Fill

Video

Cursor
Color Pick

KeyBorders One

	Size	V Pos	H Pos	Soft
Border	4.00	0.00	0.00	0

	Luma	Sat	Hue	Opac
MatFill	50.00	50.00	0.00	100.00
Corner		Mode	Boost	
Misc	Square	Quick	Off	

Border Type

Border Fill

Key Fill

Brdr Luma
50.00

Brdr Sat
50.00

Brdr Hue
0.00

Opacity
100.00

Keypad

The Border Fill Submenu

value by turning the pushknob. Also note that negative numbers lower than -7 "overflow" to maximum luminance.

Note that when you select the emboss border type, the **Opacity** pushknob changes to **Embs Opacity**. This setting is independent of the opacity values for border or outline border types. It affects only the opacity of the selected border fill, not the opacity of the original foreground video that fills the opposite side(s) of the border.

Matte

Video

Border Fill

Cursor

Color Pick

	Size	V Pos	H Pos	Soft
Border	4.00	0.00	0.00	0

Border Type

	Luma	Sat	Hue	Opac
MatFill	50.00	50.00	0.00	100.00

Border Fill

	Corner	Mode	Boost
Misc	Square	Quick	Off

Key Fill

Brdr Luma
50.00

Brdr Sat
50.00

Brdr Hue
0.00

Opacity
100.00

Keypad

The Border Fill Submenu

NOTE: The M/E wipe border and the Keyer 1 borders share a common matte color generator, and both share the video fill source with the Keyer 2 borders. The PGM/PST wipe border and DSK borders also share a common matte color generator and video fill source. If you select a matte color fill for both a key border and a wipe border for the above combinations, the wipe border color setting overrides the key border fill color setting. Also, if you select video fill for the wipe and key borders, they have the same video fill. The wipe border fill timing overrides the key border fill timing, shifting the key border video fill horizontally.

If you need three independent matte color fills for the key and wipe borders, you can change an unused input in the Engineering menu to matte color output and then use that input as a video fill for one of the borders.

Color Pick

The *Color Pick* softkey lets you pick a color from the preview monitor video. Pressing the softkey enables a cursor on the screen. Move the cursor (with the joystick or the **Hpos** and **Vpos** pushknobs) to the color that you want and press *Color Pick*. This applies the color to the border matte fill. You can turn the cursor off with the **Cursor** pushknob.

NOTE: The Color Pick feature works in all 8150s that have the Enhanced (Frame Delay) Output module installed. If this module is not present, the Dual Framestore option must be present in order for Color Pick to work.

Key Fill Submenu

Key Fill

The **Key Fill** softkey lets you select video or a matte generator as the original key fill source. Selecting **Video** (the default) sets the source selected in the Keyer Sources submenu as the key fill source; however, you cannot change the key fill selection from this menu. Selecting **Matte** accesses controls for **Key Luma**, **Key Sat**, and **Key Hue**, which offer another way of adjusting the **Luma**, **Sat**, and **Hue** controls under the Keyer Sources submenu **Key Fill** softkey. This matte generator is independent of the matte generator used to fill the border, so the key and border can each have a different color matte fill.

If you need a "super black" (luminance level below 0 percent) key fill, enter a negative number (range -1 to -7) in the keypad and

Video
Key Fill

Matte

KeyBorders One

Border Type

	Size	V Pos	H Pos	Soft
Border	4.00	0.00	0.00	0

Border Fill

	Luma	Sat	Hue	Opac
MatFill	50.00	50.00	0.00	100.00

Key Fill

	Corner	Mode	Boost
Misc	Square	Quick	Off

Key Luma
50.00

Key Sat
50.00

Key Hue
0.00

Keypad

The Key Fill Submenu

press the **Key Luma** pushknob to enter the value. To avoid accidentally selecting an "illegal" color, you cannot set a negative value by turning the pushknob. Also note that negative numbers lower than -7 "overflow" to maximum luminance.

The Key Borders Menu

8150 Operations

Section 6

Wipes

Introduction

This section discusses the wipe pattern generators and their controls. Two independent wipe generators are included: one for the PGM/PST buses and one for the M/E. A third pattern generator is dedicated to the SuperMatte generator. See Section 7 – Miscellaneous Functions for details on the SuperMatte feature.

With the Advanced Wipe option, there are two pattern generators for the M/E (primary and secondary) which you can mix and morph together in several ways.

Use the pushknobs in the menus to adjust wipe settings. In many cases, you can also use the joystick. An arrow graphic in a pushknob label indicates that you can use the joystick to adjust the setting.

With the Advanced Wipe option, you can adjust the primary pattern and secondary pattern independently or together. Toggle the softkey (left side of the menu display) to select the pattern generator (primary, secondary, or both) you want to modify. A black highlight in the softkey label indicates the selected pattern generator(s). When you select Primary, Secondary, or both, the selected pattern appears on screen, and the menu settings that apply to the Primary and Secondary patterns change to reflect the currently selected one. With both patterns selected, they combine on screen in an "or" mix that lets you see both. This is explained in more detail in the "Primary and Secondary Pattern Mixing" discussion on page 6-10.

Setting Up a Wipe Transition

- STEP 1:** Press **PGM PST** to select the PGM/PST buses.
- STEP 2:** Select different sources on the Program and the Preset buses. The "high tally" crosspoint button on the Program bus, which is brighter than other selected crosspoint buttons, is the "from" source: it begins the transition. The selected crosspoint on the Preset bus is the "to" source: it wipes over the "from" source and appears full screen at the end of the transition.
- STEP 3:** Press the **WIPE** button in the Transition button group. If you have *Auto Menus* enabled (under Personality menu, User Keys & Misc submenu) the Wipe menu appears on the display. If not, press the **WIPE** menu button to bring up the Wipe menu.
- STEP 4:** Press the *Patterns* submenu softkey to bring up the wipe pattern display. It defaults to the first pattern, a vertical split wipe.
- STEP 5:** Select a different wipe pattern with the **Pattern** pushknob. The selected wipe pattern appears highlighted on the menu screen.
- STEP 6:** To put a border on the wipe edge, press the *Border* submenu softkey to bring up the wipe border controls.
- STEP 7:** Press the *Border Adjust* softkey on the left side of the menu screen to select and/or adjust the wipe border. Use the **Width** pushknob to enable the border.
- STEP 8:** Press the **AUTO TRAN** button or move the fader bar to perform the wipe.
- STEP 9:** For a wipe on the M/E buses, press the M/E crosspoint buttons on the Program and Preset buses, then use steps 2 through 8, substituting the

Background A bus for Program, and the Background B bus for Preset. With the Advanced Wipe option, you can select the Primary pattern, the Secondary pattern, or a mix of the two for the transition.

Using a Wipe as a Key Mask

You can use a wipe pattern in any keyer to mask off parts of the key. The default external mask source for the keyers is **wipePatOut**. This is the active wipe pattern (either M/E or Program/Preset) with all its current attributes. Since you use the fader bar for transitions, there is another way to size and move the wipe pattern when using it as a key mask. This procedure assumes that you have set up a key and are ready to mask it. For more information on setting up a key, see Section 4 – Keying.

- STEP 1:** Press the **KEY** menu button, then the *Key Mask* submenu softkey. Toggle the *External Mask* softkey *On*, and check that the **Mask Source** pushknob is set to **wipePatOut**.
- STEP 2:** Select a transition type other than **WIPE** (for example, **MIX** or **EFFECT**) with the transition control buttons. This disconnects the wipe generator from the fader bar and frees the generator so the 8150 can time it correctly as a key mask.
- STEP 3:** In the Wipe menu, select a wipe shape.
- STEP 4:** In the Key Mask submenu, press the *Wipe Trans* softkey to bring up the **HPos**, **VPos**, **Size**, and **Rotation** pushknobs. You can change the wipe pattern size and move it with the joystick or the pushknobs.

STEP 5: You can apply most wipe settings to a pattern used as a key mask. However, if you have enabled a border, it is not visible; only the inner edge of the wipe pattern is visible when used as a mask.

In the Wipe menu, you can also use the Attributes submenu *Transition* softkey to access the same position and size controls. For more information on key masking, see Section 4 – Keying.

NOTE: Pressing the WIPE transition button while using the wipe pattern as a mask source forces the wipe generator back to fader bar control, and changes the timing of the wipe pattern for use as a transition. In this mode the wipe pattern does not respond to the Size pushknob, although the HPos, VPos, and Rotation pushknobs still work. Select another transition type to properly retime the wipe pattern and to return control of the wipe pattern size to the wipe transition controls.

Advanced Wipe Option

The Advanced Wipe option offers many features that may be new to you. This tutorial explains how to set up more complex wipe effects. Advanced wipe features apply to both the M/E and the PGM/PST wipe generators, except as noted.

The Advanced Wipe option adds these features to the standard set:

- 65 additional wipe patterns, for a total of 93 shapes for all wipe pattern generators.
- The Multiply function duplicates the wipe pattern horizontally and/or vertically up to 20 times in each direction.
- Perspective Rotation and Magnification controls rotate the inner border edge, the outer border edge, or both, horizontally or vertically.
- For the M/E wipes only, the Horizontal and Vertical Modulation controls modulate the inner or outer border edge, or both, with one of several modulation waveforms.
- 81 matrix wipe patterns, which you can use instead of the normal wipe patterns, or to modify the edges of the normal patterns.
- For the M/E wipes only, an additional independent full-featured wipe generator, which you can combine in several ways, including "morphing" from one pattern shape to the other in real time.
- For the M/E wipes only, you can limit the final pattern size with the Preset Pattern feature.

Multiply

This softkey is in the Attributes submenu. Use it to make up to 20 copies of the current wipe pattern horizontally, vertically, or both. The copies are spaced at regular intervals across the screen according to the number of multiples. You can invert every other copy of the pattern horizontally, vertically, or both with the **Reflection** pushknob. As a result, one pattern is a reflection of the other, which is particularly effective if the patterns are rotating.

Perspective, Rotation, and Magnification

These controls are under the Attributes submenu *Aspect* softkey for the PGM/PST wipe, and under both the Special and Matrix submenu *Shape Modifier One* softkey for the M/E wipes. **Perspctv Mag** sets the amount of rotation, in the range +/- 45 degrees. The **Perspctv Rot** control moves the "vanishing point" 360 degrees around the screen; 0 puts the vanishing point at the left edge of the picture.

For the M/E wipes, you can use the **Pattern Modifier** (border inner edge) and **Border Modifier** (border outer edge) controls to select the wipe edges that have perspective, a matrix (described later), or nothing applied to them. Since the *Shape Modifier One* softkey pushknobs default to **Matrix Mix**, you must select **Perspective** on one or both pushknobs to see perspective on the pattern edges.

NOTE: The wipe generators apply Perspective to the entire screen, "downstream" of the Multiply function. This means that applying Perspective to a multiplied pattern does not change each copy of the pattern identically. Instead, it applies perspective across the entire screen, giving each copy a different perspective according to its location on screen.

The PGM/PST wipe generator, unlike the M/E wipe generators, applies perspective to both border edges simultaneously.

Horizontal and Vertical Modulation

The modulation controls are in the Special or Matrix submenu of the M/E Wipes menu, under the *Shape Modifier Two* softkey. You cannot modulate the PGM/PST wipe. Modulation lets you add several different waveforms to the inner or outer border edges, or both, for the M/E wipe patterns. Besides the traditional sinusoidal waveform, you can modulate the wipe edge(s) with a triangle wave, square wave, sawtooth pattern, or a random-amplitude pattern.

The **Amplitude** pushknob sets the amount of modulation. The **Frequency** pushknob sets the wavelength, or frequency, of the modulating waveform. For each modulation dimension, horizontal or vertical, lock mode leaves the waveform locked in place, with no motion. You can manually move the waveform on the wipe edges with the **Phase** pushknob. With either modulation softkey toggled to *On*, you can set the **Cycle** pushknob to make the modulating waveform continuously travel across the wipe edge in either direction.

The *Shape Modifier Two* softkey accesses pushknobs that determine the type of modification applied to each wipe edge: **Pattern Modifier** (inner border edge) and **Border Modifier** (outer border edge). The default is **H + V Mod**, which applies modulation in both directions. The other settings for each edge are horizontal modulation only, vertical modulation only, a matrix pattern applied to the edges (described later), or none. You must enable at least one of the modulation settings to see the modulation on the pattern edges.

You also can invert the polarity of the modifying pattern independently for either edge. For example, if you apply the same

modification to each edge, but invert one edge and not the other, the edges are symmetrical, but "out of phase" with each other.

The primary and secondary patterns share one modulation waveform generator. If you apply modulation to more than one wipe edge, they have the same modulation settings. This means you cannot apply different modulation settings to the primary and secondary patterns, or to the inner and outer edges of the same pattern.

NOTE: Modulation applies across the entire screen, "downstream" of Multiply and Perspective. If you modulate a multiplied pattern, each copy of the pattern is different, according to its position on screen.

Matrix Wipe Patterns

There is a Matrix submenu for both the M/E and PGM/PST wipe generators. Matrix patterns are so called because they use full-screen pixel "maps," which, as the transition progresses, turn on more and more blocks of pixels, in predetermined patterns and sizes, to bring the "to" video on screen. This is unlike normal wipe patterns, which combine "ramping" waveforms to develop pattern shapes.

You can apply a border to a matrix pattern, and apply softness to the edges. Because the edges are blocks of pixels, and softening simply makes those pixel blocks more transparent, this leaves the block edges hard and shows more of the matrix pattern intermediate structure. Because the matrix patterns are one of the last processing stages for the wipes, no other wipe settings (standard nor advanced) apply to matrix patterns, in either the M/E or PGM/PST generators.

Use the Matrix submenu *Patterns* softkey to select a matrix wipe pattern. The menu does not show the different shapes, but you

can view them on screen. Set the **Matrix Mode** pushknob to **Primary** to replace the current primary wipe pattern with the current matrix pattern. You can also use **Secondary**, which replaces the secondary pattern with a matrix pattern. **Both** replaces both primary and secondary patterns with the same matrix pattern. **Mix** leaves the primary and/or secondary patterns on screen, but applies the selected matrix pattern to the edges of either or both wipe patterns, according to the settings under the *Shape Modifier One* and *Two* softkeys. In the PGM/PST Wipe menu, **On** replaces **Primary**, **Secondary**, and **Both**, since you can replace only one wipe pattern.

The *Shape Modifier One* and *Two* softkeys access the same controls in the Matrix and Special submenus to reduce menu-hopping. *Shape Modifier One* defaults to **Matrix Mix**, but *One* and *Two* have settings that apply the **Matrix Mix** to one or more wipe edges. This makes for more flexibility, and lets you apply a matrix to a wipe pattern with perspective or modulation. Note that you cannot apply all three features (perspective, modulation, and matrix) to a single wipe edge. Also, selecting **Matrix Mix** for both functions does not let you apply a matrix to a matrix; it superimposes the same matrix mix over itself. Also, if you do not select **Matrix Mix** for either modifier, the matrix mix does not affect the wipe edges at all.

The **Matrix Mix** setting follows the **Matrix Mode** pushknob setting. With it set to **Mix**, a *Shape Modifier* setting of **Matrix Mix** shows the matrix mixed with the wipe pattern. If it is set to **Off**, a *Shape Modifier* setting of **Matrix Mix** shows the wipe pattern without the matrix applied. If it is set to **Primary**, **Secondary**, or **Both**, the matrix pattern completely replaces the wipe pattern, and neither perspective nor modulation appear.

NOTE: Matrix Mix applies across the entire screen, "downstream" of Multiply, Perspective, and Modulation. If you apply a matrix mix to a multiplied wipe pattern, the matrix applies across the full screen, and not to each copy of the wipe pattern identically.

Mixing Primary and Secondary Patterns

This feature only appears in the M/E Wipe menu's Special submenu. Since the primary and secondary patterns are independent, you can select two unrelated patterns, and set each with a different border width, softness, position, rotation, number of multiples, and perspective. The only controls the two patterns share are modulating waveforms, matrix patterns, border fill sources, and preset pattern size (described later).

The *Pattern Mix* softkey has three settings:

- **Offset** – the secondary pattern changes size in proportion to the primary pattern throughout the transition, as set with the offset value in the **Secondary Offset** pushknob.
- **Absolute** – only the primary pattern transitions; the secondary pattern stays at the size set with the **Secondary Progress** pushknob.

- **Morph** – both patterns stay at the size set with the **Primary Progress** and **Secondary Progress** pushknobs. This mode only works with the **Mix Mode** pushknob also set to **Morph**. In this mode, the fader bar neither transitions the pattern nor flip flops the background buses; instead, it transforms, or "morphs," the primary pattern into the secondary pattern, and vice versa.

The **Mix Mode** pushknob settings use digital logic terms to name some of the combinations:

- **Primary** – shows only the primary pattern and turns off the secondary.
- **Secondary** – shows only the secondary pattern and turns off the primary.
- **Or** – shows both patterns, with the "to" (Background B bus) source appearing inside either pattern, and over any overlapping borders.
- **Xor** (Exclusive Or) shows both patterns, with the "to" (Background B) source appearing only where they do not overlap; the "from" (Background A) source appears anywhere the patterns or borders (if any) overlap.
- **And** – shows the two patterns only where they overlap; the "to" source is inside the overlap; the "from" source is everywhere outside the border (if any).
- **Border** – shows both patterns, with the "to" source appearing only where they overlap; elsewhere inside the patterns, the border fill appears, even if both border widths are 0.00.
- **Morph** – shows both patterns on screen according to the *Pattern Mix* softkey setting and its pushknob settings. Also, the primary pattern border attributes (size, softness, symmetry) apply to both the primary and secondary patterns in this mode.

These pushknobs appear with the *Pattern Mix* softkey set to *Offset* or *Absolute*:

- **Morph Offset** (with *Offset*) – determines how far into the morph transformation the transition starts. Negative numbers delay the morph's start until part way through the transition, positive numbers put the start of the transition part way through the morph.
- **Morph Progress** (with *Absolute*) – sets a fixed percentage of morph transformation from one pattern to the other; this does not change as the transition progresses.

Preset Pattern

This Special submenu softkey is only available for the M/E wipes. When toggled to *On*, it limits how far the wipe pattern(s) travel when you move the fader bar through its full range. The **Size** pushknob setting indicates the amount of travel that has been "locked out." For example, a setting of 75.00 removes 75 percent of the wipe pattern travel, so it only travels 25 percent of its full range.

NOTE: Pressing a transition button other than WIPE (MIX, EFFECT, or NAM) defaults the *Pattern Mix* softkey to *Offset* and turns the *Preset Pattern* softkey off, though it retains the preset pattern value.

The Wipe Menu

Press the **WIPE** menu button to bring up the Wipe menu. If you have enabled *Auto Menus* (Miscellaneous menu, Preview Bus Control & Misc submenu), pressing the **WIPE** transition button automatically brings up the Wipe menu for the active buses (M/E or PGM/PST).

This menu and its submenus control all wipe transitions and functions. You can access submenus by pressing the softkeys on the right side of the menu display. To clear all attributes from the Wipe menu, press **CLEAR** + the **WIPE** menu button.

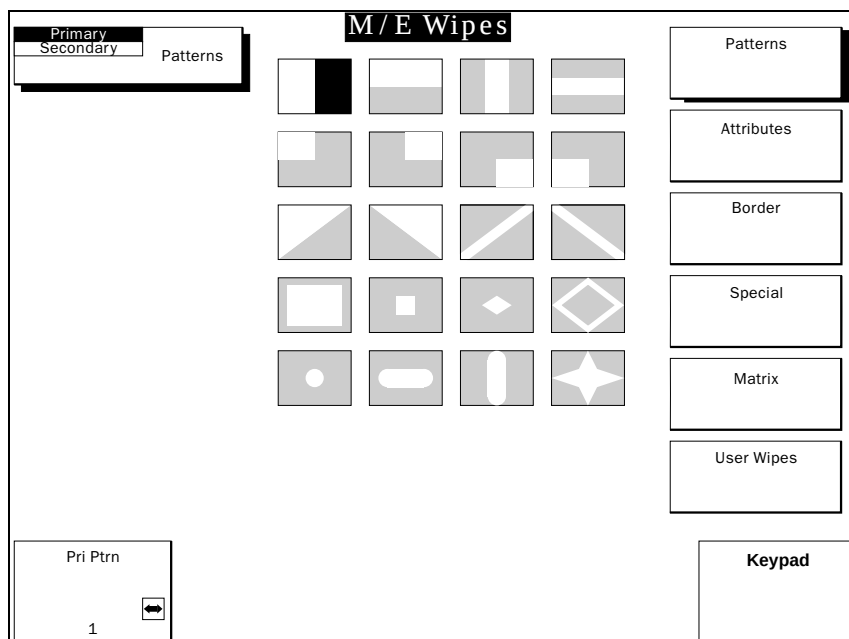
There are some differences in menu items you can use, depending on whether you have the standard or Advanced Wipe generator. These differences are noted.

Press any M/E transition control button (**BKND**, **KEY 1**, **KEY 2**, or **PRIORITY**) to use the M/E wipe pattern generator for M/E wipe transitions. Press one or both of the **PGM PST** and **DSK** buttons to use the PGM/PST wipe pattern generator for PGM/PST wipe transitions. The menu title indicates which generator is active.

Patterns Submenu

Press the *Patterns* submenu softkey to bring up this submenu. Use the **Pattern** pushknob to select a pattern. The current pattern number appears in the pushknob label. You can also use the joystick to select a pattern, or enter its number in the numeric keypad and press the pushknob.

There are 28 standard wipe patterns available to both the M/E and PGM/PST. With the Advanced Wipe option, there are 65 additional patterns, for a total of 93, plus 81 matrix patterns. See the end of this section for a laminated sheet that lists the standard pattern numbers.



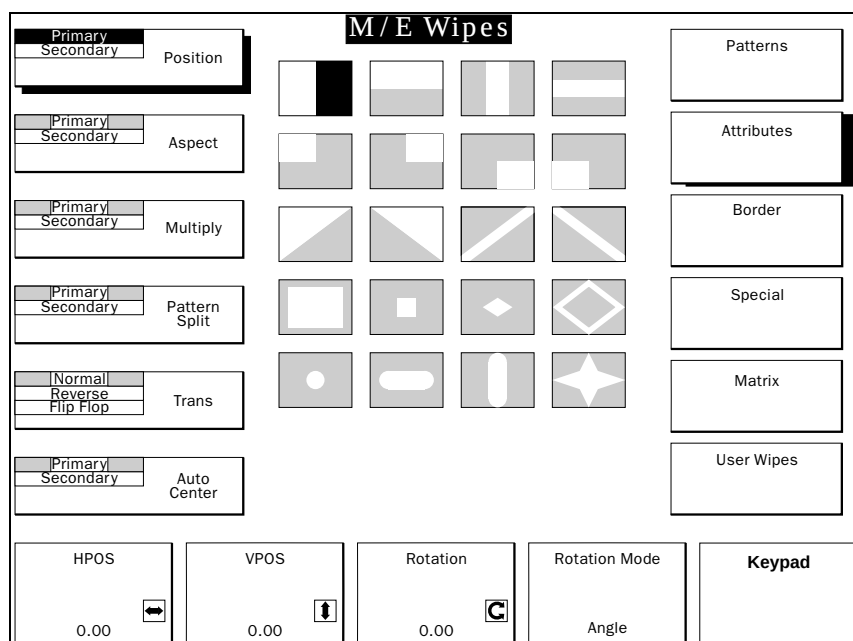
The Pattern Submenu

Attributes Submenu

Use the Attributes submenu to move the wipe pattern on screen, and set its transition direction, rotation mode, etc. To see these adjustments, set up a wipe transition between two sources on PGM/PST, and move the fader bar halfway.

Position

Press the **Position** softkey to highlight it to move the wipe pattern. Move the joystick left and right to move the wipe pattern horizontally, or use the **HPos** pushknob. The range of horizontal movement is ± 8.00 . Move the joystick up and down to move the wipe pattern vertically, or use the **VPos** pushknob. The range of vertical movement is ± 6.00 . (The position values are in screen units that correspond to the 4:3 aspect ratio.)



The Attributes Submenu

NOTE: Enable the *Auto Center* softkey to force a moved wipe pattern to smoothly finish the transition. Otherwise, you may notice a jump as the pattern nears the end of the transition.

Pushknobs 3 and 4 work together. Pushknob 4 has three settings: **Angle**, **Cycle**, and **Xition**. By default, pushknob 4 is **Angle**, and pushknob 3 is **Rotation**. In this mode, turning pushknob 3 or the joystick rotates the wipe pattern to a fixed angle that does not change during the transition.

Toggle pushknob 4 to **Cycle**, and pushknob 3 changes to **Spin**. Turning the joystick or pushknob 3 causes the wipe pattern to constantly spin through the wipe transition. The **Spin** pushknob sets the speed at which the wipe spins; the range is +/- 100. The spin value is the number of degrees that the pattern turns per field. For example, a spin of 1.00 rotates the pattern 1 degree per field, requiring 360 fields ($360/60 = 6$ seconds in 525; $360/50 = 7.2$ seconds in 625) to make one full rotation. To simplify this, you can use the following two rules of thumb in most situations:

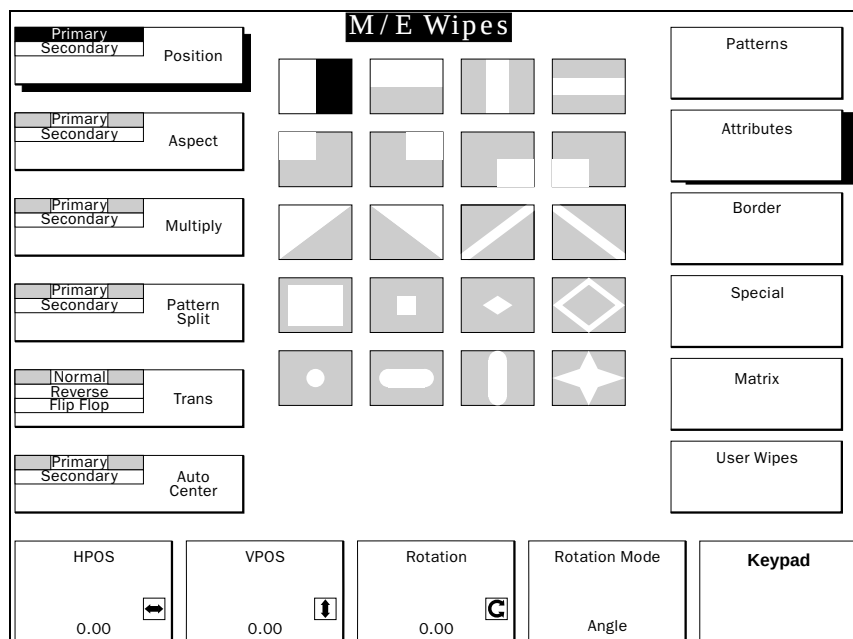
- For a certain number of rotations per second:
 - 525: Multiply 6 by the number of rotations you want.
 - 625: Multiply 7.2 by the number of rotations you want.
 - The result is the needed spin value.
- For a certain number of seconds per rotation:
 - 525: Divide 6 by the number of seconds you want.
 - 625: Divide 7.2 by the number of seconds you want.
 - The result is the needed spin value.

Toggle pushknob 4 to **Xition**, and pushknob 3 changes to **Twist**. Turning the joystick or the pushknob gives the wipe pattern a rotation proportional to how far the transition has progressed. The **Twist** pushknob setting ranges from +/- 720. A twist value of 360 causes the wipe pattern to make one complete rotation during the transition.

Aspect

Highlight this softkey to change the wipe pattern aspect ratio. Turn the **Aspect** pushknob (or move the joystick left and right) to alter the wipe pattern aspect ratio. Positive numbers change the horizontal size, negative numbers change the vertical size.

With the Advanced Wipe option, you can use the **Perspectv Mag** pushknob to add perspective to the PGM/PST wipe pattern. The range is ± 45 ; larger numbers increase the acuteness of the perspective. You can set the "vanishing point" for the perspective with **Perspect Rot**. The range is ± 360 . 0 sets the vanishing point on the left side of the wipe pattern, 90 sets it at the top, 180 sets it to the right. For the M/E, these settings are in the Special submenu.



The Attributes Submenu

Multiply (Advanced Wipe Only)

Multiply lets you make copies (up to 20 X 20) of the current pattern. Use the **H Multiply** pushknob to select the number of patterns horizontally (1 - 20). Use **V Multiply** to select the number of patterns vertically (1 - 20).

The **Reflection** pushknob toggles **Off**, **Horiz**, **Vert**, or **Both**. The **Horiz** setting causes horizontal pairs of patterns to mirror each other in both shape and rotation direction. **Vert** causes vertical pairs to mirror each other in both shape and rotation direction. **Both** reflects the patterns both horizontally and vertically.

Pattern Split

This function lets you use two wipe directions (forward and reverse) at once. Pushknob 1 toggles the split enable on and off. Use the **Split Level** pushknob to set the point during the transition that the split occurs. The range for this setting is 0 - 100, in percentages. With a value of 50, the wipe begins at a position halfway between its normal start and end points. One pattern travels toward the normal start point for the wipe, the other toward the end. 0 gives a single normal wipe, 100 a single reverse wipe. Other numbers split the wipe accordingly. For example, with a setting of 25, one pattern travels 25 percent of the normal transition (toward the normal start point); the other pattern travels 75 percent of the normal transition (toward the normal end point).

NOTE: Pattern Split does not apply to patterns with circular motion, like clock wipes (patterns 49 - 52, 55, and 56).

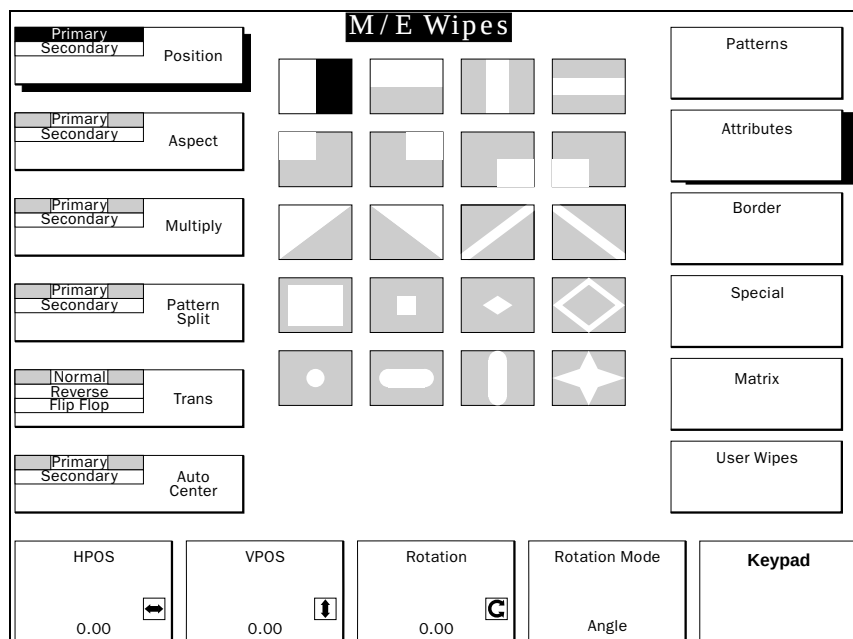
Trans

Toggle this softkey to select a wipe transition direction. In the *Normal* direction, most patterns start in the center of the screen and move outward. In the *Reverse* direction, most patterns start at the edges of the screen and move inward. In *Flip-Flop*, the patterns alternate direction at the end of every transition.

The Pattern submenu graphics indicate the normal direction as white-to-black; reverse directions are black-to-white.

Auto Center

Use this softkey to turn the wipe auto centering on and off. Use *Auto Center* when you move wipe patterns away from center screen to prevent a jump at the end of a transition. Some patterns, notably the rotary or "clock" wipes (Advanced Wipe option only), work best with **Auto Center** turned off.



The Attributes Submenu

Border Submenu

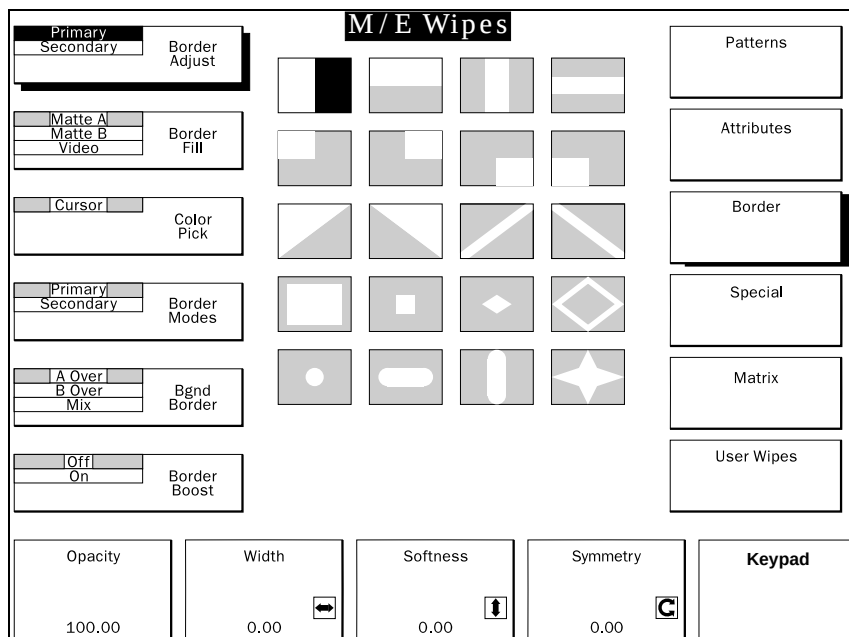
Use the **Border** submenu to set the wipe border width and other attributes, select a border fill source, and/or select a border fill color for the wipe pattern.

Border Adjust

Press the **Border Adjust** softkey to set the wipe border width, opacity, softness, and symmetry.

Use the **Width** pushknob to set the width in the range 0 - 200. The value is a percent of the raster width; 100 gives a wipe border that is 720 pixels wide, the full width of the screen.

Use the **Opacity** pushknob to set the wipe border's transparency, in the range 0 (fully transparent) to 100 (fully opaque).



The Border Submenu

The **Softness** pushknob adjusts softness in the range 0 (hard) to 100 (extremely soft).

The **Symmetry** pushknob adjusts which edge is soft/hard, in the range -100 (hard outside/soft inside) to 100 (soft outside/hard inside). **Symmetry** has no effect if the border width is 0.00.

Border Fill

Toggle **Border Fill** to select a wipe border fill source. In both the M/E and PGM/PST outputs, you can use **Matte A**, **Matte B**, and **Video**. With a **Video** fill, use the **Source** pushknob to select an input, the SuperMatte generator, or any other source available in the 8150, as the video for the border fill. With **Matte A**, use the **Luma**, **Sat**, and **Hue** pushknobs to set the matte color for Keyer 1. **Matte B** sets the matte color for Keyer 2.

For a "super black" fill for the border, enter a negative number in the keypad (range -1 to -7) and press the **Luma** pushknob to enter it. To avoid accidentally dialing in an "illegal" value, you cannot select a negative luma level with the pushknob. Also note that negative numbers below -7 "overflow" to maximum white.

NOTE: The default *Border Fill* is *Video*, and the default *Source* is set to *Supermatte*.

NOTE: In the M/E, the wipe border fill and both key border fills share two matte generators and one live video source. The PGM/PST wipe border fill and DSK border fill share one matte generator and one live video source. If you select a matte fill for both a key border and the wipe border, the wipe border settings override the Keyer 1 (or DSK) border fill settings. Also, if you select video fill for the wipe and key borders, they all use the same video source for their fill. In this case, the wipe border fill timing overrides the key border fill timing, and results in a horizontal shift of the video fill in the key border(s). To use three independent matte fills for the key and wipe borders, you can change an input in the Engineering menu to matte output and then use that input as a border fill source, or use the SuperMatte generator as a border fill source.

Color Pick

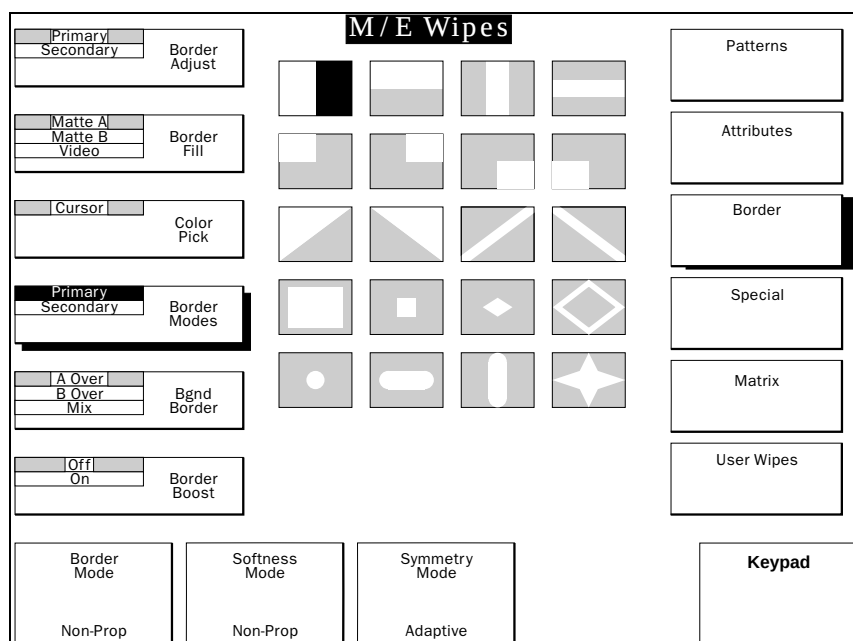
This softkey lets you pick a color from the preview output to fill a border matte. Use the **Cursor** pushknob to toggle the screen cursor on and off. Select the video you want to pick the color from on the preview output (see Section 2 – Getting Started or Section 7 – Miscellaneous Functions for more on the preview output). Move the cursor (with the joystick or the pushknobs) on the preview monitor to the color you want, then press the *Color Pick* softkey to load that color into the matte.

NOTE: The Color Pick feature works in all 8150s that have the Enhanced (Frame Delay) Output module installed. If this module is not present, the Dual Framestore option must be installed in order for Color Pick to function.

Border Modes

This softkey controls the border modes for wipe patterns. The **Border Mode** and **Softness Mode** pushknobs toggle **Proportional** and **Non-Prop** (the default). In proportional mode, the border width and/or softness vary with the pattern size: border width and softness decrease as the pattern size decreases, and vice versa. In nonproportional mode, the border size and/or softness remain the same throughout the transition.

The **Symmetry Mode** pushknob toggles **Center** and **Adaptive**. In adaptive mode, the border width increases with increased softness settings to maintain the hard edge on the other side of the border. Center mode maintains the border width, which can result in the softness of one edge overlapping the other (hard) edge.



The Border Submenu

Background Border

This softkey gives you some options when using **Border Opacity**. To see it, put a border on a wipe pattern, with **Opacity** set to about 75. Change the **Border Fill** softkey to **Matte A** or **B** and add **Softness**. As you toggle the softkey, notice that **A Over** mixes the border with the video selected on Background A/Program. **B Over** does the same with Background B or Preset. **Mix** gives you a 50/50 mix of both sources.

Border Boost

If you fill the wipe border with the matter generator, the color levels are limited to the RGB gamut (legal colors only). If you decrease the border opacity, the border color becomes less saturated. Toggling **Border Boost** to **On** lets you use colors outside the RGB gamut to compensate for the border transparency. Since you can generate illegal colors with this feature, you should normally leave it **Off**.

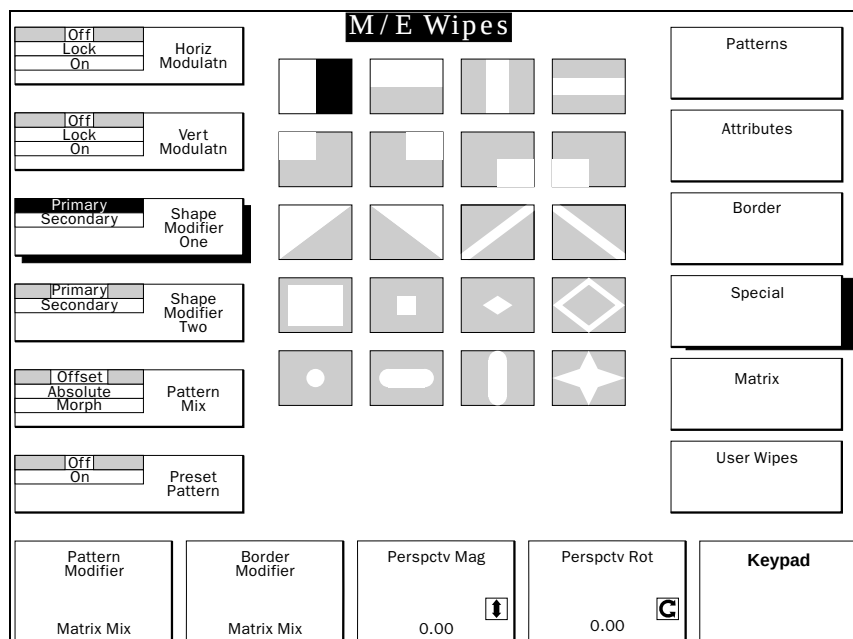
Special Submenu (Advanced Wipe Only)

NOTE: This section applies only to the Advanced Wipe option M/E Wipes menu, since this mode is not available on PGM/PST or with the standard wipe generators.

This submenu lets you modify wipe patterns to create special wipe effects. For example, you can mix patterns with matrix parameters, morph from one pattern to another, or give a pattern perspective and modulation.

Horizontal/Vertical Modulation

You can independently enable and control the horizontal and vertical modulation for a wipe pattern. Both softkeys toggle *Off*, *Lock*, and *On*. *Off* disables pattern modulation in that direction. *Lock* fixes the pattern modulation so that it does not move. Use



The Special Submenu

the **H** or **V Phase** pushknob to move it manually. Use the **On** setting to let the modulation free-run as set with the **Cycle** pushknob. Enter a value in the range ± 100 . Larger numbers cause the modulation to move faster. Positive numbers move the modulation up or right, negative numbers move it down or left.

You can modulate wipe patterns based on several shapes. Turn the **Shape** pushknob to select a **Sine**, **Triangle**, **Random**, **Square**, or **Saw Tooth** shape for the modulation. You can set the **H** or **V Frequency** and **Amplitude** with the pushknobs. With the amplitude set to 0.00, there is no modulation.

Shape Modifier One

Use this softkey to modify the wipe edges with a matrix mix or perspective. The **Pattern Modifier** (inner edge of the border) and **Border Modifier** (outer edge of the border) pushknobs toggle **Matrix Mix** (default), **Perspective**, and **Off**. **Matrix Mix** lets you modify a shape to include matrix attributes, as set in the Matrix submenu. Apply perspective to the inner border edge, outer border edge, or both with the **Perspectv Mag** and **Rot** pushknobs.

Shape Modifier Two

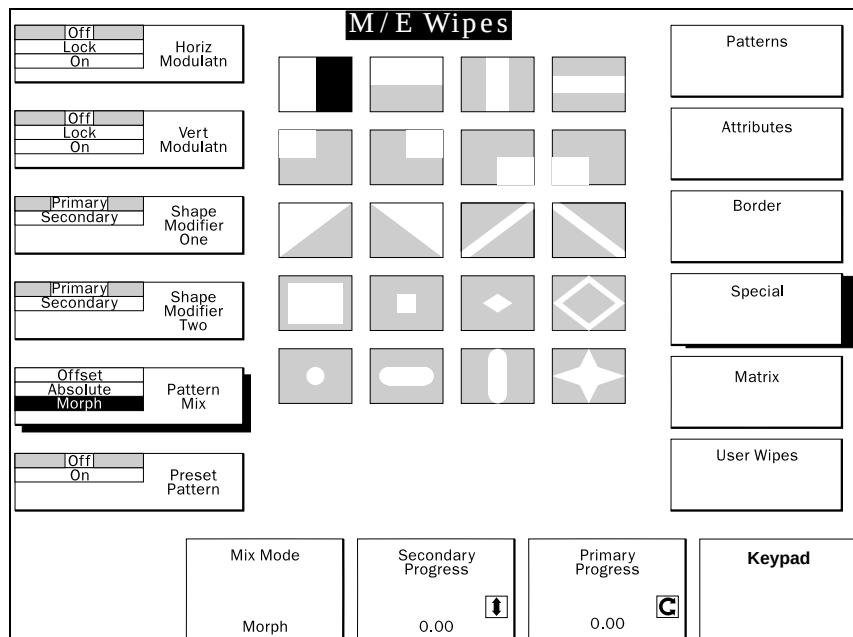
This softkey works with the *Shape Modifier One* softkey to combine modifications like perspective, modulation, and matrix. The best way to see this is to select a pattern, place a border around it, and apply some H or V modulation. Turn on **Matrix Mix** (see the Matrix submenu for details) and use the **Matrix Mix Level** pushknob to apply a value (0 - 100). The **Pattern Modifier** pushknob affects the inner edge of the border, and toggles **H+V Mod** (default), **H Mod**, **V Mod**, **Matrix Mix**, and **Off**. Toggle the **Pattern Invert** pushknob to invert the inner border edge modifications. The **Border Modifier** pushknob settings work like **Pattern Modifier** pushknob settings to modify the outer border edges; **Border Invert** and **Pattern Invert** both toggle on and off.

Pattern Mix

You can mix and morph primary and secondary wipe patterns with these controls. The *Pattern Mix* softkey has three settings that control how the fader bar or the **AUTO TRAN** button affect the transition.

NOTE: Pressing a transition select button other than **WIPE (MIX, EFFECT, or NAM)** defaults the *Pattern Mix* softkey to *Offset* and turns the **Preset Pattern** softkey off, although it retains the preset pattern value.

Offset lets you transition both patterns simultaneously with the fader bar or **AUTO TRAN**. Use the **Secondary Offset** pushknob to set the size of the secondary pattern in proportion to the primary pattern.



The Special Submenu

Absolute transitions only the primary pattern, leaving the secondary pattern at a set size. This is a handy way to place a wipe within another wipe. Use the **Secondary Progress** pushknob to manually change the size of the secondary pattern.

Morph enables the fader bar or **AUTO TRAN** only if the **Mix Mode** pushknob is set to **Morph**. The 8150 interpolates between the primary and secondary patterns when you make the transition, but leaves the pattern sizes as you set them. Use the **Primary Progress** and **Secondary Progress** pushknobs to change the pattern size.

You can combine the primary and secondary patterns several ways, as described below, with the **Mix Mode** pushknob.

- **Primary** – shows only the primary wipe pattern on screen.
- **Secondary** – shows only the secondary wipe pattern on screen.
- **Or** – shows both patterns on screen; the "to" source appears inside the borders where the patterns appear.
- **Xor** – (Exclusive Or) shows both patterns on screen; the "to" source appears where the patterns do not overlap, and the "from" source appears where the patterns (or borders) do overlap.
- **And** – shows the two patterns only where they overlap each other, with the "to" source inside the overlap.
- **Border** – shows both patterns filled with the selected border fill (even if the border size is 0.00), except where they overlap, where the "to" source appears.
- **Morph** – interpolates or "morphs" between the primary and secondary patterns during the transition.

The best way to see these settings is to select a primary and secondary pattern and move them to partially overlap. Toggle the **Mix Mode** pushknob and press **AUTO TRAN** or use the fader bar to see how each mode works.

Use the **Secondary Progress** and **Primary Progress** pushknobs to set the size for each pattern in morph mode. These are in the range ± 100 , in percentages. For example, select the square as the primary pattern, leave it centered on screen, and set the **Primary Progress** pushknob to 50. Select the circle as the secondary pattern, leave it centered, and set the **Secondary Progress** pushknob to 100. As you move the fader bar, the wipe begins with a half-size square, and finishes as a full-size circle. Set both progress settings to the same number to morph between the shapes without actually transitioning the video.

Preset Pattern

Toggle this softkey to enable a preset pattern size for the M/E wipe patterns only. When you move the fader bar, the wipe patterns complete only part of their normal travel. Use the **Size** pushknob to set the maximum size of the wipe pattern as a percentage of its full travel.

NOTE: Pressing a transition select button other than **WIPE (MIX, EFFECT, or NAM)** defaults the *Pattern Mix* softkey mode to *Offset* and turns the *Preset Pattern* softkey to *Off*, although it retains the preset pattern value.

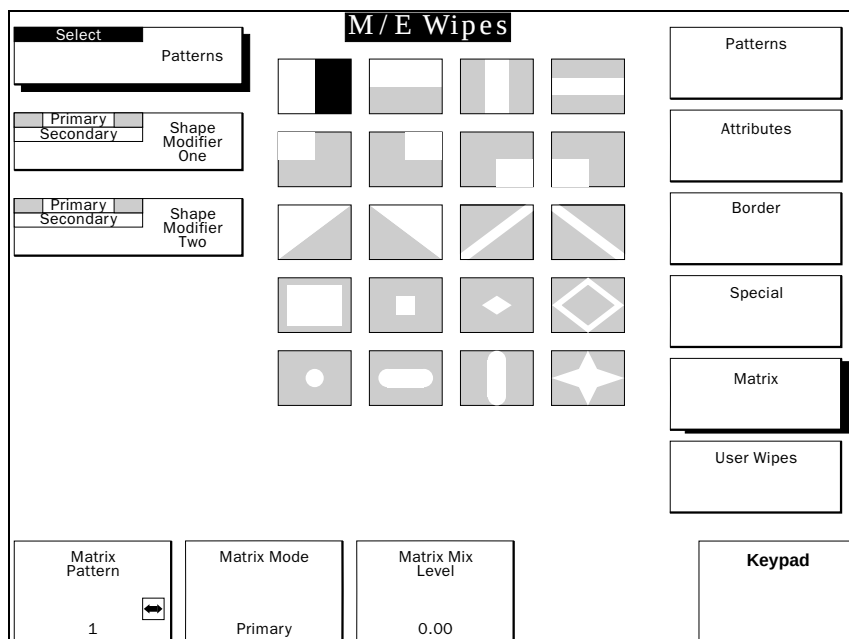
Matrix Submenu (Advanced Wipe Only)

Use this submenu to set up matrix wipes with any of 81 different matrix patterns. You can also apply matrix parameters to primary or secondary wipe pattern edges. Note that the *Shape Modifier One* and *Shape Modifier Two* softkeys (in the M/E Wipes menu only) are identical to the ones in the Special submenu.

The Matrix submenus vary slightly between the M/E and PGM/PST Wipe menus, as noted below.

Pattern

Select a matrix pattern, set the **Matrix Mode** pushknob to **Primary**, and press the **AUTO TRAN** button or move the fader bar to see the pattern. There are no menu graphics for these patterns.



The Matrix Submenu

The **Matrix Mode** pushknob selects **Off** or one of these settings:

- **Mix** – applies the selected matrix pattern to the edges of the wipe pattern. You can vary the amount of matrix from 0.00 percent to 100.00 percent with the **Matrix Mix Level** pushknob.
- **Primary** – changes the M/E primary pattern from its normal shape to the selected matrix pattern, leaving the secondary pattern unchanged (M/E Wipes menu only).
- **Secondary** – changes the M/E secondary pattern from its original shape to the selected matrix pattern, leaving the primary pattern unchanged (M/E Wipes menu only).
- **Both** – changes both the M/E primary and secondary patterns to the selected matrix pattern. The same matrix pattern applies to both patterns; you cannot select two different matrix patterns at once (M/E Wipes menu only).
- **On** – changes the PGM/PST wipe pattern from its normal shape to the selected matrix pattern (PGM/PST Wipe menu only).

In the PGM/PST Wipe menu only, there is a **Matrix Apply** pushknob. With **Matrix Mode** set to **Mix**, you can apply the matrix pattern to the inner edge of the wipe border (**Pattern**), the outer edge of the wipe border (**Border**), both edges (**Both**), or neither edge (**Off**).

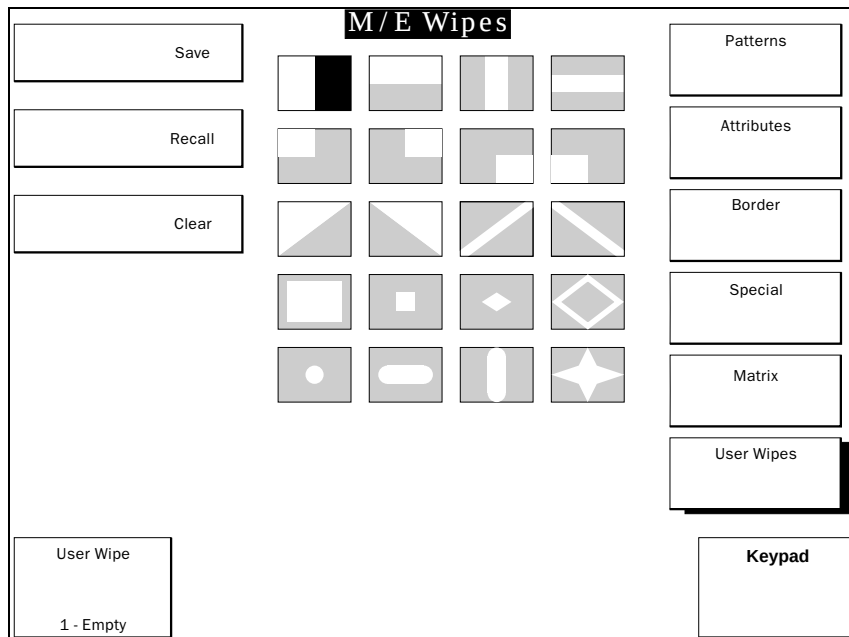
The identical function for the M/E wipes appears in the Special submenu *Shape Modifier One* and *Two* softkeys.

Shape Modifier One/Two (M/E Wipes Only)

These softkeys are the same as *Shape Modifier One* and *Shape Modifier Two* in the M/E Wipes Special submenu.

User Wipes Submenu

After you set up a wipe with the pattern, border, and other attributes, you can save the setup to a register for later recall. You can save a total of 20 setups for M/E and PGM/PST wipes. The **User Wipe** pushknob lets you select a register number, and indicates whether that register currently has a wipe saved to it or not (**Used** or **Empty**). The save, recall, and clear functions affect the register displayed in the **User Wipe** pushknob. You can also save these registers to floppy for off-line storage. See Section 11 – Disk Operations for more information.



The User Wipes Submenu

Save

Select an empty register and press the *Save* softkey to save the current wipe setup. If the register currently in the **User Wipe** pushknob is **Used**, you will overwrite the saved pattern with the new one.

Recall

Press *Recall* to recall the user wipe setup saved in the currently selected register.

Clear

Use *Clear* to erase the setup in the currently selected register.

The Wipe Menu

8150 Operations

Section 7

Miscellaneous Functions

Introduction

This section discusses Miscellaneous menu controls: the SuperMatte background generator, source assignments for the optional Aux bus outputs, preview monitor output control, and transition rate and transition trajectory curve settings for the **AUTO TRAN** and **FTB** functions.

The SuperMatte background generator lets you create a three-color wash or background using a dedicated wipe pattern generator to transition from one color to the next. The SuperMatte generator is available as a source just like an input. There are 20 user SuperMatte registers that you can use to store and recall SuperMatte setups to on-line memory and to disk.

The preview output has three modes. The default mode, *Auto*, gives a "look-ahead preview" output, which displays what the 8150 program output (or M/E output, depending on which is active) will be after completing the current transition. This is handy for previewing keys before they go "on air."

The second preview mode is *Select*, which lets you route any of the sources available in the 8150 (up to 16 external inputs plus the internal sources, including wipe generators, framestores, processed key signals, etc.) to the preview output for monitoring.

The third mode is *Program*, which lets you send the 8150 main program video to the preview output. This is also useful in editing

situations that use a single monitor for viewing all edit functions. With the preview output, you can monitor the 8150 program output, the record VTR output, and edit preview switching. You can also place the preview monitor overlays, including safe action, safe title, cursors, etc., over the program video in this mode.

The optional Aux(iliary) outputs (in combinations of two or four) let you send any 8150 source to another device for storage, display, or external processing. Typical external devices include DVEs (Digital Video Effects devices), VTRs (Video Tape Recorders), DDRs (Digital Disk Recorders), and picture monitors.

The Aux outputs are also used in Effects Loops, which let you send a processed fill and key signal from a keyer, before layering over a background, out of the 8150 to a DVE. The DVE manipulates the video, then sends it back to the 8150. The DVE feed re-enters the same keyer, at the same point from which it left, to be layered over the background.

The Aux outputs also support A/B, or front/back, switching. This feature uses a high/low tally signal from a DVE or other device to trigger an Aux output to switch from one preset source to another. This means that you need to use only two Aux output feeds for the DVE instead of the usual four.

You can set the transition durations for the M/E and PGM/PST **AUTO TRAN** and **FTB** buttons in the Miscellaneous menu. There are also controls for acceleration/deceleration curves for **AUTO TRAN** and fader bar transitions.

Creating a SuperMatte Background

Create a SuperMatte background pattern and color as follows:

- STEP 1:** Press the crosspoint button for the SuperMatte (it defaults to **SHIFT + BLACK**, crosspoint 10) on the Background A bus of the M/E, or on the Program bus of the PGM/PST. A three color wash appears.
- STEP 2:** Press the **MISC** menu button to bring up the main Miscellaneous menu.
- STEP 3:** Press the *SuperMatte Patterns* submenu softkey to bring up the submenu.
- STEP 4:** Press the *Pattern* softkey and use the **Pattern** pushknob to select a pattern. There are 28 available patterns (93 patterns with the Advanced Wipe option installed).
- STEP 5:** Press the *SuperMatte Attributes* submenu softkey, and select *SuperMatte Adjust* to set the *Start*, *Middle*, and *End* colors. Here is an example setting:

	Luma	Sat	Hue	Middle Pos
Start	50	50	310	
Middle	50	50	150	50
End	50	50	20	

- STEP 6:** Press the *Transition* submenu softkey and set the **Softness** pushknob to 10.

Depending on the pattern, you should see all three colors on screen. Setting **Middle Pos** to 0 removes the start color, and setting it to 100 removes the end color: the result is a two color wash. You can toggle the *Super Matte Adjust* softkey to highlight and adjust all three colors at once. Use the numeric keypad to enter the same values for the **Luma**, **Sat** and **Hue** pushknob settings for all three colors. This is a quick and easy way to create a flat color field.

The Miscellaneous Menu

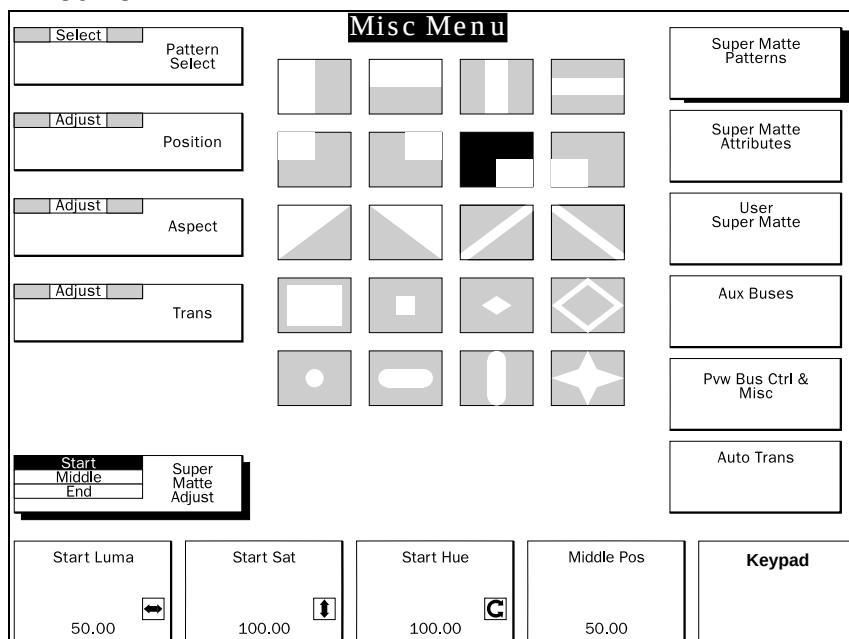
Press the **MISC** menu button to bring up the Miscellaneous menu.

SuperMatte Patterns Submenu

Pattern Select

Press this softkey to select one of the 28 patterns (93 patterns with the Advanced Wipe option) for the SuperMatte generator. Use the **Pattern** pushknob to select a pattern. The current pattern number appears in the pushknob label. You can also enter a pattern number in the numeric keypad and press the pushknob. See the end of Section 6 – Wipes for a laminated sheet that lists the pattern numbers; they are identical to the M/E and PGM/PST wipe generator patterns.

Position



The SuperMatte Patterns Submenu

Press the **Position** softkey to move the SuperMatte pattern. Move the joystick left and right to move the pattern horizontally, or use the **HPOS** pushknob. The range of horizontal movement is ± 8.00 . Move the joystick up and down to move the selected pattern vertically, or use the **VPOS** pushknob. The range of vertical movement is ± 6.00 .

The **Rotation Mode** pushknob toggles two rotation types and controls for the SuperMatte patterns. The **Angle** setting (default) lets you give the pattern a fixed angle of rotation with the **Rotation** pushknob or the joystick. The **Cycle** setting lets you give the pattern a continuous rotation. Set the speed and direction with the **Spin** pushknob or the joystick. The **Spin** value is the number of degrees that the pattern turns per field. For example, a **Spin** setting of 1.00 rotates the pattern 1 degree per field, requiring 360 fields ($360/60 = 6$ seconds in 525, $360/50 = 7.2$ seconds in 625) to make one full rotation. In most situations you can use these two rules of thumb:

- For a certain number of rotations per second:
 - 525: Multiply 6 by the number of rotations you want.
 - 625: Multiply 7.2 by the number of rotations you want.
 - The result is the needed **Spin** value.
- For a certain number of seconds per rotation:
 - 525: Divide 6 by the number of seconds you want.
 - 625: Divide 7.2 by the number of seconds you want.
 - The result is the needed **Spin** value.

Aspect

Highlight this softkey to change the SuperMatte pattern aspect ratio. Turn the **Aspect** pushknob (or move the joystick left and right) to change the SuperMatte pattern aspect ratio. Positive numbers change the horizontal aspect ratio, negative numbers change the vertical aspect ratio.

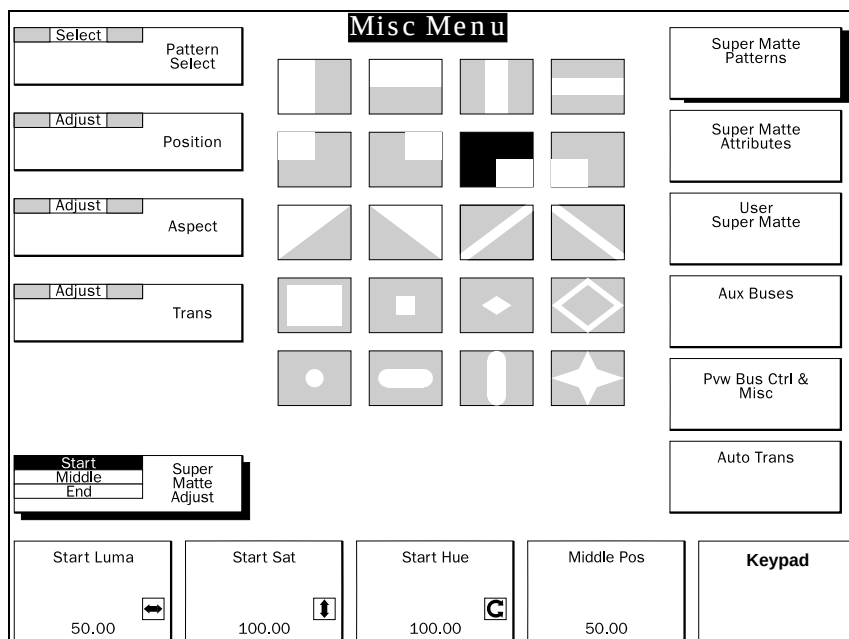
With the Advanced Wipe option installed, you can use the **Perspectv Mag** pushknob to add perspective to the pattern. The

range is ± 45 ; larger numbers increase the acuteness of the perspective angle. You can set the "vanishing point" for the perspective with the **Perspctv Rot** pushknob. The range is ± 360 . A value of 0 sets the vanishing point on the left side of the pattern, 90 sets it at the top, 180 sets it to the right.

Trans

Press the **Trans** softkey to enable these settings:

- **Progress** – sets the pattern's size in the same way as the fader bar sets the wipe pattern size, except that you can use the joystick or the pushknob to set it.
- **Softness** – adjusts the softness of the edge of the middle color, similar to wipe border softness. The range is 0 (hard edge) to 200 (edge softened to twice the width of the screen).
- **Split Enable** – splits the SuperMatte pattern in the same way you can split a wipe pattern (see Section 6 – Wipes). With **Split**



The SuperMatte Patterns Submenu

Enable off, adjusting the SuperMatte **Progress** pushknob changes the pattern size from the center or one edge of the screen, depending on the pattern. Turning **Split Enable** on lets you change the pattern size from the point where the pattern edge normally is with **Split Enable** turned off.

- **Split Level** – this value determines the point around which the pattern changes size.

SuperMatte Adjust

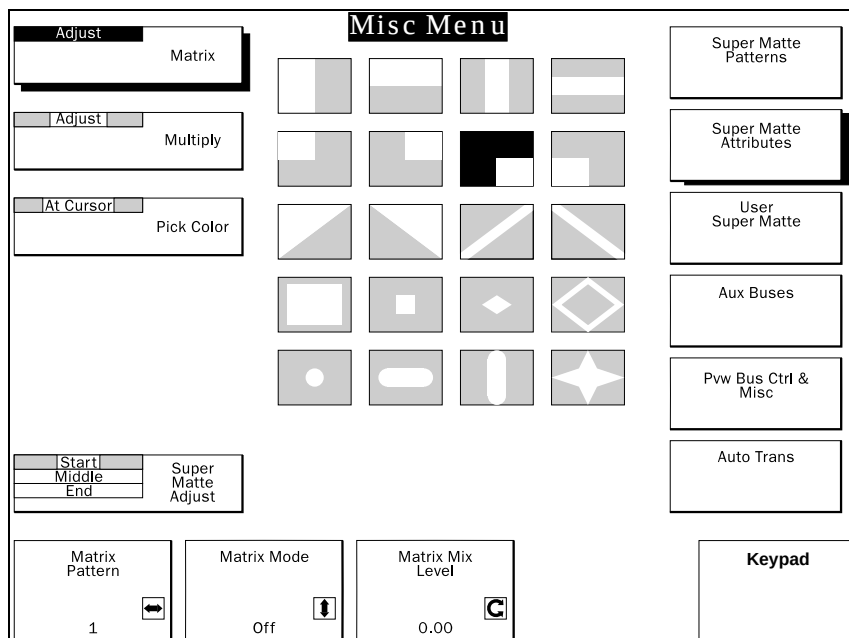
Press this softkey to set the colors for the SuperMatte generator. Toggle the softkey to select *Start*, *Middle*, *End*, or all three colors. With an "open" SuperMatte pattern, the start color appears on the right or bottom of the screen, the end color on the left or top. With a "closed" pattern, the start color appears at the edges of the screen, the end color in the center. Use the **Luma**, **Saturation**, and **Hue** pushknobs or the joystick to set the colors. The **Middle Pos** pushknob sets the middle color's position. Note that setting **Middle Pos** to 0 removes the start color, and setting it to 100 removes the end color; either creates a two color wash.

For a "super black" level (luminance below 0 percent), enter a negative number in the keypad (range -1 to -7) and press the **Luma** pushknob. To avoid accidentally setting an "illegal" value, you cannot select a negative number with the pushknob. Also note that negative values below -7 "overflow" to maximum white.

SuperMatte Attributes Submenu

Matrix (Advanced Wipe Only)

Press the *Matrix* softkey to access the matrix pattern features. The **Matrix Mode** pushknob toggles **Off**, **Mix**, and **On**. Use **Mix** to add the selected matrix pattern to the edge of the SuperMatte pattern. The **Matrix Mix Level** pushknob sets the amount of mix in the range of 0.00 to 100.0 percent. Use **On** to replace the SuperMatte pattern with the matrix pattern selected with the **Matrix Pattern** pushknob.



The SuperMatte Attributes Submenu

Multiply (Advanced Wipe Only)

Use this softkey to copy the SuperMatte pattern across the screen. Use the **H Multiply** pushknob to set the number of patterns horizontally, **V Multiply** to set the number of patterns vertically. You can create up to 20 multiples in each direction.

The **Reflection** pushknob toggles **Off**, **Horiz**, **Vert**, or **Both**. **Horiz** causes horizontal pairs of patterns to mirror each other in both shape and rotation direction. **Vert** causes vertical pairs to reflect each other in both shape and rotation direction. Use **Both** to reflect the patterns both horizontally and vertically.

Pick Color

Press this softkey to access controls for positioning the Color Pick cursor in the preview output and selecting a color to load into the SuperMatte generator. The **H Pos** and **V Pos** pushknobs move the cursor, or you can use the joystick. Use **Cursor On/Off** to turn the cursor on and off in the preview output.

After positioning the cursor on a color you want to pick, press **Pick Color** again. The highlighted SuperMatte color (*Start*, *Middle*, *End*, or all three) changes to the color that you pick.

NOTE: The Color Pick function works in all 8150s that have the Enhanced (Frame Delay) Output module installed. If this module is not present, the Dual Framestore option must be installed in order for Color Pick to function.

SuperMatte Adjust

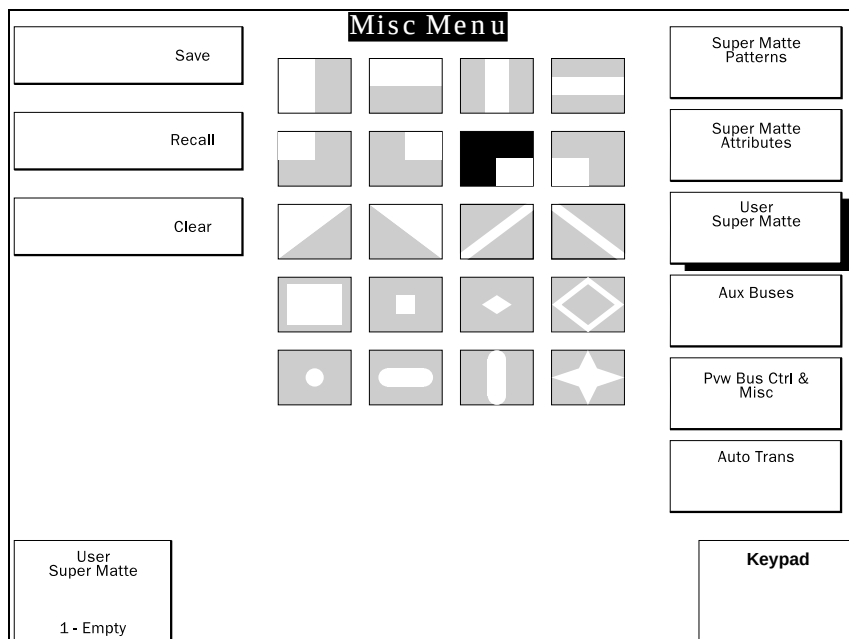
This softkey has the same function as the *SuperMatte Adjust* softkey in the SuperMatte Patterns submenu (see page 7-7).

User SuperMatte Submenu

You can save up to 20 different SuperMatte setups in the user SuperMatte registers, which are stored on-line in battery backed RAM. You can also save these setups to disk as .MAT files for archiving or for use with other 8150s. See Section 11 – Disk Operations for details on saving and recalling disk files.

When you press the *User SuperMatte* softkey, the *Save*, *Recall*, and *Clear* softkeys appear, and the **User SuperMatte** pushknob.

To save a SuperMatte setup, select one of the 20 user SuperMatte registers with the **User SuperMatte** pushknob. The label shows the selected register number. **Empty** appears if the register does not have a setup stored. **Used** appears if the register has a setup stored in it. Press *Save* to store all the current SuperMatte settings



The User SuperMatte Submenu

in the selected register. If the register is **Used**, this overwrites the existing setup without a warning prompt.

To recall a register, select the register with the **User SuperMatte** pushknob and press **Recall**. This loads the register setup into the current SuperMatte settings.

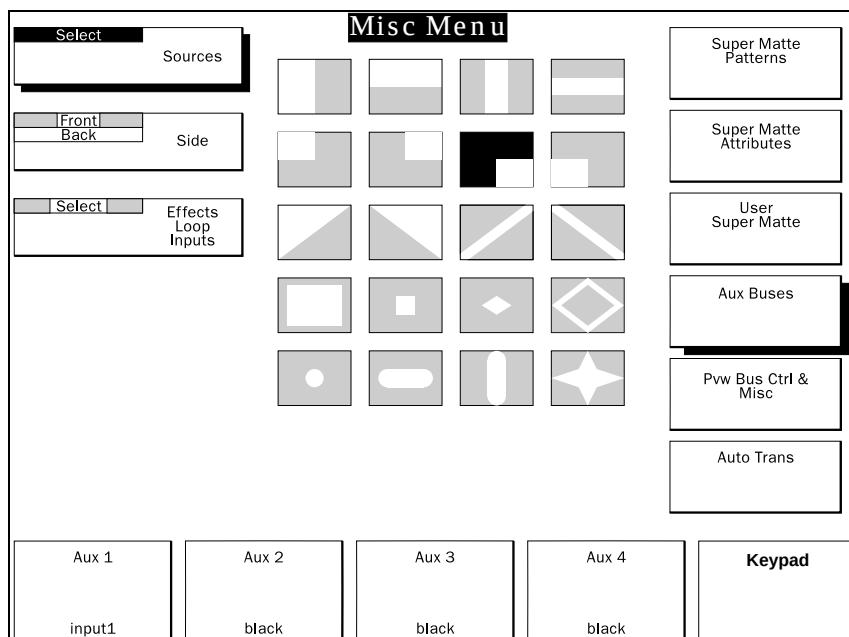
Press **Clear** to erase the selected register.

Aux Buses Submenu

The 8150 can have up to four optional Aux bus outputs that you can use to route video to other devices. The most common Aux output destination is a DVE, although you can connect an Aux output to any device that accepts serial component digital video.

Check how many Aux outputs are installed in your 8150. All units have Aux 1 and Aux 2 connectors, but they are not active if the Aux 1 and 2 option is not installed. Aux 3 and 4 are labeled as such, and, if installed, replace inputs 15 and 16.

Press the *Aux Buses* submenu softkey to access the controls for the Aux outputs. The pushknobs select a source to route out that Aux output. All external and most internal sources are available for Aux bus routing. A display in the center of the Aux Buses submenu shows the source currently selected for each Aux



The Aux Buses Submenu

output, and whether a front/back switch GPI has requested the front source or the back source.

See page 7-22 for a list of the sources available to the Aux outputs. Note that some sources do not appear when you rotate the pushknobs. For example, Wipe Pattern and Key Monitor appear for Aux 2 and 4, but not for Aux 1 and 3; this is because these two sources are key signals, and only Aux 2 and 4 are intended as key outputs. However, you can still access those sources by typing the source number (from the list) and pressing the pushknob for the appropriate Aux output.

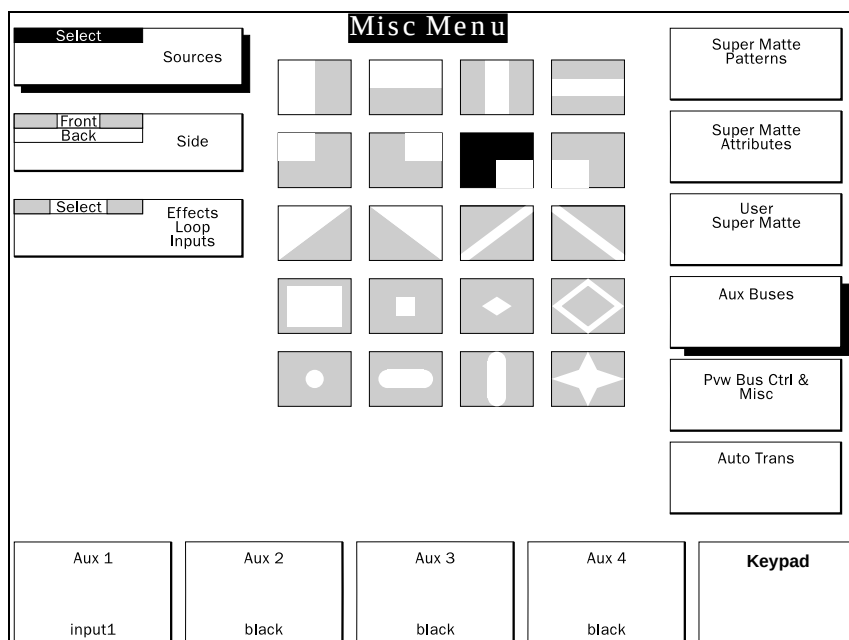
The *Aux Bus* and *Side* softkeys work with the "A/B side switch" GPI input settings. This lets you preset two different sources for an Aux output and switch them with a GPI output or tally signal from a DVE or other device. This is useful for feeding an external DVE that has A and B (front and back) video and key inputs, since the 8150 can do the switching instead of the DVE. This means you need use only two 8150 Aux outputs (one for video, one for key) to feed the DVE, instead of the usual four.

Set up A/B, or front/back, switching on an Aux output as follows:

NOTE: This procedure assumes that the 8150 and the external device have been properly configured and connected, including the A/B, or front/back, switch signal and the 8150 GPI inputs. For more information, see Section 12 – Personality, and the 8150 Technical Guide.

STEP 1: Press the **PERSONALITY** button, then the *Remote Port Enables* softkey.

- STEP 2:** Toggle the left *GPIs* softkey to *On* to activate the GPI inputs. The GPI inputs will not function if it is set to *Off* (the default).
- STEP 3:** Press the right *GPIs* softkey to bring up the GPIs submenu.
- STEP 4:** Use the **GPI List** pushknob to scroll through the list and select the GPI input (1 through 8) to which you want to assign the A/B (front/back) side switch for the Aux 1 output.
- STEP 5:** Use the **Selection List** pushknob to scroll the list and highlight "Aux 1 A/B Side Switch."
- STEP 6:** Press the *Assign* softkey to assign that function to the selected GPI input.



The Aux Buses Submenu

- STEP 7:** Repeat the above steps for any other Aux outputs to which you want to assign A/B side switching.
- STEP 8:** Press the **MISC** button, then the *Aux Buses* softkey, to bring up the Aux Buses submenu.
- STEP 9:** Press the *Sources* softkey and toggle the *Side* softkey to *Front*.

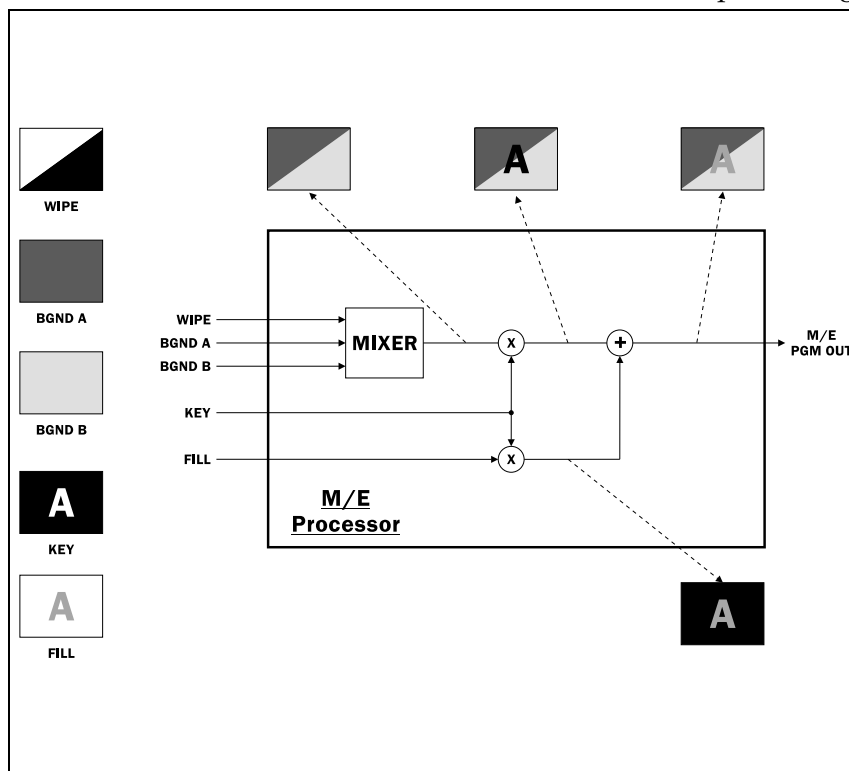
NOTE: The Aux outputs are zero-timed together in pairs. Aux outputs 1 and 2 share the same timing, and Aux outputs 3 and 4 (if installed) share their own independent timing. If you route two Aux outputs to a single device, use both outputs from the same pair to maintain proper signal timing. Select "Combiner on" in the Engineering menu to set all four outputs to share the same timing. See the 8150 Technical Guide for more information on Aux bus output timing considerations.

- STEP 10:** Use the pushknob for the Aux output(s) to choose the source(s) that you want to send when the DVE shows front side video. If the source is assigned to a crosspoint button, you can press and hold that button on the Background B or Preset bus row and press the pushknob to directly set the source.
- STEP 11:** Toggle the *Side* softkey to *Back*.
- STEP 12:** Use the pushknob for the same Aux output(s) to choose the source(s) that you want to send when the DVE shows back side video.
- STEP 13:** You can verify that the front/back switch is working by monitoring the DVE output and rotating the image either horizontally or vertically to check both the front and back sides of the image. The source(s) that you set

with *Front* highlighted should appear as the DVE front side image; the source(s) you set with *Back* highlighted should appear as the DVE back side image. Note also that the center of the menu displays "Front" or "Back" for the appropriate Aux outputs to indicate which side the DVE requested via the GPI(s).

Effects Loop Inputs

The Effects Loop feature lets you "break out" video and key signals from the processing paths and send them to the optional internal DVE, or out of the 8150 to an external DVE for processing.



Effects Looping Off (Normal Key)

The loop returns the processed video and key to the same keyer, at the same point from which they left, for final compositing. Press the *Effects Loop Inputs* softkey to access the **DVE Select**, **Loop Select**, and **Press to Assign** pushknobs, which let you set up and turn on the loop.

NOTE: Effects looping to an external DVE does not work unless the 8150 inputs that are connected to the DVE outputs are selected as such in the Engineering Input submenu. See Section 13 – Engineering and the 8150 Technical Guide for details on this.

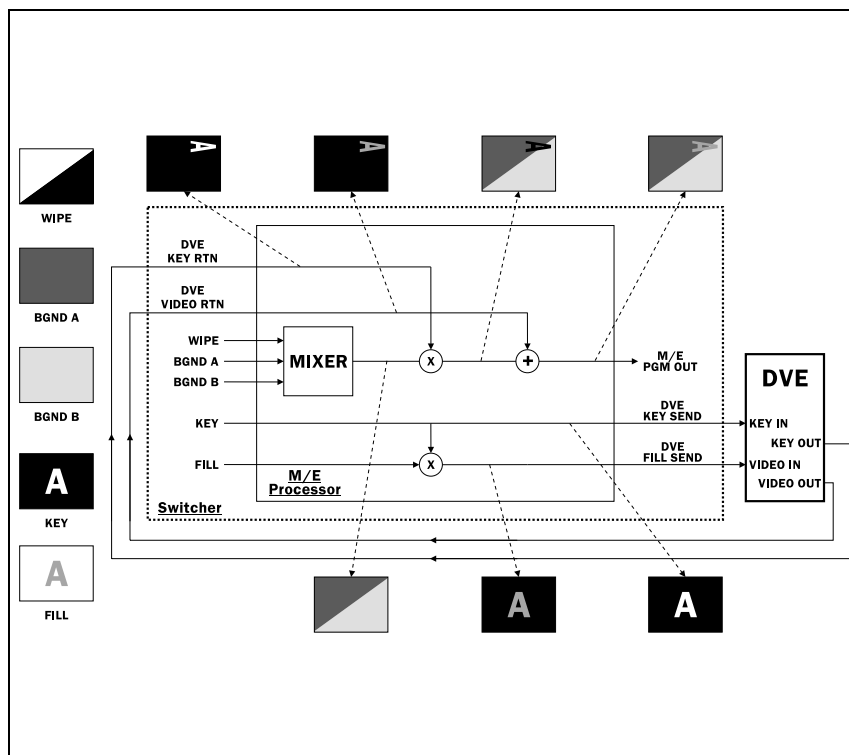
Use the **DVE Select** control to toggle **Int**, **Ext 1**, or **Ext 2**. The **Int** setting is used with the optional internal DVE, which requires no external connections or settings in the Engineering menu.

For effects looping to work correctly with an external DVE, you must connect Aux 1 to the DVE video input and Aux 2 to the DVE key input. This DVE is **Ext 1**. Similarly, for effects looping to work correctly with a second DVE, you must connect Aux 3 to the DVE video input, and Aux 4 to the DVE key input. This DVE is **Ext 2**. You can connect two DVEs simultaneously using all four Aux outputs, but you can only activate one effects loop at a time. When activating an effects loop, use **DVE Select** to select the DVE you want to use for the loop. Since there is one set of signal paths for the Effects Loop feature (one for video and one for key), you can activate only one effects loop at a time.

Connections that do not conform to this configuration will not work correctly. For more information on effects loop connections, see the 8150 Technical Guide.

If you are using two external DVEs that feed a combiner, you must enable this feature in the Engineering Inputs submenu to avoid inter-channel timing problems. See Section 13 – Engineering and the 8150 Technical Guide for more information.

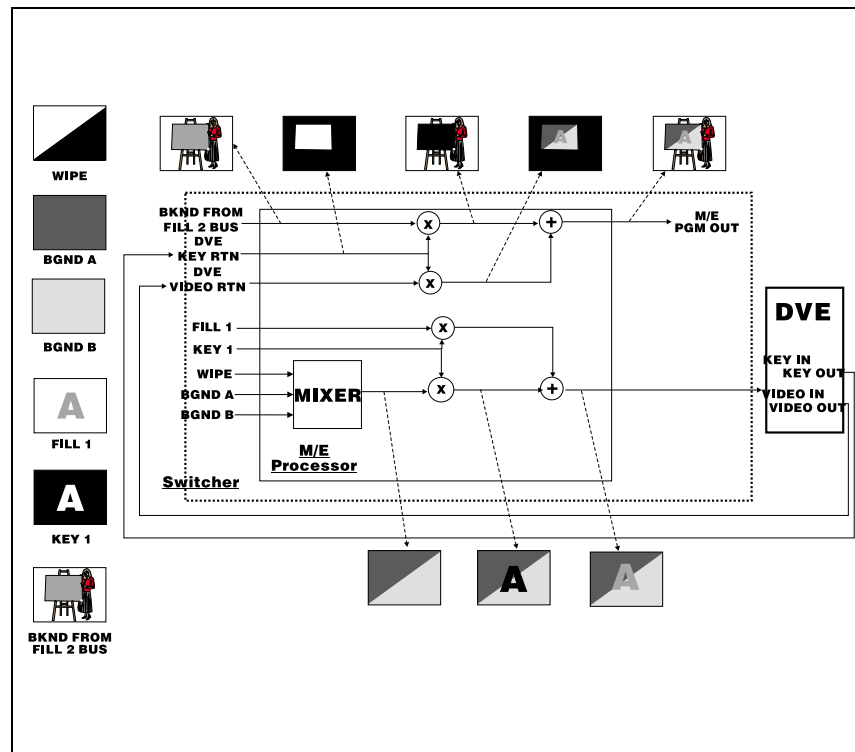
Use **Loop Select** to select the keyer to be inserted in the loop. **M/E Key1** sends the processed fill and key signals from Keyer 1 to the selected DVE (either internal or external). After the DVE manipulates the signals, they re-enter the same keyer, so you need to use only one keyer for the entire process. **M/E Key2** sends the processed fill and key from Keyer 2 to the selected DVE and returns them to the same place in Keyer 2. **DSK** works exactly the same as the M/E keyers, except that it routes processed fill and key from the DSK to the DVE and returns them to the same place in the DSK.



Effects Looping in Key Mode

After selecting a loop type, press the **Press to Assign** pushknob to activate the loop. To turn the loop off, select **Off** with the **Loop Select** pushknob and press **Press to Assign** again.

NOTE: In any configuration, the DVE must have a key channel to manipulate the key signal. Otherwise, the Effects Loop does not function correctly. If you are using the optional internal DVE, it is automatically set to V+K mode during a key loop. See the 8150 Operations manual for more information on DVE channel modes.



Effects Looping in M/E Background Mode

The **M/E Bgnd** mode takes the output of the M/E background mixer (which is the transition, if any, between the Background A and Background B buses before any keys are added), places Keyer 1 over it, and sends the entire composite to the selected DVE. The DVE output re-enters on Keyer 2, which is forced on as a linear luminance key and cannot be turned off. Also, since the Key 2 Fill bus row is not needed to select the fill for Keyer 2, it selects the background video over which the re-entered DVE is keyed.

NOTE: Since only video is sent to the DVE with M/E Bgnd selected as the loop, you must turn off the DVE key channel for this type of loop to function correctly. If you are using the optional internal DVE, it is automatically set to V+V mode for a background loop. See the 8150 DVE Operations manual for more information on DVE channel modes.

This loop mode lets you perform M/E background and Key 1 transitions "inside" the DVE without having to feed the entire M/E output to it. Also, the DSK is still available to place another key over this composite. However, since the Background A/B transition is already being sent to the DVE, remember that you can only change the video underneath the DVE as a cut on the Keyer 2 Fill bus.

Press the **Press to Assign** pushknob to activate the selected loop type.

In all menus, a message that indicates the Effects Loop's status appears in the lower right corner of the display, above the Keypad Buffer. Normally, the message is "DVE Loop Off." With an Effects Loop turned on, the message indicates which device (DVE I [Internal], DVE 1 or 2) is being used in the loop, and which mode (M/E Key1, M/E Key 2, M/E Bgnd, or DSK) is active. This is to alert you that the DVE has been inserted in the normal key or background path.

Preview Bus Control & Misc Submenu

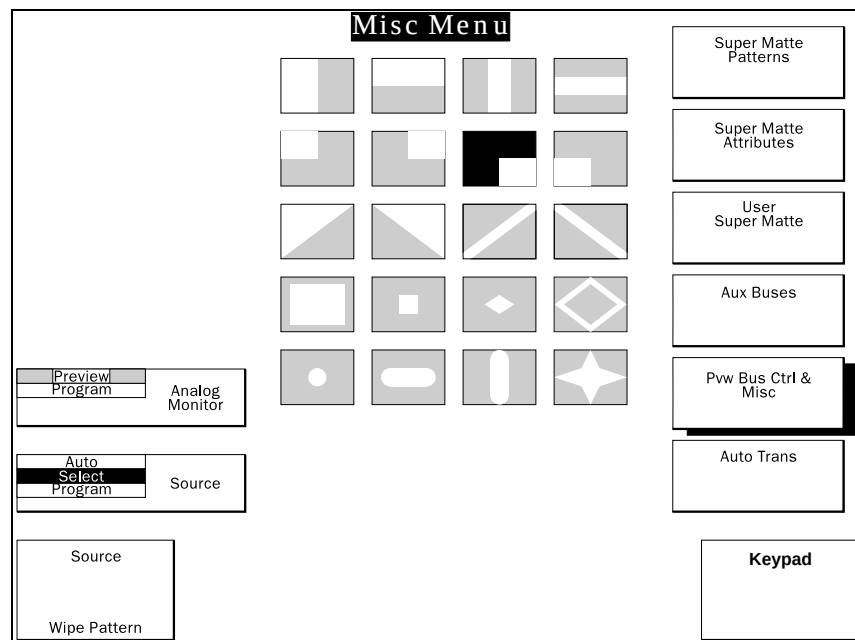
Analog Monitor

Toggle the *Analog Monitor* softkey to send the main *Preview* signal or one of the Program signals (*Program 1* or *Program 2*) to the analog monitor output.

NOTE: The analog monitor output is intended for monitoring purposes only.

Source

This softkey toggles *Auto*, *Select*, and *Program*. In *Auto* (the *default mode*) the *preview output* is a true "look-ahead" preview. It displays what the 8150 program output (or M/E output, depending on which buses are selected) will be after completing the current transition. The output changes depending on the



The Preview Bus Control & Misc Submenu

current transition type (background, key, priority, or any combination).

Select enables the **Source** pushknob, which lets you send any 8150 source to the preview output. There are three ways to select a source:

- If the source is assigned to a crosspoint button, press and hold that crosspoint button on the Background B or Preset bus row and press the **Source** pushknob.
- Enter the source number in the numeric keypad, as listed below, then press the **Source** pushknob.
- Turn the **Source** pushknob to select the source name.

NOTE: Some of these sources may not be available to all menu source selections.

<u>Src No.</u>	<u>Src Name</u>	<u>Src No.</u>	<u>Src Name</u>
1	black	17	input 16
2	input 1	18	SuperMatte
3	input 2	19	Framestore 1
4	input 3	20	Framestore 2
5	input 4	21	DVE Video
6	input 5	22	DVE Key
7	input 6	23	M/E Key Send
8	input 7	24	DSK Preview
9	input 8	25	DSK Vid Send
10	input 9	26	DSK Key Send
11	input 10	27	Key Monitor
12	input 11	28	Wipe Pattern
13	input 12	29	M/E Vid Send
14	input 13	30	M/E Program
15	input 14	31	M/E Preview
16	input 15		

It is handy to use the *Select* mode to view the internal Key Monitor source. This is the processed key signal from the keyer currently active in the Keyer menu. Viewing this can be helpful when adjusting chroma keys and complex masked keys.

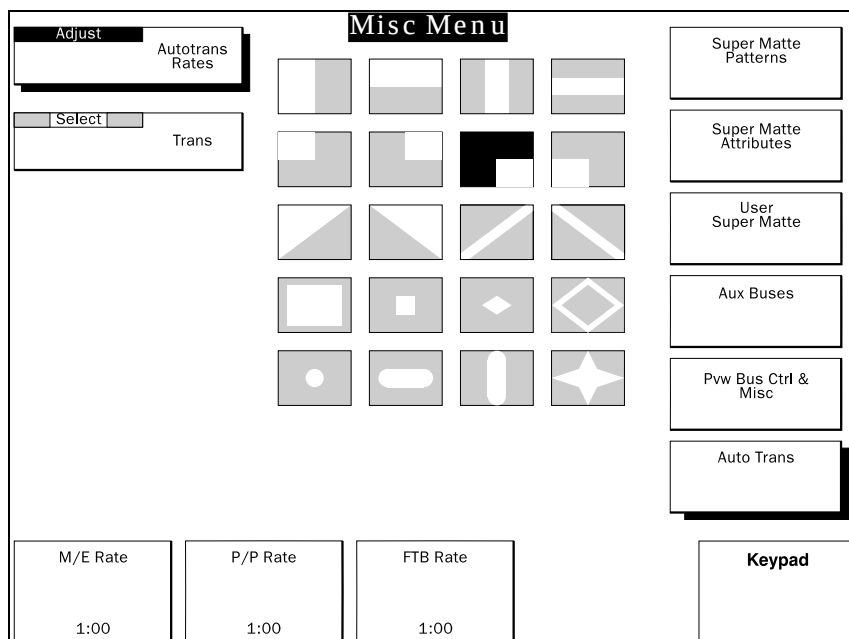
Program lets you route the 8150 main program output to the preview output. This is useful for performing edit previews when the 8150 is under external editor control. You can also use this selection to view the preview monitor overlays (safe action, safe title, color pick cursor, etc.) over the main program video.

Auto Trans Submenu

The Auto Trans submenu lets you set the transition durations for the M/E and PGM/PST **AUTO TRAN** and **FTB** buttons. There are also acceleration/deceleration curve controls for **AUTO TRAN** and fader bar transitions.

Autotrans Rates

The 8150 uses the transition rates shown here as the transition duration when you press the **AUTO TRAN** button. Press the softkey to bring up the **M/E Rate**, **P/P Rate**, and **FTB Rate** pushknobs. The default transition duration for each is one second. The 8150 reads an entry without a decimal point as frames and converts to seconds and frames automatically. It reads a number with one decimal point as seconds and frames, and a second decimal at the end of the entry as one extra field.



The Auto Trans Submenu

For example:

<u>Entry</u>	<u>Result</u>
200	200 frames
2.00	2 seconds, 00 frames
2.00.	2 seconds, 00 frames, 1 field

The maximum transition duration is 5000 frames, which is 2:46:20 in 525, and 3:20:00 in 625. The 8150 does not accept an entry in minutes, so you must enter durations of one minute (1:00:00) or longer as seconds and frames.

You can also enter transition durations from any menu by entering the duration value in the numeric keypad, then pressing the **AUTO TRAN** or **FTB** button. This loads the value, but does not perform the transition. Press the button again to perform the transition with the new duration.

Trans

This softkey selects the transition trajectory curves for both **AUTO TRAN** and manual fader bar movement. The **M/E Trans**, **P/P Trans**, and **FTB Trans** pushknobs toggle **Linear**, **Log**, **Antilog**, **Exponential**, and **S_Curve**. A **Linear** trajectory causes the transition to occur smoothly at one speed. A **Log** trajectory transition starts quickly and slows at the end, approximating a logarithmic curve. The **Antilog** trajectory is the opposite of **Log**. The **Exponential** trajectory is an exaggerated version of **Antilog**: it starts very slowly, and accelerates quickly at the end, approximating an exponential curve. The **S_Curve** trajectory accelerates at the start and symmetrically decelerates at the end.

These acceleration curves apply to the transition whether you use an auto transition or the fader bar. In a nonlinear (Log, Antilog, Exponential, or S_Curve) manual transition, the percent completion of the transition is not directly proportional to the percentage of fader bar movement.

The Miscellaneous Menu

8150 Operations

Section 8

Color Correction

Introduction

The 8150 reTouch™ Color Corrector option provides independent color correction for each bus row (Key 1 Fill, Key 2 Fill, DSK Fill, Background A, Background B, Program, and Preset). Color correction controls include Gain, Offset, Saturation, Knee, Luminance and Chrominance Invert, Luminance Tinting, False Coloring, and Solarizing.

Video in its simplest and purest form has three primary color components (red, green, and blue) that combine to create a color image. Individual red, green, and blue adjustments are often found in video cameras, graphics and paint devices, and traditional analog color correctors. These controls are the most intuitive and easiest to understand.

For reasons that are beyond the scope of this manual, component digital video does not use red, green, and blue components directly. Instead, it has three different components: a luminance component called Y, which carries all the brightness information in the video signal, and two color difference components, variously known as U and V, B-Y and R-Y, Pb and Pr, or Cb and Cr. Technically, some of these terms are more accurate than others, but whatever the designation, the two color difference components, when combined, contain all the color (chrominance) information in the video signal. This format appears as both YUV and Y/B-Y/R-Y in the 8150 reTouch™ Color Corrector menus.

The Color Corrector option lets you apply color correction to any source in the 8150, with either RGB or YUV controls. You will

probably find that RGB mode is more intuitive and easier to predict than YUV mode. However, since RGB "color space" is more restricted than YUV "color space," there may be times when you need to use YUV mode.

The 8150 reTouch™ Color Correctors work in two stages. In the YUV mode, the first stage processes the video in this format without transcoding. In the RGB or RGB 444 modes, the first stage upsamples normal 4:2:2 YUV to 4:4:4 YUV, or brings in 4:4:4 YUV directly (with the 4:4:4 Chroma Key option installed). This signal is then digitally transcoded to 4:4:4 RGB, which is the format for all processing in this stage. The first stage includes the Gain/Offset/Gamma/Knee, Black Clip/White Clip, Solarize, and Invert Gain controls.

The second color corrector stage transcodes the modified 4:4:4 RGB signal back to 4:4:4 YUV. It is downsampled to 4:2:2 YUV, then the False Coloring, Luma Tinting, and Proc Amp controls are processed. There are two options for downsampling from 4:4:4 to 4:2:2: **Down Smpl** or **Filter**, discussed later.

With the 4:4:4 Chroma Key option, you can feed a high resolution digital 4:4:4 (Y:U:V) or 4:4:4:4 (Y:U:V:K) signal to the 8150. This uses two standard 4:2:2 inputs, which the 8150 combines internally to reconstruct 4:4:4 video. The 8150 does not process an external key signal if it is present. Since these inputs are intended as chroma key fill signals, only the three key bus color correctors (Keyer 1, Keyer 2, and DSK) support 4:4:4 video. The processed fill signal is always downsampled to 4:2:2 after color correction.

You can store all color corrector setups in memory, and you can apply these memories to sources or buses three different ways. The **Source Memory** softkey in the Main and Effects submenus toggles the following:

- **Src Based** – uses a different setup memory for each source selected, no matter which bus it is selected on, as if the source had its own dedicated color corrector. This is the default mode.

- **Bus Based** – uses a different setup memory for each bus, no matter which source is selected. The memories "flip-flop" with the buses as you make a transition, so you can mix or wipe between a source that has been color corrected and the same source without color correction or with different color correction.
- **Src By Bus** – combines the other two modes to give a different memory setup for each combination of source and bus.

When you recall a Snapshot or Timeline effect, it updates only the current color corrector settings; it does not change the current source memory. Recalling an effect that has a different color corrector setup than the current source memory, then pressing the same fill source crosspoint, recalls the current source memory. This clears the color corrector settings from the effect and replaces them with the settings from the current color corrector source memory. Recalling the effect again reloads the settings from the effect.

Conversely, recalling a user color corrector register does update the source memory, and overwrites the current memory for that source or bus (depending on the memory mode selected). There are two ways to recall Snapshot or Timeline effects and save those settings to the current source memory:

Resave as a User Color Corrector Register

This method temporarily stores the color corrector settings to a user register after recalling a keyframe or effect, then recalls the user register to update the source memory.

- STEP 1:** Recall the Snapshot or Timeline effect register with the color corrector setup.
- STEP 2:** Save the current setup in a user color corrector register.
- STEP 3:** Toggle the *Source Memory* softkey to **Src Based**. Recall the user register that you just saved. The source

memory now has the color corrector settings from the original Snapshot or Timeline effect.

Change Color Corrector Parameter

In this method, you change a color corrector setting after recalling a keyframe or effect to directly update the source memory.

STEP 1: Recall the Snapshot effect or Timeline effect register with the color corrector setup.

STEP 2: Toggle the *Source Memory* softkey to *Src Based*. Adjust any setting in the current color corrector setup by one step, then back to where it was. This saves all current settings to the source memory.

When you apply color correction to a source or bus row, the menu display "Current CCR:" changes from "Unity" to "Modified," and a red "COLOR CRCTR" display lights next to the **SHIFT** button(s). With the *Source Memory* softkey toggled to *Src Based* or *Src By Bus*, the display for a bus lights only when you select a color corrected source on that bus. However, with the *Source Memory* softkey toggled to *Bus Based*, the display lights only for that bus when its color corrector is modified.

A display in the upper middle part of the menu shows the status of all seven color correctors. The highlighted bus name indicates that it is the color corrector currently shown in the menu display. The source that is being modified appears directly below next to the "Source:" read-out. Each bus shows "Unity" if it is unmodified, "YUV" if it is modified in YUV mode, or "RGB" if it is modified in RGB mode. (The status of all seven color correctors also appears in the Show Status menu Color Correctors status box. Press the **SHOW STATUS** button to access this menu.)

Note that with the *Source Memory* softkey toggled to *Src Based*, more than one color corrector may be highlighted if that source is selected on more than one bus row. If the *Source Memory* softkey is set to *Bus Based* or *Src by Bus*, only one bus name is highlighted.

The Color Corrector Menu

Color Corrector		Current CCR: Key 1 Fill, Unity		Main	
YUV	Color Corrector mode				
RGB					
RGB 444					
Gain	Adjust	Bgd A:	Unity		
Offset		Bgd B:	Unity		
Gamma		Program:	Unity		
Knee		Preset:	Unity		
		Key 1:	Unity		
		Key2:	Unity		
		DSK:	Unity		
Blk Clip	Adjust				
Wht Clip					
Adjust	Proc Amp Controls				
Down Smpl	RGB-YUV Convert				
Filter					
Src Based	Source Memory				
Src By Bus					
Bus Based					
Luma Gain	B-Y Gain	R-Y Gain	All Gain	Keypad	
100.00	100.00	100.00	100.00		

The Color Corrector Menu

Press the **COLOR CRCTR** button to bring up the main Color Corrector menu. You can access submenus by pressing the softkeys on the right side of the menu display.

Below the menu name is the "Current CCR" display. This reflects the color corrector that the menu is controlling. To change this, press the crosspoint button on the bus you want to adjust.

Below "Current CCR" is a display of the status of all seven color correctors. See page 8-4 for details on this display.

Main Submenu

Use the Main submenu to select the color corrector mode and to apply color correction.

Color Corrector Mode

Toggle the *Color Corrector Mode* softkey to select a color space to work in: **YUV** or **RGB**. (With the 4:4:4 Chroma Key option installed, the **RGB 444** mode appears for the Key Fill buses only.) Working in RGB color space may be more intuitive because you use the red, green, and blue components of video, much like camera white and black balance adjustments. Working in YUV color space mode is less straightforward. "Y" is the brightness or luminance component, "U" is the B-Y or blue/yellow chrominance component (with no luminance), and "V" is the R-Y or red/cyan chrominance component (with no luminance). What this means is that adjustments in RGB color space affect not only

Color Corrector		Current CCR: Key 1 Fill, Unity		Main	
YUV	Color Corrector mode				
RGB					
RGB 444					
Gain	Adjust	Bgd A:	Unity		
Offset		Bgd B:	Unity		
Gamma		Program:	Unity		
Knee		Preset:	Unity		
Blk Clip	Adjust	Key 1:	Unity		
Wht Clip		Key 2:	Unity		
		DSK:	Unity		
Adjust	Proc Amp Controls				
Down Smpl	RGB-YUV Convert				
Filter					
Src Based	Source Memory				
Src By Bus					
Bus Based					
Luma Gain	B-Y Gain	R-Y Gain	All Gain	Keypad	
100.00	100.00	100.00	100.00		

The Main Submenu

the color relationship, but also the luminance levels. YUV mode keeps the luminance separate from the color components, so you can adjust them independently.

You can select and use **RGB 444** only on the three key fill signals. This mode requires the 4:4:4 Chroma Key option, since it uses a high resolution source with a 4:4:4 (Y:U:V) or 4:4:4:4 (Y:U:V:K) sampling structure. This means that the chrominance resolution is double that of a standard component digital signal, and results in a higher resolution for color correction and key extraction. With the Keyer menu **Key Type** softkey toggled **Chroma 444**, you should toggle the **Color Corrector Mode** softkey to **RGB 444**, and also toggle the **RGB-YUV Convert** softkey to **Filter** to avoid chrominance aliasing in the RGB to YUV transcoding process.

Color Corrector	
YUV RGB RGB 444 Color Corrector mode	Current CCR: Key 1 Fill, Unity
Gain Offset Gamma Knee Adjust	Bgd A: Unity Bgd B: Unity Program: Unity Preset: Unity Key 1: Unity Key 2: Unity DSK: Unity
Blk Clip Wht Clip Adjust	
Adjust Proc Amp Controls	
Down Smpl Filter RGB-YUV Convert	
Src Based Src By Bus Bus Based Source Memory	
Gain 100.00	Offset 0.00
Proc Sat 100.00	Hue 0.00
Keypad	

The Main Submenu

We recommend that you start with RGB mode. The YUV mode is most useful when you want to apply color correction based on luminance levels, and to create black and white negatives with the *Invert Gain* softkey. Another advantage of using the RGB mode is that the color corrector effectively limits the color corrected video to "legal" RGB colors with a small outside margin. To maintain strictly RGB-legal colors, you can use the Black Clip and White Clip settings to restrict them, as described below.

Adjust Gain/Offset/Gamma/Knee

You can adjust the individual video components' (Y, U, and V, or R, G, and B) *Gain*, *Offset*, *Gamma*, and *Knee* with these softkeys.

NOTE: The *Invert Gain* softkey in the Effects submenu overrides the normal *Gain*, *Offset*, *Gamma*, and *Knee* functions. If these controls do not appear to work, turn *Invert Gain* off.

In YUV mode, *Gain* increases or decreases the individual component's level relative to the others, and the **All Gain** pushknob adjusts the overall gain. In RGB and RGB 444 modes, these controls are **R White**, **G White**, **B White**, and **All White**, which work like camera white balance controls.

In YUV mode, *Offset* provides a black or null offset for each component. In RGB and RGB 444 modes, these controls are the **R Black**, **G Black**, **B Black**, and **All Black** pushknobs, which work like camera black balance controls.

Gamma is a contrast adjustment that lets you bring out more detail in the component you are working with. A *Gamma* setting less than 1 "stretches" the darker parts and "compresses" the lighter parts of an image. A *Gamma* setting greater than 1 "stretches" the lighter parts and "compresses" the darker parts. Use *Knee* to set the dividing point between level stretch and compress.

Knee sets the dividing point for the areas of the component being stretched or compressed. The best way to see **Gamma** and **Knee** adjustments is to input a ramp test signal and adjust each pushknob. If you are not familiar with **Gamma** adjustments, checking the output on a waveform monitor can help you better understand how these controls affect an image.

Adjust Black Clip/White Clip

You can limit peak levels of the individual components with these controls. For the RGB modes and the Luma component in YUV mode, black clip defaults to -7.31 percent, white clip to 109.47 percent. This effectively passes all levels allowed in component digital video. For the R-Y and B-Y components in YUV mode, the range is ± 57.03 , which also allows all possible levels in component digital video. You can then narrow the value range,

Color Corrector	
YUV RGB RGB 444 Color Corrector mode	Current CCR : Key 1 Fill, Unity
Gain Offset Gamma Knee Adjust	Bgd A: Unity Bgd B: Unity Program: Unity Preset: Unity Key 1: Unity Key2: Unity DSK: Unity
Blk Clip Wht Clip Adjust	
Adjust Proc Amp Controls	
Down Smp Filter RGB-YUV Convert	
Src Based Src By Bus Bus Based Source Memory	
Gain 100.00 ↔	Offset 0.00 ↑↓
Proc Sat 100.00	Hue 0.00 C
Keypad	

The Main Submenu

effectively clipping the brightest or darkest parts of the individual component(s) with the pushknobs or joystick. In YUV mode, these controls work as black, white, and chrominance clip values. In RGB mode, you can set all three to Black Clip = 0.00, White Clip = 100.00 for RGB "legalizing."

NOTE: The *Invert Gain* softkey in the Effects submenu overrides the normal *Black* and *White Clip* functions. If these controls do not appear to work, turn *Invert Gain* off.

Proc Amp Controls

This softkey accesses controls that work much like a Processing Amplifier or VTR time-base corrector: **Gain** (luminance level), **Offset** (luminance black level), **Proc Sat** (chrominance level), and **Hue** (chroma phase) controls are all "downstream" of the main color corrector settings.

The **Proc Sat** control is the same as the **Proc Sat** adjustment under the Effects submenu *False Color* softkey. Note that these pushknobs track each other's settings.

RGB - YUV Convert

This softkey selects the type of RGB to YUV transcoding for the second color corrector stage. *Down Smpl* discards every other sample of the U and V components, and is used if the original video was sampled at the standard 4:2:2 rate. *Filter* averages chrominance samples together to create the downsampled data. Use this if the 4:4:4 Chroma Key option is inputting high resolution video or graphics for use as a chroma key fill, or to eliminate illegal colors generated by nonlinear corrections (gamma, etc.).

Source Memory

See the description of the three *Source Memory* softkey modes on page 8-3.

Effects Submenu

Use the Effects submenu to create effects like solarization, false coloring, and luminance tinting.

Color Corrector Mode

This softkey has the same function as the *Color Corrector Mode* softkey in the Main submenu.

Solarize

You can adjust the quantizing of the individual video components with these controls. In YUV mode you can solarize the **Luma**, **B-Y**, or **R-Y** channels. In the RGB and RGB 444 modes, you can solarize the **Red**, **Green**, and **Blue** channels. Solarizing the B-Y, or U, and R-Y, or V, components (which together make up the chrominance signal) is also known as "posterizing."

YUV RGB RGB 444		Color Corrector mode	Color Corrector		Current CCR : Key 1 Fill, Unity		Main
Adjust			Solarize				Effects
Offl Blacks Mids Whites			Luma tinting		Bgd A: Unity Bgd B: Unity Program: Unity Preset: Unity Key 1: Unity Key2: Unity DSK: Unity		Clear
Offl On			False coloring				User Cors
Offl On			Invert Gain				
Src Based Src By Bus Bus Based			Source Memory				
Red 0.01		Green 0.01		Blue 0.01		Keypad	

The Effects Submenu

Luma Tinting

This applies a color "tint" to the image based on its luminance value. You can apply tinting to the black, gray, or white areas of the image, or any combination, with the **Sat** and **Hue** pushknobs.

Selecting **Blacks** adds tinting to luminance levels below about 45 percent; the darker the luma level, the more tinting applied. Selecting **Mids** adds tinting to luminance levels between 20 and 85 percent, with the most tinting applied near gray, or 50 percent. Selecting **Whites** adds tinting to luminance levels above about 60 percent; the brighter the luma level, the more tinting applied.

False Coloring

This softkey is a simplified version of the *Luma Tinting* softkey, with the added ability to reduce or increase the image's original chrominance level with the **False Sat** pushknob. The **Luma** pushknob proportions the amount of false coloring applied, according to its luminance level, with the greatest amount centered around the selected luminance value. The **False Sat** pushknob is the same as the **Sat** pushknob under the Main submenu *Proc Amp* softkey. These pushknobs track each other's settings.

Invert Gain

This softkey lets you change the gain of one or all components, either YUV or RGB, centered around the 50 percent level of the component. You can create a "negative" of the original image by swapping dark areas for bright, and vice versa, for all three components. Pushknob values over 0.00 percent give a "positive" image, with reduced contrast below 100.00 percent. Values below 0.00 percent give a "negative" image; -100.00 percent creates a full contrast negative.

NOTE: The *Invert Gain* softkey overrides the normal *Gain*, *Offset*, *Gamma*, *Knee*, and *Black/White Clip* controls. If any of these functions do not appear to work, turn *Invert Gain* off.

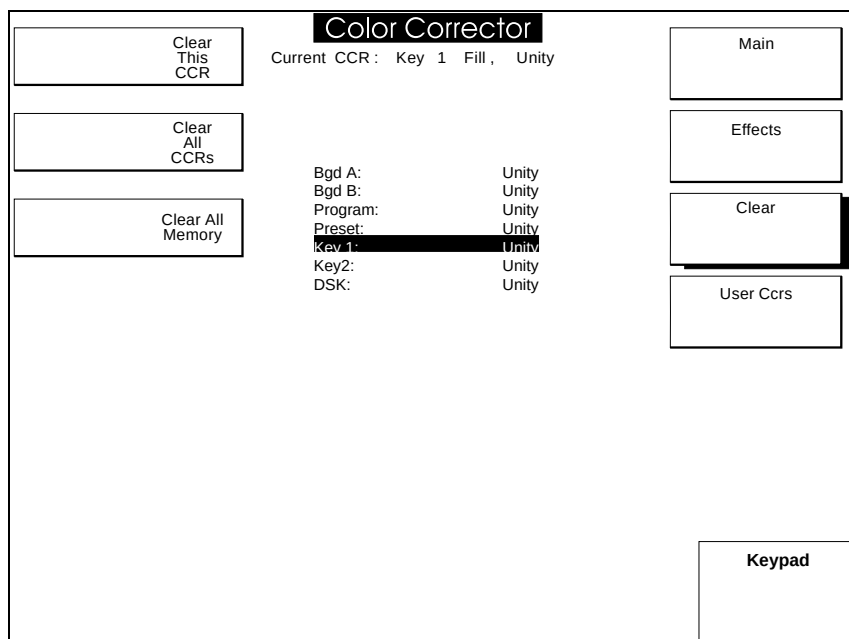
Source Memory

See the description of the three *Source Memory* softkey modes on page 8-3.

Clear Submenu

Clear This CCR

Press the *Clear This CCR* softkey to reset all color correction setups and memory for the selected video source to normal (color corrector at unity). With the *Source Memory* softkey set to *Src Based*, pressing this softkey clears the settings only for the source displayed, but for all buses. With the *Source Memory* softkey set to *Src By Bus*, pressing this softkey clears the color corrector settings only for that source on only that bus. With the *Source Memory* softkey set to *Bus Based*, pressing this softkey clears only the color corrector settings for the active bus, but for all sources on that bus.



The Clear Submenu

Clear All CCRs

With the *Source Memory* softkey set to *Bus Based*, press the *Clear All CCRs* softkey to reset all color correction setups for all buses to normal. With *Source Memory* set to either *Src Based* or *Src By Bus*, however, it clears the current settings, but retains the source memories, which are recalled when you select those sources again by pressing their crosspoint buttons.

Clear All Memory

Press this softkey to clear the source memories for all color correctors, no matter what mode the *Source Memory* softkey is in. This does not clear any user CCR registers.

After setting up a color corrector, you can save its settings in a user CCR register for later recall. You can save 20 color corrector setups. Select a register with the **User CCR** pushknob. The label indicates whether that register currently has a setup saved to it or not (**Used** or **Empty**). The *Save*, *Recall*, and *Clear* softkeys affect the register number displayed in the **User CCR** pushknob. Also, since you can recall setups to a different color corrector, these registers are useful for copying setups between color correctors.

Save

Recall

Clear

Current CCR : Key 1 Fill , Unity

Bgd A: Unity

Bgd B: Unity

Program: Unity

Preset: Unity

Key 1: Unity

Key2: Unity

DSK: Unity

Main

Effects

Clear

User Ccrs

User Ccr

1 - Empty

Keypad

The User CCRs Submenu

Save

Select an empty register and press the *Save* softkey to save the current color corrector setup. If the register currently in the **User CCR** pushknob is **Used**, this overwrites the saved setup with the new one.

Recall

Press the *Recall* softkey to load the setup from the selected register into the current color corrector. If *Source Memory* is *Src Based*, this loads the setup into the memory for the selected source on all buses. If *Source Memory* is *Src By Bus*, this loads the setup into the memory for only the selected source on only the selected bus. If *Source Memory* is *Bus Based*, this loads the setup into the memory for all sources on the selected bus only.

Clear

Use this softkey to clear the setup in the currently selected register to the default values.

The Color Corrector Menu

8150 Operations

Section 9

Framestores

Introduction

This section details using the Dual Framestore option: how to freeze and unfreeze video in the framestores, how to create stroboscopic effects, how to draw masks.

Each framestore stores a full frame of 10-bit component digital video, which can be read out as a full frame or a single field. You can use the two framestores for complex graphic layering by storing video in one frame, using it as a background to key over, then storing the result in the other framestore. You can then place another key over this composite, and store that result in the first framestore, ad infinitum. Because the signal path is all digital, there is no generation loss.

The Drawing feature lets you draw masks, holdback mattes, and stencils into either framestore, for use as key masks. You can also use the Drawing feature to change a single color in a frozen image, change all colors to one color, or change all luminance levels to a single luminance level. You can use the joystick or connect a user-supplied mouse to the Control Panel RS-232 port to draw patterns into the framestores.

You can also save and recall the framestore video contents to and from floppy disk or the optional hard disk drive as TIFF or YUV files. See Section 11 – Disk Operations for more information.

Frame Store Menu				
GRAB	Frame Store #1 Freeze			Frame Store
Pass Thru Strobe	Frame Store #1 Mode	Store 1		Locks
		Source : input1		
		Mode : Pass Thru		
		Strobe Rate : 1:00		
		Duty Cycle : 100.00		
		Output : Both Fields		
		Pattern : none		
GRAB	Frame Store #2 Freeze	Store 2		Test Patterns
Pass Thru Strobe	Frame Store #2 Mode	Source : input2		
		Mode : Pass Thru		
		Strobe Rate : 1:00		
		Duty Cycle : 100.00		
		Output : Both Fields		
		Pattern : none		
Store #1	Adjust			Drawing
Store #2				
Store #1 Output	Strobe Duty (Frozen %)	Strobe Period (secs :frms)	Store #1 Source	Keypad
Both Fields	100.00	1:00	input1	

The Framestore Menu

NOTE: When you use Color Pick, the 8150 uses a framestore to temporarily "grab" the video from which you picked a color. If the Enhanced (Frame Delay) Output module is not installed, at least one framestore must be unlocked for Color Pick to work. Lock a framestore if you do not want its contents overwritten by Color Pick.

Basic Framestore Operations

Freezing Video

By default, the Framestore 1 and 2 outputs are assigned to the last two shifted crosspoint buttons, but you can map them to any crosspoint buttons. See Section 12 – Personality for information on assigning crosspoint buttons.

- STEP 1:** Press the Framestore 1 crosspoint button on the Background A or Program bus, or select it on the preview output and monitor it there.
- STEP 2:** Press the **FRAMESTORE** menu button.
- STEP 3:** Press the *Framestore* softkey to bring up the submenu. Toggle the *Adjust* softkey to *Store #1*.
- STEP 4:** The *Framestore #1 Mode* softkey toggles *Strobe* and *Pass Thru*. Set it to *Pass Thru* to let video pass through the framestore.
- STEP 5:** Use the **Store #1 Source** pushknob to select an input. Any source in the 8150 is available as an input to the framestore. If the source is assigned to a crosspoint button, you can press and hold that crosspoint button on the Background B or Preset bus row and press the pushknob to enter the source directly.
- STEP 6:** Press the *Framestore #1 Freeze* softkey to grab a frame of the selected video source and freeze it. This freezes an entire frame of video. Once frozen, use the **Store #1 Output** pushknob to select **Field 1**, **Field 2**, or **Both Fields** of the frozen frame as the output. **Both Fields** gives a full frame output with the best vertical resolution of a still image. If the frozen frame came from a moving image, there may be some inter-field flicker. Use **Field 1** or **Field 2** to eliminate this.

STEP 7:

To prevent accidentally losing the frozen image, press the *Locks* softkey to bring up the Locks submenu, then toggle the *Framestore #1* softkey to *Locked*. With the framestore locked, you cannot overwrite it, and toggling the *Framestore #1 Strobe* softkey to *Pass Thru* has no effect.

WARNING: The framestores remain locked only as long as the 8150 is not powered down or rebooted. Either clears both framestores, even if they were locked.

STEP 8: To freeze Framestore 2, toggle the *Adjust* softkey to *Store #2* and repeat steps 1 - 7.

Unfreezing Framestore Video

STEP 1: Press the **FRAMESTORE** button.

STEP 2: If the framestore is locked, press the *Locks* softkey, then toggle the *Framestore #1* softkey to *Un-Locked*.

STEP 3: Press the *Framestore* softkey to bring up the Framestore submenu.

STEP 4: Toggle the *Framestore #1 Mode* to *Pass Thru* to let video pass through the framestore.

STEP 5: Repeat steps 2 - 4 for unfreezing video in Framestore 2, substituting Framestore 2 for Framestore 1.

NOTE: There is a one-frame delay through the framestores; any live video passing through the framestores is one frame late relative to the original source.

Creating a Stroboscopic Effect

Create a start-stop action (stroboscopic) effect on a moving video source as follows:

- STEP 1:** Press the **FRAMESTORE** menu button.
- STEP 2:** Press the *Framestore* softkey to bring up the Framestore submenu.
- STEP 3:** Toggle the *Framestore #1 Mode* softkey to *Pass Thru* to let video pass through the selected framestore.
- STEP 4:** Toggle the *Adjust* softkey to *Store #1*. This brings up the **Store #1 Output**, **Strobe Duty**, **Strobe Period**, and **Store #1 Source** controls.
- STEP 5:** Use the **Store #1 Source** pushknob to select an input. Any source in the 8150 is available as a framestore input. If the source is assigned to a crosspoint button,

Frame Store Menu				
GRAB	Frame Store #1 Freeze			Frame Store
Pass Thru	Frame Store #1 Mode			Locks
GRAB	Frame Store #2 Freeze			Test Patterns
Pass Thru	Frame Store #2 Mode			Drawing
Store #1 Store #2 Adjust		Store 1 Source : input1 Mode : Pass Thru Strobe Rate : 1:00 Duty Cycle : 100.00 Output : Both Fields Pattern : none Store 2 Source : input2 Mode : Pass Thru Strobe Rate : 1:00 Duty Cycle : 100.00 Output : Both Fields Pattern : none		
Store #1 Output	Strobe Duty (Frozen %)	Strobe Period (secs :frms)	Store #1 Source	Keypad
Both Fields	100.00	1:00	input1	

The Framestore Submenu

you can press and hold that crosspoint button on the Background B or Preset bus row and press the pushknob to enter the source directly.

- STEP 6:** Use the **Strobe Period** pushknob to set the amount of time between grabs. The moving video "strokes" at the rate you set: it holds the freeze for the set duration (**Strobe Duty** setting), then grabs another frame.
- STEP 7:** You can also unfreeze the image during part of the strobe period. The **Strobe Duty** pushknob sets a duty cycle for the time frozen vs. time unfrozen. For example, a duty cycle of 30 percent freezes the video for 30 percent of the strobe period, and unfreezes it the other 70 percent. The default setting of 100 percent keeps the video frozen for the entire strobe period. A setting of 0 percent never freezes the video, keeping it live for the entire strobe period.

Drawing into the Framestores

The Drawing function is a powerful feature that lets you draw masks, holdback mattes, stencils, etc. into either framestore and use them with the keyers to create complex keys. Also, you can replace one color in an image frozen in either framestore with another color, replace all colors with a single color, or replace all luminance levels with a single luminance level. Using this feature can replace a dedicated external paint or graphics device.

A common problem in self keying, particularly chroma keying, is noise or other unwanted artifacts in the original fill signal that prevents a clean key. The 8150's key masking let you mask off parts of the key so that these artifacts are not visible. However, sometimes you may need an irregularly shaped mask, one that you cannot create with the internal key mask or a wipe pattern. Typically, you would have to create a mask, usually with a paint system, to use as an external mask for the key. With the framestore Drawing feature, you can draw your own mask directly into either framestore, with the joystick, or a mouse or mouse pen connected to the Control Panel RS-232 port.

There are two main drawing modes: Mono and Color. For masks, holdback mattes, and other monochrome video intended to mask a key, use Mono mode, because any color information in a mask is not used. In this mode, you can select only luminance (gray scale) levels as the paint color. Since the 8150 does not have to calculate chrominance pixels in this mode, it can create twice as many luminance pixels when you draw a diagonal or curved line, yielding a smoother line than is possible in Color mode.

Use Color mode for replacing parts of a stored framestore image, as when touching up a chroma key set or removing parts of a graphic. In some cases you can replace a color in an image with another color. Color mode also lets you change all colors in a

framestore image to a single color, or no color, or change all brightness or luminance levels to the same level.

Key Mask Drawing

Draw a mask into Framestore 1 as follows. To draw into Framestore 2, substitute "Framestore 2" for "Framestore 1" in these steps.

You can use a mouse to draw into the framestore. The mouse buttons have different functions. Press the left mouse button to move the cursor; if you move the mouse without pressing the left button, the cursor does not move. Pressing the right mouse button toggles the active softkey on the left side of the menu. For example, if you highlight the *Draw* softkey, pressing the right mouse button toggles it between *Move* and *Draw*.

STEP 1: The framestore draw cursor is only visible in the main preview output. In the Miscellaneous menu, press the *Pvw Bus Ctrl & Misc* softkey.

STEP 2: Toggle the *Source* softkey to *Select*. If Framestore 1 is assigned to a crosspoint button, press and hold the Framestore 1 crosspoint button on the Background B or Preset bus row and press the **Source** pushknob to select Framestore 1 on the preview output. If Framestore 1 is not assigned to a crosspoint button, use the **Source** pushknob to select **Framestore 1**.

Toggling the *Source* softkey to *Program* routes the main program output to the preview output. Select the Framestore 1 crosspoint button on the Program bus, or select it on the Background A bus if the M/E crosspoint is selected on the Program bus.

- STEP 3:** Grab an the image, preferably an extracted key signal, in Framestore 1 as described on page 9-3. Otherwise, you can grab black to clear the framestore and draw freehand into the framestore.
- STEP 4:** In the Framestore menu, press the *Drawing* softkey. Toggle the *Frame Store* softkey to highlight *Store #1*. Set the **Frame Store Mode** pushknob to **Mono**.
- STEP 5:** Press the *Brush & Paint* softkey. Enter a luminance level for the paint color with the **Paint Luma** pushknob. The default is 100.00 (100 percent white), the usual level for masks.
- STEP 6:** Select a brush shape with the **Brush Shape** pushknob: **Circle** or **Square**. A circle (the default) is often more useful.
- STEP 7:** Toggle the *Draw* softkey to highlight *Move*. You can now move the draw cursor (visible in the preview output only) with the joystick or a standard two- or three-button mouse connected to the Control Panel RS-232 port. Using a mouse, or mouse pen, gives a more intuitive "feel" for drawing, and is the recommended method. If you use a mouse, press and hold the left mouse button to move the cursor.
- STEP 8:** You can vary the brush size from 1 to 100 pixels wide with the **Size** pushknob. The default size is 10, which is a good place to start. Note that the brush is not yet visible under the cursor.
- STEP 9:** Move the cursor to the area where you want to begin drawing. Toggle the *Draw* softkey to *Draw*. If you are using a mouse, you can press the right mouse button to toggle from *Move* to *Draw*. A white circle appears under the cursor. This is your brush.

- STEP 10:** Move the cursor slowly with the mouse or joystick. (To follow the outside contours of an object in the framestore, you can adjust the brush size for finer position control.) If possible, finish drawing the line at the point where you started to completely enclose an area of the framestore. If you started at the edge of the screen, finish the line by drawing to another edge of the screen to completely section off part of the framestore. In neither case you do not need to manually fill in the area inside the line.
- STEP 11:** When you finish drawing, do not move the cursor. Toggle the *Draw* softkey back to *Move* before moving the cursor again. This prevents you inadvertently drawing into other areas.
- STEP 12:** To fill in the area around the line you just drew, press the *Flood Fill* softkey once (pressing it more than once at this stage performs the flood fill). This accesses the **Fill Mode** pushknob, and the **H position** and **V position** controls for the cursor. Leave **Fill Mode** set to **Normal**, the default.
- STEP 13:** Move the cursor to the area you want to fill in. Press the *Flood Fill* softkey again to fill the area.
- STEP 14:** To outline and fill other areas of the screen, repeat steps 9 through 13. Be careful not to fill when the cursor is outside an enclosed area; this fills all areas of the image outside the enclosed area.

When you finish drawing and filling the mask(s), you can set the rest of the framestore to black:

STEP 15: Press *Brush & Paint* and set **Paint Luma** to 0.00. Press the *Flood Fill* softkey once to bring up the pushknobs. Change the **Fill Mode** to **Last**. (Leaving **Fill Mode** to **Normal** will completely overwrite the framestore with the new **Paint Luma** value in the next step.)

STEP 16: Move the cursor to an unfilled area of the framestore. Press the *Flood Fill* softkey again. The parts of the framestore outside the filled areas are now filled with black.

NOTE: Always set **Fill Mode** to **Normal** before filling more enclosed shapes. If you fill an enclosed shape in **Last** mode, and then change the paint color and attempt to fill around that object, it overwrites the entire framestore. Use **Normal** for filling shapes, and use **Last** for filling the areas outside the shapes.

You can use the new mask to mask a key, or save it to disk for later use.

Replacing Colors

Besides drawing with color, you can use the Drawing feature to replace one color or all colors in a framestore image. This involves placing the cursor over a color in the image and using *Flood Fill* in **Current** mode to replace that area of that color with the current paint color. You can also replace all colors with a single color, or with no color to create a monochrome image, with the *Clear Store* function. This also works for replacing all luminance or brightness levels in the image with a single brightness or luminance level.

Live video, generated with a camera or other analog imaging device, rarely contains adjacent pixels with exactly the same color values, because of noise and/or imperfect lighting. Flood Fill in Current mode fills only adjacent pixels with exactly the same luminance, saturation, and hue values as the pixel under the cursor. This may limit its usefulness to digitally generated video, including graphics, live video that has been posterized or solarized, or other framestore drawings.

The following is an example of using the Flood Fill function to replace a color. To perform this in Framestore 2, substitute "Framestore 2" for "Framestore 1" in these steps.

STEP 1: The framestore draw cursor is only visible in the main preview output. In the Miscellaneous menu, press the *Pvw Bus Ctrl & Misc* softkey.

STEP 2: Toggle the *Source* softkey to *Select*. If Framestore 1 is assigned to a crosspoint button, press and hold the Framestore 1 crosspoint button on the Background B or Preset bus row and press the **Source** pushknob to select Framestore 1 on the preview output. If Framestore 1 is not assigned to a crosspoint button, use the **Source** pushknob to select **Framestore 1**.

Toggling the *Source* softkey to *Program* routes the main program output to the preview output. Select the Framestore 1 crosspoint button on the Program bus, or select it on the Background A bus if the M/E crosspoint is selected on the Program bus.

STEP 3: Grab an image suitable for color replacement into Framestore 1, for example, video that has text with colored characters from a character generator or other graphics device.

- STEP 4:** In the Framestore menu, press the *Drawing* softkey. Toggle the *Frame Store* softkey to highlight *Store #1*. Set the **Frame Store Mode** pushknob to **Color**.
- STEP 5:** Press the *Color Pick* softkey. Move the cursor to a color that you want to use to fill the character(s).
- STEP 6:** Press *Color Pick* again to pick the color and load it into the **Brush & Paint Luma, Sat, and Hue** pushknobs. You can also manually select a color by pressing the *Brush & Paint* softkey and entering values with the pushknobs.
- STEP 7:** Press the *Flood Fill* softkey once to access its controls. Set the **Fill Mode** pushknob to **Current**. This mode replaces the color currently under the cursor with the paint color. The replacement applies to all pixels that are adjacent to the cursor and that have the same color as the one under the cursor.
- STEP 8:** Move the cursor over a character or other area with a solid color.
- STEP 9:** Press *Flood Fill* again. Only that character's color is replaced with the paint color, unless the character is adjacent to (touching) other characters with the same color.
- STEP 10:** Change the paint color by picking another color or by using the **Brush & Paint** pushknobs.
- STEP 11:** Move the cursor to another letter and press *Flood Fill* again to fill the character with the new color.

You can use this method to fill areas of the same color with any other color, as long as the areas are adjacent to the color selected by the cursor.

The *Clear Store* softkey lets you overwrite the entire framestore with black or any color, if you set the **Frame Store Mode** pushknob to **Color**. You can also overwrite only the chrominance or the luminance information in the framestore with the color set in the **Canvas Luma**, **Sat**, and **Hue** pushknobs. With the **Frame Store Mode** pushknob set to **Mono**, you can select only canvas luma values.

Use the Clear Store function as follows:

STEP 1: The framestore draw cursor is only visible in the main preview output. In the Miscellaneous menu, press the *Pvw Bus Ctrl & Misc* softkey.

STEP 2: Toggle the *Source* softkey to *Select*. If Framestore 1 is assigned to a crosspoint button, press and hold the Framestore 1 crosspoint button on the Background B or Preset bus row and press the **Source** pushknob to select Framestore 1 on the preview output. If Framestore 1 is not assigned to a crosspoint button, use the **Source** pushknob to select **Framestore 1**.

Toggling the *Source* softkey to *Program* routes the main program output to the preview output. Select the Framestore 1 crosspoint button on the Program bus, or select it on the Background A bus if the M/E crosspoint is selected on the Program bus.

STEP 3: Grab an image with large variations of brightness (luma) and color (saturation and/or hue) into Framestore 1.

STEP 4: In the Framestore menu, press the *Drawing* softkey. Toggle the *Frame Store* softkey to highlight **Store #1**. Set the **Frame Store Mode** pushknob to **Color**.

- STEP 5:** Press the *Clear Store* softkey once. (Pressing it more than once at this stage clears the framestore.)
- STEP 6:** The **Canvas Luma**, **Canvas Sat**, and **Canvas Hue** pushknobs default to 0.00 (luminance at black and no chrominance). For this example, set **Canvas Luma** to 50.00 and leave **Canvas Sat** and **Hue** at 0.00.
- STEP 7:** Set the **Clear Mode** pushknob to **Chroma**. Press the *Clear Store* softkey. This overwrites all colors in the frozen image with the **Canvas Sat** and **Hue** values. Since they are 0.00, this removes all chrominance from the image, resulting in a monochrome picture.
- STEP 8:** Grab the same or a similar image again. Set the **Clear Mode** pushknob to **Luma**. Press the *Clear Store* softkey again. This time the color remains, but all brightness variations are gone; they are replaced by the 50 percent gray value that you entered earlier.
- STEP 9:** Set the **Canvas Sat** and **Hue** pushknobs to 100.00 and change the **Clear Mode** pushknob to **All**. Press the **Clear Store** pushknob again. This overwrites both luma and chrominance values with a red color field.

This example shows that the Clear Store function can do more than just clear the current framestore contents.

Remember that the framestore Drawing feature is not meant to replace a paint system. However, it can be a great timesaver when used in combination with other 8150 features, such as key softening, masking, or color correction.

The Framestore Menu

Frame Store Menu				
GRAB	Frame Store #1 Freeze			Frame Store
Pass Thru Strobe	Frame Store #1 Mode			Locks
GRAB	Frame Store #2 Freeze			Test Patterns
Pass Thru Strobe	Frame Store #2 Mode			Drawing
Store #1 Store #2 Adjust		Store 1 Source : input1 Mode : Pass Thru Strobe Rate : 1:00 Duty Cycle : 100.00 Output : Both Fields Pattern : none Store 2 Source : input2 Mode : Pass Thru Strobe Rate : 1:00 Duty Cycle : 100.00 Output : Both Fields Pattern : none		
Store #1 Output	Strobe Duty (Frozen %)	Strobe Period (secs :frms)	Store #1 Source	Keypad
Both Fields	100.00	1:00	input1	

The Framestore Menu

Press the **FRAMESTORE** button to bring up the main Framestore menu. Access submenus in the Framestore menu with the submenu softkeys on the right side of the menu display.

The center of all Framestore submenus shows the status of each framestore, including the currently selected input source, its freeze mode, strobe rate and duty cycle, field/frame output mode, and the test pattern selected.

Framestore Submenu

Use this submenu to select video sources and the freeze type, and to set strobe rates and strobe duty cycles.

Framestore #1 Freeze

Highlight *Grab* with this softkey to freeze a frame of the video passing into Framestore 1.

Framestore #1 Mode

Toggle this softkey to *Pass Thru* to let video feeding Framestore 1 pass through it "live," or unfrozen (delayed by one frame). Toggle this softkey to *Strobe* to let video feeding Framestore 1 pass through it using the current strobe settings. Use the **Store Source** pushknob to select the input for the framestore highlighted in the *Adjust* softkey. If the source is assigned to a crosspoint button, you can press and hold that button on the Background B or Preset bus row and press **Store Source** to directly enter that source.

Framestore #2 Freeze

Highlight *Grab* with this softkey to freeze a frame of the video passing into Framestore 2.

Framestore #2 Mode

Toggle this softkey to *Pass Thru* to let video feeding Framestore 2 pass through it "live," or unfrozen (delayed by one frame). Toggle this softkey to *Strobe* to let video feeding Framestore 1 pass through it using the current strobe settings. Use the **Store Source** pushknob to select the input for the framestore highlighted in the *Adjust* softkey. If the source is assigned to a crosspoint button, you can press and hold that button on the Background B or Preset bus row and press **Store Source** to directly enter that source.

Adjust

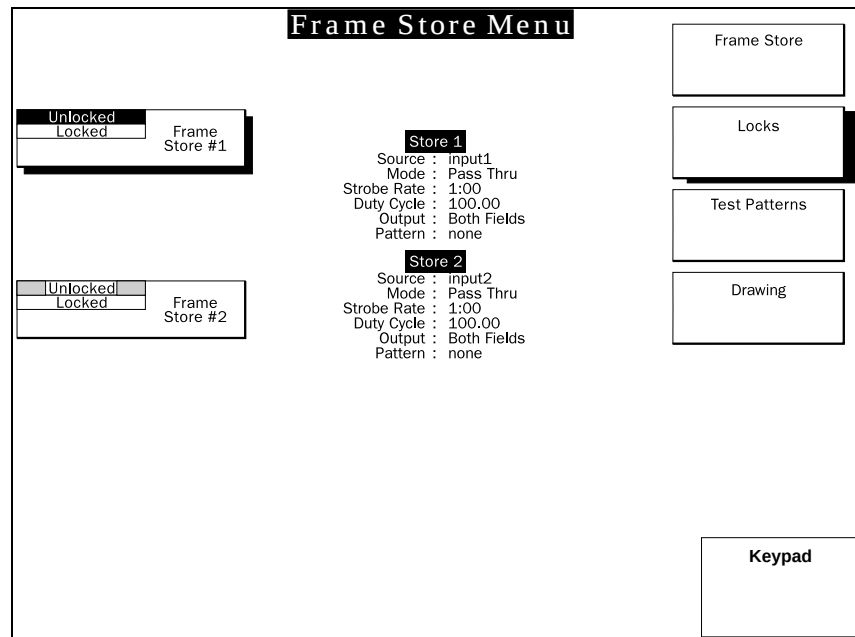
Press this softkey to select the framestore you want to use. It toggles *Store #1* and *Store #2*.

- The **Store #1 (#2) Output** pushknob toggles three freeze output modes: **Field 1**, **Field 2**, or **Both Fields**. This selects the output mode only; images are always grabbed and stored as full frames. **Both Fields** gives the best vertical resolution of a stationary image. If the frozen frame is from a moving image, there may be some inter-field flicker. Select **Field 1** or **Field 2** to eliminate this.
- Use the **Strobe Period** pushknob, or the numeric keypad, to set the amount of time between freezes, in frames. The maximum strobe period is 15,000 frames between freezes, which is 500:00 (8:20:00) in 525, or 600:00 (10:00:00) in 625. You cannot enter minutes from the numeric keypad; enter strobe periods of one minute or more as seconds and frames. For example, enter 2:00:00 as 120:00.
- The **Strobe Duty** pushknob adjusts the duty cycle of the strobe period: the percentage of time that the video is frozen versus the percentage of time it is live, or unfrozen. For example, setting a strobe period of 10 frames with a strobe duty cycle of 30 percent grabs the source video every 10 frames and holds it for three frames. The other seven frames are in the Pass Thru mode (live).
- **Store #1 (#2) Source** lets you route any source available in the 8150 and to the selected framestore. If the source is assigned to a crosspoint button, you can press and hold that crosspoint button on the Background B or Preset bus row and press this pushknob to enter the source directly.

Locks Submenu

The two softkeys in this submenu let you lock the framestores, so that you cannot overwrite them. When you lock a framestore, the message "-->LOCKED<--" appears between the *Framestore #1(2) Freeze* and the *Framestore #1(2) Mode* softkey labels in the Framestore submenu.

WARNING: The framestores remain locked only as long as the 8150 is not powered down or rebooted; either clears both framestores, even if they were locked.



The Locks Submenu

Test Patterns Submenu

This submenu lets you write internally generated video test patterns and texture patterns (used with the optional internal DVE) into the framestores.

Frame Store #1 (#2) Pattern

Use the **Store #1 (#2) Patterns** pushknob to select an internal test pattern for Framestore 1 (or 2). Press the *Frame Store #1 (#2) Pattern* softkey to load the selected pattern into Framestore 1 (or 2). If the framestore is locked, you can not load the pattern.

The **Store #1 (#2) Output** pushknob toggles **Field 1**, **Field 2**, or **Both Fields** for the framestore output.

These are the video test patterns available for both framestores:

- **Black** – 0 percent luminance and chrominance.

The screenshot shows the 'Frame Store Menu' interface. At the top, there are two 'LOAD' buttons for 'Frame Store #1 Pattern' and 'Frame Store #2 Pattern'. The main area displays settings for 'Store 1' and 'Store 2'. For Store 1, the settings are: Source: input1, Mode: Pass Thru, Strobe Rate: 1:00, Duty Cycle: 100.00, Output: Both Fields, and Pattern: none. For Store 2, the settings are: Source: input2, Mode: Pass Thru, Strobe Rate: 1:00, Duty Cycle: 100.00, Output: Both Fields, and Pattern: none. On the right side, there are buttons for 'Frame Store', 'Locks', 'Test Patterns' (which is highlighted), and 'Drawing'. At the bottom, there is a keypad with five buttons: 'Store #1 Output' (with 'Both Fields' below it), 'Store #1 Patterns' (with 'Black' below it), 'Store #2 Output' (with 'Both Fields' below it), 'Store #2 Patterns' (with 'Black' below it), and a 'Keypad' button.

The Test Patterns Submenu

- **Chroma Patch** – used as the Color Wheel test pattern.
- **Full Chroma** – has all colors in the CCIR 601/SMPTE 125M color gamut.
- **75% Bars** – full field color bars at 75 percent saturation.
- **Bowtie** – useful for detecting component analog inter-channel timing errors in a signal path.
- **DigTest** – a three-channel ramp useful for detecting missing bits in a signal path.
- **100% Bars** – full field color bars at 100 percent saturation.
- **Multipulse** – has pulses at certain frequencies, useful for detecting group delay errors in a signal path.
- **Multi-Burst** – three-channel multiple burst packets, useful for measuring the frequency response of a signal path.
- **Pulse & Bar** – useful for detecting timing and short-time distortion errors.
- **SMPTE Bars** – split field color bars at 75 percent saturation with +/- 4 percent pluge signal in black.
- **Border Test** – diagonal lines and a small center rectangle; this pattern only overwrites the parts of the framestore that it occupies, leaving the remaining framestore contents intact.
- **Ramp** – test pattern used in development; the 4:2:2 part of a high resolution 4:4:4 test signal.
- **444 Ramp** – test pattern used in development; the 0:2:2 part of a high resolution 4:4:4 test signal.
- **Keyer Window** – test pattern used in development; 100 percent white rectangle over black; rectangle edges are not anti-aliased.

These are the DVE texture patterns available for both framestores. A texture pattern is a luminance-only image that interacts with the DVE SurfaceFX™ feature to create realistic looking surface textures. See the 8150 DVE Operations manual for more information on using texture patterns in conjunction with the SurfaceFX™ feature:

- **Brick** – interlaced brick wall texture.
- **Industry** – industrial traction plate texture.
- **Scallop** – overlayed scallop siding texture.
- **Diamond** – multiple four-facet diamonds texture.
- **Weave** – hexagonal weave texture.
- **Star** – multiple six-point stars texture.
- **Dot** – dimpled texture.
- **Random** – orange peel texture.

Drawing Submenu

Use this submenu to draw simple masks, stencils, or holdback mattes into either framestore, or to change a color in digitally generated video. Monitor the framestore in the preview output, and you can use the joystick or a user-supplied PC mouse connected to the Control Panel RS-232 port to draw monochrome or color patterns into the framestore. You can fill them with that color or a different color, which you can manually enter or select with Color Pick.

You can use a mouse to draw into the framestore. The mouse buttons have different functions. Press the left mouse button to move the cursor; if you move the mouse without pressing the left button, the cursor does not move. Pressing the right mouse button toggles the active softkey on the left side of the menu. For

Frame Store Menu				
Store #1 Store #2 Frame Store	Store 1 Source : input1 Mode : Pass Thru Strobe Rate : 1:00 Duty Cycle : 100.00 Output : Both Fields Pattern : none Store 2 Source : input2 Mode : Pass Thru Strobe Rate : 1:00 Duty Cycle : 100.00 Output : Both Fields Pattern : none			Frame Store Locks Test Patterns Drawing
Move Draw Draw				
Fill Flood Fill				
Clear Clear Store				
Brush Brush & Paint				
Pick Color Pick				
H position 0.0000 ↔	V position 0.0000 ↑↓	Size 10	Draw Cursor On	Keypad

The Drawing Submenu

example, if you highlight the *Draw* softkey, pressing the right mouse button toggles it between *Move* and *Draw*.

Frame Store

Press this softkey to select the framestore you want to draw in: *Store #1* or *Store #2*. The **Frame Store Mode** pushknob selects the drawing mode: **Mono** for only luminance, or **Color** for full color drawing. Mono mode yields better resolution when drawing diagonal or curved lines, since the 8150 only has to render luminance pixels instead of luminance and chrominance pixels. For this reason, Mono mode is recommended when drawing or filling key masks. Color mode lets you use color to draw and fill.

Draw

Press this softkey to toggle *Move* and *Draw*. *Move* is the default; use it to move the cursor around the screen with the joystick or a user-supplied mouse. *Draw* places the cursor in a drawing mode;

Frame Store Menu				
Store #1 Store #2	Frame Store			Frame Store
Move Draw	Draw	Store 1 Source : Input1 Mode : Pass Thru Strobe Rate : 1:00 Duty Cycle : 100.00 Output : Both Fields Pattern : none		Locks
Fill	Flood Fill	Store 2 Source : Input2 Mode : Pass Thru Strobe Rate : 1:00 Duty Cycle : 100.00 Output : Both Fields Pattern : none		Test Patterns
Clear	Clear Store			Drawing
Brush	Brush & Paint			
Pick	Color Pick			
H position 0.0000	V position 0.0000	Size 10	Draw Cursor On	Keypad

The Drawing Submenu

it draws a line of the selected shape, color, and size as you move the cursor.

The **H position** and **V position** pushknobs display and move the cursor on-screen. 0.000 is the center of the screen. You can also use the joystick or a mouse to move the cursor. If you use a mouse for drawing, press and hold the left mouse button to move the cursor. You can set the width of the line with the **Size** pushknob, from 1 to 100 pixels wide. You can turn the cursor on or off with the **Draw Cursor** pushknob. With **Draw** highlighted, you can draw whether the cursor is turned on or off.

Flood Fill

Press this softkey to access the Flood Fill controls. Flood Fill lets you fill an area of the screen with the current paint color. The area filled depends on the mode selected. If the **Flood Fill** softkey is not highlighted, pressing it once brings up the pushknobs. Pressing it again actually performs the fill. The **H position** and **V position** pushknobs display and move the cursor.

NOTE: If an area is not completely enclosed by the drawn line, pressing *Flood Fill* fills the entire framestore. Before filling, make sure that the area that you want to fill is completely enclosed by a line that touches the edges of the screen at both ends, or by a line that has its ends joined to form a closed shape.

The **Fill Mode** pushknob selects **Normal**, **Current**, or **Last** mode.

- **Normal** uses the current paint color to fill the area the cursor is currently in, and stops filling where an enclosed line, with the same color, separates the area from the rest of the screen. For example, if you draw an enclosed shape with a blue line, then move the cursor inside the shape and press **Flood Fill**, the same blue color fills the area inside the shape. If the cursor is

outside the shape, the entire framestore is filled except the area inside the shape. If you change the paint color after drawing the shape, manually or with Color Pick, pressing the *Flood Fill* softkey fills the entire framestore with the new color, including any existing drawing that is a different color.

- **Current** replaces the color under the cursor, and any adjacent pixels that are the same color, with the paint color. You can select any paint color for this kind of fill. For example, you can load colored text from a character generator into the framestore, then place the cursor over a letter. You can select a new paint color with the *Brush & Paint* softkey and fill that character, and only that character, with the new color. If that character is adjacent to (touching) other characters, those characters are filled also. You can draw a line between the characters to prevent the one on the other side of the line from being filled.

Note that this mode replaces only pixels with exactly the same luminance, saturation, and hue values as the pixel under the cursor. In live video, it is highly unlikely that two adjacent pixels have exactly the same values, so this mode is useful mostly for filling digitally generated or processed video, including live video that has been posterized or solarized, and other colored objects drawn in the framestore.

- **Last** fills the area outside shapes that you filled with the last paint color. For example, if you draw a shape with a green line and fill it with the same green color, you can then move the cursor outside the box, change the paint color, and fill the entire area outside the green shape with the new paint color. This overwrites anything that you drew with a color other than the green. However, you can change any existing drawings to the last paint color (green in this example) by first using Current mode to fill them. This prevents them from being overwritten with a fill in Last mode.

Clear Store

Press this softkey to access controls to clear or modify the framestore by writing a preset value into the luminance part, the chrominance part, or both parts of the framestore. With the **Frame**

Frame Store Menu				
Store #1 Store #2	Frame Store			Frame Store
Move Draw	Draw	Store 1 Source : input1 Mode : Pass Thru Strobe Rate : 1:00 Duty Cycle : 100.00 Output : Both Fields Pattern : none		Locks
Fill	Flood Fill	Store 2 Source : input2 Mode : Pass Thru Strobe Rate : 1:00 Duty Cycle : 100.00 Output : Both Fields Pattern : none		Test Patterns
Clear	Clear Store			Drawing
Brush	Brush & Paint			
Pick	Color Pick			
H position 0.0000	V position 0.0000	Size 10	Draw Cursor On	Keypad

The Drawing Submenu

Store Mode pushknob set to **Color**, you can set a color with the **Canvas Luma**, **Canvas Sat**, and **Canvas Hue** pushknobs. The **Clear Mode** pushknob selects **All**, **Luma**, or **Chroma**. Use this to replace the entire contents of the framestore with the combined **Canvas Luma**, **Sat**, and **Hue** values (**ALL**), replace just the framestore luminance with the **Canvas Luma** value (**Luma**), or replace just the framestore chrominance with the **Canvas Sat** and **Hue** values (**Chroma**).

With the **Frame Store Mode** pushknob set to **Mono**, you can replace the entire framestore or just the framestore luminance with the **Canvas Luma** value.

Brush & Paint

Press this softkey to select the paint color and cursor shape. Use the **Paint Luma**, **Paint Sat**, and **Paint Hue** pushknobs to set the color. The **Brush Shape** pushknob selects a **Circle** or **Square** brush shape.

Color Pick

Press this softkey to use the cursor to pick a color from the screen. With **Color Pick** not highlighted, the first softkey press accesses the **H Position** and **V Position** pushknobs. Move the cursor to the color that you want to pick and press **Color Pick** again. This loads that color as the paint color.

NOTE: The Color Pick feature works in all 8150s that have the Enhanced (Frame Delay) Output module installed. If this module is not present, the other framestore must be "unlocked," and not selected on any bus, in order for Color Pick to function.

Section 10

Timelines

Introduction

This section discusses 8150 TimeFrame™ Effects editing, including:

- saving and recalling Snapshot effects
 - creating Timeline effects
 - saving and recalling Snapshot and Timeline effects to and from system memory, the floppy disk, and the optional hard disk
- Both Snapshot and Timeline effects store individual parameters as keyframes. The two effect types are saved and recalled differently, however, as detailed in this section.

Snapshot Effects

The 8150 can "take a snapshot" of itself, which stores all the settings for the keyers, wipe generators, color correctors, SuperMatte generator, Aux outputs, and internal DVE parameters. It saves the snapshot as a single keyframe. There are 25 memory registers available for storing Snapshot effects. When you save a snapshot, you store all of the current switcher settings for later recall. When you recall a Snapshot effect, the 8150 immediately configures itself to match all the settings saved in that snapshot.

Some edit controllers let you "upload" and "download" switcher settings as part of their EDL (edit decision list). As of this writing, Axial and CMX edit controllers can upload and download the 8150's Snapshot keyframe registers to their own memory.

Some switcher settings, of necessity, are not saved as part of a keyframe. These include framestore contents (except for internally generated test patterns), input names, crosspoint bus assignments, and Engineering menu settings. However, you can save these settings separately as TIF, YUV, Y10, ENG, or PER files.

Timelines

You can string two or more keyframes together to create a sequence, called a Timeline. When you run a Timeline, the 8150 begins by configuring itself according to the first keyframe. It then looks ahead to the next keyframe to determine what its configuration needs to be at the time designated by that keyframe. The 8150 interpolates smoothly from its current settings to the settings in the next keyframe. This continues until it reaches the last keyframe on the Timeline.

Each keyframe has its own location and duration on a Timeline. Keyframe durations default to one second, but you can set them from 1 field to 5000 frames long. You can vary the length of each keyframe independently and vary the start or end points of each keyframe relative to other keyframes. You can also vary the length of the entire Timeline while keeping the duration of each keyframe proportional to the others.

Timeline Effects

You can use up to four Timelines in a Timeline effect. With two or more Timelines in an effect, each Timeline runs simultaneously with the other Timelines in the effect, and you can edit and offset each Timeline independently.

You can assign different switcher settings to different Timelines. For example, you can assign all M/E Color Correctors, M/E Transitions, PGM/PST Color Correctors, and PGM/PST Transitions to one Timeline (the default state), or divide them between two Timelines, or have each parameter set on its own

Timeline. Each parameter set can belong to only one Timeline in any single effect. However, you can offset the relative start and end time of each Timeline to create complex effects, letting some parameters coincide with each other, while others can be completely independent. A list of the assignable parameter sets appears later in this section.

Running Timeline Effects with an Editor

You can play back a Timeline effect from an edit controller in the same way that you play back a videotape on a VTR. The 8150 puts out a timecode value (on its remote port) that corresponds to the current time on its master Timeline. Each effect starts at a time of 00:00:00:00, but an edit controller can "preroll" the effect, just like a VTR, to synchronize the effect with VTRs or other devices. Other controls include pausing the effect, jog, rewind, fast-forward, cue, and variable-speed playback.

Because a Timeline effect stores a large amount of data, it is currently not possible to "upload" and "download" Timeline effects to edit controllers. However, some edit controllers do let you recall and run Timeline effects from the 8150's own registers.

Saving and Recalling Timeline Effects

After creating an effect, you can save it to the 8150 on-line memory. There are 100 Timeline effect registers available. With the standard 8 MB DRAM memory, there is enough on-line memory to save Timeline effects in all 100 registers.

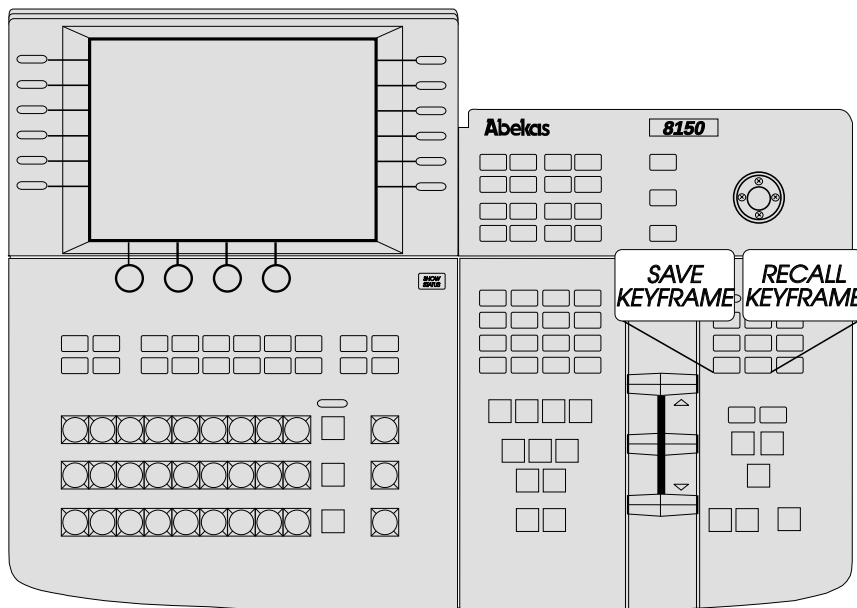
You can also save Timeline effects to the floppy disk for archiving, or for use with another 8150. Note that individual Snapshot effect registers are stored on disk as EFF files; Timeline effect registers are stored on disk as TIM files.

Saving and Recalling Snapshot Effects

The Control Panel buttons used to store and recall individual Snapshot effect registers appear below. Use the **SAVE KEYFRAME** and **RECALL KEYFRAME** buttons with the numeric keypad to store and recall Snapshot effect registers. You can be in any menu when you save or recall a Snapshot effect register.

You can save and recall up to 25 individual Snapshot effects in on-line memory. They are not part of any Timeline effect. The following is an example.

STEP 1: Enter the number of the register you want to save in the numeric keypad. You can enter register numbers in the range 0 - 24. The number appears in the keypad



The Register Save and Recall Buttons

area of the menu screen. Press the **SAVE KEYFRAME** button.

- STEP 2:** Change a crosspoint, or make some other change to the switcher.
- STEP 3:** Enter the number of the saved register in the numeric keypad. It appears in the keypad area of the menu screen. Press **RECALL KEYFRAME**. Recalling the register returns the switcher to the state it was in when you saved the register.
- STEP 4:** To view a list of the Snapshot keyframe registers, press the **EFFECTS** button to bring up the Effect menu and press the *Snapshot Effects* softkey. Registers that have keyframes stored in them display the time and date that they were saved. Unused registers display "Empty."
- STEP 5:** To protect a Snapshot keyframe from being overwritten, use the **Scroll** pushknob to highlight the register and press the *Protect* softkey. The letter "P" appears on the line, indicating that you cannot save another keyframe in that register. To unprotect it, press *Protect* again to remove the "P."

NOTE: Recalling a Snapshot or Timeline effect register does not automatically update the keyer and color corrector source memories. See Section 4 – Keying, and Section 8 – Color Correction, for information on updating source memories by recalling effects.

Saving Snapshot Effect Registers to Disk

Back up Snapshot effect registers on a floppy disk or the optional hard disk for archiving as follows:

- STEP 1:** Set up the switcher and save the Snapshot effect register as outlined on pages 10-4 and 10-5.
- STEP 2:** Insert a formatted 1.44MB or 720KB floppy disk into the Control Panel or (optional) external floppy drive. You can use a preformatted DOS floppy or format one with a PC or the 8150. See Section 11 – Disk Operations for information on formatting.
- STEP 3:** Press the **DISK** menu button and, if needed, select *Internal*, *External*, or *Hard Drv* with the *Drive* softkey. (It defaults to the internal drive unless you previously selected another drive.) The menu displays information about the size of the disk, available space, and lists any disk files in the box in the center of the menu. The internal Control Panel drive is *A:*, the external drive is *B:*, and the optional hard drive is *C:*.
- STEP 4:** Set the **File Type** pushknob to **EFF** and select the register number you want to save with the **Register Number** pushknob.
- STEP 5:** Press the *Save* softkey to highlight *Name File*. A naming box appears in the bottom of the menu. If there is a PC AT keyboard connected to the 8150 Control Panel, you can use it to give the file a standard eight-character name. If a PC keyboard is not available, you can use the **Cursor** and **Character** pushknobs to name the file as discussed in Section 11 – Disk Operations. The 8150 automatically adds the file extension based on the file type currently selected, in this case, .EFF. See the 8150 Technical Guide for information on connecting a PC keyboard to your 8150 Control Panel.

- STEP 6:** Press the *Confirm* softkey. The 8150 writes the file to the disk, and prompts when it is done. The menu display updates to list the new file.
- STEP 7:** You can save a comment up to 80 characters long with any existing .EFF file. To do this, press the *Comments (Set)* softkey.
- STEP 8:** Use the **File List** pushknob to scroll to the file name you want to add the comment to.
- STEP 9:** Enter the comment with the pushknobs or keyboard. It appears in the comment box as you enter it.
- STEP 10:** When you finish entering the comment, press *Confirm*. This saves the comment with the disk file.
- STEP 11:** To read a file comment, scroll to the file name and press *Comment (Show)*. The comment appears in the comment box. If the comment is longer than 34 characters, turn the **Cursor** pushknob to move the cursor and read the rest of the comment.

See Section 11 – Disk Operations for information on saving multiple registers to disk in one operation.

Recalling Snapshot Registers from Disk

Recall Snapshot effect registers from disk as follows:

- STEP 1:** Insert the floppy disk with the register file into the Control Panel or (optional) external floppy drive.
- STEP 2:** Press the **DISK** menu button and, if needed, select *Internal, External, or Hard Dvr* with the *Drive* softkey.
- STEP 3:** Set the **File Type** pushknob to **EFF**. The file list in the menu only lists files of the selected type, unless you set the **File Type** pushknob to **ALL**.
- STEP 4:** Use the **File List** pushknob to scroll the highlight bar in the file list and select the file you want to recall.

- STEP 5:** Use the **Register Number** pushknob to select the register number to which you want to recall the file. Note that this does not have to be the same register from which you originally saved the file to disk.
- STEP 6:** Press the *Confirm* softkey. The 8150 recalls the file from the disk, and prompts when it is done. You can recall the register by entering the number and pressing the **RECALL KEYFRAME** button.

NOTE: Recalling a Snapshot keyframe register does not update keyer source memory settings. Pressing the current crosspoint button on the key fill bus row recalls the source memory settings and overrides the settings that were recalled with the Snapshot effect register. However, by adjusting any Key menu setting you copy all the current key settings into the source memory. In this way, you can save the current key settings, or use the ones saved in the register.

See Section 11 – Disk Operations for information on recalling multiple files from disk in one operation.

Creating Timeline Effects

A Timeline is a set of keyframes connected sequentially in time, and a Timeline effect is a combination of one to four Timelines running in parallel. You create a Timeline effect with the buttons in the Timeframe™ Effects Editor and Quick Keyframes sections of the Control Panel, and with the Timeline menu. You can save and recall entire Timeline effects to and from on-board memory, and back up and restore them to and from floppy disk, or the optional hard disk drive, as .TIM files.

The 8150 saves Timeline effect keyframes differently than Snapshot effect keyframes. It saves the first keyframe of a Timeline effect as if it were a full snapshot, but successive keyframes are saved only as differences from the first keyframe. This avoids using large amounts of memory space for every keyframe. It also, however, means it cannot accurately predict how many more keyframes you can create before running out of on-line memory. Since the number of total keyframes that you can save to on-line memory varies, the only indication of how much memory is left is in the Display Timelines submenu "Free Memory" readout. It is a good idea to occasionally check the amount of free memory to avoid running out at an inopportune moment.

Basic Timeline Operations

When you create a Timeline effect keyframe, you save the current switcher settings to a part of memory called the effect workspace. This workspace is where you edit and run all Timeline effects. To create a Timeline effect, you create a keyframe in the workspace, where it is automatically inserted on one or more Timelines. The workspace is the only place where you can run or edit a Timeline effect. When you save a Timeline effect to memory, you save the effect workspace to a Timeline effect register. Also, when you

recall a Timeline effect register, it puts the contents of that register in the workspace so that you can run or edit the effect.

Each keyframe has a default duration of one second, displayed as 1:00. You can change each keyframe's duration independently or change all the keyframes. The last keyframe on a Timeline, by definition, has no duration because there is no next keyframe for interpolation or transition. However, if you add a keyframe to the end of a Timeline, the former last keyframe duration is again valid, and the new last keyframe has no duration.

You can also change the overall duration of the Timeline. This changes the duration of each keyframe proportionally to maintain the original timing relationships within the Timeline. Also, if there is more than one Timeline in an effect, you can offset the start and end points of one Timeline relative to the other(s), or even start one Timeline after another's end.

There are twelve sets of parameters that you can assign to different Timelines. The default state assigns all twelve parameter sets to Timeline 1, but you can easily change their assignments, or unassign them if you do not want them in the effect at all. The parameter sets are as follows:

- Keyer 1 parameters, including Key 1 Fill Color Corrector settings and all crosspoint assignments (fill, key, mask, and border fill sources)
- Keyer 2 parameters, including Key 2 Fill Color Corrector settings and all crosspoint assignments (fill, key, mask, and border fill sources)
- DSK parameters, including DSK Fill Color Corrector settings and all crosspoint assignments (fill, key, mask, and border fill sources)
- M/E Transition parameters (Background A, Background B, Key 1, Key 2, and Priority), including crosspoint assignments and the M/E Wipe(s) settings

- PGM/PST Transition parameters (Program/Preset and DSK), including crosspoint assignments and the Program/Preset Wipe settings
- M/E Background A and Background B bus Color Corrector settings
- PGM/PST Program and Preset bus Color Corrector settings
- Miscellaneous parameters: all framestore parameters, all Aux bus output crosspoint selections, GPI outputs (GPOs), and Timeline effect pauses
- SuperMatte generator settings
- DVE Channel A parameters, if the internal DVE is installed
- DVE Channel B parameters, if the internal DVE is installed
- DVE Global parameters, if the internal DVE is installed

The Timeline Display

Press the green **TIMELINE** button to access the Timeline menu. Press the *Display Timelines* softkey to bring up the Timeline graphic display. See the figure on the next page.

The four Timelines start at the left side of the menu at 00.00, which indicates the start of the Timeline effect. Time markers along the bottom of the display show the time relationships of the keyframes on the various Timelines. Keyframes appear as vertical lines on the Timeline displays. The amount of space between two keyframes corresponds to the keyframe's duration: the amount of time it takes to interpolate from one keyframe to the next. Note that, since the last keyframe on a Timeline has no "next" keyframe for interpolation, it has no duration. However, a duration appears in the **End** pushknob label when you toggle the *TimeLine* softkey to *This KF*. This duration is active only if another keyframe follows this one.

The Timeline cursor is between the four Timelines. This is a vertical line that indicates the "current time." The current time is the location on the Timeline that corresponds to how far the effect

has progressed, and is common to all four Timelines. If the Timeline cursor is on a keyframe boundary or between two keyframe boundaries, that is the "current keyframe."

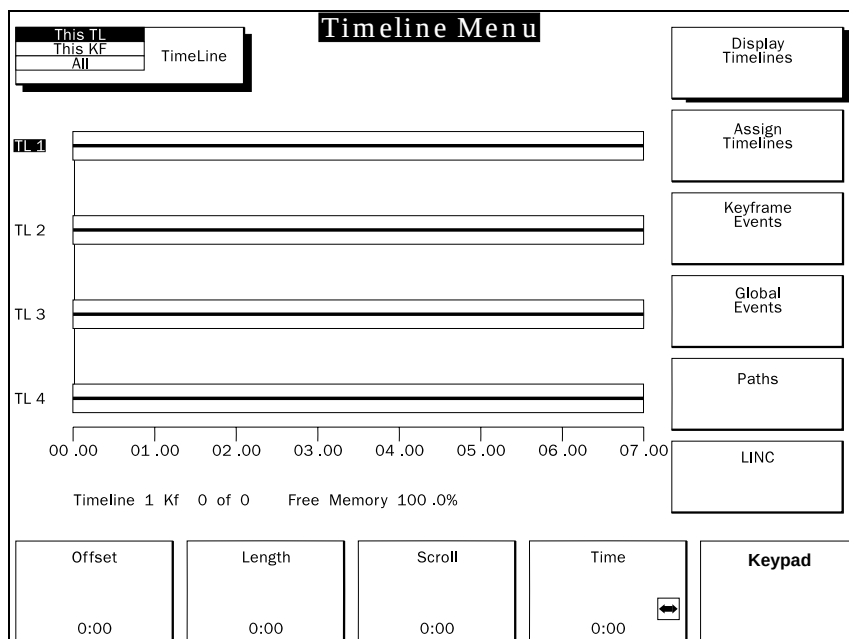
A status line below the Timelines shows which Timeline is the master, which keyframe is the current keyframe, and how much memory is available. For example, the status line

Timeline 1 Kf 2 of 6 Free Memory 99.6%

means that Timeline 1 is the master, Keyframe 2 is the current keyframe of a total of six in the effect, and that 99.6 percent of the on-line effects memory (including all effect registers) is still available.

The Master Timeline

The master Timeline's parameters appear in the pushknob labels in the Display Timelines submenu. Also, the **TL** softkey for the master Timeline is highlighted. By default, Timeline 1 is the



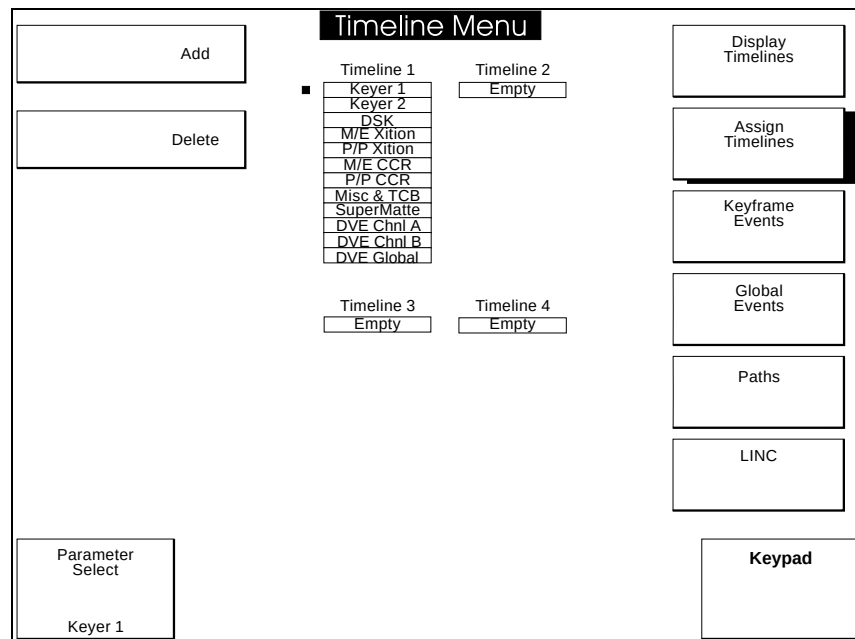
The Display Timelines Submenu

master Timeline, but you can select any Timeline as the master. To make another Timeline the master, press its **TL** softkey or double press the blue delegation button for that Timeline (**TIMELINE 1** through **TIMELINE 4**).

Delegating Timelines

At least one Timeline, the master, must be delegated in any effect. If a Timeline is delegated, or active, you modify it when you create or change a keyframe in the effect. Undelegated Timelines do not change when you insert, modify, remove, or delete keyframes. When you run the effect, however, all Timelines run whether they are delegated or not.

You can delegate one Timeline or any combination of the four by pressing the blue Delegation buttons on the Control Panel (**TIMELINE 1** through **TIMELINE 4**). The LED in the button



The Assign Timelines Submenu

lights to indicate that the Timeline is delegated and enabled for editing.

Creating Timeline Effects

The buttons in the Quick Keyframes section of the Control Panel let you quickly and easily create a Timeline effect. These buttons are as follows:

- **INSERT NEXT** – creates a keyframe from the current settings. The new keyframe is inserted on all delegated Timelines after the current keyframe, with the default duration of 1:00.
- **DELETE** – deletes the current keyframe, including its duration, from the delegated Timelines. If the Timeline cursor is between keyframes when you press the **DELETE** button, nothing happens.
- **MODIFY** – copies the current switcher settings to the current keyframe on the delegated Timelines. If the Timeline cursor is between keyframes when you press the **MODIFY** button, nothing happens.
- **UNDO KF EDIT** – "undoes" the last keyframe edit you made. When you change the current workspace, the existing workspace (before you made the change) is copied into temporary memory called the Undo Buffer. You can think of the Undo Buffer as backup storage in case you make a mistake in the workspace, or decide that the change is not what you want. Pressing **UNDO KF EDIT** exchanges the workspace, which is the effect with the unwanted change, with the Undo Buffer, which is the effect before you made the change. Also, when you save the workspace to an effect register, the contents of that effect register are automatically copied to the Undo Buffer before the effect in the workspace overwrites the effect currently in the register, if any. This lets you recover the previous effect register contents in case you saved the workspace to the wrong effect register. Similarly, when you recall an effect register, the current contents of the workspace are automatically copied to the

Undo Buffer before the effect register overwrites the workspace. This lets you recover what was in the workspace if you did not save it before recalling the new register. In either case, pressing **UNDO KF EDIT** exchanges the workspace with the contents of the Undo Buffer.

This is an example of creating a simple Timeline effect:

- STEP 1:** Press the **TIMELINE** menu button to bring up the Timeline menu. Check that the **TIMELINE 1** button LED is lit; if it is not, you can not insert keyframes on Timeline 1.
- STEP 2:** Select the black crosspoint button on the Background A bus row. Select another source on the Background B bus row. Press and highlight the **BGND** and **MIX** buttons. This is the first keyframe, the start of the effect.
- STEP 3:** Press the **INSERT NEXT** button in the Quick Keyframes area. This stores the current switcher setup as Keyframe 1 on Timeline 1.
- STEP 4:** Move the fader bar to the other end of its range to transition from black to the source you selected on the Background B bus. Press the **WIPE** transition button to select a wipe as the next transition.
- STEP 5:** Select another source on the Background B bus and press the **INSERT NEXT** button. This stores the new switcher setup as Keyframe 2.
- STEP 6:** Move the fader bar to the other end of its range to perform the new transition. Press the **INSERT NEXT** button to store this setup as Keyframe 3.
- STEP 7:** Press the **RUN** button. The 8150 program output shows a fade up from black to the first source you selected, then a wipe from that source to the second source you selected.

In this way, you can create an effect with as many keyframes as needed to perform as many functions as needed. In the above example, you used only the M/E Transitions parameter. You can use any or all of the parameters listed in the Assign Timelines menu by changing their settings between keyframes. The 8150 interpolates between the settings to smoothly change from one setting to the next.

This example adds a key and the SuperMatte to the effect that you built in the previous steps.

- STEP 1:** Press the **END (FF)** button to go to the end (last keyframe) of the effect, in this case, Keyframe 3.
- STEP 2:** Select SuperMatte on the Background B bus. Press the Quick Keyframes **MODIFY** button (not the Timeframe™ Effects Editor **MODIFY** button). This changes the current keyframe so that it is ready to transition to the SuperMatte.
- STEP 3:** Move the fader bar to transition this source to the Background A bus. Press the **KEY 1** button and set up a key on Keyer 1 (either a luminance or chroma key) with the key and fill sources of your choice.
- STEP 4:** When the key is set up, transition the key off, making sure that only the **KEY 1** button is lit. (Since the transition mode selected is Wipe, the key transitions off as a wipe unless you change it to another mode.) Press the **INSERT NEXT** button to save this setup as Keyframe 4.
- STEP 5:** Transition the key on. Press the **INSERT NEXT** button to save this setup as Keyframe 5.
- STEP 6:** Press the **MISC** button. Press the *Super Matte Attributes* submenu softkey, then the *Super Matte Adjust* softkey. Change the SuperMatte colors so that the transition from the original colors to the new ones

is obvious. When finished, press **INSERT NEXT** to save this setup as Keyframe 6.

STEP 7: Press the **RUN** button. You should see the following happen in this order:

- 1 – A fade up from black to the first source.
- 2 – The second source wipes on over the first source.
- 3 – The SuperMatte wipes on over the second source.
- 4 – Key 1 wipes on over the SuperMatte.
- 5 – The SuperMatte changes color under the key.

So far, you have used only one Timeline. If, for example, you want to delay or advance the SuperMatte changes relative to the transitions, you can assign the SuperMatte parameter set to another Timeline and move it relative to the first Timeline.

Assign the SuperMatte parameters to another Timeline as follows:

- STEP 1:** In the Timeline menu, press the *Assign Timelines* softkey.
- STEP 2:** Use the joystick to move the black square in the menu display to the box with the word "Empty" beneath the "Timeline 2" label. The box highlights.
- STEP 3:** Use the **Parameter Select** pushknob to select **SuperMatte**. Press the *Add* softkey. This moves the SuperMatte parameters from Timeline 1 to Timeline 2.
- STEP 4:** Press the *Display Timelines* softkey. Note that Timeline 2 now has a timeline display. Press the **TL2** softkey, or double press the blue **TIMELINE 2** delegation button below the menu. This delegates Timeline 2 as the master timeline.

- STEP 5:** Set the **Offset** pushknob to **2:00**. This delays the start of Timeline 2 from the start of the effect by two seconds.
- STEP 6:** Press the **RUN** button. Watch the effect and note that the key transitions on as before, but the SuperMatte color does not change until two seconds later than it did previously.

You can use this to change timing relationships between any parameters sets listed in the Assign Timelines menu.

Motion Path Types

When you create a Timeline effect, at least some settings change from one keyframe to the next. This change from one keyframe value to another can be calculated in several ways, depending on what type of parameter is changing. These ways of calculating changes are known as "motion paths," or simply "paths."

The 8150 supports five different motion path types, but most parameters let you select only the first three. The motion path types are as follows:

■ **JP (Jump)**

This is similar to "Hold" on DVEs. A jump motion path does not interpolate or ramp from one value to another; it jumps from the value in one keyframe to the new value in the next keyframe.

Many 8150 settings are flags. These are static settings, for example video sources, border types, or color corrector modes. If this type of parameter changes in an effect, it must change instantly, as no "in-between" settings apply. Flags can only use a JP path, and you cannot change their path type. You can also apply JP to any parameter that is a numeric value. This makes the parameter jump from one setting to the next instead of interpolating or ramping.

LN (Linear)

A linear path changes or interpolates in a completely linear fashion from the current value to the next. With this motion path type, values change at a constant rate from beginning to end, without acceleration or deceleration. All 8150 numeric parameters default to this path type, except for the wipe pattern position parameters and most internal DVE position parameters, which default to SM (described later).

■ SL (Smooth-Linear)

A smooth-linear path changes or interpolates from the current value to the next by starting out slowly at the beginning of the current keyframe and accelerating to a constant speed. It holds this speed until it approaches the end of the current keyframe, when it decelerates to a stop at the next keyframe. You can assign this path type to any numeric parameter.

■ T1 and T2 (Tension-Continuity-Bias 1 and 2)

Tension, continuity, and bias (TCB) are three interactive motion attributes. T1 and T2 are identical in function; having two sets means you can apply one set of TCB values to some parameters and a different one to others.

As of this writing, only wipe pattern position, rotation, and split level switcher parameters accept the T1 and T2 path types, as well as most of the position parameters for the optional internal DVE. This is because you can only apply T1 and T2 to parameters that actually define the physical position of an object in the image. In the 8150, the wipe patterns are the only "objects" that you can move in the image. This means that only the wipe **H Position**, **V Position**, **Rotation**, and **Split Level** parameters can use T1 and T2. (While it is true that you can change the position of the internal key mask edges in a Timeline effect, they are not true "objects," and therefore are not motion splined.) Additionally, because the internal DVE actually repositions images, those parameter can also use T1 and T2.

A "spline" is a mathematically generated curved path, and a TCB spline is one way to define a curved path. Besides the curve, there is acceleration and deceleration through the path. The degree of this non-linear speed depends on the tension value.

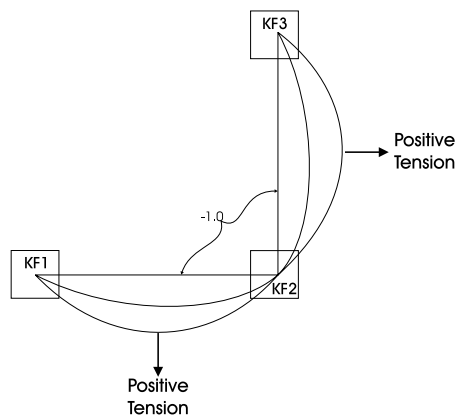
An important aspect of TCB is that, to apply the spline predictably, it must "look behind" to the previous keyframe on the Timeline and "look ahead" to the next. This lets it calculate how much and in which direction to curve the motion path for the current keyframe. This means that effects that use TCB must be at least three keyframes long, or you will not see the splined path. Also note that no matter how much the motion path curves between keyframes, the moving object always "lands" on each keyframe location exactly, if only for the duration of one field.

Tension, continuity, and bias define interrelated attributes of the motion path, and therefore are not completely independent. For the following descriptions, imagine a simple effect that moves a square wipe pattern around the screen in three keyframes.

The **Tension** value defines how much the wipe pattern's path curves as it changes direction between keyframes. At the minimum tension value of -1.0, the motion path appears the same as a Smooth-Linear (SL) path: the wipe pattern moves in a straight line, accelerates and decelerates at the beginning and end of each keyframe, and makes a sharp turn at the keyframe boundary.

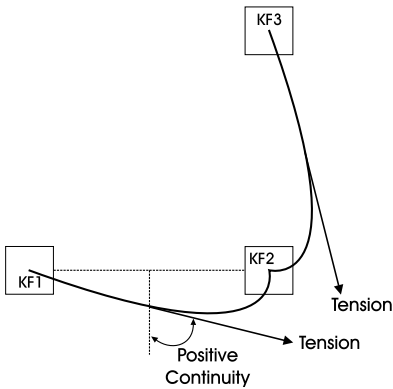
Increasing tension toward its maximum value of 1.0 curves the path between keyframes so that the pattern turns less sharply at the keyframe boundary. Also, much like a running person "rounds off" a turn to avoid having to slow down too much, a more positive tension value lets the wipe pattern decelerate less as it approaches, and accelerate less as it leaves, the keyframe.

The default tension value of 0.7 provides a natural looking curved motion path. This is where the "look behind" and "look ahead" calculations determine how much and in which direction the path curves. They must "know" the positions of the previous and next keyframes relative to the current keyframe.



Continuity defines how smooth or continuous the motion path is between keyframes. This is useful for creating movement that appears to "bounce" without any added deceleration or acceleration. The default value of 0.0 shows no discontinuity at all: the wipe pattern finishes one keyframe and begins the next with no visible disturbance.

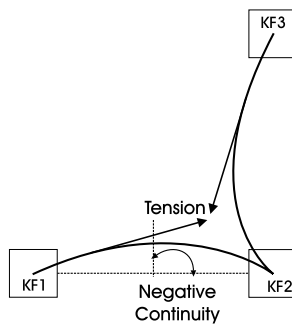
Positive continuity bends the motion path at the keyframe boundary so that the wipe pattern approaches the keyframe position from "outside" its normal path. It lands on the keyframe position, then "bounces" out of that position, again to the "outside" of where its normal motion path would take it.



Negative continuity bends the wipe pattern's motion path to the "inside" of its normal path. It lands on the keyframe position, then "bounces" toward this "inside" path.

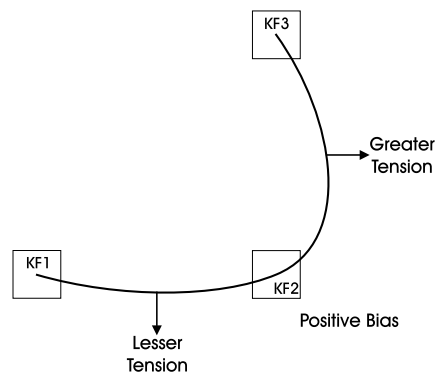
The effect must "look behind" to the previous keyframe and "look ahead" to the next keyframe to determine where its "normal" path would be, and then bend the actual path accordingly.

NOTE: The effect of the continuity value varies with the amount of tension applied. With no tension (tension = -1.0), continuity has no effect on the motion path.



Bias defines the motion path's direction as it enters and exits the keyframe boundary: it "overshoots" or "undershoots" the keyframe position. This is useful for adding "momentum" to a moving object. The default value of 0.0 causes the wipe shape to enter and exit the keyframe position symmetrically.

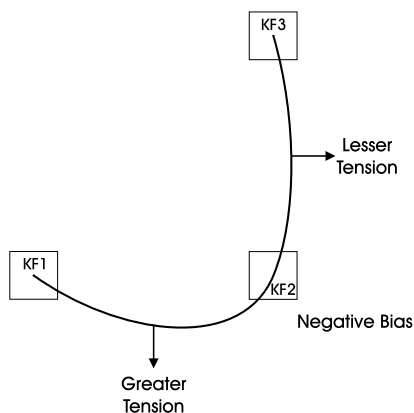
Positive bias forces the wipe pattern to "overshoot" the keyframe position, move through it, then continue in the same direction briefly before turning toward the next keyframe position.



Negative bias forces the wipe pattern to "undershoot" the keyframe position: it turns toward the next keyframe position before it reaches the current keyframe, then continues through the current keyframe on its way to the next one.

The effect must "look behind" and "look ahead" to know where the previous and next keyframes are located. This lets it produce the correct overshoot or undershoot direction.

NOTE: The effect of the bias value varies with the amount of tension applied. With no tension (tension = -1.0), bias has no effect on the motion path.



If you apply the T1 or T2 path type to some keyframes but not others, only the keyframes with T1 or T2 as the path type will look ahead and behind to those keyframes. Also, since the first keyframe in an effect cannot "look ahead," and the last keyframe cannot "look behind," you may get unexpected results if you apply T1 or T2 to the first and last keyframes. You may want to use another path type for these keyframes, for example, SL (Smooth-Linear). Because of the way tension, continuity, and bias interact, you may want to set aside some time to explore this.

■ SM (Smoothed Motion)

A smoothed motion path defines the motion path by taking into account the position of all keyframes on a Timeline. As of this writing, only wipe pattern position, rotation, and split level switcher parameters accept the SM path type, as well as most of the position parameters for the optional internal DVE. As with T1 and T2, this is because you can only apply SM to parameters that actually define the physical position of an object in the image. In the 8150, the wipe patterns are the only "objects" that you can move in the image. This means that only the wipe H Position, V Position, Rotation, and Split Level parameters let you use SM, which is their default path type. (While it is true that you can change the position of the internal key mask edges in a Timeline effect, they are not true "objects," and therefore are not motion splined.) Additionally, because the internal DVE actually repositions images, those parameter can also use SM.

Smoothed motion creates the smoothest possible motion path, in both time and motion, by eliminating as many sharp turns and changes in speed as each keyframe position and duration allows. Note that with the SM path type, the object's position exactly coincides with the original keyframe position as created, albeit for just the duration of one field.

If you do not apply SM to all keyframes, the keyframes with another path type use the one assigned. However, the 8150 uses all keyframes in the effect to calculate the smoothed motion for the keyframes with SM.

Assigning Path Types

All "keyframable" settings in the 8150 show the two-character motion path abbreviation, for the type assigned, in their pushknob labels. A parameter without a pushknob label is a flag (toggle), and can only jump between settings during an effect. If the parameter has a pushknob label, but no path type display, it is either not a keyframable setting, or motion paths do not apply.

To assign a path type to an individual parameter, press the **PATH** button in the numeric keypad. A display in the Keypad Buffer toggles the path types (**JP**, **LN**, **SL**, **T1**, **T2**, and **SM**) as you press **PATH**. Highlight the path type you want, then press the parameter's pushknob. The label shows the currently assigned path type.

To assign a path type to a group of parameters, you can select the path type you want, then press and hold **PATH** and press a control softkey, a submenu softkey, or a green menu button to assign that path to all parameters associated with that softkey, submenu, or menu. If there are parameters in that group that cannot accept the selected path type, they change to the "highest" path type level possible for the parameter, which is **SL** for most switcher parameters.

NOTE: Copying values from one parameter to another with the Keypad Buffer does not copy the path type; if necessary, you must change the path type manually for each parameter.

Triggering GPI Outputs (GPOs)

The 8150 has eight independent GPI (General Purpose Interface) Outputs that you can trigger as part of a Timeline keyframe. The GPOs are pulses that you can use to trigger a function in another device, such as starting an effect in a DVE or recalling a page in a character generator. See the 8150 Technical Guide for information on connecting GPOs to other equipment.

Trigger one or more GPOs as part of a Timeline effect as follows, using the Timeline effect that you built in the previous discussion as an example.

STEP 1: In the Personality menu, press the *Remote Port Enables* softkey. Verify that the *GPOs* softkey is *On*. This enables the GPOs.

- STEP 2:** In the Timeline menu, press the *Display Timelines* softkey to bring up the Timeline graphic display.
- STEP 3:** Double press the blue **TIMELINE 1** button to delegate Timeline 1 as the Master. Use the **PREVIOUS** or **NEXT** buttons (near the fader bar) to move the Timeline cursor to Keyframe 2.
- STEP 4:** Press the *Keyframe Events* softkey. Use the **Select GPO** pushknob to select GPO 1.
- STEP 5:** Press the *Toggle GPO* softkey. Note that the **GPO Select** display changes from **None** to **1-----** to indicate that GPO 1 is selected.
- STEP 6:** Turn the **Select GPO** pushknob to select GPO 4, and press *Toggle GPO* again. Note that **GPO Select** now displays **1--4----**, to indicate that GPOs 1 and 4 are selected.
- STEP 7:** Press the Quick Keyframes **MODIFY** button to modify Keyframe 2 (see step 2) to trigger GPOs 1 and 4.
- STEP 8:** Run the effect by pressing the **RUN** button. The **GPO Select** display reads **None** until it reaches Keyframe 2, when it changes to **1--4----**. When it reaches Keyframe 3, it reverts to **None** again for the rest of the effect. Any external device connected to GPOs 1 or 4 is triggered at Keyframe 2 in this effect.
- STEP 9:** Repeat steps 6 and 7 to add more GPOs or trigger GPOs on other keyframes. Numbers in the **GPO Select** display indicate that those GPOs are active if saved as part of a keyframe. To remove GPOs from a keyframe, select the GPO number with **Select GPO** and press *Toggle GPO* to remove it from the **GPO Select** display. Press the Quick Keyframes **MODIFY** button to modify the current keyframe and deactivate the GPO trigger.
- You can use this method to use GPOs in any 8150 Timeline effect.

Pausing an Effect

The Keyframe Events submenu has a *Pause* softkey. You can pause any Timeline effect by toggling *Pause On* and saving it as part of a keyframe. If you insert new keyframes later, be sure to toggle *Pause Off* again. All keyframes that you create with *Pause On* pause when you run the effect. Pause flags are part of the Miscellaneous parameter set, which you can assign to any Timeline.

If a keyframe has *Pause On*, the effect pauses at the beginning of that keyframe, and the **STOP NEXT** button lights. To continue running the effect from the point at which it paused, press the **RUN** button. To run the effect from the beginning, press the **STOP NEXT** button to turn it off, then press **RUN**.

Press the **REV** button to run the effect in reverse, from the last keyframe to the first. While running in reverse, a keyframe with a pause causes the effect to pause when it reaches that keyframe, i.e., at the "end" of the keyframe when viewed from the true start of the effect. Pressing **REV** with **STOP NEXT** lit runs the effect in reverse from the point at which it paused. Pressing **REV** with **STOP NEXT** off runs it in reverse from the end. You can also run the effect in the opposite direction after a pause, making the effect run toward the point at which it started.

To manually pause an effect, press the **STOP NEXT** button to light it. With the **STOP NEXT** button lit, the fader bar does not control transitions. Instead, it is a manual Timeline position control, and moves the Timeline cursor within the boundary of one keyframe as a fine manual "jog" of the effect. This mode is active regardless of which menu appears in the display. Moving the fader bar without touching either end-stop slides the Timeline cursor back and forth within the current keyframe. Moving the fader bar to its end-stop moves the cursor to the next keyframe. The fader bar moves the cursor within this next keyframe until it reaches its end-stop, when it moves the cursor to the next keyframe, and so on until you reach the end of the effect. You

cannot step backward to the previous keyframe with the fader bar in this mode.

In the Display Timelines submenu, you can use the joystick to manually move the Timeline cursor, effectively moving back and forth in the Timeline. The **STOP NEXT** button lights in this mode to indicate that the effect is paused. Unlike the fader bar, the joystick works like this only in the Display Timelines submenu.

Looping an Effect

The Global Events submenu has a *Loop* softkey. Toggle *Loop On* to put the current effect in an endless loop. Because the last keyframe has no duration, the effect "cuts" from the last keyframe to the first keyframe. For a seamless loop, you can make the last keyframe of the effect the same as the first one by pressing:

COPY — START (REW) — TO — END (FF) — ENTER

However, if there is a transition involved in the last keyframe, you may have to modify the last transition so that it blends smoothly to the first keyframe: select the source used in the first keyframe on the Background B or Preset bus in the last keyframe.

Setting the Preview output source to Auto (look-ahead preview) is helpful for determining what the completed transition will look like. Observing the Preview output, select the sources and active bus transitions so that the Program output resembles the current (last) keyframe and the Preview output resembles the first keyframe. Modifying the last keyframe now allows a graceful transition from the end of the Timeline back to the beginning when Loop is enabled.

Defeating Crosspoint Memory in an Effect

You may want to run an effect but use different crosspoint sources than the ones used when you created the effect. You can use the *Xpoints* softkey in the Global Events submenu to toggle *All On*, *All Off*, or *Inh Aux*.

When you create a Timeline effect keyframe, it saves all crosspoint matrix settings, regardless of this flag's setting, including bus row selections, Aux output sources, key fill, key source, and key mask selections, Framestore inputs, etc. With the *Xpoint* softkey, you can enable or disable recall of the crosspoint selections as needed.

- **All On** enables all crosspoint selections and recalls all sources exactly as they were when you created the effect.
- **All Off** defeats recall of all crosspoint selections that were current when you created the effect. This lets you run the same effect but use different sources each time without having to modify and resave keyframes. Note that the original source selections are still saved with the effect; they are just not active in **All Off** mode.
- **Inh Aux** inhibits recall of only the Aux crosspoint selections in a Timeline effect. It recalls all other crosspoint selections, but leaves the Aux outputs undisturbed, so you can use them for unrelated operations while running the effect.

Xpoints is strictly a recall function, which you can set differently as needed, for the same Timeline effect.

Forcing or Inhibiting a Transition

In a Timeline effect, the 8150 normally executes a background transition only when the source selected on the Background B or Preset bus is different from the one selected on the Background A or Program bus. If the same source is selected on both buses, it does not execute a transition. However, sometimes you might want to transition from a source to itself, for example to wipe between the source and a color corrected version of the same source. Conversely, you can inhibit a transition from one source to another so that it executes a cut instead of the selected transition.

The *M/E Trans* and *PIP Trans* softkeys in the Keyframe Events submenu independently control the transition status for all M/E buses and PGM/PST buses. The default is *Auto*. Toggling to *Force*

forces a transition for that keyframe, even if the same source is selected on both buses. Toggling to *Off* inhibits the selected transition and the source changes with a cut at the next keyframe. Since these settings are keyframe-based, you can force and/or inhibit transitions as often as needed in a single Timeline effect.

Editing Timeline Effects

After creating a Timeline effect, you can change, or edit, it. Use the buttons in the Timeframe™ Effects Editor section of the Control Panel to modify an existing Timeline effect, or to create a new effect. These buttons are **INSERT**, **DELETE**, **REMOVE**, **COPY**, **MODIFY**, **CLEAR KEYFRAME**, **START (REW)**, **TO**, **END (FF)**, **THIS**, **ALL**, and **ENTER**, as described below.

As you press these buttons, a dialog line shows the command string that you are creating for the effects editor. In all menus, this edit dialog line appears in the lower left corner of the menu screen, above the left pushknob label.

NOTE: You can only edit delegated (active) Timelines. To delegate a Timeline, press its blue TIMELINE button to light its LED.

Use the **INSERT** button as follows:

- Press **INSERT — ENTER** to insert a new keyframe after the current keyframe. This increases the Timeline's overall length by the new keyframe's duration.
- Press **INSERT — THIS — ENTER** to insert a new keyframe at the current location on the Timeline, whether it is between keyframes or not. This does not change the overall Timeline length. Instead, it shortens the durations of the previous and next keyframes to make room for a new keyframe, and ripples all subsequent keyframe numbers.

- Press **INSERT — START (REW) — ENTER** to create a new Keyframe 1 and ripple all subsequent keyframe numbers. This increases the overall Timeline length by the new keyframe's duration.
- Press **INSERT — END (FF) — ENTER** to insert a new keyframe at the end of the Timeline. This increases the overall Timeline length by the duration of the old last keyframe, which is now the next to the last keyframe.
- Press **INSERT — <number> — ENTER** to insert a new keyframe at the specified keyframe location. If that keyframe does not exist, the 8150 creates as many copies of the new keyframe as it needs to reach the specified number. This increases the overall Timeline length by the new keyframe's duration.
- Press **INSERT — <number> — TO — <number> — ENTER** to create a range of identical keyframes starting with the first number and ending with the second number. This inserts the keyframes at the current timeline location, and ripples all subsequent keyframe numbers. This changes the overall Timeline length by the new keyframes' total duration.

Use the **DELETE** button as follows:

- Press **DELETE — ENTER** or **DELETE — THIS — ENTER** to delete the current keyframe. This shortens the Timeline by the deleted keyframe's duration, and ripples all subsequent keyframe numbers.
- Press **DELETE — START (REW) — ENTER** to delete Keyframe 1. This shortens the Timeline by the deleted keyframe's duration, and ripples all subsequent keyframe numbers.
- Press **DELETE — END (FF) — ENTER** to delete the last keyframe, make the old next to the last keyframe the last keyframe, and set its duration to 0:00. This shortens the overall

Timeline length by the duration new last keyframe used to have.

- Press **DELETE** — **<number>** — **ENTER** to delete the specified keyframe number. This shortens the Timeline by the deleted keyframe's duration, and ripples all subsequent keyframe numbers.
- Press **DELETE** — **<number>** — **TO** — **<number>** — **ENTER** to delete the specified range of keyframes. This shortens the Timeline by the total durations of the deleted keyframes, and ripples all subsequent keyframe numbers.
- Press **DELETE** — **ALL** — **ENTER** to delete all keyframes on a Timeline. This sets the Timeline length to 0:00.

Use the **REMOVE** button as follows:

- Press **REMOVE** — **ENTER** or **REMOVE** — **THIS** — **ENTER** to delete the current keyframe and ripple all subsequent keyframe numbers. This also adds the deleted keyframe's duration to the previous keyframe to maintain the same overall Timeline length. Removing the first keyframe shortens the overall Timeline length by the removed keyframe's duration. Removing the last keyframe shortens the overall Timeline length by the duration the new last keyframe used to have.
- Press **REMOVE** — **START (REW)** — **ENTER** to delete Keyframe 1 and its duration. This ripples all subsequent keyframe numbers, but does not move the location of the new Keyframe 1 relative to other timelines. This shortens the Timeline by the removed keyframe's duration.
- Press **REMOVE** — **END (FF)** — **ENTER** to delete the last keyframe on a Timeline. This shortens the Timeline by the duration the new last keyframe used to have. (same as **DELETE** — **END** — **ENTER**).
- Press **REMOVE** — **<number>** — **ENTER** to delete the keyframe. This adds its duration to the previous keyframe to maintain the same overall Timeline length.

- Press **REMOVE — <number> — TO — <number> — ENTER** to delete a range of keyframes. This adds their total duration to the previous keyframe to maintain the same overall Timeline length.
- Press **REMOVE — ALL — ENTER** to delete all keyframes in a Timeline (same as **DELETE — ALL — ENTER**).

Use the **COPY** button as follows:

- Press **COPY — START (or) THIS (or) END (or) <number> — TO — START (or) THIS (or) END (or) <number> — ENTER** to copy a keyframe to another location on the Timeline. This overwrites the parameters in the destination keyframe.
- Press **COPY — START (or) THIS (or) END (or) <number> — TO — START (or) THIS (or) END (or) <number> — INSERT — ENTER** to copy a keyframe to another location on the Timeline. In this case, instead of overwriting the parameters in the existing destination keyframe, it inserts a new keyframe in front of the specified destination keyframe and ripples all subsequent keyframe numbers.
- Press **COPY — START (or) THIS (or) <number> — TO — THIS (or) END (or) <number> — TO — START (or) END (or) <number> — ENTER** to copy a range of keyframes to another location on the Timeline. This overwrites the parameters in the destination keyframe(s). This copies the first keyframe in the range to the destination keyframe, and the rest of the range is added by overwriting existing keyframes or creating new keyframes as needed. Note that when you enter a range of keyframes, the editor dialog line in the menu display changes the first "TO" to "THRU" to indicate a range.
- Press **COPY — START (or) THIS (or) <number> — TO — THIS (or) END (or) <number> — TO — START (or) END (or) <number> — INSERT — ENTER** to copy a range of keyframes to another location on the Timeline. In this case, instead of overwriting the parameters in the existing destination

keyframes, it inserts a new range of keyframes in front of the specified destination keyframe and ripples all subsequent keyframe numbers.

Use the **MODIFY** button as follows:

- Press **MODIFY — ENTER** or **MODIFY — THIS — ENTER** to overwrite the existing keyframe with the current switcher settings. If the Timeline cursor is between keyframes, nothing happens.
- Press **MODIFY — START** (or) **END** (or) **<number> — ENTER** to overwrite an existing keyframe with the current switcher settings.
- Press **MODIFY — ALL — ENTER** to overwrite only the parameters that are different, in all keyframes, from the settings at the "current time" (indicated by the Timeline cursor) with the actual settings (the way the switcher is currently, actually set up). This is known as an "absolute modify." For example, a Timeline has three keyframes that set a border hue to 30 in the first keyframe, 60 in the second keyframe, and 90 in the third keyframe. The current time is at the first keyframe, and you change the border hue to 120. Pressing **MODIFY — ALL — ENTER** changes the border hue in all three keyframes to 120.
- Press the **MODIFY — TRIM — ALL — ENTER** to trim only the parameters that are different, in all keyframes, between the settings at the current time and the actual settings. This is known as a "relative modify." Using the above example, the difference in the settings at the current time (hue = 30) and the actual settings (hue = 120) is 90. Pressing **MODIFY — TRIM — ALL — ENTER** offsets the hue by 90 in all three keyframes, resulting in hue settings of 120, 150, and 180.
- Press **MODIFY — START** (or) **THIS** (or) **<number> — TO — THIS** (or) **END** (or) **<number> — ENTER** to overwrite a range of keyframes that are different from the settings at the current

time. This is the same as **MODIFY — ALL — ENTER** except that it modifies only the specified range of keyframes, not all keyframes.

- Press **MODIFY — TRIM — START** (or) **THIS** (or) **<number> — TO — THIS** (or) **END** (or) **<number> — ENTER** to trim a range of keyframes that are different from the settings at the current time. This is the same as **MODIFY — TRIM — ALL — ENTER** except that it trims only the specified range of keyframes, not all keyframes.

Besides the uses described above, you can press the **START (REW)** button alone to immediately go to the first keyframe on the master Timeline. Press the **END (FF)** button alone to immediately go to the last keyframe on the master Timeline. Use the **TO** button to go immediately to the start of a keyframe on the master Timeline by pressing **TO — <number> — ENTER**.

The **THIS**, **ALL**, and **ENTER** buttons are used in Timeline effect editing dialog as described above.

Press the **PREVIOUS** button in the Timeline button section to stop a running effect at the beginning of the previous keyframe. Press the **NEXT** button to stop a running effect at the beginning of the next keyframe. These buttons do not pause the effect but actually stop it.

To go to a specific point in time in the effect, enter the time on the numeric keypad and press the **Time** pushknob. The effect jumps immediately to the entered time, which is now the effect's "current time."

Using LINC

LINC™ (Locally Integrated Node Control) is a serial remote control protocol developed by Accom to give the switcher control over other devices, such as DVEs and DDRs (digital disk recorders), as part of the switcher Timeline effect. With LINC you can run these devices repeatably and frame-accurately. They are actually part of the effect.

The LINC submenu lists 16 devices, which correspond to the 16 available LINC addresses. Highlight a device with the **Scroll** pushknob and toggle the *Dev Enable* softkey to enable or disable that device as part of a switcher Timeline effect. Each device's ON/OFF status appears next to its LINC address.

Since each LINC device reports back to the 8150 every video field, there is a maximum number of LINC devices that you can use in a single Timeline effect. This number varies according to the type of device, but should be limited to ten devices or fewer.

Because of the size of the 8150 Control Panel, manual control of LINC devices is limited to *Play*, *Stop*, and *Jog*. However, these controls should let you find the exact point in the DVE effect or off-disk video that you want to correspond to a point in the switcher Timeline effect.

To define the relative timing of the Timeline, DVE, and DDR, you must use the **Offset** control. The use of this control varies depending on the device, as explained below. After you enter the offsets for each device, they are saved and recalled with the Timeline effect.

Adding a DVE to a Timeline Effect

If you have a DVE that supports LINC protocol (Accom A57, DVEOUS, A51, or Component A53-D, for example), you can integrate an effect on the DVE into an 8150 Timeline effect. If the DVE effect is to start at the same time as the Timeline effect, enter a 0:00 value in **Offset**, since they start simultaneously.

To begin the DVE effect after the Timeline effect starts, enter a positive offset. This delays the start of the DVE effect until after the start of the Timeline effect. Enter the number of frames (or seconds and frames) for the DVE effect start delay in the **Offset** pushknob.

To run the DVE effect from a point after its own start point, enter a negative offset value. This cues the DVE effect to a point past the start of the effect: it starts from there when you run the switcher Timeline effect. Note that, in either case, the DVE effect does not always run from its own start point; it runs from the point determined by the **Offset** value.

You may need to synchronize a certain point in the DVE effect with a certain point in the switcher Timeline effect. To calculate the offset, subtract the Timeline effect's time code ("current time") at that point from the time code of the DVE effect at that point. The result is the needed offset value, which can be either a positive or negative number.

Adding a DDR to a Timeline Effect

If you have a digital disk recorder that supports LINC protocol (Accom Diskus or A66, for example), you can integrate the off disk video into an 8150 Timeline effect. To use the video at a time code location of 00:00 on the disk in the effect, enter 0:00 in the **Offset** pushknob.

If the off-disk video starts at a time code location after 00:00, enter that value *as a negative number*. Since you want to exclude the off-disk video *before* the time code location, you must offset the start of the disk (defined as 00:00) *before* the start of the switcher Timeline effect by that same amount. This lets the correct video appear at the beginning of the effect.

An easy way to do this is to go to the beginning of the Timeline effect (press **START**), then use the **JOG** pushknob to position the DDR at the start of the desired video footage. Then just press **JOG** to copy the timecode number into the Keypad Buffer, and press

Offset to load that number as its timecode offset. However, since the offset value must be a negative number, press the **+/-** button and press **Offset** to make the number negative.

Note that, when the effect runs, the DDR instantly cues to, and runs from, the time code location specified by the **Offset** value; it does not run from the beginning of the disk.

You may need to synchronize the off-disk video with a certain point in the switcher Timeline effect. To calculate the offset, subtract the Timeline effect's time code ("current time") at that point from the time code of the needed off-disk video. The result is the needed offset value, usually a negative number.

The 8150 controls DDRs as either playback or record devices. To use a DDR as a recorder, press the **LINC** softkey in the Timeline menu and turn the **Scroll** pushknob to highlight the address of the desired DDR in the list. Its status, next to its address number, should read **PLA**. Press the **Dev Enable** softkey to toggle its status to **REC**. Use the Record Len pushknob to enter a record length, and use the Offset pushknob to enter a record "in" point. As noted above, you must enter the "in" point as a negative number so that the DDR's timeline is offset correctly from the switcher timeline.

Now, when you run this Timeline effect, the DDR will cue to the assigned "in" point and begin recording as the effect runs, dropping out of record as it reaches the end of its assigned record length.

To assign this DDR as a playback device, toggle **Dev Enable** through **OFF** to **PLA**. Alternatively, assigning **REC** status to another DDR automatically changes the status of the current DDR back to **PLA**.

For more information on using the 8150 and the Accom Diskus as a Cache Recorder, see the 6100 10-Bit Cache Recorder Configuration and Operations Manual, P/N 9100-0252.

Saving and Recalling Timeline Effects

After building a Timeline effect, you can save it for use later. With the standard 8MB DRAM memory, there is enough memory to let you save Timeline effects to all 100 on-line effect registers.

Save and recall Timeline effects as follows:

- STEP 1:** Press the **EFFECT** menu button.
- STEP 2:** Press the *Name* softkey and enter a name (up to eight characters) with the **Cursor** and **Character** pushknobs, or a PC AT compatible keyboard connected to the Control Panel KEYBOARD port.
- STEP 3:** Use the **Scroll** pushknob to select the register to which you want to save the effect. You can use any effect register number (0 through 99).
- STEP 4:** Press the *Confirm* softkey to save the effect. It is stored in battery backed RAM, and remains available, even if the 8150 is powered down or rebooted.

WARNING: Performing a RAM update in the Engineering menu, or removing the Switcher board from the Main Chassis, clears all Timeline effects saved to memory. Be sure to save all Timeline effects to disk before doing either.

Recall a Timeline effect from an effect register as follows:

- STEP 1:** In the Effect menu, press the *Recall* softkey.
- STEP 2:** Use the **Scroll** pushknob to highlight the Timeline effect you want to recall.
- STEP 3:** Press the *Confirm* softkey to load the selected Timeline effect into the active workspace.
- STEP 4:** When the effect is loaded, the switcher configures itself to the first keyframe of the effect. You can press

the **RUN** button to run the effect, press the **NEXT** and **PREVIOUS** buttons to step through the effect one keyframe at a time, or edit the effect without running it.

NOTE: Recalling a Timeline effect register does not automatically update the keyer and color corrector source memories. See Section 4 – Keying, and Section 8 – Color Correction, for information on updating source memories by recalling effects.

Saving Timeline Effect Registers to Disk

Back up a Timeline effect to disk as follows:

- STEP 1:** Create a Timeline effect and save it to an effect register as outlined above.
- STEP 2:** Insert a 1.44MB or 720KB floppy disk into the Control Panel or (optional) external floppy drive. You can use a preformatted DOS floppy, or format one with a PC or the 8150. See Section 11 – Disk Operations for information on formatting.
- STEP 3:** Press the **DISK** menu button and, if needed, select *Internal*, *External*, or *Hard Drv* with the *Drive* softkey. (It defaults to the internal drive unless you previously selected another drive.) The menu displays information about the size of the disk, available space, and lists any disk files in the box in the center of the menu. The internal Control Panel drive is *A:*, the external drive is *B:*, and the optional hard drive is *C:*.
- STEP 4:** Set the **File Type** pushknob to **TIM** and select the register number you want to archive with the **Register Number** pushknob.

- STEP 5:** Press the *Save* softkey to highlight *Name File*. A naming box appears in the bottom of the menu. If you have a PC AT keyboard connected to the 8150 Control Panel, you can use it to give the file a standard eight character name. If a PC keyboard is not available, you can use the **Cursor** and **Character** pushknobs to name the file as discussed in Section 11 – Disk Operations. The 8150 automatically adds the file extension based on the file type currently selected, in this case, .TIM. See the 8150 Technical Guide for information on connecting a PC keyboard to your Control Panel.
- STEP 6:** Press the *Confirm* softkey. The 8150 writes the file to the disk, and prompts when it is done. The menu display updates to list the new file.
- STEP 7:** You can save a comment up to 80 characters long with any existing .TIM file. Press the *Comments (Set)* softkey.
- STEP 8:** Use the **File List** pushknob to scroll to the file name you want to add the comment to.
- STEP 9:** Type or enter the comment, which can be up to 80 alphanumeric characters. The comment appears in the comment box as you type.
- STEP 10:** When you finish typing the comment, press *Confirm*. This saves the comment with the disk file.
- STEP 11:** To read any file comment, scroll to the file name and press *Comment (Show)*. The comment appears in the comment box. If the comment is longer than 34 characters, use the **Cursor** pushknob to move the cursor along the full length of the comment.

See Section 11 – Disk Operations for information on saving multiple registers to disk in one operation.

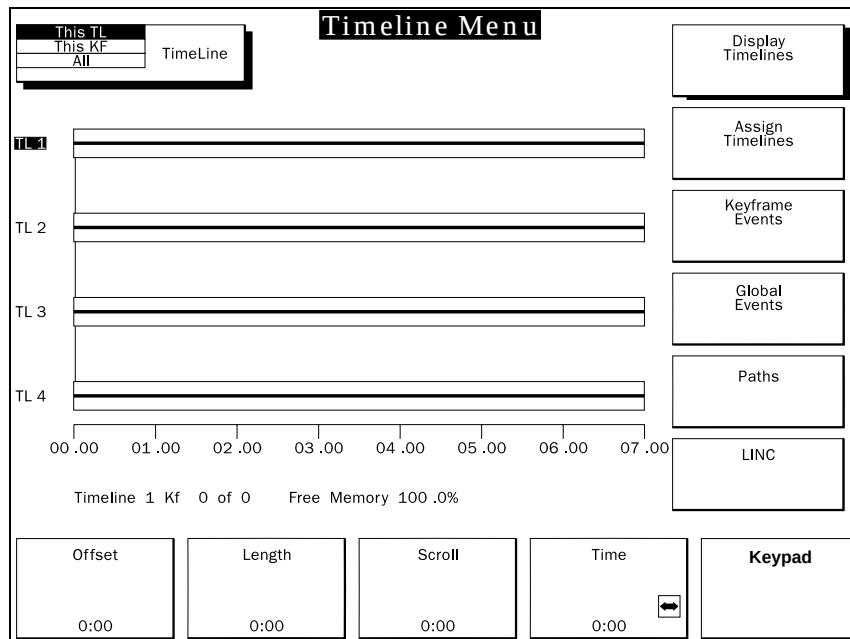
Recalling Timeline Registers from Disk

Recall Timeline effect registers from disk as follows:

- STEP 1:** Insert the floppy disk with the Timeline file into the Control Panel or (optional) external floppy drive.
- STEP 2:** Press the **DISK** menu button and, if needed, select *Internal*, *External*, or *Hard Drv* with the *Drive* softkey.
- STEP 3:** Set the **File Type** pushknob to **TIM**. The file list in the menu only lists files of the selected type, unless you set the **File Type** pushknob to **ALL**.
- STEP 4:** Use the **File List** pushknob to scroll the highlight bar in the file list and choose the file you want to recall.
- STEP 5:** Select the register number you want to recall the file to with the **Register Number** pushknob. Note that this does not have to be the same register number from which you originally saved the file to disk.
- STEP 6:** Press the *Confirm* softkey. The 8150 recalls the file from the disk, and prompts when it is done. You can now recall the Timeline effect from the Effect menu.

See Section 11 – Disk Operations for information on recalling multiple files from disk in one operation.

The Timeline Menu



The Timeline Menu

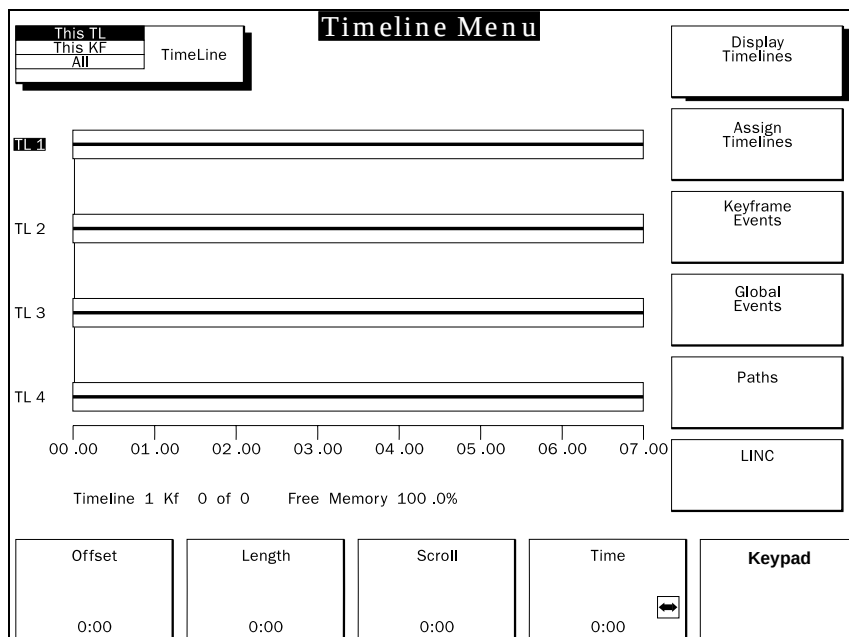
Press the green **TIMELINE** button to bring up this menu. Here you can view graphics of existing Timeline effects, assign parameters to different Timelines, and establish and use LINC communications.. The display includes the current time from the start of the effect, and lets you scroll up and down the Timeline display. You can also use this menu to adjust keyframe start and end times, Timeline durations, and Timeline offsets.

Display Timelines Submenu

Press the *Display Timelines* softkey to bring up a graphic display of the four Timelines. There are controls for scrolling through the displays and adjusting lengths and offsets of all Timelines, one Timeline, or individual keyframes.

Each Timeline is displayed horizontally on the LCD screen, with the start (00.00) of the effect on the left side and the seven-second point (07.00) on the right side. Timeline effects can be any length, but the display can only show a seven second segment at a time.

At the left of each Timeline are softkeys labeled *TL 1* through *TL 4*. Pressing a softkey highlights the label and makes the selected Timeline the *master* Timeline.



The Display Timelines Submenu

TimeLine

Press this softkey to toggle *This TL*, *This KF*, and *ALL*. Selecting *This TL* or *ALL* brings up these pushknob controls:

- **Offset** - use to move the selected Timeline (or all Timelines if *ALL* is selected) relative to 00.00, the effect start point. Note that the Timeline effect always starts at 00.00, even if none of the timelines start at that point.
- **Length** - use to change the overall length of the selected Timeline (or *ALL* Timelines) by changing each keyframe's length proportionally in the Timeline.
- **Scroll** - use to move the Timeline display backward or forward to see the current part of the effect. This does not change the Timeline effect; it just lets you see other parts of the effect.
- **Time** - the display shows the current time at the cursor location. You can use the joystick to move forward or backward on the Timeline. To go to a specific point on the Timeline, enter the time in the numeric keypad and press the **Time** pushknob.

NOTE: The 8150 interprets numbers entered for times or durations as frames. For example, it interprets an entry of 1 — 0 — 0 as 100 frames, and displays it as 3:10 in 525 or 4:00 in 625. To enter seconds and frames, enter the seconds, press the decimal (*) button, then enter the frames. For example, an entry of 1 — * — 0 — 0 is interpreted as 1 second 0 frames, and is displayed as 1:00 in both line standards. To enter seconds and frames plus one field, enter the seconds, press the decimal button, enter the frames, then press the decimal button again. For example, an entry of 1 — * — 0 — 0 — * is 1 second 0 frames plus 1 field, and is displayed as 1:00* in both line standards.

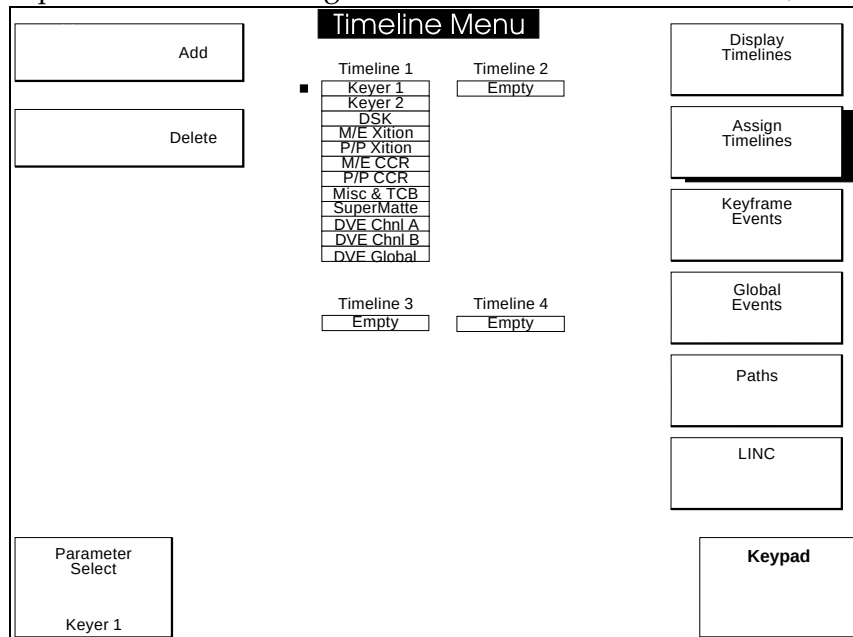
If you select ***This KF*** with the ***TimeLine*** softkey, the pushknob labels change as follows.

- **Start** - use to adjust the point in time that the current keyframe starts relative to the beginning of the Timeline effect. Note that the first keyframe always starts at 00.00, and that the last keyframe has no duration, and therefore no "start" or "end." This *does not* change the overall Timeline length because it changes the duration of the previous keyframe accordingly.
- **End** - use to adjust the point in time that the current keyframe ends relative to the beginning of the Timeline effect. Note that the last keyframe has no duration, and therefore no "start" or "end." This *does not* change the overall length of the Timeline, because it changes the duration of the next keyframe accordingly *with one exception*. The exception is that changing the end time of the next-to-last keyframe *does* change the overall Timeline length, because the last keyframe has no duration.
- **Duration** - use to adjust the current keyframe's duration. This adjustment *does* change the overall length of the Timeline because it does not affect the duration of any other keyframe.
- **Time** - the display shows the current time at the cursor location. You can use the joystick to move forward or backward on the Timeline. To go to a specific point on the Timeline, enter the time in the numeric keypad and press the **Time** pushknob. See the note on the previous page about entering times with the numeric keypad.

Assign Timelines Submenu

Use the *Assign Timelines* softkey to assign different sets of switcher attributes to the Timelines. With this feature, you can change some switcher parameters independently of others during a Timeline effect.

This submenu has four columns labeled "Timeline 1" through "Timeline 4." You can assign any switcher parameter set to any Timeline column. To move a parameter set to a different Timeline, use the joystick to move a small black square, called the Assign cursor, to highlight a parameter box in any of the four Timeline columns. (If the Timeline column has no parameters assigned, a box with the word "Empty" appears in that column.) Select the parameter set that you want to assign to that Timeline with the **Parameter Select** pushknob, then press the *Add* softkey. If that parameter set is assigned to another Timeline column, it is



The Assign Timelines Submenu

automatically deleted when you add it to the new column. You cannot assign a parameter set to more than one Timeline at once.

To remove a parameter set from all Timelines, move the joystick to highlight the parameter set that you want to delete, then press the *Delete* softkey. However, once you have deleted a parameter set, if you recall it later, that parameter set has no keyframes of its own. To avoid this, just move the parameter set to another Timeline instead of deleting it entirely.

The **Parameter Select** pushknob toggles the parameter sets:

- **Keyer 1** – all attributes for M/E Keyer 1, including fill, key, mask, and border fill sources, and the Keyer 1 Fill Color Corrector; this does not include transitioning the key on or off.
- **Keyer 2** – all attributes for M/E Keyer 2, including fill, key, mask, and border fill sources, and the Keyer 2 Fill Color Corrector; this does not include transitioning the key on or off.
- **DSK** – all attributes for the Downstream Keyer, including fill, key, mask, and border fill sources, and the DSK Fill Color Corrector; this does not include transitioning the key on or off.
- **M/E Xition** (Transition) – all M/E transitions, including background transitions, key transitions, key priority transitions, or any combination; the Background A and B bus crosspoint selections; all M/E Wipe generator(s) attributes.
- **P/P Xition** (Transition) – all PGM/PST transitions, including Program/Preset bus transitions, DSK transitions, or both; the Program and Preset bus crosspoint selections; all the Program/Preset Wipe generator attributes.
- **M/E CCR** – all attributes for the M/E Background A and Background B Color Correctors.
- **P/P CCR** – all attributes for the Program and Preset bus Color Correctors.
- **Misc + TCB** – Aux bus output source selections; all Framestore attributes, including source selections; GPO (GPI output) triggers; Timeline effect pauses; tension, continuity, bias.

- **Super Matte** – all SuperMatte generator attributes.
- **DVE Chnl A** – all parameters from Channel A of the optional internal DVE, if installed.
- **DVE Chnl B** – all parameters from Channel B of the optional internal DVE, if installed.
- **DVE Global** – all global parameters of the optional internal DVE, if installed.

Add

Press this softkey to add a parameter set to a Timeline column. Select the parameter set with the **Parameter Select** pushknob. Use the joystick to move the Assign cursor to any parameter in the Timeline column (including "Empty"), then press the **Add** softkey.

Delete

Press this softkey to remove a parameter from a Timeline column. Use the joystick to move the Assign cursor and highlight the parameter, then press the **Delete** softkey. Note that if you delete a parameter set from a timeline and later recall it, the parameter set contains no keyframes of its own.

Keyframe Events Submenu

Use the controls under the *Keyframe Events* softkey to:

- enable, disable, or force M/E and PGM/PST transitions
- add or remove a pause
- trigger the GPI outputs.

The M/E Transition control applies to the M/E Transition parameter set, the PGM/PST Transition control applies to the P/P Transition parameter set. The settings for the *Pause* flag and *Toggle GPO* (GPI Outputs) are part of the Miscellaneous Timeline parameter set, which you can assign to any Timeline.

M/E Trans

This softkey toggles *Auto*, *Force*, and *Off*. This is a keyframable parameter, so you must modify the keyframe(s) that you want to use this setting with.

Timeline Menu																					
<table style="width: 100%;"> <tr> <td style="width: 50%; text-align: center;">Auto</td> <td style="width: 50%;"></td> </tr> <tr> <td style="text-align: center;">Force</td> <td></td> </tr> <tr> <td style="text-align: center;">Off</td> <td></td> </tr> </table> M/E Trans <table style="width: 100%;"> <tr> <td style="width: 50%; text-align: center;">Auto</td> <td style="width: 50%;"></td> </tr> <tr> <td style="text-align: center;">Force</td> <td></td> </tr> <tr> <td style="text-align: center;">Off</td> <td></td> </tr> </table> P/P Trans <table style="width: 100%;"> <tr> <td style="width: 50%; text-align: center;">Off</td> <td style="width: 50%;"></td> </tr> <tr> <td style="text-align: center;">On</td> <td></td> </tr> </table> Pause <table style="width: 100%;"> <tr> <td style="width: 50%; text-align: center; background-color: black; color: white;">Select</td> <td style="width: 50%;"></td> </tr> <tr> <td colspan="2" style="text-align: right; padding-right: 10px;">Toggle GPO</td> </tr> </table> Select GPO 1 GPO Select 1-----	Auto		Force		Off		Auto		Force		Off		Off		On		Select		Toggle GPO		Display Timelines Assign Timelines Keyframe Events Global Events Paths LINC Keypad
Auto																					
Force																					
Off																					
Auto																					
Force																					
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Off																					
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Select																					
Toggle GPO																					

The Keyframe Events Submenu

- **Auto**, the default mode, executes the active M/E background bus transition if the crosspoint selected on Background A is different from that selected on Background B.
- **Force** executes the transition even if the same source is selected on both buses. This is useful if you need a wipe pattern to move through the picture without changing the background source.
- **Off** executes the transition only as a cut. This is useful if you want to perform a cut on the Background A bus instead of the active transition.

P/P Trans

This softkey toggles *Auto*, *Force*, and *Off*. This is a keyframable parameter, so you must modify the keyframe(s) that you want to use this setting with.

- **Auto**, the default mode, executes the active PGM/PST bus transition if the crosspoint selected on the Program bus is different from the crosspoint selected on the Preset bus.
- **Force** executes the transition even if the same source is selected on both buses. This is useful if you need a wipe pattern to move through the picture without changing the background source.
- **Off** executes the transition only as a cut. This is useful if you want to perform a cut on the Program bus instead of the active transition.

Pause

Toggle this softkey *On* to pause a Timeline effect at the beginning of a keyframe when run forward, or at the end of the keyframe when run in reverse. You must insert or modify the keyframe with *Pause On* for the Timeline effect to pause at that keyframe.

Since this flag is a part of the Miscellaneous parameter set, you can assign pauses to only one Timeline in an effect. Note that the entire effect pauses at keyframes with the *Pause* flag *On*, not just the Timeline to which you assign the pause.

Toggle GPO

You can trigger GPOs (GPI outputs) during any keyframe in the Timeline with the Miscellaneous parameter set assigned to it. Select the GPO (1 through 8) that you want to trigger with the **Select GPO** pushknob. When you press *Toggle GPO*, the **GPO Select** display shows that number and a series of dashes. Select another GPO with the **Select GPO** pushknob, then press *Toggle GPO* again to add that GPO to the display. To remove a GPO from the display, select its number with **Select GPO** and press *Toggle GPO*. This removes that GPO number from the **GPO Select** display.

The GPOs shown in the **GPO Select** display are saved as a keyframe parameter on the Timeline that has the Miscellaneous parameter set assigned to it. When you run the Timeline effect, it triggers the selected GPOs at the beginning of that keyframe. You can trigger any combination of GPOs in any or all keyframes.

NOTE: Be sure to enable the GPOs by toggling *GPOs On* in the Personality Remote Port Enables submenu. If the *GPOs* setting is *Off*, no GPOs are triggered, even if they are part of a Timeline effect.

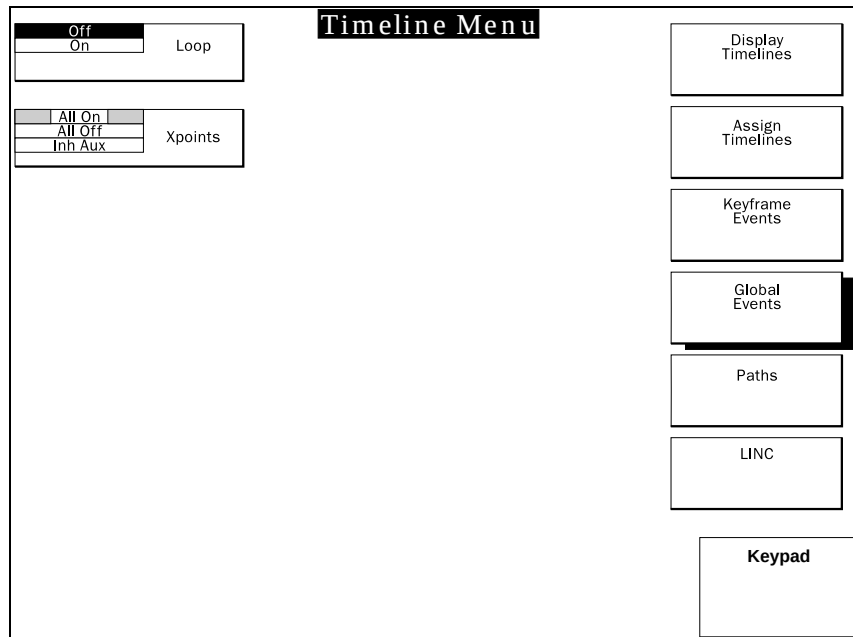
Global Events Submenu

Press the *Global Events* softkey to bring up controls for looping a Timeline effect and for enabling or disabling crosspoint recall in a Timeline effect.

Loop

Toggle this softkey *On* to place the current Timeline effect in an endless loop when you run it in either direction. For a seamless transition from the end keyframe to the start keyframe, add a new end keyframe that is the same as the start keyframe by pressing **COPY — START — TO — END — ENTER**.

When *Loop* is *On*, a reverse highlighted "L" appears in the menu display next to the Timeline keyframe status message above the Keypad Buffer. This reminds you that the current Timeline effect will loop continuously when you run it in either direction.



The Global Events Submenu

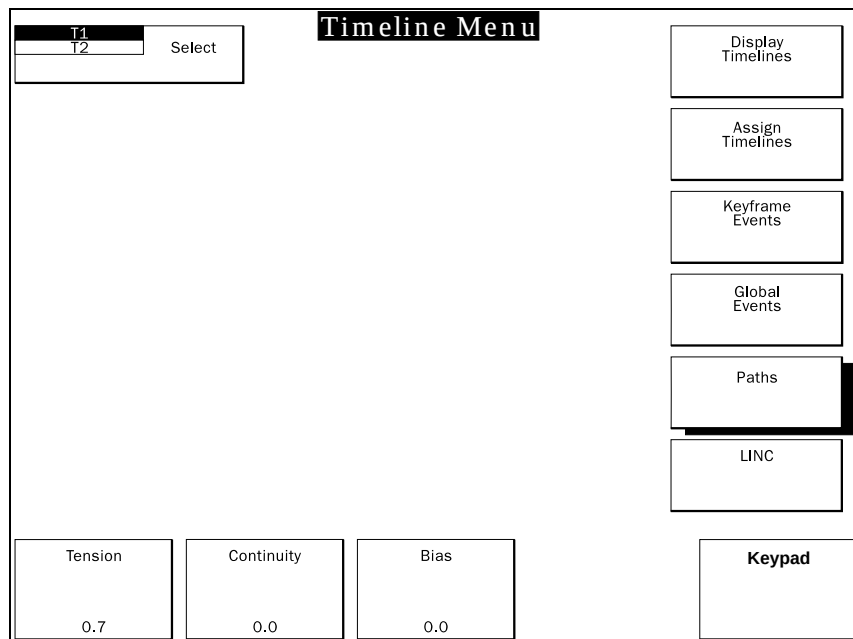
XPoints

Press this softkey to toggle *All On*, *All Off*, and *Inh. Aux*. Note that Timeline effects always save crosspoint settings, regardless of the *Xpoints* setting; this flag only affects recalling the crosspoint settings.

- *All On* (the default) recalls all crosspoint matrix settings in an effect, including all bus row selections, Aux outputs, key fill, source, and mask settings, Framestore inputs, etc.
- *All Off* does not recall any crosspoint settings when you run a Timeline effect, so that you can build and save an effect using one set of crosspoint sources, then select different sources and run the effect using the new sources.
- *Inh. Aux* recalls all crosspoint settings except the four Aux bus outputs. This lets you run Timeline effects without affecting the Aux outputs, which you can then use for other unrelated purposes.

Paths Submenu

Press the *Paths* softkey to bring up controls for setting tension, continuity, and bias values for the T1 and T2 presets. See the discussion that begins on page 10-18 for details on the path types. In brief, tension, continuity, and bias (TCB) are time and motion parameters that define the path a parameter takes during the course of a Timeline effect. T1 and T2 are both TCB presets. There are two presets so that you can apply one set of TCB values to some parameters, and different set to others. As of this writing, only wipe pattern position, rotation, and split level switcher parameters take the T1 and T2 (as well as SM) path types.



The Paths Submenu

Select

Press this softkey to toggle *T1* and *T2*. Use the **Tension**, **Continuity**, and **Bias** pushknobs to set the values for the selected motion path (T1 or T2). The discussion beginning on page 10-18 outlines each setting in detail.

- **Tension** – controls how sharply the motion path bends as it changes direction.
- **Continuity** – controls how smooth, or continuous, the motion path is as it enters and leaves a keyframe.
- **Bias** – controls the symmetry of the motion path as it enters and leaves a keyframe.

LINC Submenu

Press the **LINC** softkey to access the listing and controls for LINC. To enable LINC, set Editor Port 3 for LINC protocol and enable the port. See the 8150 Technical Guide for information on physical connections to LINC devices.

Dev Enable

Press this softkey to select or deselect a LINC device. Use the **Scroll** pushknob to move the highlight in the list and select the device's LINC address. Press **Dev Enable** to toggle the device **ON** and **OFF**. If the device is a DDR (digital disk recorder), the status in this column toggles between **PLA** (playback), **REC** (recorder), and **OFF**.

Use the **Offset** pushknob to select an offset value for the timecode from the selected LINC device. If the LINC device is a DVE, you

Toggle		Dev Enable		Timeline Menu				Display Timelines
				Location	Offset			
1	PLA	6100	00:00:20:00	23:59:40:00				
2	REC	6100	00:00:39:15	23:59:21:15				
3	ON	5100	00:00:06:10	00:00:00:00				
4	ON	NONE	00:00:00:00	00:00:00:00				
5	ON	NONE	00:00:00:00	00:00:00:00				
6	ON	NONE	00:00:00:00	00:00:00:00				
7	ON	NONE	00:00:00:00	00:00:00:00				
8	ON	NONE	00:00:00:00	00:00:00:00				
9	ON	NONE	00:00:00:00	00:00:00:00				
10	ON	NONE	00:00:00:00	00:00:00:00				
11	ON	NONE	00:00:00:00	00:00:00:00				
12	ON	NONE	00:00:00:00	00:00:00:00				
13	ON	NONE	00:00:00:00	00:00:00:00				
14	ON	NONE	00:00:00:00	00:00:00:00				
15	ON	NONE	00:00:00:00	00:00:00:00				
16	ON	NONE	00:00:00:00	00:00:00:00				

Play	Stop	Assign Timelines	Keyframe Events	Global Events	Paths	LINC

Scroll	Offset	Record Len	Jog	Keypad
1	-20:00	04:20	20:00	

The LINC Submenu

can begin running its effect after the beginning of the 8150 Timeline effect. To do this, enter a *positive* offset value in **Offset**.

If the LINC device is a DDR (digital disk recorder), you can play back disk video that has a beginning time code number higher than 00:00:00:00. To do this, enter a *negative* offset value in **Offset**. The value should equal to the time code number at the start of the piece of video. This runs the disk from the selected time code location as the 8150 Timeline effect runs. You can enter an offset value of up to +/- 10,000 frames, which is 5:33:10 in 525, and 6:40:00 in 625.

If you are using a DDR (digital disk recorder) as a Cache Recorder, you can set the record length for that device with the **Record Len** pushknob. Enter the desired record duration in frames or seconds and frames using the normal method.

Use the **Jog** pushknob or the joystick to jog or step the selected LINC device through its effect or recorded material. You can also cue the device to a certain time code number by typing the desired time code number and pressing **Jog**. The time value in the **Jog** display is the time code output by the device.

Play

Press this softkey to play or run the selected LINC device. Use the **Scroll** pushknob to move the highlight in the list and select the device's LINC address.

Stop

Press this softkey to stop or pause the selected LINC device. Use the **Scroll** pushknob to move the highlight in the list and select the device's LINC address.

The Effect Menu

The diagram illustrates the 'Effect Menu' interface. It features a central list of 14 effect registers, numbered 0 to 13. Register 5, labeled 'joesmove', is currently selected. To the left of the list are several control buttons: 'Name Eff' (with a 'Save' button), 'Recall Eff' (with a 'Recall' button), 'Protect', 'Copy Current', 'Confirm', 'Scroll' (with a '5' indicator), and 'Cursor'. To the right are 'Timeline Effects' and 'Snapshot Effects' buttons. Below the list is a small box labeled 'A'. At the bottom, there are three main sections: 'Cursor' (with '< Move >' text), 'Character' (with 'Change' text), and 'Keypad'.

The Effect Menu

Press the green **EFFECT** button to access the Effect menu. Use this menu to save and recall Timeline effects and Snapshot keyframes to and from on-line battery-backed memory. The standard 8150 with 8MB of DRAM memory can store 100 Timeline effects in effect registers from 0 through 99.

To recall independent DVE effects, such as for Effect transitions, use the DVE Misc menu, which you can access by pressing the **EFFECT TRANS** menu button.

You can also save a total of 25 Snapshots as Keyframes 0 through 24. The Snapshot keyframes have their own registers that are separate from the Timeline registers. You cannot name a Snapshot keyframe; however, the 8150 stamps each register with

the current time and date when you store a Snapshot keyframe in it. Note that you do not have to be in this menu to save or recall Snapshot keyframes; the menu simply displays the status of the 25 registers. To save or recall a Snapshot keyframe, enter the keyframe number (0 through 24) in the numeric keypad and press the **SAVE KF** or **RECALL KF** button.

Each Timeline effect register shows the date that it was saved, the total number of keyframes in it, and an eight-character name that you can assign to it. A PC AT keyboard connected to the 8150 Control Panel makes naming Timeline effects quick and easy.

To save and recall Timeline effect and Snapshot keyframe registers to and from disk, see Section 11 – Disk Operations.

Converting Snapshots Created with Earlier Software

Snapshot keyframes that are created with one version of software may not be compatible with a later version; however, Timeline effects are compatible with later software versions. If you have Snapshot keyframes that you will need to use after a software update, use the following procedure to convert them.

NOTE: You should perform this procedure BEFORE the software update, as you will be unable to recall old Snapshot keyframes (even if they were saved to disk) with the new software.

- STEP 1:** Recall a Snapshot keyframe that you wish to use after the software update by typing the keyframe number and pressing **RECALL KEYFRAME**.
- STEP 2:** To keep the process simple, assign all parameter sets to Timeline 1. Press the Assign Timelines softkey and verify that all 12 parameter sets are assigned to Timeline 1, and that all other Timeline columns read "EMPTY."

- STEP 3:** Double-press the **TIMELINE 1** button, lighting its LED. Press **INSERT NEXT** to create a timeline effect keyframe out of the current setup.
- STEP 4:** Save this one-keyframe timeline effect into one of the Timeline effect registers. You can name it if you wish.
- STEP 5:** Save this Timeline effect to disk as a .TIM file.
- STEP 6:** Repeat the above steps for all Snapshot keyframes that you wish to save. See Section 11 – Disk Operations for a method of saving multiple registers to disk in one operation.
- STEP 7:** Perform the software update per the instructions that came with the update kit.
- STEP 8:** After the update is complete, restore the Timeline effects from disk that you saved earlier. See Section 11 – Disk Operations for a method of recalling multiple disk files in one operation.
- STEP 9:** Recall one of these Timeline effects. Once it is recalled, enter the Snapshot keyframe number for which you want to save it, and press **SAVE KEYFRAME**.
- STEP 10:** Repeat the previous step for all other Snapshot keyframes that you saved as Timeline effects. Once they are saved as Snapshot keyframes, you can delete them from the Timeline effect registers if you wish.
- STEP 11:** If necessary, save the converted Snapshot keyframes to disk as .EFF files.

Timeline Effects Submenu

Press the *Timeline Effects* softkey to name, save, and recall Timeline effects to and from battery-backed memory.

The upper middle part of the menu lists all the Timeline effects registers. If there is no effect stored in a register, "EMPTY" appears at that register number.

Save (Name Eff)

Press this softkey to assign an eight-character name to a Timeline effect that you are ready to save. Three pushknobs appear: **Scroll**, **Cursor**, and **Character**. Use the **Scroll** pushknob to move the highlight in the list and select a register to which you want to save a Timeline effect. If you know the register number, you can enter it and press **Scroll** to move directly to that register. You can assign an eight-character name to each Timeline effect before you save

The Timeline Effects Submenu

it. You can use a PC AT keyboard connected to the Control Panel KEYBOARD port to name the effects.

If a PC AT keyboard is not available, you can use the **Cursor** and **Character** pushknobs to name the effect. Use the **Character** pushknob to select a character in the naming box, then press the pushknob to enter the character. The cursor automatically advances to the next character position. To move the cursor, use the **Cursor** pushknob. To clear the naming box, press the **CLEAR** button in the numeric keypad, then the **Character** pushknob.

After entering the name and selecting the register to which you want to save the effect, press the *Confirm* softkey.

To protect a Timeline effect register from being overwritten, select the register with the **Scroll** pushknob, then press the *Protect* softkey. "P" appears to indicate that that register is now protected. To remove the overwrite protection, select the register with the **Scroll** pushknob, then press the *Protect* softkey.

NOTE: All Timeline effects, protected or not, are deleted if you clear the RAM or update software in the Engineering menu, or remove the Switcher board from the Main Chassis. Save all needed effect registers to disk before executing any of these functions.

Recall (Recall Eff)

Press this softkey to recall a Timeline effect from a register. Use the **Scroll** pushknob to move the highlight in the list and select the register to recall. You can also enter the register number and press the pushknob to highlight the register. Press the *Confirm* softkey to load the effect into the effect workspace, where you can run or edit it.

Protect

Use this softkey to protect an effect register from being overwritten. Select a register with the **Scroll** pushknob, then press the **Protect** softkey. "P" appears to indicate that the register is protected. To unprotect a register, highlight it with the **Scroll** pushknob and press **Protect**.

Copy Current

Press this softkey to copy a Timeline effect name to the naming box for editing. (This does not copy Timeline effects, only effect names.) Use the **Scroll** pushknob to highlight the register name in the list, then press **Copy Current**. You can edit the name with a PC AT keyboard or the **Cursor** and **Character** pushknobs. You can use the edited name to save the current Timeline effect to another register.

Confirm

This softkey acts as an "enter" button: it enters the settings in the other controls in this menu.

Snapshot Effects Submenu

Press the *Snapshot Effects* softkey to save and recall Snapshot keyframes to and from battery backed memory.

The upper middle part of the menu lists the Snapshot keyframe registers. If there is no effect stored in a register, "EMPTY" appears at that register number. If there is a keyframe stored, the display includes the register's time and date stamp. You cannot name a Snapshot keyframe.

Save (Save Eff)

Press this softkey to save a Snapshot keyframe to one of the 25 registers. Use the **Scroll** pushknob to move the highlight in the list and select a register. You can also enter the register number in the numeric keypad and press **Scroll** to highlight that number. Press *Confirm* to save the Snapshot keyframe.

Effect Menu		
0)	11-16-95	15:50
1)	11-17-95	9:40
2)	EMPTY	
3)	EMPTY	
4)	EMPTY	
5)	EMPTY	
6)	EMPTY	
7)	EMPTY	
8)	EMPTY	
9)	EMPTY	
10)	EMPTY	
11)	EMPTY	
12)	EMPTY	
13)	EMPTY	

The Snapshot Effects Submenu

To protect a Snapshot keyframe register from being overwritten, select the register with the **Scroll** pushknob, then press the **Protect** softkey. "P" appears to indicate that that register is now protected. To remove the overwrite protection, select the register with the **Scroll** pushknob, then press the **Protect** softkey.

NOTE: All Snapshot keyframes, protected or not, are deleted if you clear the RAM or update software in the Engineering menu, or remove the Switcher board from the Main Chassis. Save all needed effect registers to disk before executing any of these functions.

Recall (Recall Eff)

Press this softkey to recall a Snapshot keyframe from a register. Use the **Scroll** pushknob to move the highlight in the list and select the register to recall. You can also enter the register number and press the pushknob to highlight the register. Press the **Confirm** softkey to load the Snapshot keyframe, which immediately configures the switcher to the settings in the keyframe.

Delete (Delete Eff)

Press this softkey to clear or remove a Snapshot keyframe from a register. Use the **Scroll** pushknob to move the highlight in the list and select the register to delete. You can also enter the register number and press the pushknob to highlight the register. Press the **Confirm** softkey to delete the Snapshot keyframe.

Protect

Use this softkey to protect a Snapshot keyframe register from being overwritten. Select a register with the **Scroll** pushknob, then press the *Protect* softkey. "P" appears to indicate that the register is protected. To unprotect a register, highlight it with the **Scroll** pushknob and press *Protect*.

Confirm

This softkey acts as an "enter" button: it enters the settings in the other controls in this menu.

The Effect Menu

8150 Operations

Section 11

Disk Operations

Introduction

Use the Disk menu to save and recall switcher files. The 8150 has a built-in 3.5" floppy disk, located on the right side of the Control Panel. You can also add an optional external floppy drive, which is useful if your Control Panel is mounted in a console that covers the integral disk drive. Other options include a SCSI hard drive and Jaz drive kit, both of which mount in the Main Chassis. You can use these to store all files, including image files.

NOTE: For the Jaz option, you must use an internal SCSI Jaz drive.

The floppy drive supports 1.44MB floppy disks. Floppy disks are in the MS-DOS format, letting you manage files off-line on a personal computer. Because you can save switcher setups and effects to disk, you can easily and precisely recreate switcher setups. You should always back up engineering setup, personality, and effect files to disk before performing a system update or removing the main board from the Main Chassis.

NOTE: If you connect an external floppy drive to the Control Panel, you must reboot the Control Panel before it recognizes the new drive.

Saving Files to Disk

When you save a file to disk, the 8150 "stamps" it with the current time and date. If your 8150 is new, set the time and date before saving disk files.

Setting the Date and Time

- STEP 1:** Press the **DISK** menu button, then the *Misc* softkey.
- STEP 2:** Press the *Date* softkey and select today's date with the **Month**, **Day**, and **Year** pushknobs.
- STEP 3:** Press the *Time* softkey and select the current time with the **Hour (00-23)** and **Minute** pushknobs. The 8150 uses a 24 hour clock instead of 12 hour AM and PM settings.

The screenshot displays the 'Disk Menu' interface. At the top, there are two softkey options: 'Adjust' (highlighted) and 'Date'. Below these, there are two more softkey options: 'Adjust' and 'Time'. The main display area shows the current date and time: 'Date: 4/1/95' and 'Time: 12:32'. Below this, there is a table of files:

MORNOPEN.EFF	JAN-02-1995	16:15:58
JOES_BAR.EFF	JAN-06-1995	12:20:12

Below the table, the following information is displayed:

Path: A:
 Disk Size: 1457664
 Disk Free: 1423872
 File Size: 3346

On the right side of the screen, there are several buttons: 'Save Recall', 'Directory', 'Delete Copy', 'Format', and 'Misc' (highlighted). At the bottom, there is a 'Keypad' button. The 'Date & Time' section at the bottom left shows 'Set' and 'Date & Time' softkeys, and three pushknobs for 'Month' (4), 'Day' (1), and 'Year' (1995).

The Miscellaneous Submenu

STEP 4: After entering the current date and time, press the *Date & Time* softkey. This enters the settings into the 8150's real-time clock, where it remains even if the battery backed RAM is cleared. When you save a file to disk, it is "stamped" with the current date and time according to this system clock.

Formatting a Floppy Disk or Jaz Cartridge

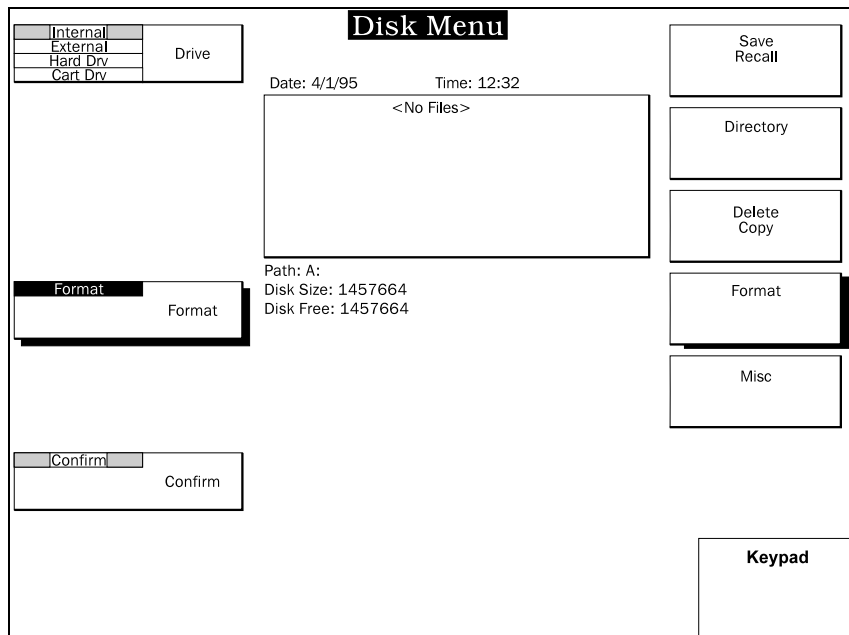
If you have a new or unformatted floppy disk, or Jaz cartridge you must first format it before using it with the 8150. You can use a DOS compatible PC or the 8150 Control Panel. The hard disk is already formatted by Accom and should not need re-formatting.

Format a floppy disk with the 8150 Control Panel as follows:

- STEP 1:** Insert a 1.44MB floppy disk into the Control Panel or (optional) external floppy drive.
- STEP 2:** Press the **DISK** menu button and, if needed, select *Internal* or *External* with the *Drive* softkey. (It defaults to the internal drive unless you selected another drive previously.) The internal Control Panel drive is *A*; the external drive is *B*; the Jaz cartridge is drive *D*.

WARNING: Formatting a disk erases all the information stored on it. Be sure the floppy or Jaz cartridge do not have files you want to keep, and that you select the correct drive, before formatting a disk.

STEP 3: Press the *Format* submenu softkey on the right side of the display. Press the *Format* softkey on the left side of the display, then *Confirm*. The prompt "Are you SURE you want to do this?" appears. If so, press *Confirm* again. It prompts when it is finished.



The Format Submenu

Saving Files to Disk

Save a file to a formatted floppy disk or Jaz cartridge, or the optional hard disk drive, as follows:

STEP 1: Select the destination disk drive with the *Drive* softkey. *Internal* is the disk drive installed in the Control Panel; the *A:* drive. *External* is the optional disk drive connected to the Control Panel EXTERNAL FLOPPY connector; the *B:* drive. *Hard Drv* is the optional hard disk drive; the *C:* drive. *Cart Drv* is the optional Jaz drive; the drive is *D:*. To use a floppy drive, insert a formatted disk in the drive.

STEP 2: Press the *Save Recall* submenu softkey, then the *Save* softkey on the left side of the menu.

Disk Menu										
Internal	Drive	Date: 4/1/95	Time: 12:32	Save Recall						
External		<table border="1"> <tr> <td>MORNOPEN.EFF</td> <td>JAN-02-1995</td> <td>16:15:58</td> </tr> <tr> <td>JOES_BAR.EFF</td> <td>JAN-06-1995</td> <td>12:20:12</td> </tr> </table>			MORNOPEN.EFF	JAN-02-1995	16:15:58	JOES_BAR.EFF	JAN-06-1995	12:20:12
MORNOPEN.EFF		JAN-02-1995	16:15:58							
JOES_BAR.EFF		JAN-06-1995	12:20:12							
Hard Drv										
Cart Drv										
Show	Comment			Directory						
Set	Comments			Delete Copy						
Name File	Save	Path: A: Disk Size: 1457664 Disk Free: 1423872 File Size: 3346		Format						
Recall File	Recall			Misc						
Confirm	Confirm									
		JOESTART.EFF T								
Register Number	File Type	Cursor	Character	Keypad						
1	EFF	< Move >	Change							

The Save Recall Submenu

STEP 3: Use the **File Type** pushknob to select the type of file you want to save. These are the file types:

EFF – saves the single-keyframe Snapshot effect in the currently selected Snapshot effect register. Use the **Register Number** pushknob to select the register (0 - 24) you want to save.

TIM – saves the Timeline effect in the currently selected Timeline effect register. Use the **Register Number** pushknob to select the register (0-99) you want to save.

WIP – saves the wipe setup in the currently selected user wipe register. Use the **Register Number** pushknob to select the user wipe register (1 - 20) you want to save.

CCR – saves the Color Corrector setup in the currently selected user Color Corrector register. Use the **Register Number** pushknob to select the user Color Corrector register (1 - 20) you want to save.

KEY – saves the keyer setup in the currently selected user keyer register. Use the **Register Number** pushknob to select the user keyer register (1 - 20) you want to save.

MAT – saves the SuperMatte setup in the currently selected user SuperMatte register. Use the **Register Number** pushknob to select the user SuperMatte register (1 - 20) you want to save.

PER – saves the current Personality menu settings. There is only one register available.

ENG – saves the current Engineering menu settings. There is only one register available.

TIF – saves the image frozen in the framestore as a TIFF (Tag Image File Format) file. The 8150 saves TIFF images as compressed 8-bit RGB files. Use the **Register Number** pushknob to select the framestore (1 or 2) image that you want to save. Saving a TIFF file to the hard disk takes several seconds; saving it to a floppy disk may take several minutes.

YUV – saves the image frozen in the framestore as a full bandwidth 8-bit YUV (A60 format) file. Use the **Register Number** pushknob to select the framestore (1 or 2) image that you want to save. Saving a YUV

Disk Menu				
Internal External Hard Drv Cart Drv	Drive	Date: 4/1/95	Time: 12:32	Save Recall
Show	Comment	MORNOPEN.EFF	JAN-02-1995 16:15:58	Directory
		JOES_BAR.EFF	JAN-06-1995 12:20:12	Delete Copy
Set	Comments	Path: A: Disk Size: 1457664 Disk Free: 1423872 File Size: 3346		Format
Name File	Save			Misc
Recall File	Recall			
Confirm	Confirm			
		JOESTART.EFF T		
Register Number	File Type	Cursor	Character	Keypad
1	EFF	< Move >	Change	

The Save Recall Submenu

file to the hard disk takes about three seconds; saving it to a floppy disk takes several minutes.

Y10 – saves the image frozen in the framestore as a full bandwidth 10-bit YUV file. Use the **Register Number** pushknob to select the framestore (1 or 2) image that you want to save. Saving a Y10 file to the hard disk takes about three seconds; saving it to a floppy disk takes several minutes.

DVE – saves user-defined effect transitions, which use the optional DVE card. Use the **Register Number** pushknob to select the framestore (1 or 2) image that you want to save.

STEP 4: Name the file. If you have a PC AT keyboard connected to the 8150 Control Panel, you can use it to give the file a standard eight character name. If a PC keyboard is not available, use the **Cursor** and **Character** pushknobs to name the file.

If there is already a name in the naming box, you can clear it by pressing the **CLEAR** button in the numeric keypad, then the **Character** pushknob. (This leaves one character in the box, since valid file names must have at least one character.) Use the **Cursor** pushknob to move the cursor in the naming box; push it to backspace through the name to delete characters. Use the **Character** pushknob to select a character; push it to enter the current character in the current cursor position. You can enter numbers in the file name with the numeric keypad. The 8150 uses standard DOS filenames, so you can only use the characters available with the **Character** pushknob.

The 8150 automatically adds the file extension based on the file type currently selected.

- STEP 5:** Press the *Confirm* softkey. The 8150 saves the file to the disk, and prompts when it is finished. The menu display updates to list the new file on the disk.

Recalling Files from Disk or Jaz

- STEP 1:** Insert the floppy with the files you want to recall into the Control Panel or (optional) external disk drive.
- STEP 2:** Press the **DISK** menu button and select *Internal*, *External*, *Hard Drv* or *Cart Drv* with the *Drive* softkey. (The internal drive is the default unless you selected another drive previously.) The menu displays information about the size of the disk, available space, and lists any files in the list box in the center of the menu. The Control Panel drive is *A:*; the external drive is *B:*; the optional hard drive is *C:* and the optional Jaz drive is drive *D:*.
- STEP 3:** Press the *Save Recall* submenu softkey, then the *Recall* softkey on the left side of the menu display.
- STEP 4:** Use the **File Type** pushknob to select the type of file you want to recall. See the list of file types in the discussion on saving disk files. **ALL** lists all files on the disk, regardless of type or extension.

- STEP 5:** Use the **File List** pushknob to move the black highlight bar through the file list and select the file you want to recall.
- STEP 6:** Press the *Confirm* softkey. The 8150 recalls the file from the disk, and prompts when it is done. For Personality and Engineering menu files, this automatically sets the switcher to the settings in the recalled file.

Deleting Files from Disk or Jaz

- STEP 1:** Insert the floppy with the files you want to delete into the Control Panel or (optional) external disk drive or Jaz drive. Or insert the Jaz cartridge into the Jaz drive.
- STEP 2:** Press the **DISK** menu button and select *Internal*, *External*, *Hard Drv* or *Cart Drv* with the *Drive* softkey. (It defaults to the internal drive unless there is an external drive connected, in which case it defaults to the external drive.) The menu displays information about the size of the disk, available space, and lists any files in the center of the menu. The internal Control Panel drive is *A:*, the external drive is *B:*, the optional hard drive is *C:*, the optional Jaz drive is *D:*.
- STEP 3:** Press the *Delete Copy* submenu softkey.
- STEP 4:** Use the **File Type** pushknob to select the type of file you want to delete. See the list of file types in the discussion on saving disk files. In addition to the individual file types, you can select **ALL** to display the full contents of the current disk or directory.
- STEP 5:** Use the **File List** pushknob to scroll the black highlight bar through the file list and select the one you want to delete.
- STEP 6:** Press the *Confirm* softkey to delete the file. The 8150 deletes the file, and prompts when it is finished.

WARNING: The 8150 does not prompt before deleting a file. Be sure you have the correct file selected before pressing the *Confirm* softkey. If you delete a floppy disk file by mistake, you can use the "undelete" function in a DOS PC to recover the file.

Saving and Recalling File Comments

You can add comments of up to 80 characters to each 8150 disk file, except for image files (TIF, YUV, Y10). The file must already be saved on the disk before you can add comments to it; you cannot save a comment to a file that you have not yet saved.

The 8150 saves file comments as ASCII text at the beginning of each file. If you are archiving files on a PC, you can use the "type [filename.ext]" command at the DOS prompt to view the comments for a given file.

Save comments to a file as follows:

- STEP 1:** Press the **DISK** menu button, then the *Save Recall* softkey.
- STEP 2:** Press the *(Set) Comments* softkey and scroll through the list of files with the **File List** pushknob to highlight the file to which you want to add comments. A large "comment box" appears in the lower part of the menu display.
- STEP 3:** If you have a PC AT keyboard connected to the Control Panel Keyboard port, you can use it to enter the comment. If a PC AT keyboard is not available, you can use the **Cursor** and **Character** pushknobs to enter the comment. Turn the **Cursor** pushknob to move the cursor in the comment box. Turn the **Character** pushknob to select the character, and press it to enter the character at the current cursor position. In either case, you can use up to 80 characters for the comment.
- STEP 4:** After typing the comment, press the *Confirm* softkey to save the comment with the highlighted disk file. The time and date stamp is not updated when you save the comment.

Recall a comment previously saved with a file as follows:

- STEP 1:** Press the **DISK** menu button, then the *Save Recall* softkey.
- STEP 2:** Press the *Recall File* softkey and scroll through the list of files with the **File List** pushknob, highlighting the file whose comment you want to recall.
- STEP 3:** Press the *(Show) Comment* softkey. The "comment box" appears in the lower part of the menu display with the file comment, if one exists for that file.

Saving and Recalling a Range of Files

To save more than one register of the same type to the disk, you can specify a range of registers to save. All registers in the range are saved with a common file name, to which the 8150 automatically adds a two digit number according to each register's place in the range. For instance, if you want to save eight registers in the range 3 through 10, you assign a single file name, to which the 8150 adds the numbers 01 through 08 to indicate in what order the registers were originally saved.

Saving a Range of Files

Follow these steps to save multiple registers of the same type to disk with a single command.

- STEP 1:** In the Disk menu, press the *Save Recall* softkey, followed by the *Name File (Save)* softkey.
- STEP 2:** To specify the range of registers that you want to save, use the numeric keypad to type the number of the first register in the range, followed by the decimal point, followed by the number of the last register in the range. Then press the **Register Number** pushknob to enter the range.

For instance, to specify registers 3 through 10, type **3 – * – 10**, then press **Register Number**. The pushknob display now reads **3 thru 10**.

- STEP 3:** Turn the **File Type** pushknob to select the type of register file you want to save. You can save a range of registers of any file type except for **PER**(sonality) and **ENG**(ineering), each of which have only one register available. Note that you can save a range of image files, (**TIF**, **YUV**, or **Y10**), but the range is limited to two,

since there are only two framestores (registers) in the system.

- STEP 4:** Using an external PC AT keyboard connected to the Control Panel KEYBOARD port, or using the **Cursor** and **Character** pushknobs, type a file name, which all registers in the range will use when saved to disk. The 8150 automatically adds a two digit number to the file name to indicate the order that each register has in the range. If you type a name longer than six characters, the two digit number replaces the seventh and eighth characters in the file name.

For instance, for a range of timeline effect registers using the file name ENDING.TIM, the files on the disk would appear as ENDING01.TIM, ENDING02.TIM, etc. However, for a file name of CLOSINGS.TIM, the files on the disk would appear as CLOSIN01.TIM, CLOSIN02.TIM, etc.

- STEP 5:** Press the Confirm softkey. This saves all registers in the specified range to the disk with the file name that you entered, including the two digit number as described above. The menu prompts when it is done.

Recalling a Range of Files

To recall more than one file of the same type from the disk, you can specify a range of registers to which you want to recall those files. The files must be adjacent in the menu file list for this feature to work. For instance, if you want to recall eight files of the same type from the disk to registers 3 through 10, those eight files must be sequential in the list. You specify a range of registers into which you want to recall those files, and the files are recalled in the order in which they appear in the file list.

Follow these steps to recall multiple files of the same type with a single command:

STEP 1: In the Disk menu, press the *Save Recall* softkey, followed by the *Recall File* softkey.

STEP 2: To specify the range of registers to which you want to recall the files, use the numeric keypad to type the number of the first register in the range, followed by the decimal point, followed by the number of the last register in the range. Then press the **Register Number** pushknob to enter the range.

For instance, to specify registers 3 through 10, type **3 – * – 10**, then press **Register Number**. The pushknob display now reads **3 thru 10.**]

STEP 3: Turn the **File Type** pushknob to select the type of file that you want to recall. You can recall a range of any file type except for **PER**(sonality) and **ENG**(ineering), each of which have only one register available. Note that you can recall a range of image files (**TIF**, **YUV**, or **Y10**), but the range is limited to two since there are only two framestores (registers) in the system.

NOTE: Do not select **ALL** as the file type. If there are files of different types sequentially in the list, they will not be recalled correctly.

STEP 4: Turn the **File List** pushknob to select the first file in the range. That file is highlighted, and in addition, a number of files below the first file is highlighted, indicating the files that will be recalled in to the specified range of registers. You cannot "mark" or otherwise specify files that do not directly follow the first highlighted file.

For example, if the range that appears in the **Register Number** pushknob display is **3 thru 10** (a total of eight registers), the selected file name plus the next seven are highlighted to indicate that these files will be recalled into registers 3 through 10.

STEP 5: Press the *Confirm* softkey. This recalls all highlighted files to the specified range of registers. The menu prompts when it is done.

Copying Single Files between Disks

If your 8150 has the optional external floppy disk drive, optional Jaz drive, or the optional hard drive, you can copy files between disks with the Delete Copy submenu, as follows:

- STEP 1:** Insert a floppy into the Control Panel or (optional) external disk drive, or a cartridge in the (optional) Jaz drive.
- STEP 2:** Press the **Disk** menu button, then the *Delete Copy* softkey.
- STEP 3:** Toggle the *Drive* softkey to select the source drive: the disk drive that has the file that you want to copy. If the file is in a subdirectory, use the Directory submenu to change to that subdirectory.

Disk Menu								
Internal	Drive	Date: 4/1/95 Time: 12:32						
External								
Hard Drv								
Cart Drv								
Copy	From	<table border="1"> <tr> <td>MORNOPEN.EFF</td> <td>JAN-02-1995</td> <td>16:15:58</td> </tr> <tr> <td>JOES_BAR.EFF</td> <td>JAN-06-1995</td> <td>12:20:12</td> </tr> </table>	MORNOPEN.EFF	JAN-02-1995	16:15:58	JOES_BAR.EFF	JAN-06-1995	12:20:12
MORNOPEN.EFF	JAN-02-1995	16:15:58						
JOES_BAR.EFF	JAN-06-1995	12:20:12						
Copy	To							
Delete	Delete	Path: A: Disk Size: 1457664 Disk Free: 1423872 File Size: 3346						
Confirm	Confirm All	Save Recall						
Confirm	Confirm	Directory						
		Delete Copy						
		Format						
		Misc						
File Type		File List						
EFF		Scroll						
		Keypad						

The Delete Copy Submenu

- STEP 4:** Press the *From* softkey. Use the **File List** pushknob to scroll the highlight in the list and select the file you want to copy.
- STEP 5:** Press *Confirm*. The message "Copy file" with the filename and extension appears in the menu to indicate that you selected that file as the source, or "from," file.
- STEP 6:** Toggle the *Drive* softkey to select the destination drive: the disk drive to which you want to copy the file. To copy the file to a subdirectory, use the Directory submenu to change to that subdirectory.
- STEP 7:** Press the *To* softkey, then *Confirm*. The "Copy file" message adds "to" and the destination drive and filename. When it is finished, it prompts "Copy file . . . done."

Copying All Files Between Disks

Steps 1 through 3 are the same as for Copying Single Files.

- STEP 4:** Press the *From* softkey. Use the File Type pushknob to select *A*
- STEP 5:** Press the *Confirm All* softkey. The message "Copy all files displayed" appears.
- STEP 6:** Toggle the *Drive* softkey to select the destination drive (the disk drive to which you want to copy the file). To copy the file to a subdirectory, use the **Directory** submenu to change to that subdirectory.
- STEP 7:** Press the *To* softkey, then the *Confirm All* softkey. A message displaying the file names as they are being copied will appear. When it is finished, it prompts

Internal	Drive	Disk Menu Date: 4/1/95 Time: 12:32 <table border="1"> <tr> <td>MORNOPEN.EFF</td> <td>JAN-02-1995</td> <td>16:15:58</td> </tr> <tr> <td>JOES_BAR.EFF</td> <td>JAN-06-1995</td> <td>12:20:12</td> </tr> </table>		MORNOPEN.EFF	JAN-02-1995	16:15:58	JOES_BAR.EFF	JAN-06-1995	12:20:12
MORNOPEN.EFF	JAN-02-1995			16:15:58					
JOES_BAR.EFF	JAN-06-1995	12:20:12							
External									
Hard Drv		Path: A: Disk Size: 1457664 Disk Free: 1423872 File Size: 3346							
Cart Drv									
Copy	From	Save Recall							
Copy	To	Directory							
Delete	Delete	Delete Copy							
Confirm	Confirm All	Format							
Confirm	Confirm	Misc							
File Type		File List							
EFF		Scroll							
		Keypad							

"Copy file...done." If there is not enough room on the destination drive, the message "Not enough disk space" will be displayed.

NOTE: When **ALL** is the selected choice, a naming box appears, allowing you to type in DOS-style "wild card" entries. Such entries include *.EFF, *.TIF, *.PER, GRAPHICS.*, NEWS.*, EDIT.*, etc. This DOS wild card feature lets you copy all files with the indicated full or partial filename or extension.

This feature is case sensitive. You must type in **CAPITAL LETTERS** when specifying file types or names. When copying all files from one disk to another, you must press *Confirm All* both for the Copy From selection as well as for the Copy To selection. Pressing *Confirm* in either case copies only the highlighted file.

The Disk Menu

Press the green **DISK** button to bring up this menu.

Save Recall Submenu

This softkey accesses the Save Recall submenu, where you can save and recall files to and from a floppy disk or the optional hard disk drive, or the optional Jaz drive.

A box in the center of the menu lists all the files of the selected type on the selected disk with their time and date stamp.

Disk Menu					
Internal	Drive	Date: 4/1/95	Time: 12:32	Save Recall	
External		MORNOPEN.EFF	JAN-02-1995		16:15:58
Hard Drv		JOES_BAR.EFF	JAN-06-1995		12:20:12
Cart Drv					
Show	Comment	Path: A:		Directory	
Set	Comments	Disk Size: 1457664		Delete Copy	
Name File	Save	Disk Free: 1423872		Format	
		File Size: 3346		Misc	
Recall File	Recall				
Confirm	Confirm	JOESTART.EFF			
		T			
Register Number	File Type	Cursor	Character	Keypad	
1	EFF	< Move >	Change		

The Save Recall Submenu

Drive

Toggle this softkey to select the *Internal* (Control Panel) or *External* (optional) floppy disk drive, or *Hard Drv* (optional SCSI disk drive), or *Cart Drv* (optional Jaz drive). You cannot select the external or hard drive if they are not installed.

Show Comment

Press this softkey to view the comment added to the current file in the list. Use the **File List** pushknob to scroll the black highlight bar in the list and select the file. Press *Show Comment* to view the file comment. You can also view comments on a PC by entering "type <filename.ext>" at the DOS prompt.

Disk Menu				
Internal External Hard Drv Cart Drv	Drive	Date: 4/1/95	Time: 12:32	Save Recall
Show	Comment	MORNOPEN.EFF	JAN-02-1995 16:15:58	Directory
		JOES_BAR.EFF	JAN-06-1995 12:20:12	
Set	Comments			Delete Copy
Name File	Save	Path: A: Disk Size: 1457664 Disk Free: 1423872 File Size: 3346		Format
Recall File	Recall			Misc
Confirm	Confirm			
JOESTART.EFF T				
Register Number	File Type	Cursor	Character	Keypad
1	EFF	< Move >	Change	

The Save Recall Submenu

Set Comments

Use this softkey to add a comment to a file that is already on the disk. (You cannot add a comment to a file that does not yet exist on the disk.) A comment box appears, and you can use a PC AT keyboard connected to the Control Panel KEYBOARD port to enter a comment of up to 80 characters. Comments do not have the same constraints as DOS filenames, so you can use almost any character, including spaces, in a comment. Press *Confirm* to add the comment to the file.

If you do not have a keyboard, you can use the **Character** pushknob to select characters and numbers for the comment. Press the pushknob to enter the character at the current cursor location. Use the **Cursor** pushknob to move the cursor in the comments box. Press the **CLEAR** button in the numeric keypad, then the **Character** pushknob, to clear the comments box. Press the *Confirm* softkey to add the comment to the current file.

Save

Press this softkey to bring up controls for naming and saving a file. Select the file type with the **File Type** pushknob. Use the **Register Number** pushknob to select the register that you want to save. You can use a PC AT keyboard connected to the Control Panel to assign a standard eight character DOS name to the file, then press *Confirm* to save it.

If a PC keyboard is not available, you can use the **Character** pushknob to select characters and numbers for the file name. Press the pushknob to enter the current character at the current cursor position in the naming box. You can use the numeric keypad to enter numbers in the file name. Use the **Cursor** pushknob to move the cursor in the naming box. After selecting the register to save, press the *Confirm* softkey to save the file.

Recall

Press this softkey to list the files of the selected type on the disk. Select the file type with the **File Type** pushknob. Use the **File List** pushknob to scroll through the file list to select a file. Select the register to which you want to recall the file with the **Register Number** pushknob, then press the *Confirm* softkey.

Confirm

This softkey acts as an "enter" button: it confirms the operation set up in the other controls in this menu.

Directory Submenu

Press the *Directory* softkey to create, remove, or change directories on the disk.

Drive

Toggle this softkey to select the *Internal* (Control Panel) or *External* (optional) floppy disk drive, *Hard Drv* (optional SCSI disk drive), or *Cart Drv* (optional Jaz drive). You cannot select the external or hard drive if they are not installed.

Make Directory

Press this softkey to create a new directory on a floppy or the optional hard disk. Use a PC AT keyboard connected to the Control Panel to enter a standard eight character DOS directory name. If a PC keyboard is not available, you can use the **Cursor** and **Character** pushknobs to enter the name.

Disk Menu					
<table border="1"> <tr><td>Internal</td></tr> <tr><td>External</td></tr> <tr><td>Hard Drv</td></tr> <tr><td>Cart Drv</td></tr> </table>	Internal	External	Hard Drv	Cart Drv	Drive
Internal					
External					
Hard Drv					
Cart Drv					
Date: 4/1/95 Time: 12:32					
<No Sub-Dir>					
<table border="1"> <tr><td>Make</td></tr> </table>	Make	Make Directory			
Make					
<table border="1"> <tr><td>Remove</td></tr> </table>	Remove	Remove Directory			
Remove					
<table border="1"> <tr><td>Change</td></tr> </table>	Change	Change Directory			
Change					
<table border="1"> <tr><td>Confirm</td></tr> </table>	Confirm	Confirm			
Confirm					
Path: C: Disk Size: 1079736832 Disk Free: 1074146304					
<table border="1"> <tr><td>Save Recall</td></tr> </table>		Save Recall			
Save Recall					
<table border="1"> <tr><td>Directory</td></tr> </table>		Directory			
Directory					
<table border="1"> <tr><td>Delete Copy</td></tr> </table>		Delete Copy			
Delete Copy					
<table border="1"> <tr><td>Format</td></tr> </table>		Format			
Format					
<table border="1"> <tr><td>Misc</td></tr> </table>		Misc			
Misc					
<table border="1"> <tr><td>A</td></tr> </table>		A			
A					
<table border="1"> <tr><td>Cursor</td></tr> </table>	Cursor	<table border="1"> <tr><td>Character</td></tr> </table>	Character		
Cursor					
Character					
< Move >	Change				
<table border="1"> <tr><td>Keypad</td></tr> </table>		Keypad			
Keypad					

The Directory Submenu

Remove Directory

Press this softkey to remove a directory from a floppy or the optional hard disk. Use the **Directory List** pushknob to scroll the highlight in the list of directories and select the one you want to delete. The directory must be empty before you can delete it.

Change Directory

Press this softkey to change from the current directory to another directory on the same disk. Use the **Directory List** pushknob to scroll the highlight in the list of directories and select the one to which you want to change. Select "." to move up one directory.

Confirm

This softkey acts as an "enter" button: it confirms the operation set up in the other controls in this menu.

Delete Copy Submenu

Use the Delete Copy submenu to delete files or to copy files from one disk to another.

Drive

Toggle this softkey to select the *Internal* (Control Panel) or *External* (optional) floppy disk drive, *Hard Drv* (optional SCSI disk drive) or *Cart Drv* (optional Jaz drive). You cannot select the external or hard drive if they are not installed.

From

Use this softkey to select the file that you want to copy. Use the **File List** pushknob to scroll the highlight in the file list and select the file, then press *Confirm*. The lower part of the menu prompts "Copy file <filename.ext>" to indicate that you selected that file to copy.

Disk Menu		
Internal External Hard Drv Cart Drv Drive	Date: 4/1/95 Time: 12:32 MORNOPEN.EFF JAN-02-1995 16:15:58 JOES_BAR.EFF JAN-06-1995 12:20:12 Path: A: Disk Size: 1457664 Disk Free: 1423872 File Size: 3346	Save Recall
Copy From		Directory
Copy To		Delete Copy
Delete Delete		Format
Confirm Confirm All		Misc
Confirm Confirm		
File Type EFF	File List Scroll	Keypad

The Delete Copy Submenu

To

Press this softkey to select the destination disk or directory for the copy. Use the *Drive* softkey to select the destination drive. You can select a different directory on the drive in the Directory submenu. Press *Confirm*. The lower part of the menu prompts "Copy file <filename.ext> to A:/<subdir>/<filename.ext>." When it is finished, it prompts "Copy file done."

Delete

Press this softkey to bring up controls for deleting files. The **File Type** pushknob selects type of file listed. Use the **File List** pushknob to scroll the highlight in the list and select the file. Press the *Confirm* softkey to delete the file.

WARNING: The 8150 does not prompt before deleting a file. Be sure you select the correct file before pressing the *Confirm* softkey. If you delete a floppy disk file by mistake, you can use the "undelete" function in a DOS PC to recover the file.

Confirm

This softkey acts as an "enter" button: it confirms the operation set up in the other controls in this menu.

Format Submenu

Use this submenu to format floppy disks for use with the 8150. The format is MS-DOS, so you can use a PC to format disks instead of tying up the 8150 in your suite. The optional hard disk is already formatted by Accom, but you can reformat it from this menu as a last resort, for example, to get rid of a corrupted file on the hard disk.

Drive

Toggle this softkey to select the *Internal* (Control Panel) or *External* (optional) floppy disk drive, or *Hard Drv* (optional SCSI disk drive). You cannot select the external or hard drive if they are not installed.

Disk Menu						
<table border="1"> <tr><td>Internal</td></tr> <tr><td>External</td></tr> <tr><td>Hard Drv</td></tr> <tr><td>Cart Drv</td></tr> </table>	Internal	External	Hard Drv	Cart Drv	<table border="1"> <tr><td>Drive</td></tr> </table>	Drive
Internal						
External						
Hard Drv						
Cart Drv						
Drive						
Date: 4/1/95 Time: 12:32 <No Files>						
Path: A: Disk Size: 1457664 Disk Free: 1457664						
<table border="1"> <tr><td>Format</td></tr> </table>	Format	<table border="1"> <tr><td>Format</td></tr> </table>	Format			
Format						
Format						
<table border="1"> <tr><td>Confirm</td></tr> </table>	Confirm	<table border="1"> <tr><td>Confirm</td></tr> </table>	Confirm			
Confirm						
Confirm						
<table border="1"> <tr><td>Save Recall</td></tr> <tr><td>Directory</td></tr> <tr><td>Delete Copy</td></tr> <tr><td>Format</td></tr> <tr><td>Misc</td></tr> </table>		Save Recall	Directory	Delete Copy	Format	Misc
Save Recall						
Directory						
Delete Copy						
Format						
Misc						
<table border="1"> <tr><td>Keypad</td></tr> </table>		Keypad				
Keypad						

The Format Submenu

Format

Press this softkey to enable the disk format. Press the *Confirm* softkey to format the currently selected disk (floppy or the optional internal hard disk).

WARNING: Formatting a disk erases all the information stored on it. Be sure the disk does not contain files you want to keep, and that you select the correct drive, before formatting a disk.

Confirm

This softkey acts as an "enter" button: it confirms the operation set up in the other controls in this menu.

Miscellaneous Submenu

The Miscellaneous submenu lets you set the system date and time. Since the 8150 uses the system date and time to "stamp" files, this can help you find archived setups or effects.

Date

Press the **Date** softkey to set the system date. Use the **Month**, **Day**, and **Year** pushknobs to select today's date.

Time

Press the **Time** softkey to set the system time. Use the **Hour** and **Minute** pushknobs to set the current time. The **Hour** softkey uses a 24 hour clock; 00.00 is midnight.

The screenshot displays the 'Disk Menu' interface. At the top, a title bar reads 'Disk Menu'. Below it, the current date and time are shown: 'Date: 4/1/95' and 'Time: 12:32'. A file list is displayed with two entries: 'MORNOPEN.EFF' (JAN-02-1995, 16:15:58) and 'JOES_BAR.EFF' (JAN-06-1995, 12:20:12). Below the file list, disk statistics are shown: 'Path: A:', 'Disk Size: 1457664', 'Disk Free: 1423872', and 'File Size: 3346'. On the right side, a vertical column of buttons includes 'Save Recall', 'Directory', 'Delete Copy', 'Format', and 'Misc' (which is currently selected). On the left side, there are two main sections: 'Adjust Date' and 'Adjust Time'. The 'Adjust Date' section has a 'Set' button and a 'Date & Time' label. The 'Adjust Time' section has a 'Set' button and a 'Date & Time' label. At the bottom, there are three pushknobs labeled 'Month', 'Day', and 'Year', with values '4', '1', and '1995' respectively. A 'Keypad' button is located at the bottom right.

File Name	Date	Time
MORNOPEN.EFF	JAN-02-1995	16:15:58
JOES_BAR.EFF	JAN-06-1995	12:20:12

Path: A:
Disk Size: 1457664
Disk Free: 1423872
File Size: 3346

Month: 4, Day: 1, Year: 1995

The Miscellaneous Submenu

(Set) Date & Time

After selecting the current time and date, press this softkey to reset the system clock to match.

NOTE: You must press (Set) Date & Time to update the system clock to the current settings.

Personality

The Personality Menu

Name

Inputs

Copy

Current Selection

Assign

Name

Input List

Scroll

Personality Menu

1 input1

2 input2 serial-601

3 input3 serial-601

4 input4 serial-601

5 input5 parallel-601

6 input6 parallel-601

7 input7 SMPTE/EBU

8 input8 SMPTE/EBU Key

9 input9 SMPTE/EBU GBR

10 input10 SMPTE/EBU Key

11 input11 60Hz Beta wSU

12 input12 60Hz Beta wSU

13 input13 serial-601

14 input14 serial-601

A

Cursor

< Move >

Character

Change

Keypad

Input Names

Input Assign

User Keys & MISC

GPis

Remote Port Enable

Preview Monitor Overlays

The Personality Menu

Press the **PERSONALITY** menu button to bring up this menu. Here you can name and assign inputs, and configure your system to meet your needs.

When you save personality files to disk, you save all the settings in this menu, and you can recall them as needed. See Section 11 – Disk Operations for more information on saving personality files.

Input Names Submenu

Press the *Input Names* softkey to bring up the Input Names submenu. Here you can name the sources connected to the 8150's physical inputs. The box in the middle of the display lists the inputs, not the crosspoints as they appear on the bus rows. Next to each input name is the type of input module installed, e.g. "serial 601," "parallel 601," or the analog input format selected if the input module is a component analog one.

The input names appear in the box according to the physical input number at the rear of the Main Chassis. By default, the input names are Input 1, Input 2, etc. You can assign an name of up to 14 characters to each input. If there is no input module installed at an input slot, that slot is blank in the list.

Input Number	Input Name	Module Type
1	input1	
2	input2	serial-601
3	input3	serial-601
4	input4	serial-601
5	input5	parallel-601
6	input6	parallel-601
7	input7	SMPTE/EBU
8	input8	SMPTE/EBU Key
9	input9	SMPTE/EBU GBR
10	input10	SMPTE/EBU Key
11	input11	60Hz Beta wSU
12	input12	60Hz Beta wSU
13	input13	serial-601
14	input14	serial-601

The Input Names Submenu

NOTE: You can use an external PC AT keyboard to name inputs. See the 8150 Technical Guide for information on connecting a PC keyboard to your Control Panel.

Inputs

Press this softkey to bring up the **Input List**, **Cursor**, and **Character** pushknobs, and a naming box. Use the **Input List** pushknob to scroll the highlight bar through the list and select an input.

You can use an external user-supplied PC AT keyboard to name inputs. If there is no keyboard available, use the **Cursor** and **Character** pushknobs to name inputs.

If there is already a name in the naming box, you can clear it by pushing the **CLEAR** button in the numeric keypad, then the **Character** pushknob. This leaves one character in the box, since valid file names must have at least one character. Turn the **Cursor** pushknob to move the cursor in the naming box; push it to backspace through the name to delete characters. Turn the **Character** pushknob to select a character; push it to enter the current character in the current cursor position. You can enter numbers in the name with the numeric keypad.

Current Selection

Press this softkey to copy the current input name from the list to the naming box. This lets you edit existing names and assign them to the same, or other, sources.

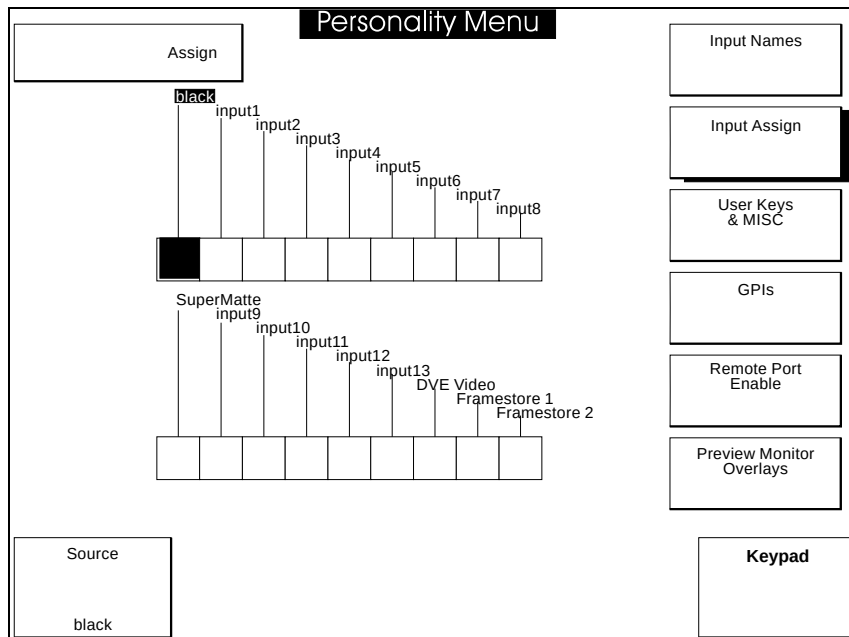
Name

Press this softkey to assign the name in the naming box to the input currently selected in the list.

Input Assign Submenu

The Input Assign submenu displays the crosspoint assignments and lets you customize the crosspoint configuration.

The center of this menu shows two bus rows of nine boxes. These represent the buttons on the Control Panel. The top row shows crosspoints 1 through 9, which are the unshifted crosspoints. The bottom row shows crosspoints 10 through 18, which are the shifted crosspoints. The input names currently assigned to the crosspoints appear above the boxes. The black box is the selected crosspoint button on the Background B or Preset bus row.



The Input Assign Submenu

Assigning Crosspoints

When you assign a source to a crosspoint button, that source is assigned to that button on all seven buses, not just the three buses currently displayed. Assign sources to crosspoint buttons as follows:

- STEP 1:** Select the crosspoint you want to assign a source to on the BKGND B or PRESET bus row. The black box in the menu indicates that crosspoint.
- STEP 2:** Use the **Source** pushknob to select a source name. The sources you can use include the physical inputs that you have named, and the internally generated sources, including black, the SuperMatte generator, and the optional framestores.
- STEP 3:** Press the *Assign* softkey to assign the source to the selected crosspoint button.

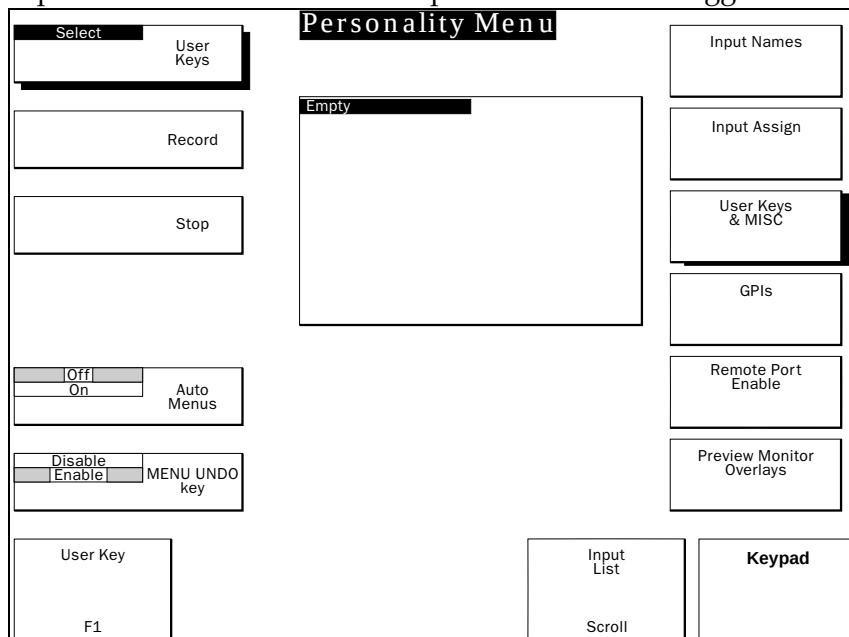
NOTE: In a fully-optioned system, you may have more than 18 sources available, so not all can have their own crosspoint button. You can assign the eight most used sources to the unshifted crosspoints (2 through 9, if you leave black on crosspoint 1) and nine more sources to the shifted crosspoints (10 through 18). If there are one or more dedicated key signal inputs, you do not necessarily have to assign them to their own crosspoint buttons. You can still select them in the Keyer, Preview, Aux Bus, Wipe, Border, Framestore, and DVE menus.

User Keys & MISC Submenu

Use the User Keys & MISC submenu to record three separate macros of up to 50 button presses. A macro is a series of button presses that you record. When you run the macro, the 8150 performs the functions, in the order recorded. Run macros by pressing a User Key (**F1, F2, F3**), near the joystick. You can record any button press in a macro, including pressing another macro button, which starts a second macro as part of the first one.

The main uses for macros are toggling parameters from their current state to a new state, or setting parameters to a specific state.

For example, a macro that "presses" the Pvw Bus Ctrl & Misc submenu *Source* softkey toggles it from its current setting to the next, regardless of the current state. However, a macro that presses and holds **CLEAR** and presses *Source* first toggles *Source*



The User Keys & MISC Submenu

to a known setting (the default, *Auto*). The next press of *Source* alone toggles it to its next state, which is always *Select*. You can use macros this way to select known states or to toggle to whatever the next state happens to be.

Recording a Macro

STEP 1: Use the **User Key** pushknob to select a macro number (**F1**, **F2**, or **F3**). You can also press the **F1**, **F2**, or **F3** button to select it. The current User Key appears in the pushknob label.

STEP 2: Press the *Record* softkey. The 8150 now records every button press you make. As you record button presses, the name of the button just pressed appears in the list box below the menu title.

HINT: It is often helpful, especially when recording long macros, to follow a script, since you cannot edit macros after recording them.

STEP 3: To stop recording the macro without re-entering the Personality menu, press **F1**, **F2**, or **F3**, (the active macro) to disable macro record mode. (You can also press the *Stop* softkey for this.) The recorded macro now resides at the selected User Key. The box in the middle of the menu lists the recorded button presses.

To replay a recorded macro, press the user button (**F1**, **F2**, or **F3**) to which you recorded the macro. Use the **Input List** pushknob to scroll through the list of macro steps (button presses).

NOTE: When you recall a macro, the time interval between button presses is fixed at about 1/4 second. The 8150 ignores any pauses you make between button presses when recording the macro. For this reason, building effects with macros is not recommended.

Auto Menus

Toggling this softkey *On* (default is *Off*) sets these menus to come up automatically when you press their transition select and delegation buttons:

- **KEY 1** recalls the Keyer 1 menu
- **KEY 2** recalls the Keyer 2 menu
- **DSK** recalls the DSK Keyer menu
- **WIPE** recalls the M/E Wipes menu if the M/E buses are active, the Program/Preset Wipe menu if the PGM/PST buses are active
- **EFFECT** recalls the DVE Misc menu, which is the menu accessed by the **EFFECTS TRANS** menu button (functional only if the optional internal DVE is installed)

MENU UNDO Key

Use this softkey to enable and disable the **UNDO MENU** button. With this button enabled (the default), you can use it to "back up" through button presses. As you press **UNDO MENU**, the 8150 steps backward and "undoes" button presses and menu settings.

You can "undo" all button presses made since you enabled this feature. If you step back too far, you can press **CLEAR + UNDO MENU** to redo the button presses that you have undone. If you press any other button besides **UNDO MENU**, however, the "undo" list is brought back to the end, and pressing **CLEAR + UNDO** does not step forward from that point.

If you *Disable* the **MENU UNDO** button, you cannot automatically "undo" button presses. The 8150 boots up with this function enabled.

GPIs Submenu

The GPIs submenu lets you assign functions to the eight input GPIs. When the 8150 receives a GPI trigger, it executes the function assigned to that GPI input.

There are two list boxes in this menu: the top box lists the GPI inputs and their assigned functions; the bottom box lists the functions that you can assign to the GPI inputs. Black highlight bars in each list box indicate the current GPI input and the current function.

NOTE: You must turn on the GPI port in the Remote Port Enables submenu to enable GPI input triggers.

Personality Menu

Assign GPIs

1	<None>
2	<None>
3	<None>
4	<None>
5	<None>
6	<None>
7	<None>
8	<None>

<None>

- Autotrans (Current)
- Cut (Current)
- M/E Autotrans (current)
- M/E Cut (Current)
- M/E Key 1 Cut
- M/E Key 2 Cut
- M/E Background Cut
- P/P Autotrans (Current)
- P/P Cut (Current)

Input Names

Input Assign

User Keys & MISC

GPIs

Remote Port Enable

Preview Monitor Overlays

GPI List
Scroll

Selection List
Scroll

Keypad

The GPIs Submenu

GPIs

Press this softkey to bring up the **GPI List** and **Selection List** pushknobs. Use the **GPI List** pushknob to scroll the highlight bar through the list of eight GPI inputs. The bar indicates the current input. Use the **Selection List** pushknob to scroll the highlight bar through the list of GPI input functions. The bar indicates the current function.

Assign

Press the *Assign* softkey to assign the current function (highlighted in the lower list box) to the current GPI input (highlighted in the upper list box).

Input GPI Functions

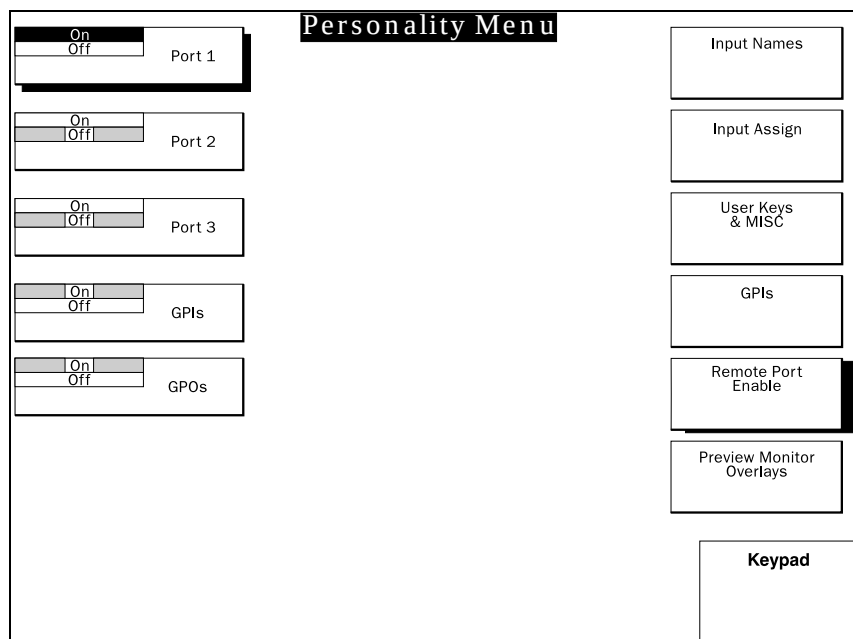
The functions available for GPI input triggers appear in the lower list box. An input GPI can trigger the following functions:

- **<None>** – no function.
- **Autotrans (Current)** – executes the currently active transition, just like pressing the **AUTO TRAN** button.
- **Cut (Current)** – cuts the currently active transition, just like pressing the **CUT** button.
- **M/E Autotrans <Current>** – executes a transition on the M/E, using its currently active transition mode, just like pressing the **AUTO TRAN** button while the M/E buses are active.
- **M/E Cut <Current>** – executes a cut on the M/E, just like pressing the **CUT** button while the M/E buses are active.
- **M/E Key 1 Cut** – cuts Keyer 1 on or off on the M/E, just like pressing the **CUT** button with **KEY 1** lit.
- **M/E Key 2 Cut** – cuts Keyer 2 on or off on the M/E, just like pressing the **CUT** button with **KEY 2** lit.
- **M/E Background Cut** – cuts between the Background A and B buses on the M/E, just like pressing the **CUT** button with **BKND** lit.

- **P/P Autotrans <Current>** – executes a transition on PGM/PST, using its currently active transition mode, just like pressing the **AUTO TRAN** button.
- **P/P Cut <Current>** – cuts the PGM/PST buses, DSK, or both using the current transition mode, just like pressing the **CUT** button.
- **P/P DSK Cut** – cuts the DSK on or off, just like pressing the **CUT** button with **DSK** lit.
- **P/P Cut** – cuts Preset to Program on PGM/PST, just like pressing the **CUT** button with **PGM PST** lit.
- **P/P Fade-to-Black** – executes a fade-to-black on the program output, just like pressing the **FTB** button.
- **P/P Cut-to-Black** – executes a cut-to-black on the program output, just like pressing the **FTB** button with a transition duration of 0:00.
- **Grab Image in Framestore #1** – freezes Framestore 1 with its currently selected input video, just like pressing the *Framestore #1 Freeze* softkey in the Framestore menu.
- **Grab Image in Framestore #2** – freezes Framestore 2 with its currently selected input video, just like pressing the *Framestore #2 Freeze* softkey in the Framestore menu.
- **Freeze/PassThru FS #1 Switch** – toggles the state of Framestore 1, just like toggling between the *Framestore #1 Mode* and *Framestore #1 Freeze* softkeys in the Framestore menu.
- **Freeze/PassThru FS #2 Switch** – toggles the state of Framestore 2, just like toggling between the *Framestore #2 Mode* and *Framestore #2 Freeze* softkeys in the Framestore menu.
- **F1, F2, F3** – executes the macro currently assigned to a User Key, just like pressing one of the buttons (**F1, F2, F3**).
- **Aux 1 A/B Side Switch** – triggers the Aux 1 A/B (front/back) switch. This mode requires a simple state change as its input. A TTL high (or open contact) designates the A or front side,

and a TTL low (or closed contact) designates the B or back side.
Assign the sources for A and B in the Miscellaneous menu.

- **Aux 2 A/B Side Switch** – triggers the Aux 2 A/B (front/back) switch as above.
- **Aux 3 A/B Side Switch** – triggers the Aux 3 A/B (front/back) switch as above.
- **Aux 4 A/B Side Switch** – triggers the Aux 4 A/B (front/back) switch as above.
- **Run Effect Forward** – runs the current Timeline effect forward from the start or its current position if paused, just like pressing the **RUN** button.
- **Run Effect Reverse** – runs the current Timeline effect in reverse from the end or its current position if paused, just like pressing the **REV** button.



The Remote Port Enables Submenu

- **Jog Effect Forward** – steps the current Timeline effect forward by one field.
- **Jog Effect Reverse** – steps the current Timeline effect backward by one field.
- **Rewind Effect** – sends the current Timeline effect to the first keyframe, just like pressing the **START (REW)** button.
- **FastFwd Effect** – sends the current Timeline effect to the last keyframe, just like pressing the **END (FF)** button.
- **Previous Keyframe** – steps the current Timeline effect to the previous keyframe, just like pressing the **PREVIOUS** button.
- **Next Keyframe** – steps the current Timeline effect ahead to the next keyframe, just like pressing the **NEXT** button.

NOTE: The delay between receipt of a GPI and its execution is one frame.

Remote Port Enables Submenu

Use this submenu to enable and disable the remote ports. The three serial remote ports and the GPOs default to *On*, the GPIs default to *Off*.

Port 1

Toggle this softkey to enable/disable the remote port marked "SERIAL 1" on the back of the Main Chassis.

Port 2

Toggle this softkey to enable/disable the remote port marked "SERIAL 2" on the back of the Main Chassis.

Port 3

Toggle this softkey to enable/disable the remote port marked "SERIAL 3 (LINC)" on the back of the Main Chassis.

GPIs

Toggle this softkey to enable/disable the GPIs (General Purpose Interface inputs).

NOTE: The default setting for GPIs is *Off*. You must toggle this to *On* to enable both input and output GPIs.

GPOs

Toggle this softkey to enable/disable the GPOs (GPI Outputs).

Personality Menu						
<table border="1"> <tr><td>Off</td></tr> <tr><td>Safe Action</td></tr> <tr><td>Safe Title</td></tr> <tr><td>Both</td></tr> </table>	Off	Safe Action	Safe Title	Both	Safe Action	Input Names Input Assign User Keys & MISC GPIs Remote Port Enable Preview Monitor Overlays Keypad
Off						
Safe Action						
Safe Title						
Both						
<table border="1"> <tr><td>Off</td></tr> <tr><td>Squares</td></tr> <tr><td>Center +</td></tr> </table>	Off	Squares	Center +	Grid Overlay		
Off						
Squares						
Center +						
<table border="1"> <tr><td>White</td></tr> <tr><td>Black</td></tr> </table>	White	Black	Overlay Color			
White						
Black						
<table border="1"> <tr><td>Off</td></tr> <tr><td>Horizontal</td></tr> <tr><td>Vertical</td></tr> <tr><td>Both</td></tr> </table>	Off	Horizontal	Vertical	Both	Reference Lines	
Off						
Horizontal						
Vertical						
Both						
<table border="1"> <tr><td>Off</td></tr> <tr><td>Crosshair</td></tr> <tr><td>Box</td></tr> </table>	Off	Crosshair	Box	Cursor		
Off						
Crosshair						
Box						
<table border="1"> <tr><td>White</td></tr> <tr><td>Black</td></tr> <tr><td>Xor</td></tr> </table>	White	Black	Xor	Cursor & Ref Line Color		
White						
Black						
Xor						
H Position (pixels) 0.0000 ↔	V Position (pixels) 0.0000 ↑↓					

The Preview Monitor Overlays Submenu

Preview Monitor Overlays Submenu

The preview monitor overlays are tools for picture conformation and composition. These overlays appear only in the preview monitor output.

Safe Action

Toggle this softkey to enable a safe action boundary, a safe title boundary, or both. The safe action boundary is located 5 percent from the edges of the full active picture; the safe title boundary is located 10 percent from the edges of the full active picture.

Grid Overlay

Toggle this softkey to *Squares* to turn on a 8x6 grid. Toggle it to *Center +* for a large crosshair that is fixed exactly in the center of the screen. The grid changes to 16x9 if you set the aspect ratio to 16:9.

Overlay Color

Toggle this softkey to set the safe action/safe title and grid/crosshair color to white or black.

Reference Lines

Toggle this softkey turns on the movable reference lines. You can use two horizontal lines, two vertical lines, or one of each. These lines can be useful for precisely placing or locating screen objects. Negative numbers are left or below the center of the screen, positive numbers are right or above the center of the screen.

NOTE: The cursor and the reference lines share the same circuitry and therefore cannot appear at the same time. The cursor overrides the reference lines. Toggling the *Cursor* softkey to *Crosshair* or *Box* removes the reference lines.

Horizontal enables two horizontal lines that you can move independently with the joystick or pushknobs. **Bottom Line Position** and **Top Line Position** values of 0.00 place the lines exactly in the center of the screen. The top line is always above the bottom line; if they meet, one "pushes" the other along with it.

Vertical enables two vertical lines that you can move independently with the joystick or pushknobs. **Left Line Position** and **Right Line Position** values of 0.00 place the lines exactly in the center of the screen. The right line is always to the right of the left line; if they meet, one "pushes" the other along with it.

Both enables one horizontal and one vertical line that you can move independently with the joystick or pushknobs. **H Position** and **V Position** values of 0.00 place the lines exactly in the center of the screen.

Cursor

The **Cursor** softkey selects either a small **Crosshair** or **Box**, which you can move with the joystick or pushknobs. This cursor is the same one used for Color Pick. **H Position** and **V Position** values of 0.00 place the cursor exactly in the center of the screen.

Cursor & Reference Line Color

Toggle this softkey to set the color of the movable (color pick) cursor to **White**, **Black**, or **Xor**. The default is **Xor**, which sets the cursor to change its color from black to white according to the luminance level of the video beneath it.

Section 13

Engineering

Introduction

Almost all 8150 setups are controlled in software, so you can adjust most of the engineering parameters at the Control Panel. This makes 8150 setups easier to make and recall, since there is no need for time consuming manual adjustments at the Main Chassis.

When you save engineering (*.ENG) files to disk, you save all the settings in the Communications, Input, Output, and Miscellaneous submenus. When you recall an engineering file from disk, it loads all those settings into memory.

The Engineering Menu

Engineering Menu				
Adjust Editor Port #1	HARDWARE Wipe Generator: ADVANCED Framestore Board: INSTALLED Color Corrector: INSTALLED 4:4:4 Chroma Keying: INSTALLED AUX 1/2: INSTALLED AUX 3/4: INSTALLED Output Board: FRAME DELAY Memory: 8 Meg DVE Board: INSTALLED SOFTWARE Control Panel: 3.00 Chassis: 3.00 Compile Date: 13:55 04/15/96			Communications
Adjust Editor Port #2				Input
Adjust Editor Port #3				Output
				Misc
			Software Update	
			Diags	
Protocol GVG	Baud 38400	Parity Odd	Preview cmds routed from: None	Keypad

The Engineering Menu

Press the **ENG** menu button to bring up the Engineering menu. The softkeys on the right side of the menu display call up submenus that adjust communications, input and output parameters, and miscellaneous settings. Use the *Software Update* softkey to install new system software.

NOTE: All software updates come with instructions, which you should always use; the procedures in this manual are a general outline only.

A display in the center of the Engineering menu shows the options and features installed in your 8150, and the current version of Main Chassis and Control Panel software.

Communications Submenu

Use the Communications submenu to set up the RS-422 serial communications ports. These ports, labeled Serial 1, Serial 2, and Serial 3 [LINC] on the back of the Main Chassis, can each have different settings to accommodate your equipment. Select a port with the softkeys on the left side of the display, and use the pushknobs to select the communication settings.

The **Protocol** pushknob selects the communication protocol. The 8150 supports the following serial protocols. See the manual that came with your editor for the needed protocol setting.

GVG – The 8150 emulates a Grass Valley Group Model 200 video switcher. This is the most commonly used video switcher protocol. This setting also supports Accom A82/A83 and GVG Model 1000 protocols for editors that do not support preview switching with GVG 200 protocol.

SMPTE – Use this setting with an edit controller that supports SMPTE protocol.

Sony – The 8150 communicates in Sony RS-422 protocol, so you can run Timeline effects from the editor as if the 8150 were a Sony VTR.

LINC – The 8150 controls external devices that support LINC (Locally Integrated Node Control). LINC lets you frame-accurately run DVEs, DDRs, etc. as part of an 8150 Timeline effect. This setting is valid only for Editor Port 3.

SPARE – Reserved for future use.

The **Baud** pushknob sets the communication speed for the remote port: 1200, 2400, 9600, 38400, or 76800. See your editor's technical manual for the correct rate. GVG 200, SMPTE, Sony, and LINC protocols typically require 38400 baud.

The **Parity** pushknob toggles **Odd**, **Even**, and **Off**. See your editor's technical manual for the correct parity setting. GVG 200, SMPTE, Sony, and LINC protocols typically require odd parity.

Most edit controllers can send edit preview switch commands to the switcher, which then performs the preview switch on an Aux bus output. Since the 8150 uses the preview output as the edit preview switcher, it must re-route the preview switch commands to the preview output. In the Engineering Communications submenu, the **Preview cmds routed from:** pushknob toggles **None**, **Aux 1**, **Aux 2**, **Aux 3**, **Aux 4**, and **Aux 5**. This selects which Aux bus command is processed as a preview output command.

For example, if you select **None**, it switches all Aux outputs normally and does not switch the preview output at all. If you select **Aux 4**, the 8150 routes any crosspoint switch commands intended for Aux 4 to the preview output, and continues to switch

Engineering Menu				
Adjust Editor Port #1	HARDWARE Wipe Generator: ADVANCED Framestore Board: INSTALLED Color Corrector: INSTALLED 4:4:4 Chroma Keying: INSTALLED AUX 1/2: INSTALLED AUX 3/4: INSTALLED Output Board: FRAME DELAY Memory: 8 Meg DVE Board: INSTALLED SOFTWARE Control Panel: 3.00 Chassis: 3.00 Compile Date: 13:55 04/15/96			Communications
Adjust Editor Port #2				Input
Adjust Editor Port #3				Output
				Misc
			Software Update	
			Diags	
Protocol GVG	Baud 38400	Parity Odd	Preview cmds routed from: None	Keypad

The Communications Submenu

other Aux buses normally. If you select **Aux 5**, you can set the edit controller to execute preview switching on Aux 5. Since the 8150 has no Aux 5, this setting lets the editor control all four Aux outputs, plus use the preview output for preview switching.

Input Submenu

This submenu lets you select external DVE video and key inputs for effects loops, set the input bit resolution and select the color matte generator for digital inputs, and select and adjust component analog input formats if you have one or more of these input modules.

Effects Loop Inputs

The Effects Loop feature lets you "break out" video and key signals from the processing path and send them out of the 8150 to an external DVE for further processing. The loop returns the processed video and key to the same keyer, at the same point it left, for the final compositing. The 8150 uses these input settings for creating the four Effects Loops, which you select in the Miscellaneous Aux Buses submenu:

Engineering Menu		
DVE 1 DVE 2 Effects Loop Inputs Video Matte Setup Inputs 10 8 Input Bits HARDWARE Wipe Generator: ADVANCED Framestore Board: INSTALLED Color Corrector: INSTALLED 4:4:4 Chroma Keying: INSTALLED AUX 1/2: INSTALLED AUX 3/4: INSTALLED Output Board: FRAME DELAY Memory: 8 Meg DVE Board: INSTALLED SOFTWARE Control Panel: 3.00 Chassis: 3.00 Compile Date: 13:55 04/15/96 Communications Input Output Misc Software Update Diags		
DVE Video Input 1	DVE Key Input 2	Combiner Combiner Off
Keypad		

The Input Submenu - Effects Loop Inputs

- M/E Keyer 1
- M/E Keyer 2
- M/E Background (the Background A and Background B mix with Keyer 1 over it)
- DownStream Keyer

See Section 7 – Miscellaneous Functions for more information on Effects Loops.

Because these signals are delayed significantly from house system reference, the external DVE to which they are sent must be referenced to the 8150 Aux Ref output. This is a sync signal with timing that matches the Aux outputs. This lets the DVE properly input the delayed signals. However, when the DVE output returns to the 8150, it has the same delay, which would normally not let it be re-entered into the 8150. The pushknob settings let the 8150 compensate for the returning DVE video and key signals' delayed timing. This lets them re-enter the processing path at the same point they originally left.

The *Effects Loop Inputs* softkey toggles **DVE 1** and **DVE 2**. DVE 1 must use the Aux 1 and 2 outputs, while DVE 2 must use the Aux 3 and 4 outputs. Each has its own settings for video and key inputs. The **DVE Video Input** pushknob lets you select the physical input number (not the crosspoint button number) to which the DVE video output is connected. The **DVE Key Input** pushknob lets you select the input number (not the crosspoint button number) to which the DVE key output is connected.

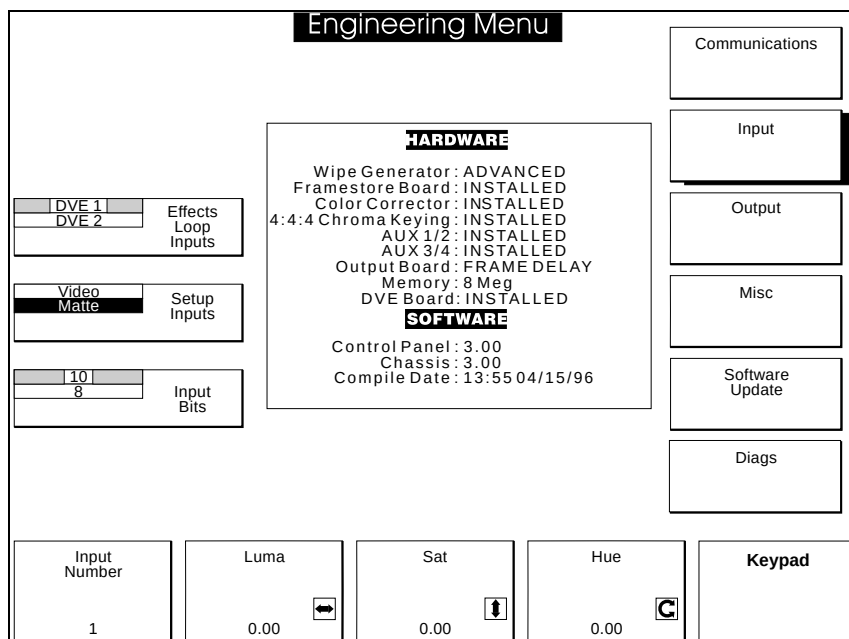
Use the **Combiner** pushknob when feeding an external DVE that is part of a multi-channel system. Turn **Combiner On** if the DVE involved in the Effects Loop is feeding a combiner before re-entry into the 8150, or if the external DVE is an Accom DVEOUS (5100). In most other cases, you can leave **Combiner Off**. See the 8150 Technical Guide for more information on this setting.

There are no settings necessary in this menu when using the optional internal DVE for Effects Looping.

NOTE: Setting both the DVE Video and DVE Key Inputs to 0 disables effects looping for external DVEs.

Setup Inputs

Press this softkey to select an input as a color matte generator if the input is digital, or to adjust analog setups if the input is analog. There is a matte generator associated with each digital input installed in the switcher. The first pushknob scrolls the input numbers.



The Input Submenu - Setup Inputs

The color matte generator is not available with the component or composite analog input modules. This softkey does not appear for inputs with an analog module.

NOTE: Since the input modules generate the matte colors, you cannot select a source as a matte generator if there is no input module installed at that input location. However, you do not need to have video connected to that input.

With *Video* selected for the input, the video signal connected to that input feeds the system normally. Toggling the softkey selects the *Matte* color field, which makes the matte generator the source for that input. The pushknobs let you create a color for the matte generator.

The **Luma** pushknob sets a luminance level in the range 0 percent (black) to 100 percent (white).

The **Sat** pushknob sets a chroma saturation level in the range 0 percent (monochrome) to 100 percent saturation.

The **Hue** pushknob sets the tint or chroma phase of the matte color, in the range 0 to 359 degrees.

Input Bits

Toggle this softkey to select the bit format for the video input: 8-bit or 10-bit. The default is 10-bit. Use the 8-bit setting if the input source has only 8-bit resolution and does not set the two LSBs (least significant bits) of the full 10-bit path to 0.

This setting is not available for the component or composite analog input modules. This softkey does not appear for the inputs at which an analog module is installed.

Analog Input Setups

NOTE: This softkey appears only when you use the Input Number pushknob to select an input that has a Component Analog Input module installed.

If a Dual Component Analog or Component Video + Key input module is installed at the selected input, *Analog Input Setups*, *Gain/Pedstl Offsets*, and *H Phase Offsets* softkeys replace the *Setup Inputs* and *Input Bits* softkeys. The Analog Input Setups softkey accesses controls as described below.

These settings are saved to battery backed memory and are recalled after a reboot or power cycle. Also, they are saved with ENG files, so you can restore all analog setups from the disk ENG file after clearing the RAM.

The **Input Number** pushknob selects the physical input number. This is the physical input number on the Main Chassis, not the crosspoint button assignment. Since each component analog input module has two inputs, there are always two adjacent input numbers that recall these adjustments. The even input numbers

The screenshot displays the 'Engineering Menu' interface. At the top center is a black header with 'Engineering Menu' in white. Below this, the interface is divided into several sections:

- Left Column:** Contains several control boxes. At the top, a box with 'DVE 1' and 'DVE 2' buttons is next to 'Effects Loop Inputs'. Below is an 'Adjust' box with 'Analog Input Setups' highlighted. Further down are 'Gain' and 'H Phase' boxes, each with an 'Offsets' button.
- Center Box:** Divided into 'HARDWARE' and 'SOFTWARE' sections.
 - HARDWARE:** Lists 'Wipe Generator: ADVANCED', 'Framestore Board: INSTALLED', 'Color Corrector: INSTALLED', '4:4:4 Chroma Keying: INSTALLED', 'AUX 1/2: INSTALLED', 'AUX 3/4: INSTALLED', 'Output Board: FRAME DELAY', 'Memory: 8 Meg', and 'DVE Board: INSTALLED'.
 - SOFTWARE:** Lists 'Control Panel: 3.00', 'Chassis: 3.00', and 'Compile Date: 13:55 04/15/96'.
- Right Column:** A vertical stack of buttons: 'Communications', 'Input' (highlighted with a thick black bar), 'Output', 'Misc', 'Software Update', 'Diags', and 'Keypad'.
- Bottom Row:** Three boxes labeled 'Input Number' (showing '8'), 'Format' (showing 'SMPTE/EBU'), and 'Master/Slave' (showing 'Master').

The Input Submenu - Analog Input Setups

(2, 4, 6, etc.) have a **Master/Slave** pushknob that the odd inputs (1, 3, 5, etc.) do not have, as described later in this section.

The **Format** pushknob selects the type of analog signal for the input selected with the **Input Number** pushknob. Each format type is described below. If the Dual Component Input module is installed, all of these formats are available for both inputs of that module. If the Component Analog + Key module is installed, the video formats are available only for the odd number input (1, 3, 5, etc.) of that module; the key formats are available only for the even number inputs (2, 4, 6, etc.) of that module.

- **SMPTE/EBU** – The SMPTE/EBU N10 700mV color difference standard, with Y, R-Y, and B-Y components and black level at 0mV. This format is compatible with all 625-line standard and MII® VTRs and some 625-line Betacam® and Betacam SP VTRs that have been modified for EBU levels.
- **50Hz Beta** – Y/R-Y/B-Y color difference signals from 625-line Betacam or Betacam SP VTRs.
- **60Hz Beta wSU** – NTSC-related Y/R-Y/B-Y with 7.5 IRE (54mV) black level (i.e., with setup). This format is compatible with all 525-line Betacam and Betacam SP VTRs outside of Japan.
- **60Hz Beta woSU** – NTSC-related Y/R-Y/B-Y with 0 IRE (0mV) black level (i.e., without setup). This format is compatible only with Japan-market 525-line Betacam and Betacam SP VTRs.
- **60Hz MII** – Y/R-Y/B-Y with 7.5 IRE (53mV) black level. This format is used on 525-line standard MII VTRs. 625-line MII format VTRs use the SMPTE/EBU format.
- **SMPTE/EBU GBR** – The SMPTE/EBU 700mV standard with red, green, and blue components and no setup (0mV black level).
- **SMPTE/EBU KEY** – A black and white (high contrast) signal used as a dedicated key source at SMPTE/EBU levels (peak white = 700mV). This format internally copies the luminance value to the Cb and Cr channels to provide a key signal for the chrominance

samples of the fill signal. Use this setting if the input is a dedicated monochrome key signal that has no chrominance.

- **NTSC KEY wSU** – A black and white (high contrast) signal with 7.5 IRE (54mV) black level (i.e., with setup), used as a dedicated key source at NTSC levels (peak white = 100 IRE or 714mV). This format internally copies the luminance value to the Cb and Cr channels to provide a key signal for the chrominance samples of the fill signal. Use this setting if the input is a dedicated monochrome key signal with setup and no chrominance.

The Component Analog + Key input module also lets you connect wide band or high resolution RGB or Y/R-Y/B-Y video for use with the 4:4:4 Chroma Key option. This feature is automatically enabled when the following conditions are met:

- At least one keyer is set as a Chroma Key in the Keyer Main submenu, with Chroma 444 selected as its Key Type in the Advanced Chroma Key submenu.
- That keyer has the odd numbered "A" input of the Component Analog + Key module selected as its 444 Cut Source #1. (You should also select the even numbered "B" input of the same module as the 444 Cut Source #2 for this feature to operate correctly; this selection is not automatic).

With both of these conditions met, the input module changes its sampling mode from 4:2:2 to 4:4:4 and uses the normal key path for the extra chrominance samples, effectively eliminating the use of the key input when in this mode. However, changing the 4:4:4 Cut Source #1 to any other source, or changing the keyer to any other mode, restores normal video and key operation for the input module. See the 8150 Technical Guide for more information on this input module.

The **Master/Slave** pushknob appears only for even numbered component analog inputs. The default setting is **Master**; set it to **Slave** for input signals that have no sync on the G or Y channel, or for key signals with no sync.

The Component Analog + Key input module has a separate sync input that you can use to supply separate sync for an RGB source that does not have sync on green. See the 8150 Technical Guide for more information on using this sync input.

NOTE: The Master/Slave function only works when the signal without sync feeds the even numbered input, and its companion signal with sync feeds the odd numbered input on the same input module. See the 8150 Technical Guide for more information on this setting.

Press the *Offsets (Gain)* softkey to bring up the **Y Gain**, **U Gain**, and **V Gain** pushknobs. Use them to fine tune each channel of the selected input signal. The **Pedestal** pushknob appears only for formats with setup (black level above 0). The default gain and pedestal setting is 0.00. Negative values reduce the gain or offset, positive increase them. With the Component Analog + Key module installed, the key (even number) input has only a **Key Gain** pushknob, plus a **Pedestal** pushknob if the NTSC Key wSU format is selected.

NOTE: Do not substitute these controls for level adjustments at the signal source; they are intended only as compensation for possible nonunity gain paths in the video system. See the 8150 Technical Guide for more information on these controls.

Press the *Offsets (H Phase)* softkey to bring up the **H Phase** pushknob. Use it to fine tune the horizontal picture position. The default setting is 0.00. Negative values move the active picture to the left, positive move it right.

NOTE: Do not substitute this control for system timing adjustments at the signal source; it is intended only as compensation for possible timing mismatches in the video system. See the 8150 Technical Guide for more information on this control.

Composite Input Setups

NOTE: This softkey appears only when you use the **Input Number** pushknob to select an input that has a **Composite Analog Input** module installed.

If a Composite Video + Key input module is installed at the selected input, *Composite Input Setups*, *Gain/Pedstl Offsets*, and *H Phase Offsets* softkeys replace the *Setup Inputs* and *Input Bits* softkeys. The *Composite Input Setups* softkey accesses controls as described below.

These settings are saved to battery backed memory and are recalled after a reboot or power cycle. Also, they are saved with ENG files, so you can restore all analog setups from the disk ENG file after clearing the RAM.

Engineering Menu				
DVE 1 DVE 2 Effects Loop Inputs		HARDWARE Wipe Generator : ADVANCED Framestore Board : INSTALLED Color Corrector : INSTALLED 4:4:4 ChromaKeying : INSTALLED AUX 1/2 : INSTALLED AUX 3/4 : INSTALLED Output Board : FRAME DELAY Memory : 8 Meg DVE Board : INSTALLED		Communications
Adjust Composite Input Setups		SOFTWARE Control Panel : 3.00 Chassis : 3.00 Compile Date : 13:55 04/15/96		Input
Gain/Pedstl Proc Adjust				Output
H Phase/Ofs More Proc Adjust				Misc
				Software Update
				Diags
Input Number 13	Adaption Adapt Vid	Hue 0.00	Sat 100.00	Keypad

The Input Submenu - Composite Input Setups

The **Input Number** pushknob selects the physical input number. This is the physical input number on the Main Chassis, not the crosspoint button assignment. Each composite analog input module has one dedicated composite video and one dedicated key (i.e., monochrome or luminance only) input, and the menus change according to the input selected.

NOTE: Composite video inputs must contain color burst in order for the built-in decoder to lock to the input correctly. The video input does not support signals without color burst. The key input, however, can process monochrome signals with or without color burst.

The **Adaption** pushknob selects the mode for decoding the composite signal into component video.

- **Adapt Vid** – This is the default setting. It is an adaptive combination of Notch and Comb modes (see below) that has a high noise threshold. Use this for video that comes from cameras, analog VTRs, or other sources that may be noisy. In NTSC, this setting appears identical to the Adapt Gph mode; with PAL, there is a difference between the two modes.
- **Adapt Gph** – This is an adaptive combination of Notch and Comb modes (see below) that has a low noise threshold. Use this for video that comes from computer graphics, character generators, or other digital sources that are noise-free. In NTSC, this setting appears identical to the Adapt Vid mode; with PAL, there is a difference between the two modes.
- **Notch** – This is a simple bandpass filter that reduces or eliminates dot crawl on horizontal edges. Vertical edges and luminance frequencies close to the color subcarrier produce color fringing, however. This setting is most useful with images that have no vertical edges (i.e., horizontal detail).
- **Comb** – This is a comb filter that reduces or eliminates color fringing on vertical edges and in luminance frequencies close

to the color subcarrier. Horizontal edges in the picture produce dot crawl artifacts, however. This setting is most useful with images that have no horizontal edges (i.e., vertical detail).

The **Hue** pushknob lets you adjust the hue or chroma phase of the composite video signal, in the range ± 180 degrees from the original chroma phase.

The **Sat** pushknob lets you adjust the chrominance saturation of the composite video signal, in the range -50 percent to +150 percent of the original saturation level.

Press the *Proc Adjust (Gain/Pdstl)* softkey to adjust the gain of the three components of the decoded composite signal, plus the pedestal (black) level for the luminance component.

Use **Y Gain** to set the luminance level, **U Gain** to set the B-Y level, and **V Gain** to set the R-Y level. Each has a range of -50 percent to +150 percent of the original levels. **Pedestal** adjusts the black level of the luminance component only, with a range of about ± 10 percent of the original black level. The default setting of 0.00 assumes that the black level of the incoming composite video is correct for the current line standard (7.5 IRE or 54mV for NTSC, or 0mV for PAL). For NTSC signals with black at 0 IRE, such as in Japan, the default setting is incorrect and should be adjusted for proper black level.

NOTE: Do not substitute these controls for level adjustments at the signal source; they are intended only as compensation for possible nonunity gain paths in the video system. See the 8150 Technical Guide for more information on these controls.

Press the *More Proc Adjust (H Phase/Ofs)* softkey to adjust the active picture's horizontal position and to set the chrominance components' DC offset.

H Phase adjusts the active picture's horizontal phase, in the range +/- one microsecond. **U Offset** adjusts the B-Y DC offset, and **V Offset** adjusts the R-Y DC offset. Both have with ranges of about +/-50 percent of the original DC offsets.

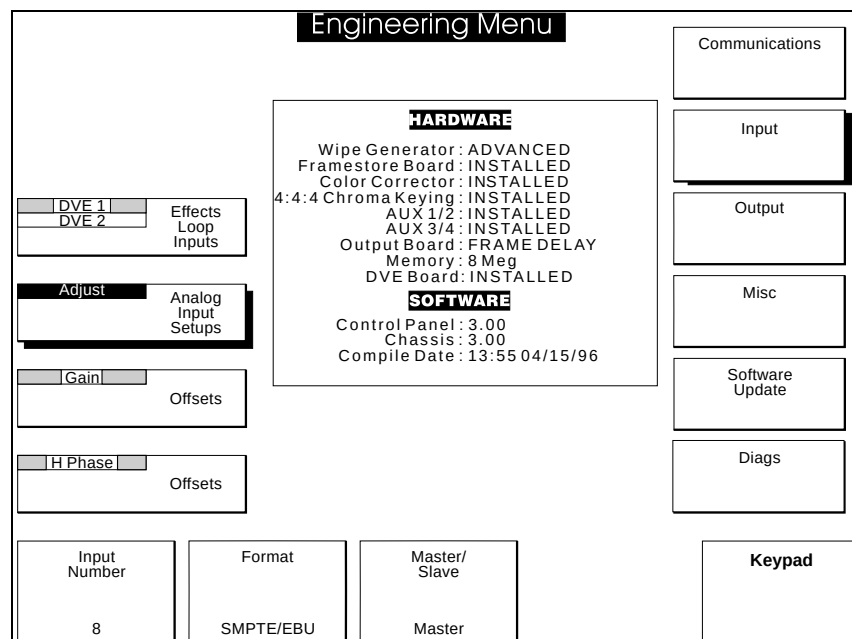
NOTE: Do not substitute this control for system timing adjustments at the signal source; it is intended only as compensation for possible timing mismatches in the video system. See the 8150 Technical Guide for more information on this control.

Key Input Setups

NOTE: This softkey appears only when you use the **Input Number** pushknob to select an input that has a **Composite Analog Input** module installed.

If a Composite Video + Key input module is installed at the selected input, **Key Input Setups**, **Gain/Pedstl Offsets**, and **H Phase Offsets** softkeys replace the **Setup Inputs** and **Input Bits** softkeys. The **Key Input Setups** softkey accesses controls as described below.

With a Composite Key input selected, the following menu controls appear. These settings are saved to battery backed memory and are recalled after a reboot or power cycle. Also, they are saved with ENG files, so you can restore all analog setups from the disk ENG file after clearing the RAM.



The Input Submenu - Key Input Setups

The **Input Number** pushknob selects the physical input number. This is the physical input number on the Main Chassis, not the crosspoint button assignment. Each composite analog input module has one dedicated composite video and one dedicated key input (i.e., monochrome or luminance only), and the menus change according to the input selected.

With a Composite Key input selected, the **Mode** pushknob selects the type of key signal used with this module:

- **Comp** – This selects a luminance-only key signal that contains both sync and color burst; this usually comes from a device with composite outputs.
- **NComp** – This selects a luminance-only key signal that contains sync but not color burst; this usually comes from a device with component outputs.
- **Slave** – This selects a luminance-only key signal that does not contain sync. In this mode, there must be a co-timed composite video signal connected to this module's video input; its sync is used to lock the key signal. If the key input has no sync, it must be zero-timed (+/- one microsecond) to its companion video input. A timing discrepancy greater than this does not allow the key input to be properly timed to the video input.

Press the **Proc Adjust (Gain/Pdstl)** softkey to adjust the key input's gain and black level. **Key Gain** adjusts the overall key level of the key input, in the range -50 percent to +150 percent of the original level. **Pedestal** adjusts the black level of the key input, with a range of about +/- 20 percent of the original black level.

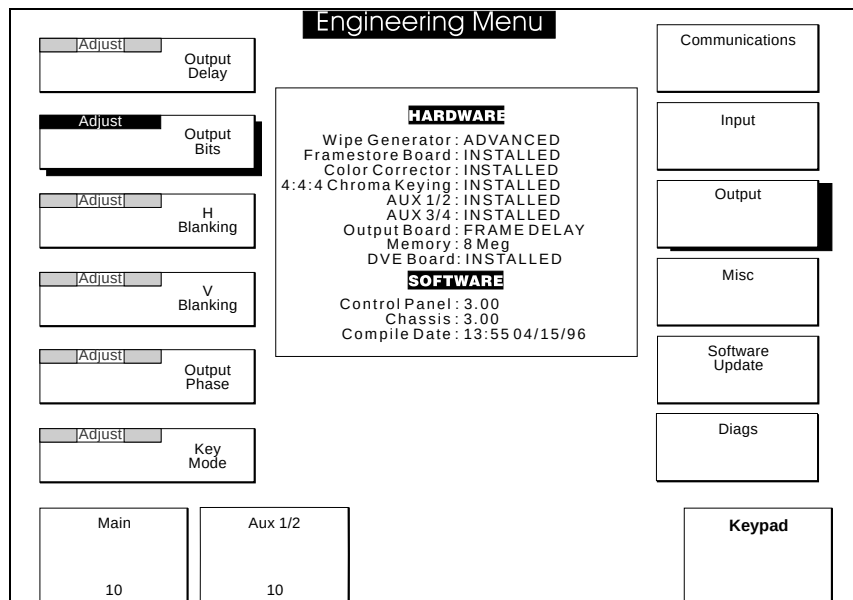
Press the **More Proc Adjust (H Phase)** softkey to adjust the key input's horizontal position. **H Phase** adjusts the active key signal's horizontal phase in the range +/- one microsecond.

Output Submenu

This submenu has adjustments for the 8150 serial digital outputs. The menu display varies depending on the Output module installed, as indicated in the following discussion. The original Output module does not have frame delay capability; it is referred to in this section as the 8100 Output module. Note that as of March 1996 the Enhanced (Frame Delay) Output module is shipped as standard equipment.

Output Delay

This softkey appears only if the Enhanced (Frame Delay) Output module is installed (some 8100s and all 8150s, except for 8150s that were field-upgraded from 8100s). Press **Output Delay** to bring up the **Program**, **Preview**, and **Aux 1/2** pushknobs. Their default delay settings are **34 Lines** for the program and preview outputs and **Auto** for the Aux 1 and 2 outputs. Use these settings when a one frame delay through the 8150 is not acceptable or



The Output Submenu

appropriate, as when using preread. The **1 Frame** setting assigns a one frame delay to the output, letting it be re-entered and retimed into your video system.

NOTE: The Program 2 output is always delayed by one frame and cannot be changed. If you are using preread, feed the Program 1 output to the preread VTR and set it to 34 Lines.

Output Bits

Press this softkey to set the bit resolution for the serial digital outputs. If the 8100 Output module is installed (some 8100s and 8150s upgraded from 8100s), there is one control for the combined **Main** outputs (Program 1, Program 2, Preview, Aux 1, and Aux 2) and a separate control for the **Aux 3/4** output pair, if present. If the Enhanced (Frame Delay) Output module is installed (some 8100s and all 8150s), there is a control for the **PGM/PVW** outputs and separate controls for the **Aux 1/2** output pair and the **Aux 3/4** output pair, if installed.

- **10** - Full 10-bit resolution (default).
- **8 Rounded** - Rounds the 10-bit signal's two least significant bits (LSBs) up or down to the nearest true 8-bit level. Use this mode if the output feeds an 8-bit device; the rounding helps reduce banding in shallow ramps and color washes.
- **8 Truncated** - Discards the two LSBs of the 10-bit signal. Use this mode only for troubleshooting purposes.

H Blanking

This softkey appears only if the Enhanced (Frame Delay) Output module is installed. Press **H Blanking** to adjust the horizontal blanking width of the main outputs (Program 1/ 2, Preview, and Aux 1/2) and the Aux 3/4 output pair.

If **H Blanking** is **OFF**, the full digital active line is output. Also, the rise times of the blanking to active video transitions are

unfiltered and may be subject to ringing. Typically, leave *H Blanking ON* to properly filter these transitions.

The pushknobs are as follows:

- **Main Left** – Adjusts the blanking width of the left edge (blanking back porch) of the main outputs, described above, in 2-pixel (148-nsecond) steps. The range is about 600 nseconds. The default, **1**, sets minimum blanking; **4** sets maximum blanking.
- **Main Right** – Adjusts the blanking width of the right edge (blanking front porch) of the main outputs, described above, in 2-pixel (148-nsecond) steps. The range is about 600 nseconds. The default, **1**, sets minimum blanking; **4** sets maximum blanking.
- **Aux 3/4 Left** – Appears only if the Aux 3/4 option is installed. Adjusts the blanking width of the left edge (blanking back porch) of the Aux 3 and 4 outputs in 2-pixel (148-nsecond) steps. The range is about 600 nseconds. The default, **1**, sets minimum blanking; **4** sets maximum blanking.
- **Aux 3/4 Right** – Appears only if the Aux 3/4 option is installed. Adjusts the blanking width of the right edge (blanking front porch) of the Aux 3 and 4 outputs in 2-pixel (148-nsecond) steps. The range is about 600 nseconds. The default, **1** sets minimum blanking; **4** sets maximum blanking.

V Blanking

This softkey appears only if the Enhanced (Frame Delay) Output module is installed (some 8100s and all 8150s). Press *V Blanking* to set the vertical blanking width of the Program 1 and 2, Preview, and Aux 1 and 2 outputs. (DIP switches set the vertical blanking widths for the 8100 Output module and the Aux 3/4 outputs, as outlined in the 8150 Technical Guide.)

As of this writing, the 8150 ships with lines 12 through 19 blanked, and line 20 is the first active line in 525-line systems. In 625-line

systems, lines 15 through 22 are blanked, and line 23 is the first active line. In both cases, the status of the field 2 line that corresponds to the indicated field 1 line is identical to the field 1 line status. (See the 8150 Technical Guide for a more complete listing of the lines affected.)

The **Blanking Status** pushknob label shows which lines are blanked by displaying the line number with its two digits oriented vertically. In 525 systems, the display looks like this:

11111111--
23456789--

In 625 systems, the display looks like this:

11111222--
56789012--

The dashes (--) are "place holders" for the lines that would appear next in the sequence, and indicate that those lines are not blanked.

To change the vertical blanking status of any line pair, use the **Select Line** pushknob to select the field 1 line number whose blanking status you want to change, then press the **V Blanking** softkey. This toggles the display to add that line if it was not there before, or to remove it if it was. The corresponding line in field 2 is blanked or unblanked accordingly.

Output Phase

Press this softkey to adjust the horizontal output timing of all 8150 outputs, both digital and analog. The **Horizontal Phase** pushknob sets system output horizontal timing. The default value is 8. The range is -256 to 245 (approximately 9.28 microseconds) in 1/4 pixel (18.5 nanosecond) increments.

NOTE: The 8100 Output module has a fixed vertical delay of 34 lines for the program and preview outputs, which you cannot adjust; the Horizontal Phase control is for horizontal timing only. If the Enhanced (Frame Delay) Output module is installed, some outputs may have no vertical delay, but the Horizontal Phase control still applies.

Key Mode

Press this softkey to select the type of signal for the Preview, Aux 2, and Aux 4 outputs. See the 8150 Technical Guide for a more complete explanation of the functions under *Key Mode*.

NOTE: This control does not affect the analog monitor output on the 8100 Output module; however, this control does affect the analog monitor output on the Enhanced (Frame Delay) Output module.

The settings are as follows:

- **Auto** – Automatically selects one of the following three settings according to whether the source routed to that output is a video signal or a key/mask/wipe signal.
- **Video** – Passes the selected source without modification.
- **Key w/o Border** – Removes the chrominance from the signal and re-scales the luminance for use as an external key signal, minus any border it may have.
- **Key w/ Border** – Removes the chrominance from the signal and re-scales the luminance for use as an external key signal, including any border that it may have.

Miscellaneous Submenu

Use this submenu to set the line standard, aspect ratio, bright or dark menu display, editor constant, and lamp saver time-out.

Video Standard

Toggle this softkey to select the 525 line or 625 line standard for the system.

NOTE: The 8150 requires a black burst or composite sync reference signal at the selected line standard to operate properly.

Engineering Menu	
525 625 Video Standard	HARDWARE Wipe Generator: ADVANCED Framestore Board: INSTALLED Color Corrector: INSTALLED 4:4:4 Chroma Keying: INSTALLED AUX 1/2: INSTALLED AUX 3/4: INSTALLED Output Board: FRAME DELAY Memory: 8 Meg DVE Board: INSTALLED SOFTWARE Control Panel: 3.00 Chassis: 3.00 Compile Date: 13:55 11/24/95
4:3 16:9 Aspect Ratio	
Day Night Display	
Adjust Timing	
Aux 3 / Aux 4 Aux 3 / Txt A Txt A / Txt B Aux Bus Use	
Adjust Lamp Saver	
H Units 8.0000	V Units 6.0000
Communications Input Output Misc Software Update Diags Keypad	

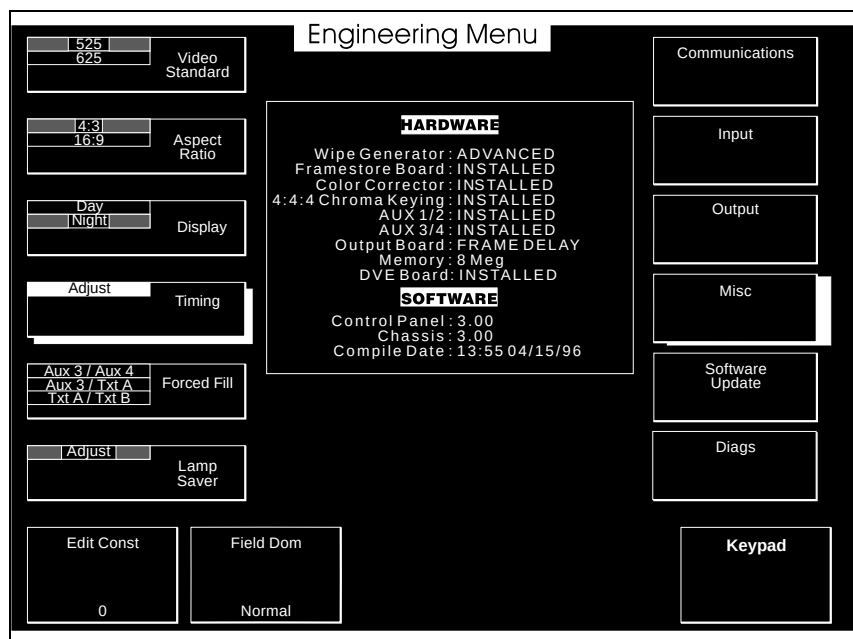
The Miscellaneous Submenu

Aspect Ratio

Toggle this softkey to select 4:3 or 16:9 aspect ratio processing for the system. The default, **4:3**, is the standard 4:3 television aspect ratio. Use **16:9** when working with video that has been created or recorded with a 16:9 aspect ratio. This gives that wipe patterns, preview monitor overlays, etc. the correct shape.

Display

This softkey toggles *Day* and *Night*. In day mode, the menus are dark text over a light background for legibility in bright rooms. In night mode, the menus are light text over a dark background for reduced glare in dark rooms.



The Miscellaneous Submenu with Night Display

Timing

Press this softkey to access the **Edit Const**, **Field Motion**, and **Field Ref** pushknobs. The editor constant is a two digit number that specifies two different parameters for use with edit controllers. Field motion determines at what rate a transition or Timeline effect is updated as it runs. Field reference determines on which field a cut occurs or transition begins.

Edit Const

Since the 8150 can emulate both SMPTE and Sony protocol VTRs, you may need to adjust the timing relationship between the edit controller commands and the 8150's execution of the commands. The 8150 supports two edit timing parameters, known as Command Delay and Time Code Delay, although these names do not appear in the menu. These two parameters affect the 8150 only

Engineering Menu		
525 625 Video Standard	HARDWARE Wipe Generator: ADVANCED Framestore Board: INSTALLED Color Corrector: INSTALLED 4:4:4 Chroma Keying: INSTALLED AUX 1/2: INSTALLED AUX 3/4: INSTALLED Output Board: FRAME DELAY Memory: 8 Meg DVE Board: INSTALLED SOFTWARE Control Panel: 3.00 Chassis: 3.00 Compile Date: 13:55 11/24/95	Communications
4:3 16:9 Aspect Ratio		Input
Day Night Display		Output
Adjust Timing		Misc
Aux 3 / Aux 4 Aux 3 / Txt A Txt A / Txt B Aux Bus Use		Software Update
Adjust Lamp Saver		Diags
H Units 8.0000	V Units 6.0000	Keypad

The Miscellaneous Submenu

when you use it to run Timeline effects from an edit controller by emulating a VTR.

Command Delay is the delay (in fields) between the time that the 8150 receives a command and the time that it actually executes it; the higher the Command Delay number, the longer it waits to execute the command.

Time Code Delay actually delays the time code that the 8150 sends to the edit controller. By delaying the time code to the edit controller, the 8150 appears to be "behind" where the edit controller expects it to be, forcing the edit controller to advance the 8150 Timeline effect relative to other devices in the system.

The **Edit Const** value can be a number up to four digits, but only the last two are significant. The last digit specifies the Command Delay parameter: it is a single digit, in the range 0 to 9. This gives a maximum of nine fields, or four and one half frames, of delay. Enter a Command Delay value if the 8150 executes editor commands too soon relative to other devices in the system.

The second-to-last digit specifies the Time Code Delay parameter: it is a single digit in the range 0 to 9. This gives a maximum of nine fields, or four and one half frames, of delay. Enter a Time Code Delay value if the 8150 is consistently "behind" or "late" relative to other devices in the system.

This is a "trial and error" adjustment, but once set, you should not need to change it for a given edit controller. Type the Time Code Offset value first, then the Command Delay value, then press the **Edit Const** pushknob to enter them. If the Time Code Offset value is 0, it does not appear in the display after you enter it.

Field Motion

When the 8150 executes a transition or runs a Timeline effect, it calculates a new percentage for the transition every video field; this new calculation is referred to as an update. There may be occasions, however, when you may want to update a transition

or Timeline effect only once per frame, or, in 525-line systems, you may want to update at the 3:2 field sequence of a film-to-video transfer. The Field Motion control allows you to specify how often, and on which field boundary, transitions and Timeline effects are updated.

- **Normal** – Updates transitions and Timeline effects at every field boundary, i.e., once per field, for maximum smoothness. This is the default setting.
- **F1** – Updates transitions and Timeline effects at every Field 1 boundary, i.e., once per frame.
- **F2** – Updates transitions and Timeline effects at every Field 2 boundary, i.e., once per frame.
- **3:2/A, 3:2/B, etc.** – Updates transitions and Timeline effects in a staggered fashion (twice per five field sequence) to match 525-line film-to-video transfers. The first update occurs after

Engineering Menu		
525 625 Video Standard	HARDWARE Wipe Generator: ADVANCED Framestore Board: INSTALLED Color Corrector: INSTALLED 4:4:4 Chroma Keying: INSTALLED AUX 1/2: INSTALLED AUX 3/4: INSTALLED Output Board: FRAME DELAY Memory: 8 Meg DVE Board: INSTALLED SOFTWARE Control Panel: 3.00 Chassis: 3.00 Compile Date: 13:55 11/24/95	Communications
4:3 16:9 Aspect Ratio		Input
Day Night Display		Output
Adjust Timing		Misc
Aux 3 / Aux 4 Aux 3 / Txt A Txt A / Txt B Aux Bus Use		Software Update
Adjust Lamp Saver		Diags
H Units 8.0000	V Units 6.0000	Keypad

The Miscellaneous Submenu

three fields, the next update occurs two fields later, the next occurs three fields later, etc. There are five selections (A, B, C, D, and E) because the sequence can potentially start on any of the five fields in the sequence; you must use trial and error to determine which of the five is correct for each instance. This mode is useful only in 525-line systems.

Field Ref

Normally, the 8150 executes a cut or other transition on the next field after it receives the command, which could be either Field 1 or Field 2. However, there may be times when you want the cut or transition to begin only on Field 1 or only on Field 2.

NOTE: These field dominance settings affect only manual transitions performed by pressing CUT, AUTO TRAN, or by moving the fader bar. Timeline effects always begin at the boundary between the end of field 2 and the beginning of field 1, i.e., they always have field 1 dominance.

Use the Field Ref control to select the field on which all cuts and transitions are executed:

- **Either** – Executes a cut or begins a transition at the boundary between the current field and the next, whether it is Field 1 or Field 2. This is the default setting.
- **F1** – Executes a cut or begins a transition only at the boundary between the end of Field 2 and the beginning of Field 1.
- **F2** – Executes a cut or begins a transition only at the boundary between the end of Field 1 and the beginning of Field 2.

Aux/Txt Retime

This softkey appears only if the optional internal DVE is installed in the 8150.

You can use any 8150 source except DSK Preview as a video input to either channel of the internal DVE, and the DVE retimes itself for that source. You can also use any direct source (defined below)

in the 8150 as a texture input to either channel of the DVE. However, because there may be a timing difference between the DVE video input and the DVE texture input, the 8150 must compensate for this difference. Because there are not dedicated delay paths for the DVE texture inputs, the 8150 must share the Aux 3 and Aux 4 retiming paths with the DVE Channel A and B texture inputs, in the event that the video and texture inputs are not zero timed to each other.

The *Aux/Txt Retime* control allows you to select the following modes:

- **Aux 3/Aux 4** – All Aux 3 and 4 sources are correctly timed, but DVE Channel A and Channel B texture sources may not be. Select this mode if you need to use the Aux 3 and 4 outputs or are not using the DVE texture inputs.

Engineering Menu	
525 625 Video Standard	HARDWARE Wipe Generator: ADVANCED Framestore Board: INSTALLED Color Corrector: INSTALLED 4:4:4 Chroma Keying: INSTALLED AUX 1/2: INSTALLED AUX 3/4: INSTALLED Output Board: FRAME DELAY Memory: 8 Meg DVE Board: INSTALLED SOFTWARE Control Panel: 3.00 Chassis: 3.00 Compile Date: 13:55 11/24/95
4:3 16:9 Aspect Ratio	
Day Night Display	
Adjust Timing	
Aux 3 / Aux 4 Aux 3 / Txt A Txt A / Txt B Aux Bus Use	
Adjust Lamp Saver	
H Units 8.0000	V Units 6.0000
Communications Input Output Misc Software Update Diags Keypad	

The Miscellaneous Submenu

- **Aux 3/Txt A** – All Aux 3 sources and DVE Channel A texture sources are correctly timed, but Aux 4 and DVE Channel B texture sources may not be. Select this mode if you are using only the DVE Channel A texture input, such as in V+K or VK+S modes, and also need to use the Aux 3 output.
- **Txt A/Txt B** – All DVE Channel A and Channel B texture sources are correctly timed, but Aux 3 and 4 outputs may not be. Use this mode if you are using both DVE texture inputs in V+V mode, or if you do not need the Aux 3 and 4 outputs.

■
Each of the three modes is explained in the following table. Note that the DVE video input selections affect the functionality of these modes. Even though any source in the 8150 (except DSK Preview) is valid as a DVE video input, only a direct source is valid as a DVE texture input. A "direct source" is defined as a source in the 8150 that is not delayed by internal processing, i.e., inputs 1 through 14, the SuperMatte generator, and Framestores 1 and 2. A "delayed source" is defined as a source in the 8150 that is delayed by internal processing, i.e., M/E Program, M/E Preview, Wipe Pattern, and Key Monitor.

Note also that the DVE Video and DVE Key outputs are considered direct sources if *both* DVE video inputs are fed by direct sources, but DVE Video and DVE Key outputs are considered delayed sources if *either* DVE video input is fed by a delayed source. This is because both channels of the DVE are timed to the more delayed of its inputs. For instance, if M/E Program is input to Channel A and the SuperMatte generator is input to Channel B, M/E Program is the more delayed of the two sources, and so the 8150 automatically delays the SuperMatte generator to match the timing of M/E Program.

The above holds true for Effects Looping as well; if the internal DVE is used for a Keyer 1, Keyer 2, M/E Bgnd, or DSK Effects Loop, the DVE video and key outputs are delayed sources and should be considered as such.

The internal source called DSK Preview cannot be used as a DVE input, as it delays the DVE too much to retime to any other sources.

See the table on the following page for general indications on which Aux/Txt Retime mode to select for different circumstances.

Aux/Txt Retime Mode	DVE Video Input	Aux 3 Output status	Aux 4 Output status	Ch A Texture status	Ch B Texture status
Aux 3/ Aux 4	Direct source (Both Ch A and B)	Timing OK for all sources	Timing OK for all sources	No source selection; timing OK	No source selection; timing OK
	Delayed source (Either Ch A or B)	Timing OK for all sources	Timing OK for all sources	No source selection; timing not correct	No source selection; timing not correct
Aux 3/ Txt A	Direct source (Both Ch A and B)	Timing OK for all sources	Timing OK for all sources	Timing OK for all sources	No source selection; timing OK
	Delayed source (Either Ch A or B)	Timing OK for all sources	No source selection; Texture A visible	Timing OK for all sources	No source selection; timing not correct
Txt A/ Txt B	Direct source (Both Ch A and B)	Timing OK for all sources	Timing OK for all sources	Timing OK for all sources	Timing OK for all sources
	Delayed source (Either Ch A or B)	No source selection; Texture B visible	No source selection; Texture A visible	Timing OK for all sources	Timing OK for all sources

Lamp Saver

This softkey sets the delay (time-out) for the Lamp Saver. If there is no Control Panel activity (no buttons pressed and no fader bar or joystick movement) within the time set, the system shuts off the lamps on the Control Panel. Set the delay with the **Timeout** pushknob, in minutes. The range is one minute to 60 minutes; the default is ten minutes.

The LCD menu display is always active and does not go dark when the lamps turn off.

Software Update Submenu

Use this submenu to install a software update from Accom.

NOTE: Software updates from Accom include installation instructions. **ALWAYS** read the instructions before installing new software. The procedure may require other system changes before the software update. Always save engineering setups, personality files, timelines, effects, and user registers to disk before installing new software, as updating the system software clears the battery backed memory.

The screenshot displays the 'Engineering Menu' interface. At the top center is a black header with the text 'Engineering Menu' in white. Below this, the main area is divided into several sections. On the left, there is a 'Confirm' button at the top and a 'Select' button below it, which is highlighted with a black bar. To the right of the 'Select' button is an 'Update' button. In the center, there is a large box containing system information. This box is divided into two sections: 'HARDWARE' and 'SOFTWARE'. The 'HARDWARE' section lists: Wipe Generator: ADVANCED, Framestore Board: INSTALLED, Color Corrector: INSTALLED, 4:4:4 Chroma Keying: INSTALLED, AUX 1/2: INSTALLED, AUX 3/4: INSTALLED, Output Board: FRAME DELAY, Memory: 8 Meg, and DVE Board: INSTALLED. The 'SOFTWARE' section lists: Control Panel: 3.00, Chassis: 3.00, and Compile Date: 13:55 04/15/96. On the right side of the interface, there is a vertical column of buttons: 'Communications', 'Input', 'Output', 'Misc', 'Software Update' (which is highlighted with a black bar), 'Diags', and 'Keypad'. At the bottom left, there is a 'Device' button and a 'Chassis' button. At the bottom right, there is a 'Keypad' button.

The Software Update Submenu

Confirm

Press this softkey to execute the update command selected with the **Device** pushknob.

Update

Press this softkey to access the **Device** pushknob. It selects the device to be updated: **None**, **Chassis**, **Panel**, or **RAM**.

An 8150 software upgrade typically calls for the Main Chassis software to be updated first. With the software update disk installed in the floppy disk drive, select **Chassis** and press **Confirm**. This automatically begins updating the Main Chassis, which takes about two minutes. A small read-out in the upper left corner of the menu shows the update's progress. When finished, the Main Chassis reboots itself, and the Keyer 1 menu appear when it is ready for operation.

You can stop the update procedure at any time before it is 96 percent complete by rebooting or powering down the Main Chassis. The update creates a temporary file before updating the flash memory and does not affect the current software version or system memory before then. After 96 percent done, however, it erases the existing software from the flash memory, and the update must continue; otherwise, the Main Chassis will have no operating software at all. When the update is complete, the Main Chassis reboots itself and displays the Keyer One menu.

Next, update the Control Panel software. Return to the Engineering Software Update submenu, then select **Panel** and press **Confirm**. In a major software change, the Control Panel menu buttons may be "remapped," meaning that they do not recall the menu that you expect. If this is the case, disconnect the power cable from the Control Panel and then reconnect it. This forces the Control Panel to read the floppy disk in the disk drive.

The Control Panel software update process is not completely automatic; you must press **SHIFT + M/E** when the menu prompts; if you do not, it aborts the upgrade and the Control

Panel reloads its existing software. Once started, the update takes about two minutes. When done, the Control Panel reboots and prompts you to press **SHIFT + M/E** again; you can press the flashing **FTB** button to boot from the new software immediately, or do nothing, which causes the Control Panel to time out and boot from the new software automatically.

You can stop the update process at any time before the display indicates that it is "erasing flash." The update creates a temporary file before updating the flash memory and does not affect the current software version or system memory before then. When it begins erasing the flash memory, however, the update must continue or the Control Panel will have no operating software at all.

Updating the **RAM** erases all battery backed memory and forces the default settings to load. This is also known as a "first birthday." This is not a normal operation and should be used only as a last resort, when other measures to fix operational problems are unsuccessful.

WARNING: Updating RAM clears the switcher's battery backed memory. Save all engineering setups, personality files, timelines, effects, and user registers to disk before updating the RAM.

Diags Submenu

This submenu has tests you can perform on the Control Panel. Normally, you will not use it, unless you suspect a fault in the Control Panel. Note that the 8150 "hears" when you press menu and crosspoint buttons while in this menu, just as it does normally.

Hold down the *Lamp Test* softkey to test the lamps and LEDs on the Control Panel for burn-out. As you hold the softkey, the 8150 lights each lamp and LED in succession so you can identify burnt-out ones. The labels in the pushknobs let you verify that the 8150 changes values in single steps. For example, if you turn the pushknob one click, the value in the label should only increase or decrease by one unit.

Engineering Menu						
Lamp Test						Communications
						Input
Keys	1-255	2-255	3-255	4-255		Output
Joy	X 0	Y 0	Z 0			Misc
TBar	8000					Software Update
Mouse	X- 0	Y- 0	Switch	00		Diags
KBD	000					
SoftPot 1		SoftPot 2		SoftPot 3		Keypad
0		0		0		
SoftPot 4						
0						

The Diags Submenu

The display in the center of the menu lets you test other Control Panel functions. Press a button and the "Keys" line indicates the switch number for the button. Press more than one button (up to four at a time) to verify more than one button.

The "Joy" line is a read-out of the current joystick position. When you let go of the joystick, the X, Y, and Z values should be 0, which means that the joystick has re-centered itself. Note that a small amount of "drift" in the joystick is normal.

The "TBar" line lets you test the fader bar's range. The top of its range is 8000, the bottom is 0000. Intermediate settings give corresponding read-outs, in hexadecimal form.

You can add your own mouse or mouse pen for drawing masks and controlling wipes. The 8150 also supports using an external PC AT keyboard for naming sources and disk files. (See the 8150 Technical Guide for details.) The Diags submenu lets you verify communications between the 8150 and a mouse and/or keyboard. The "Mouse" line lets you verify that the 8150 "hears" external mouse movement and button presses. In the same way, the "KBD" line lets you verify button presses on the external keyboard.

The Engineering Menu

8150 Operations

Section 14

Remote Operations

Introduction

The 8150 has powerful keying, transitioning, and color correcting features. To get the most use out of them, however, you must be able to control all devices in a post-production environment, especially the switcher. The 8150 allows extensive remote control at several levels, including several serial remote control protocols and many functions that you can trigger with GPIs (General Purpose Interface inputs).

This section discusses the remote control types in depth.

Controlling the 8150 from an Editor

The 8150 can be controlled by RS-422 serial communications or by GPI (General Purpose Interface) pulses. See Section 12 – Personality and Section 13 – Engineering or the 8150 Technical Guide Section 5 – Engineering Setup for information on menu settings for configuring the remote ports and GPI inputs.

RS-422 Serial Communications

You can control the 8150 with several makes of edit controllers. The switcher control mode lets the editor select crosspoints, activate transitions, select wipe patterns, etc. via a serial remote port. This allows transitions that are both frame-accurate and repeatable.

Since you can assign any source to any crosspoint button, the editor selects sources in the 8150 by crosspoint button number, not physical input number. Crosspoint numbers are 1 through 18. Crosspoint 1 (the leftmost crosspoint button) defaults to black; crosspoints 2 through 9 are the rest of the unshifted crosspoint buttons. Crosspoints 10 through 18 are the shifted crosspoint buttons. To have the editor select a certain source, assign that source to one of the 18 crosspoint buttons.

Editors manufactured by Grass Valley Group select the 8150 main program out as crosspoint 22. Most other edit controllers select main program out correctly without the need for further intervention.

The 8150 supports recalling wipe patterns from the edit controller. The wipe pattern numbers appear in the **Pattern** pushknob in the Patterns submenu. To transition a wipe in reverse, add 100 to the pattern number. For example, to use pattern 3 in reverse, select pattern 103 from the edit controller.

Since the 8150 has one M/E, selecting M/E 1 for control by the editor enables control of the 8150 M/E; selecting Program/Preset or M/E 2 enables control of the 8150 PGM/PST buses.

Single Monitor Editing

If your facility uses a single monitor to view all editing functions, you can and should use the 8150 preview output for this, unless you are using an analog VTR as the record machine. In that case, you should monitor the VTR output when editing.

To see the main program output on the preview output, bring up the Miscellaneous menu and select *Program* with the *Source* softkey in the Pvw Bus Ctrl & Misc submenu. This routes the main program video to the preview output. You can also superimpose the preview monitor overlays (safe action, safe title, cursors, etc.) over the program video. You cannot superimpose the overlays over the main program output itself.

When editing, the record VTR is normally set to "off-tape" mode so its input cannot be sent to its output; this avoids potential video feedback loops. Also, when the VTR is in record or edit record mode, it is normally set to "confidence play" mode, which outputs the off-tape video and audio that has just been recorded. This is how you should set your record VTR(s) when using the 8150 in editing situations.

If the 8150 Program 1 output delay is set to 34 lines, using the VTR to monitor the edit preview may show a large vertical and/or horizontal shift. Instead, let the edit controller use the 8150 preview switching facility to perform the edit preview. This shows no horizontal or vertical shifts in the preview because the record VTR does not have to switch to E-E mode. Alternatively, you can set the Program 1 output delay to one frame and avoid the 34 line delay. However, this one frame delay can introduce audio-to-video timing errors if both are part of the same edit; if this is the case, a user-supplied audio delay may be needed.

Furthermore, while actually recording the edit, the record VTR may show a vertical and/or horizontal shift because of the 34-line delay in the 8150 program output. Some digital VTRs use an internal fieldstore or framestore to compensate for delays caused by locking to input video; this prevents shifts in the VTR output timing. When recording on an analog VTR, set the 8150 output to one frame delay and monitor the VTR output when recording.

The 8150 also supports preread or "read-before-write" editing with digital VTRs. Its program output 34-line delay is within Digital Betacam's 40-line preread window, and well within the D5 format 100-line preread window. This means that you can use the 8150 in preread mode with either VTR type. (The frame-delayed outputs provided with the Enhanced [Frame Delay] Output module do not work with preread editing, as they fall outside the VTRs' preread window; however, you can select 34 line delay for this.) Use the 8150 preview output to monitor the program output and all preview switching functions under the control of the editor.

Most edit controllers can send edit preview switch commands to the production switcher, which then performs the preview switch on an Aux bus output. Since the 8150 uses the preview output as the edit preview switcher, it must re-route these preview switch commands to the preview output. In the Engineering Comms submenu, the **Preview cmds routed from:** pushknob toggles **None**, **Aux 1**, **Aux 2**, **Aux 3**, **Aux 4**, and **Aux 5**. This selects which Aux bus switch command is actually executed on the preview output. For example, if you leave it at the default, **None**, it performs all switch commands on the designated Aux output. If you select **Aux 4**, any switching commands that the 8150 receives for Aux 4 are actually executed on the preview output. If it receives a command to switch any other Aux bus, it performs the switch on that Aux output. If you select **Aux 5**, you can set the edit controller to perform the preview switch on Aux 5. Since the 8150 has no Aux 5, it routes commands for Aux 5 to the preview

output. This enables the control of all four Aux outputs, plus the preview output, by the edit controller.

Since the GVG model 200 switcher does not support preview switching, some edit controllers do not support it in their GVG 200 protocol. If this is true with your editor, use Accom A82/A83 protocol or GVG Model 1000 protocol to control the 8150. Both protocols work with the *GVG* setting on the 8150, and they both support preview switching.

See Section 5 – Engineering Setup in the 8150 Technical Guide for more information on connecting and setting up digital VTRs with the 8150.

GPI Inputs

A GPI is a contact closure or a pulse signal used to trigger a device function. The 8150 has eight independent GPI inputs that let external devices trigger several functions with a simple contact closure or TTL pulse. See the 8150 Technical Guide for information on connecting external devices to the 8150 GPI inputs.

GPI Input Functions

You can assign any supported function to any GPI input with the list in the GPIs submenu under the Personality menu. An input GPI can trigger the following 8150 functions:

- **<None>** – no function.
- **Autotrans (Current)** – executes the currently active transition, just like pressing the **AUTO TRAN** button.
- **Cut (Current)** – cuts the currently active transition, just like pressing the **CUT** button.
- **M/E Autotrans <Current>** – executes a transition on the M/E, using its currently active transition mode, just like pressing the **AUTO TRAN** button while the M/E buses are active.

- **M/E Cut <Current>** – executes a cut on the M/E, just like pressing the **CUT** button while the M/E buses are active.
- **M/E Key 1 Cut** – cuts Keyer 1 on or off on the M/E, just like pressing the **CUT** button with **KEY 1** lit.
- **M/E Key 2 Cut** – cuts Keyer 2 on or off on the M/E, just like pressing the **CUT** button with **KEY 2** lit.
- **M/E Background Cut** – cuts between the Background A and B buses on the M/E, just like pressing the **CUT** button with **BKND** lit.
- **P/P Autotrans <Current>** – executes a transition on the PGM/PST, using the currently active transition mode, just like pressing the **AUTO TRAN** button.
- **P/P Cut <Current>** – cuts the PGM/PST/DSK, using the current transition mode, just like pressing the **CUT** button.
- **P/P DSK Cut** – cuts the DSK on or off on PGM/PST, just like pressing the **CUT** button with **DSK** lit.
- **P/P Cut** – cuts Preset to Program on PGM/PST, just like pressing the **CUT** button with **PGM PST** lit.
- **P/P Fade-to-Black** – executes a fade-to-black on the Program output, just like pressing the **FTB** button.
- **P/P Cut-to-Black** – executes a cut-to-black on the Program output, just like pressing the **FTB** button with a transition duration of 0:00.
- **Grab Image in Framestore #1** – freezes Framestore 1, grabbing a frame of its input video, just like pressing the *Grab* softkey.
- **Grab Image in Framestore #2** – freezes Framestore 2, grabbing a frame of its input video, just like pressing the *Grab* softkey.
- **Freeze/Pass Thru FS #1 Switch** – sets Framestore 1 to Freeze or Pass Thru mode according to the state of the GPI: if the GPI is inactive (open or high), Framestore 1 is in Pass Thru mode; if the GPI is active (closed or low), Framestore 1 is frozen.

- **Freeze/Pass Thru FS #2 Switch** – sets Framestore 2 to Freeze or Pass Thru mode according to the state of the GPI: if the GPI is inactive (open or high), Framestore 2 is in Pass Thru mode; if the GPI is active (closed or low), Framestore 2 is frozen.
- **F1, F2, F3** – executes the macro currently assigned to a User Key, just like pressing one of these buttons (**F1**, **F2**, **F3**).
- **Aux 1 A/B Side Switch** – triggers the Aux 1 A/B (front/back) switch as assigned in the Miscellaneous menu.
- **Aux 2 A/B Side Switch** – triggers the Aux 2 A/B (front/back) switch as assigned in the Miscellaneous menu.
- **Aux 3 A/B Side Switch** – triggers the Aux 3 A/B (front/back) switch as assigned in the Miscellaneous menu.
- **Aux 4 A/B Side Switch** – triggers the Aux 4 A/B (front/back) switch as assigned in the Miscellaneous menu.
- **Run Effect Forward** – runs the current Timeline effect forward, just like pressing the **RUN** button.
- **Run Effect Reverse** – runs the current Timeline effect in reverse, just like pressing the **REV** button.
- **Jog Effect Forward** – steps the current Timeline effect forward by one field.
- **Jog Effect Reverse** – steps the current Timeline effect backward by one field.
- **Rewind Effect** – cues the current Timeline effect to its start, just like pressing the **START (REW)** button.
- **FastFwd Effect** – cues the current Timeline effect to its end, just like pressing the **END (FF)** button.
- **Previous Keyframe** – steps the current Timeline effect to the previous keyframe, just like pressing the **PREVIOUS** button.
- **Next Keyframe** – steps the current Timeline effect to the next keyframe, just like pressing the **NEXT** button.

Aux Bus A/B (Front/Back) Switching

The Aux A/B switch inputs are used with DVEs that send an A/B (front/back) tally to indicate that the DVE is displaying the video on its "front" or "back" side. Normally, the DVE does its own front/back switching, requiring front and back video feeds, plus front and back key feeds. If the 8150 feeds the DVE this way, it would use all four Aux outputs for one DVE.

If the 8150 knows when the DVE is displaying the "front" or "back" side, the 8150 can perform the switch instead. This uses only two Aux outputs (one for video and one for key) instead of four.

For this reason, many DVEs (including all Accom DVEs) send out a front/back switch tally signal, which the 8150 can use to trigger the switch internally. See Section 7 – Miscellaneous Functions for a step-by-step procedure on setting the sources for the front/back switch. See the 8150 Technical Guide for information on the physical connections between the DVE and the 8150.

Controlling other Devices with the 8150

LINC Serial Control

LINC™ (Locally Integrated Node Control) is a serial remote control protocol developed by Accom to let switchers control other devices, such as DVEs and DDRs (digital disk recorders), as part of the switcher's Timeline effect.

With a LINC device connected to the 8150's Serial 3 remote port (see the 8150 Technical Guide for information on physical installation), you can control it in the Timeline menu. Press the **LINC** softkey to bring up a list of the 16 LINC device addresses. Here you can select or deselect each device address for use in a Timeline effect. There are also play, stop, and jog controls for each device, so that you can independently control them as you create the effect.

Accom's larger switchers allow LINC devices to display their own menus in the switcher's menus. These menu displays are not implemented in the 8150, so you must create DVE effects with the DVE's own control panel before integrating its effect into the 8150's Timeline effect. However, you can still use DDRs as Cache Recorders to perform multiple pass layering operations with no generation loss.

See Section 10 – Timelines for more details on using LINC with Timeline effects.

GPI Outputs (GPOs)

The 8150 has eight independent GPI outputs, called GPOs in the menus, that you can use to trigger events in external devices. You can program GPOs on a keyframe-by-keyframe basis as part of a Timeline effect. They are part of the Miscellaneous parameter set, which you can assign to one of the four Timelines. See Section 10 – Timelines for a details on programming and using the GPOs. See also the 8150 Technical Guide for information on connecting the GPOs to external devices.

External Input Source Tallies

The 8150 supports independent source tallies for each external input. When any of the 16 external inputs appears on the program output (as a background, a key, or a border fill), the 8150 activates its corresponding tally to indicate that the source is "on air." You can route tallies to cameras or other video sources, or to monitors, to warn operators that their source is currently on the main program output. This includes sources routed out Aux bus outputs to other devices, which may then be re-entered to appear on the program output. See the 8150 Technical Guide for information on connecting the tally outputs to external devices.

Section 15

Control Panel

Control Panel Buttons

This section is an alphabetized listing of all Control Panel buttons with basic descriptions of each.

* (DECIMAL POINT)

Use this button to enter a decimal point as part of a number. To enter a value of 7.25, press 7 — * — 2 — 5.

+/- (PLUS/MINUS)

Use this button to sign a value negative. To enter -7.25, press +/- — 7 — . — 2 — 5. Another way is 7 — . — 2 — 5 — +/- . Press +/-, then a pushknob to change the sign of the value. For example, with 2 currently in pushknob 1, pressing +/- (which enters a minus sign[-]), then pressing pushknob 1, changes it to -2.

ACQUIRE

If there is more than one 8150 Control Panel connected to an 8150 Main Chassis, use the **ACQUIRE** button to release or gain control of the system from a Control Panel. For example, if there are two Control Panels connected to the 8150, and you want to use Control Panel 1, but Control Panel 2 has control, double press the **ACQUIRE** button on Control Panel 2 to release it, then press the **ACQUIRE** button once on Control Panel 1 to take control of the 8150 system.

ALIGN

Press **ALIGN** ("Align" appears in keypad buffer), then a pushknob to set its current value to the closest "typical" value, usually one-eighth of the full range for that value. For example, a wipe rotation value of 43 degrees changes to 45 degrees. Press

ALIGN, then a submenu softkey (left side of menu display) to change all its settings to their closest typical values.

ALL

Use **ALL** as part of a keyframe editing command to modify, delete, or copy all the keyframes in the delegated Timeline(s). For example, pressing **DELETE — ALL — ENTER** removes all keyframes from the Timeline(s).

AUTO TRAN

Pressing the **AUTO TRAN** button executes the current transition at the programmed rate. For example, if you set a wipe transition time of 2:15, pressing **AUTO TRAN** completes the wipe in two seconds and 15 frames. This applies to all transition types on both the M/E and PGM/PST buses. You can set the duration for the auto transition in the Miscellaneous menu, or by entering a number in the keypad and pressing **AUTO TRAN**. Note that if there is a number in the keypad buffer, pressing **AUTO TRAN** sets the auto transition duration; it does not execute the transition. Enter the number in frames, or seconds and frames, and press **AUTO TRAN** to set the duration. For example, enter **1.20** to set a one second, 20 frame duration. You could also enter **75**; the 8150 interprets the frame count as 2:15 in 525 or 3:00 in 625.

BKND

Pressing **BKND** enables the Background A and B bus rows for the current transition. With **BKND** lit, the current transition (**MIX**, **WIPE**, **EFFECT**, or **NAM**) occurs between the background bus rows when you move the fader bar, or press **AUTO TRAN** or **CUT**.

BORDERS

Use the Borders menu to add a border to a key. Border types include outline, extrude, trail, shadow, and emboss. The key border fill can be any video source or a matte color. There are standard hue, saturation, and luminance controls for the border matte color.

CLEAR

Use the **CLEAR** button to reset parameters to default:

- Press the **CLEAR** button, then a pushknob to reset it to its default.
- Press and hold the **CLEAR** button and press a softkey to clear all the values for that softkey to default. This resets both the softkey (if it is a toggle), and any pushknob values.
- Press and hold the **CLEAR** button and press a submenu softkey to clear all the values for that submenu to default. This resets all softkeys (if they are toggles) and all pushknob values.
- Press and hold the **CLEAR** button and press a menu button to reset all the values for that menu to default. This resets all submenus, softkeys, and pushknob values to their defaults.

CLEAR KEYFRAME

This button has no function in the 8150.

COLOR CRCTR

The Color Corrector menu accesses controls for the seven optional color correctors. Color correction can be in YUV or RGB color space, and controls include Gain, Offset, Saturation, Knee, Luminance and Chrominance Invert, Luminance Tinting, False Coloring, and Solarizing.

COPY

Use **COPY** as part of a keyframe editing command to copy a keyframe (or range of keyframes) to another keyframe. For example, pressing **COPY — 2 — TO — 4 — ENTER** makes a duplicate of Keyframe 2 and inserts it after Keyframe 3, changing the old Keyframe 4 to Keyframe 5, and rippling all subsequent keyframe numbers.

CROSSPOINTS

The crosspoint buttons select a source on a bus row; the same source appears on the same crosspoint button for any row on which it is selected. Each row is assigned a particular function, depending on the switcher output you are working with. The top

row can select the fill for Keyer 1, Keyer 2, or the DSK. The middle row can select the source for the M/E Background A bus or the Program bus. The bottom row can select the source for the M/E Background B bus or the Preset bus.

To enter a source name in a menu, press and hold the crosspoint button for that source on the Preset or Background B bus, and press a pushknob to enter that source directly.

CURSOR

Press the **CURSOR** button to enable DVE axis cursors and channel identifications on the 8150 Preview output. The axis cursors show the center of rotation for each channel and the Global controls, each with separate cursors for source and target space. Each channel's cursors are a unique color for easy identification. The **CURSOR** button is only functional if the optional internal DVE is installed.

CUT

Pressing **CUT** executes the currently selected transition instantly.

DELETE (Quick Keyframes)

Press the **DELETE** button in the Quick Keyframes area to delete the current keyframe from the delegated Timeline(s). Same as **DELETE — THIS — ENTER**.

DELETE (Effects Editor)

Use **DELETE**, in the TimeFrame™ Effects Editor area, as part of a keyframe editing command to delete a keyframe (or range of keyframes) from the Timeline. For example, pressing **DELETE — THIS — TO — END — ENTER** erases the current keyframe and all subsequent keyframes in the delegated Timeline(s).

DISK

Use the Disk menu to save, recall, copy, and delete effect, engineering, personality, user wipe, and user color corrector setup files. You can also format disks in this menu.

DSK

Pressing **DSK** selects control for the DSK (**D**own**S**tream **K**eyer). With **DSK** lit, the current transition (**MIX**, **WIPE**, or **EFFECT**) turns the DSK on or off when you move the fader bar or press **AUTO TRAN** or **CUT**.

If the *Auto Menus* softkey is **On** in the Personality User Keys & MISC submenu, the DSK Keyer menu appears when you press this button.

DVE

Press the **DVE** menu button to bring up the DVE menus. These menus let you set up real-time DVE effects on twin (A and B) channels individually, on both simultaneously, or on the Global Channel. The **DVE** button is only functional if the optional internal DVE is installed.

DVE Channel Select Buttons

The oblong DVE channel select buttons are located on the right side of the control panel below the joystick, and have labels immediately above them (CH A, CH B, and GLOBAL) which illuminate when they are active. The buttons for DVE Channel A and Channel B recall their respective menus for setting up functions that are specific to one of them; you can activate them individually or simultaneously. The button for the DVE Global channel recalls its menu for controlling both channels at once. You cannot highlight the GLOBAL indication simultaneously with either CH A or CH B. These buttons are only functional if the optional internal DVE is installed.

DVE FREEZE

This button is only active when the optional internal DVE is installed. The **DVE FREEZE** button lets you freeze the inputs to the twin channels independently or simultaneously, according to which DVE channel is highlighted. Note that this Freeze function is a duplicate of the Freeze function in the DVE menu Input submenu, which lets you apply a freeze to either or both channels

on a keyframe-by-keyframe basis. The **DVE FREEZE** button is only functional if the optional internal DVE is installed.

EFFECT (Transition Type)

The **EFFECT** transition button enables an effect transition, which uses the optional internal DVE to execute the transition. You can select any combination of the M/E transition delegation buttons (**BKND**, **KEY 1**, or **KEY 2**), or any combination of the PGM/PST transition delegation buttons (**PGM PST** or **DSK**), as an effect transition. You cannot transition M/E keyer Priority with **EFFECT**. Any bus delegation buttons selected for an effect transition light red. If the *Auto Menus* softkey is toggled to *On* in the Personality User Keys & MISC submenu, the DVE Misc menu appears when you press this button. The **EFFECT** button is only functional if the optional internal DVE is installed.

EFFECT (Menu)

Use the **EFFECT** menu to save Snapshot and Timeline effects to the on-line effects registers and to recall them to the effect workspace.

EFFECT TRANS (Menu)

Press this menu button to access the DVE Misc menu, which is a list of DVE effect registers used for Effect transitions. There are 51 registers in the list, the last 30 of which are pre-programmed two-keyframe effects that you can recall for use with Effect transitions. You can save your own effects in registers 0-20. The **EFFECT TRANS** button is functional only if the optional internal DVE is installed.

END (FF)

Press **END** to move the Timeline effect to the last keyframe. You can also use **END** as part of a keyframe editing command to modify, insert, copy, or delete the last keyframe. For example, pressing **COPY — START — TO — END — ENTER** makes the first and last keyframes identical.

ENG

The Engineering menu accesses the engineering settings. Here you can configure the inputs, outputs, editor ports, and install software.

ENTER

Press **ENTER** to complete a keyframe editing command. For example, to modify the second keyframe, press **MODIFY — 2 — ENTER**.

F1, F2, F3

You can assign your own macros, each with up to 50 button presses, to these buttons. Useful macros include turning on or off the editor communications, center of rotation cursor, or safe title area display, or to freeze or unfreeze framestores. You can program these buttons in the Personality menu, User Keys & UNDO submenu.

FADER BAR

Use the fader bar to manually perform any transition except a cut. As you move the fader bar, a small green arrow LED lights above or below it to indicate the direction the fader bar has traveled and must travel to complete the transition. This reminds you not only that the transition is not finished, but it also shows which way the fader must move to finish.

FAM (Transition Type)

This button is not supported in the 8150.

FIELD

Used with the **DVE FREEZE** button, the **FIELD** button allows you to select a field 1 or field 2 freeze (LED in the button is lit), or a full frame freeze (LED is off) of the input video for the selected channel(s). You cannot change the field/frame mode once the video is frozen.

FRAMESTORE

The Framestore menu has controls for the optional Dual Framestores in the 8150 (not to be confused with the framestores in the internal DVE option). You can select sources for the framestores, and select field 1, field 2, or frame freeze for the output. You can set any time strobe rate for "stroboscopic" or stop-motion effects.

FTB

Pressing the **FTB** button fades the program output, including the DSK, to black. You can set the duration for the Fade-To-Black in the Miscellaneous menu, or by entering a number in the numeric keypad and pressing **FTB**. Note that if there is a number in the keypad buffer, press **FTB**, sets the FTB duration; it does not perform the fade. Enter the number in frames, or seconds and frames, and press **FTB** to set the duration. For example, enter **1.20** to set a one second, 20 frame duration. You could also enter **75**; the 8150 interprets the frame count as 2:15 in 525 or 3:00 in 625.

INSERT

Use **INSERT** in a keyframe editing command to insert a keyframe (or range of keyframes) between existing keyframes, or to move keyframes in the Timeline. For example, pressing **INSERT — 1 — ENTER** inserts the current switcher setup as the first keyframe, and ripples any existing keyframes in the delegated Timeline(s).

INSERT NEXT

Pressing this button creates a keyframe out of the current switcher setup and inserts it on the delegated Timelines after the current keyframe, or at the beginning of the Timeline if there are no existing keyframes. This is the same as **INSERT — NEXT — ENTER**.

JOYSTICK

Use the joystick to adjust pushknobs that have arrow graphics. Adjust settings with left/right arrows by moving the joystick left and right. Adjust settings with up/down arrows by moving the joystick up and down. Adjust settings with circular arrows by

turning the joystick handle. For example, to move a wipe pattern with the joystick, press the Wipe menu Attributes submenu *Position* softkey, then move the joystick left/right to move the wipe pattern horizontally, and up/down to move it vertically.

JOYSTICK LOCK

Pressing this button "locks" joystick control to the current menu controls and turns on the button LED. You can then change to a different menu and use the softknobs to control the settings there. The joystick still affects only the settings it is locked to. A message in the lower left of the menu shows the controls that are currently locked to the joystick. Press **JOYSTICK LOCK** again to regain normal control and turn off the button LED.

KEY

Use the Key menu to select the key type, set clips and gains, and select key, fill, and mask sources for Key 1, Key 2 and DSK. The menus toggle Keyer 1, Keyer 2, and DSK, according to the buses currently delegated. You can also position and defocus the key signal to help solve keying problems, such as correlated key and fill sources that do not line up horizontally or vertically, or hard key edges that do not blend well with background video. The Key menu also has specialized key functions, such as key masking.

KEY BUS DELEGATION

The green oblong button above the **SHIFT** buttons delegates the Key Bus. Toggle this button to select a key bus row for control and enable its associated Keyer menu: Key 1 Fill, Key 2 Fill, or DSK Fill. As you toggle the Key Bus Delegation button, the Key menu shows the menu settings for the selected keyer. The top bus row display shows which key fill bus you are controlling: "KEY1," "KEY2," or "DSK."

KEY 1

Press **KEY 1** to select control of the Key 1 bus row. With **KEY 1** lit, the currently enabled transition (**MIX**, **WIPE**, or **EFFECT**) includes Keyer 1 when you move the fader bar or press **AUTO TRAN** or **CUT**. If the *Auto Menus* softkey is *On* in the Personality

User Keys & MISC submenu, the Keyer 1 menu appears when you press this button.

KEY 2

Press **KEY 2** to select control of the Key 2 bus row. With **KEY 2** lit, the currently enabled transition (**MIX**, **WIPE**, or **EFFECT**) includes Keyer 2 when you move the fader bar or press **AUTO TRAN** or **CUT**. If the *Auto Menus* softkey is *On* in the Personality User Keys & MISC submenu, the Keyer 2 menu appears when you press this button.

M/E

The three **M/E** crosspoint buttons select the M/E program output as the source for the Program, Preset, and DSK fill bus rows and are active only for these buses. If you are controlling the M/E buses, the **M/E** buttons flash if **M/E** is not selected on the program bus to warn you that you will not see the M/E output at the program output.

MISC

The Miscellaneous menu has miscellaneous controls, such as Aux bus source selection, preview output modes, auto transition rate settings, and SuperMatte controls.

MIX (Transition Type)

Press the **MIX** button to enable a mix transition. You can select any combination of the M/E transition delegation buttons (**BKND**, **KEY 1**, **KEY 2**, or **PRIORITY**), or any combination of the PGM/PST transition delegation buttons (**PGM PST** or **DSK**), for a mix transition. Any bus delegation buttons selected for a mix transition light yellow.

MODIFY (Quick Keyframes)

Use the Quick Keyframes **MODIFY** button to replace the current keyframe with the current switcher configuration. Same as **MODIFY — THIS — ENTER**.

MODIFY (Effects Editor)

Use **MODIFY** in the TimeFrame Effects Editor as part of a keyframe editing command to change a keyframe or a range of keyframes. For example, changing a setting, then pressing **MODIFY — THIS — ENTER** changes the current keyframe to reflect the change.

NAM (Transition Type)

The **NAM** button enables a Non Additive Mix transition. NAM transitions compare the video signals' luminance values and allow the higher of the two to appear. At the start of the transition, the "to" source fades up from black and replaces the darkest areas of the "from" source. As the transition continues, the "to" source replaces increasingly brighter areas of the "from" source until, at the end of the transition, the "to" source completely replaces the "from" source, which has faded to black. Press the **NAM** button to enable a NAM transition. You can only perform a NAM transition of the **BKND** buses or the **PGM PST** buses. Any bus delegation buttons selected for a NAM transition light yellow.

NEXT

Press **NEXT** to step a Timeline effect forward by one keyframe. When an effect is running, pressing **NEXT** stops the effect at the next keyframe. When you press **RUN**, the effect runs from the beginning. Also, use **NEXT** to insert, modify, or delete the next keyframe. For example, to modify the next keyframe, press **MODIFY — NEXT — ENTER**.

NUMERIC KEYPAD

This is a standard 10-digit keypad, plus a decimal point (*) and plus/minus (+/-) button, for entering numbers. As you enter numbers on the keypad they appear in the keypad buffer in the lower right corner of the menu.

PATH

The **PATH** button selects a Timeline effect motion path type. Listed here in "lowest" to "highest" order, the path types are **JP** (jump), **LN** (linear), **SL** (smooth linear), **T1** (TCB 1), **T2** (TCB 2),

or **SM** (smoothed motion), which appear in the keypad buffer as you toggle the **PATH** button. Not all path types are compatible with all parameters.

Use the **PATH** button to assign path types to parameters using any of these methods:

- Press the **PATH** button, then a pushknob to assign the selected path type to just that parameter. If the parameter cannot accept the selected path type, it changes to the "highest" level that it can accept.
- Press and hold the **PATH** button and press a softkey to assign the selected path type to all parameters accessed by that softkey. Those parameters that cannot accept the selected path type change to the "highest" level that they can accept.
- Press and hold the **PATH** button and press a submenu softkey to assign the selected path type to all parameters accessed by that submenu. Those parameters that cannot accept the selected path type change to the "highest" level that they can accept.
- Press and hold the **PATH** button and press a menu button to assign the selected path type to all parameters accessed by that menu. Those parameters that cannot accept the selected path type change to the "highest" level that they can accept.

PATH PREVIEW

Pressing this button places a graphic in the 8150 Preview output that shows the motion path that the selected DVE channel (or Global control) will take when you run the DVE as part of a switcher effect. The **PATH PREVIEW** button is only functional when the optional internal DVE is installed.

PERSONALITY

The Personality menu lets you customize your 8150 system for specific session needs. Here you can name inputs, assign sources to crosspoint buttons, set up new "default" values and flag settings, program macros into the **F1**, **F2**, and **F3** buttons, set GPI

input functions, enable remote ports, and select preview monitor overlays.

PGM PST

Pressing **PGM PST** selects control of the Program and Preset buses. With **PGM PST** lit, the currently enabled transition (**MIX**, **WIPE**, **EFFECT**, or **NAM**) occurs between the Program and Preset buses when you move the fader bar or press **AUTO TRAN** or **CUT**.

PREVIOUS

Pressing **PREVIOUS** steps the switcher backward one keyframe along the currently delegated Timeline. With an effect running, pressing **PREVIOUS** stops it at the beginning of the previous keyframe. When you press **RUN**, the effect runs from the beginning. Also, **PREVIOUS** is used to modify, insert, or delete the previous keyframe. For example, to modify the previous keyframe, press **MODIFY — PREVIOUS — ENTER**.

PRIORITY

Use the **PRIORITY** button to transition the priority between **KEY 1** and **KEY 2**, and as part of a mix or wipe transition. One keyer always has priority "over" the other, even if neither is on air. For example, with the **PRIORITY** and **MIX** buttons lit, and **KEY 2** "over" **KEY 1**, mixing the priority dissolves **KEY 1** through and over **KEY 2**. You can enable any combination of **BKND**, **KEY 1**, **KEY 2**, and **PRIORITY** for transitions by pressing the buttons at the same time. You can only transition Priority using **MIX** or **WIPE**.

PUSHKNOBS

The pushknobs, located below the menu screen, are from left to right, pushknobs 1 - 4. Use the pushknobs to change the settings shown at the bottom of any menu. You can turn a pushknob to change its setting, or enter a value on the numeric keypad, then press the pushknob to enter it. Pushknob labels with arrow graphics in them let you use the joystick to change their settings. Press **CLEAR**, then a pushknob, to reset it to its default value.

Press and hold a crosspoint button on the Preset or Background B bus row to enter that source into a pushknob.

RECALL KEYFRAME

Use the **RECALL KEYFRAME** button to recall one of 25 Snapshot effect keyframes to the work buffer (valid numbers are 0 through 24). For example, to recall Snapshot effect 0 to the work buffer, enter **0** in the numeric keypad, then press **RECALL KEYFRAME**.

REMOVE

Use **REMOVE** to delete the current keyframe from the delegated Timeline(s), but not its duration. The 8150 adds the duration of the deleted keyframe(s) to the previous keyframe, so the overall Timeline duration remains the same. For example, pressing **REMOVE — 3 — ENTER** deletes Keyframe 3 and adds its duration to keyframe 2, preserving the same Timeline duration.

REV

Press **REV** to run a Timeline effect in reverse from end to start. If the effect is paused (**STOP NEXT** is lit), the effect runs from that point to the beginning. Pressing **STOP NEXT** while the effect is running pauses it at the current time.

RUN

Pressing the **RUN** button runs an effect from start to end. If the effect is paused (**STOP NEXT** is lit), the effect runs from that point to the end. Pressing **STOP NEXT** while the effect is running pauses it at the current time.

SAVE KEYFRAME

Use the **SAVE KEYFRAME** button to save a Snapshot effect keyframe to one of 25 Snapshot effect registers (valid numbers are 0 through 24). For example, to save the current switcher setup to Snapshot effect register 0, enter **0** in the numeric keypad, then press **SAVE KEYFRAME**.

SHIFT

Use the **SHIFT** buttons to access crosspoints 10 through 18 on the bus rows. For example, on the middle bus row, press and hold the **SHIFT** button, then press the second-from-the left crosspoint button to access crosspoint 11. Double pressing the **SHIFT** button locks it "on;" crosspoint buttons pressed in this mode recall the shifted crosspoint source. Press **SHIFT** once to set it to normal unshifted mode.

SHOW STATUS

Press the **SHOW STATUS** button to bring up a display that shows the current system status. Press **SHOW STATUS** while in this menu to clear the fortune.

SOFTKEYS

Press the submenu softkeys on the right side of the menu screen to access submenus. When you press a submenu softkey, its parameters and/or flags appear on the left side of the menu. Pressing a flag softkey toggles the flag on or off, or toggles through multiple settings. Pressing a parameter softkey selects its function and displays up to four pushknob labels at the bottom of the menu screen.

START (REW)

Press **START** to move an effect to the first keyframe. You can also use **START** as part of a keyframe editing command to modify, insert, copy, or delete the first keyframe. For example, pressing **DELETE — START — ENTER** deletes the first keyframe in the delegated Timeline(s).

STOP NEXT

Press this button to pause a running Timeline effect at the current time. You can also press this button in any menu to enable the fader bar to move manually within a single keyframe. **STOP NEXT** lights whenever a Timeline effect is paused or run manually with the joystick.

THIS

Use **THIS** as part of a keyframe editing command to change the current keyframe in the delegated Timeline(s). For example, changing a menu setting, then pressing **MODIFY — THIS — ENTER** changes the current keyframe to reflect the change.

TIMELINE 1 – 4

The Delegation buttons are toggles. Press a **TIMELINE** button to delegate (enable for editing) one or more effect Timelines, in any combination. You can only edit a delegated Timeline, and all keyframe editing commands apply only to the Timeline or group of Timelines currently delegated. Lit LEDs in the buttons indicate the currently delegated Timeline(s). All Timelines run regardless of whether they are delegated or not.

TIMELINE (Menu)

The Timeline menu shows the relative positions of effect keyframes in the four Timelines. Use the Timeline menu to set keyframe durations, offset one Timeline from another, set the overall effect duration, and assign switcher parameter sets to the Timelines in an effect.

TO

Use **TO** as part of a keyframe editing command to define a range of keyframes for modifying, inserting, copying, or deleting. For example, delete Keyframes 1 through 3 by pressing **DELETE — 1 — TO — 3 — ENTER**. You can also use **TO** as a destination. For example, copy a keyframe to another keyframe in the Timeline with **COPY — 3 — TO — 5 — ENTER**. You can also use **TO** to go to a specific keyframe in a Timeline effect: press **TO — 4 — ENTER** to go to the beginning of Keyframe 4.

TRIM

Enter a number in the keypad, then press **TRIM** to trim a setting. For example, pressing **1 — TRIM — Rotation** (in the Wipe menu Attributes submenu) adds 1 to the current rotation value. Pressing the **+/-** button first changes the sign of the trim value, and subtracts it from the current value.

UNDO KF EDIT

Press **UNDO KF EDIT** to undo the last change made to a Timeline effect. This sets the effect as it was before the last change you made. For example, if you deleted Keyframe 2, pressing **UNDO KF EDIT** brings Keyframe 2 back into the Timeline. Pressing **UNDO KF EDIT** again returns the effect to the way it was before you pressed **UNDO KF EDIT** the first time. You can also use **UNDO KF EDIT** to recall a Timeline effect to the workspace after inadvertently overwriting it with another effect from an effect register, or you can use it to recover an effect that was in a register in which you inadvertently saved another effect.

UNDO MENU

Toggle the *Menu Undo* softkey, in the Personality menu User Keys & UNDO submenu, to enable and disable the **UNDO MENU** button. With this button enabled, you can use it to reverse through button presses. As you press **MENU UNDO**, the 8150 steps backward and "undoes" button presses and menu settings. You can "undo" all button presses made since you enabled this feature. Press **CLEAR + UNDO MENU** to redo all the steps you have previously undone.

WIPE (Transition)

Press the **WIPE** transition button to enable a wipe transition. You can select any combination of the M/E transition delegation buttons (**BKND**, **KEY 1**, **KEY 2**, or **PRIORITY**), or any combination of the PGM/PST transition delegation buttons (**PGM PST** or **DSK**), for a wipe transition. Any bus delegation buttons selected for a wipe transition light green.

If the *Auto Menus* softkey is toggled to *On* in the Personality User Keys & MISC submenu, the Wipe menu for the active buses appears when you press this button.

WIPE (Menu)

Press the **WIPE** menu button to bring up the Wipe menu. This menu lets you select wipe pattern shapes and set attributes for wipe transitions. Wipe attributes include screen position, rotation angle, aspect ratio, and pattern multiply. You can also create wipe borders with variable color, width, opacity, and softness. The menu toggles between M/E wipes and Program/Preset wipe according to the buses that you are controlling.

Index

!

- +/- (plus/minus) button 1-13, 15-1
- . (decimal point) button 15-1

A

- A/B side switch 14-8
 - triggering remotely 14-7
- ACQUIRE button 2-14, 15-1
- ALIGN button 15-1
- ALL button 1-18, 15-2
- Analog Input Setups 13-9
- Aspect Ratio 13-27
- AUTO TRAN button 1-16, 3-18, 3-20, 6-27
 - 6-28, 6-30, 15-2
- durations 3-13, 7-24
- AUTO TRANS button 7-25
 - durations 7-12
- Aux outputs 7-12

B

- BKND button 1-16, 3-2 - 3-3, 3-5, 3-16, 15-2
- Borders
 - key 5-3 - 5-14, 6-22
 - wipe 1-3, 4-58, 6-20 - 6-24
- BORDERS menu button 5-3, 15-2
- Bus Row Delegation buttons 3-16

C

- Chroma key 4-13 - 4-19
 - in matte mode 4-27
 - setting up 4-13, 4-17
- CLEAR button 1-14, 15-3

CLEAR KEYFRAME button	1-18, 15-3
Color Corrector	8-1 - 8-4
user setups	8-16
user setups, saving to disk	11-6
Color Corrector menu	8-5 - 8-18
Adjust Clip (Main submenu)	8-9
Adjust Mode (Main submenu)	8-8
Clear (User CCR submenu)	8-17
Clear All CCRs (Clear submenu)	8-15
Clear All Memory (Clear submenu)	8-15
Clear submenu	8-14
Clear This CCR (Clear submenu)	8-14
Color Corrector Mode (Effects submenu)	8-11
Color Corrector Mode (Main submenu)	8-6
Effects submenu	8-11
False Coloring (Effects submenu)	8-12
Invert Gain (Effects submenu)	8-13
Luma Tinting (Effects submenu)	8-12
Main submenu	8-6
Proc Amp Control (Main submenu)	8-10
Recall (User CCR submenu)	8-17
RGB to YUV Convert (Main submenu)	8-10
Save (User CCR submenu)	8-17
Solarize (Effects submenu)	8-11
Source Memory (Effects submenu)	8-13
Source Memory (Main submenu)	8-10
User CCR submenu	8-16
COLOR CRCTR menu button	8-5, 15-3
Color Pick	4-13, 4-45 - 4-46, 4-69, 6-22
for framestore drawing	9-13, 9-23, 9-28
for key border colors	5-9, 5-11
for SuperMatte colors	7-9
framestore needed for	9-2
Comments	
adding to and viewing on files	11-24 - 11-25
Control Panel	
button groups	1-10 - 1-21
Delegation buttons	1-19

diagnostics	13-40
lamp saver	13-36
menu buttons	1-10
menu screen layout & controls	1-11
Program/Preset buttons	1-15
Quick Keyframe buttons	1-17
submenu labels and controls	1-11
TimeFrame effects editor	1-18
Timeline buttons	1-20
Transition Control buttons	1-16, 3-2 - 3-15
transition controls	3-16 - 3-22
using multiple	2-14 - 2-15
Control Panel buttons	15-1 - 15-18
COPY button	1-18, 15-3
Coring	4-28
Crosspoint buttons	1-2, 1-7, 3-4, 15-3
Crosspoint memory	
defeating in an effect	10-30
Crosspoints	
assigning inputs to	12-4 - 12-5
CUT button	1-16, 3-20, 15-4
Cut transition	3-6

D

Date and time	
setting system	11-2, 11-33
Delegation buttons	1-19, 3-2, 3-6, 3-16, 10-13, 15-16
DELETE button	
Quick Keyframes	1-17, 10-14, 15-4
TimeFrame effects editor	1-18, 15-4
Diagnostics (Control Panel)	13-40
Disk	
copying files between	11-19 - 11-20
deleting files from	11-11 - 11-12, 11-29
formatting	11-32
menu button	11-23
recalling files from	11-9 - 11-10, 11-26
saving files to	11-2 - 11-8, 11-25

Disk menu	11-23 - 11-34
Change Directory (Directory submenu)	11-28
Confirm (Delete Copy submenu)	11-30
Confirm (Directory submenu)	11-28
Confirm (Format submenu)	11-32
Confirm (Save Recall submenu)	11-26
Date (Miscellaneous submenu)	11-33
Delete (Delete Copy submenu)	11-30
Delete Copy submenu	11-29
Directory submenu	11-27
Drive (Delete Copy submenu)	11-29
Drive (Directory submenu)	11-27
Drive (Format submenu)	11-31
Drive (Save Recall submenu)	11-24
Format (Format submenu)	11-32
Format submenu	11-31
From (Delete Copy submenu)	11-29
Make Directory (Directory submenu)	11-27
Miscellaneous submenu	11-33
Recall (Save Recall submenu)	11-26
Remove Directory (Directory submenu)	11-28
Save (Save Recall submenu)	11-25
Save Recall submenu	11-23
Set Comments (Save Recall submenu)	11-25
Set Date & Time (Miscellaneous submenu)	
Show Comments (Save Recall submenu)	11-24
Time (Miscellaneous submenu)	11-33
To (Delete Copy submenu)	11-30
DISK menu button	15-4
Disk operations	11-1
Draw	
into a framestore	9-8
DSK button	1-15, 2-5, 3-2, 3-5, 5-5
DVE	
architecture	1-24
axis cursors	15-4
channel select	15-5
effect transition	2-8, 3-8, 15-6

effects loop	7-16, 13-6
external	7-2, 7-13, 13-6
FIELD button	15-7
FREEZE button	15-5
front/back	14-8
inputs	2-4, 7-22
LINC control	10-59, 13-3, 14-9
LINC controls	10-38
manual	1-1
menu	12-8, 15-5
option	1-2
output	2-6
path	15-12
source	3-5, 7-15
textures	9-22
Timeline	10-38
timing	13-31
transition	3-19

E

Editing with a single monitor	14-3
Editor control	10-1, 10-3, 13-28 - 13-29, 14-2 - 14-8
EFFECT	
menu button	15-6
transition button	1-16, 3-5, 15-6
Effect menu	10-61 - 10-70
Confirm (Snapshot Effects submenu)	10-69
Confirm (Timeline Effects submenu)	10-66
Copy Current (Timeline Effects submenu)	
Delete/Delete Eff (Snapshot Effects submenu)	
Protect (Snapshot Effects submenu)	10-69
Protect (Timeline Effects submenu)	10-66
Recall/Recall Eff (Snapshot Effects submenu)	
Recall/Recall Eff (Timeline Effects submenu)	
Save/Name Eff (Timeline Effects submenu)	
Save/Save Eff (Snapshot Effects submenu)	
Snapshot Effects submenu	10-67
Timeline Effects submenu	10-64

Effects	
creating	10-9 - 10-44
crosspoint memory, defeating	10-30
editing	10-32
editor control	10-3
forcing or inhibiting a transition in	10-31
looping	10-30
motion path types	10-18
pausing	10-29
save and recall	10-3 - 10-4, 10-41 - 10-42, 10-44
saving to disk	11-1, 11-5 - 11-6
Snapshot	10-1
Timeline	10-2
triggering GPI outputs	10-27
using LINC	10-38
Effects Loop	7-16
selecting inputs	13-6
Effects Loop Inputs	7-16
Effects recall	
source memory	4-33
END (FF) button	1-18, 15-6
ENG menu button	13-2, 15-7
Engineering menu	13-2 - 13-42
Analog Input Setups (Input submenu)	13-9
Aspect Ratio (Miscellaneous submenu)	13-27
Baud (Communications submenu)	13-3
Communications submenu	13-3
Composite Input Setups (Input submenu)	
Confirm (Software Update menu)	13-38
Display (Miscellaneous submenu)	13-27
Effects Loop Inputs (Input submenu)	13-6
H Blanking (Output submenu)	13-22
Input Bits (Input submenu)	13-9
Input Setups (Input submenu)	13-8
Input submenu	13-6
Key Input Setups (Input submenu)	13-19
Key Mode (Output submenu)	13-25
Lamp Saver (Miscellaneous submenu)	13-36

Miscellaneous submenu	13-26
Output Bits (Output submenu)	13-22
Output Delay (Output submenu)	13-21
Output Phase (Output submenu)	13-24
Output submenu	13-21
Parity (Communications submenu)	13-4
Protocol (Communications submenu)	13-3
Software Update submenu	13-37
Timing (Miscellaneous submenu)	13-28
Update (Software Update menu)	13-38
V Blanking (Output submenu)	13-23
Video Standard (Miscellaneous submenu)	
Engineering setups	
saving to disk	11-1, 11-7, 13-1
saving to floppy disk	13-39
ENTER button	1-18, 15-7
F	
F1, F2, F3 buttons	12-6, 15-7
Fader bar	1-16, 3-18, 3-20 -3-21 , 6-15, 6-27, 6-29, 15-7
Files	
adding and viewing comments	11-24 - 11-25
copying between disks	11-19 - 11-20
deleting from disk	11-11 - 11-12, 11-29
naming	11-25
recalling from disk	11-9 - 11-10, 11-26
saving to disk	11-2 - 11-8, 11-25
time and date stamp	11-23, 11-33
Floppy disk	
formatting	11-3
Floppy drive	
external	11-24, 11-31
Foregrounds	
shaped and unshaped	4-22
Formatting	
Floppy	11-3
Jaz	11-3
Fortune	

displaying	2-18
Framestore	9-1 - 9-2
basic operations	9-3 - 9-6
Color Pick for chroma keys	4-13
drawing into	9-7 - 9-15
freezing video	9-3
replacing colors	9-11
saving contents to disk	11-7 - 11-8
stroboscopic effects	9-5
unfreezing video	9-4
Framestore menu	9-16 - 9-28
Adjust (Framestore submenu)	9-18
Brush & Paint (Drawing submenu)	9-28
Clear Store (Drawing submenu)	9-27
Color Pick (Drawing submenu)	9-28
Draw (Drawing submenu)	9-24
Drawing submenu	9-23
Flood Fill (Drawing submenu)	9-25
Frame Store (Drawing submenu)	9-24
Framestore #1 Freeze (Framestore submenu)	
Framestore #1 Mode (Framestore submenu)	
Framestore #2 Freeze (Framestore submenu)	
Framestore #2 Mode (Framestore submenu)	
Framestore submenu	9-17
Locks submenu	9-19
Store #1 (#2)Pattern (Test Patterns submenu)	
Test Patterns submenu	9-20
FRAMESTORE menu button	9-16, 15-8
FTB button	1-15, 2-2, 3-21, 15-8

G

GPI1-4	
GPIs	14-5
assigning functions to	12-10 - 12-11
enabling	12-15
input functions	14-5
triggering outputs	10-27
GPOs	14-10
enabling	12-15

I

Input matte generator	13-8
Inputs	
assigning to crosspoints	12-4 - 12-5
configuring	13-9, 13-11, 13-13, 13-15 - 13-17,
effects loop	13-6
key	13-12
matte generator	13-8
naming	12-2 - 12-3
INSERT button	1-18, 15-8
INSERT NEXT button	1-17, 10-14, 15-8

J

Jaz	
deleting files from	11-11 - 11-12
formatting	11-3
Joystick	1-13, 6-14 - 6-17,
	15-8
Joystick lock	2-12 - 2-13
JOYSTICK LOCK button	15-9
JP (jump)	
motion path type	10-18

K

Key	
basic	2-9 - 2-11
chroma, 8100 process	4-6 - 4-12
chroma, setting up basic	4-13 - 4-19
chroma, traditional	4-4 - 4-5
linear, setting up	4-2 - 4-3
KEY 1 button	1-16, 2-4, 3-2 - 3-3,
	3-5, 3-16 - 3-17, 15-9
KEY 2 button	1-16, 2-4, 3-2 - 3-3
	, 3-5, 3-16 - 3-17, 15-10
Key Border menu	5-3 - 5-14
Attributes (Border Type submenu)	5-8
Border (Border Type submenu)	5-4
Border Fill (Border Fill submenu)	5-9

Border Fill submenu	5-9
Border Type submenu	5-4
Color Pick (Border Fill submenu)	5-11
Extrude/Trail (Border Type submenu)	5-6
Key Fill (Key Fill submenu)	5-12
Key Fill submenu	5-12
Shadow (Border Type submenu)	5-7
Key Bus Delegation button	3-2 - 3-3, 3-18, 15-9
Key masks	4-59 - 4-61, 6-3 - 6-4
Key menu	4-35 - 4-70
Advanced Chroma Key submenu	4-49
ASPIK (Attributes submenu)	4-57
Attributes submenu	4-56
Basic Chroma Key submenu	4-42
Clear (Sources/User Keyer submenu)	4-70
Color Pick (Sources/User Keyer submenu)	
Defocus (Attributes submenu)	4-56
External Mask (Key Mask submenu)	4-61
External Mask Mode (Key Mask submenu)	
Hue Adjust (Basic Chroma Key submenu)	
Internal Mask (Key Mask submenu)	4-59
Internal Mask Mode (Key Mask submenu)	
Key Fill (Sources/User Keyer submenu)	4-68
Key Invert (Main submenu)	4-40
Key Mask submenu	4-59
Key Type (Advanced Chroma Key submenu)	
Key Type (Main submenu)	4-37
Luma Adjust (Advanced Chroma Key submenu)	
Main submenu	4-37
Mask Enable (Main submenu)	4-40
Mode (Basic Chroma Key submenu)	4-42
Mode (Main submenu)	4-38
Opacity (Attributes submenu)	4-57
Opacity (Main submenu)	4-40
Options (Advanced Chroma Key submenu)	
Patch Control (Advanced Chroma Key submenu)	
Pick Color (Basic Chroma Key submenu)	4-45
Post Process (Basic Chroma Key submenu)	
Recall (Sources/User Keyer submenu)	4-70

Sat Adjust (Basic Chroma Key submenu)	4-43
Saturation Adjust (Advanced Chroma Key sub)	
Save (Sources/User Keyer submenu)	4-70
Size Position (Attributes submenu)	4-56
Source (Sources/User Keyer submenu)	4-64
Source Memory	4-56
Source Memory (Main Submenu)	4-40
Sources/User Keyer submenu	4-64
Supprsn (Basic Chroma Key submenu)	4-44
Wipe Border (Attributes submenu)	4-58
Wipe Trans (Key Mask submenu)	4-63
KEY menu button	4-35, 15-9
Key mode	
versus Matte mode	4-20 - 4-28
Key signal path	1-22 - 1-26
Key source selection	2-9 - 2-11
Keyer	
user register	4-33, 4-64 - 4-65, 4-70, 8-3
user setups, saving to disk	11-6
Keypad Buffer	1-12

L

LINC	14-9
effect with a DDR	10-39
effect with a DVE	10-38
using in an effect	10-38
LN (linear)	
motion path type	10-19

M

M/E button	2-2, 3-2, 3-4, 15-10
Macros	
recording	12-6 - 12-7
running	12-6 - 12-7
steps	12-7
triggering remotely	14-7
Manual	
conventions	1-9

how to use	1-8
scope of	1-5
Matte mode	
chroma key	4-27
versus Key mode	4-20 - 4-28
Memory, source	4-29 - 4-34
copying	4-29 - 4-34
for color correction	8-2 - 8-3
Menu display	13-27
Menu recall	2-3 - 2-5
MISC menu button	7-4, 15-10
Miscellaneous menu	7-4 - 7-26
Analog Monitor (Pvw Bus Ctrl & Misc submenu)	
Aspect (SuperMatte Patterns submenu)	7-5
Auto Trans Rates (Auto Trans submenu)	7-24
Auto Trans submenu	7-24
Aux Buses submenu	7-12
Effects Loop Inputs (Aux Buses submenu)	
Matrix (SuperMatte Attributes submenu)	
Multiply (SuperMatte Attributes submenu)	
Pattern Select (SuperMatte Patterns submenu)	
Pick Color (SuperMatte Attributes submenu)	
Position (SuperMatte Patterns submenu)	7-4
Preview Bus submenu	7-21
Source (Pvw Bus Ctrl & Misc submenu)	7-21
SuperMatte Adjust (SuperMatte Attributes sub)	
SuperMatte Adjust (SuperMatte Patterns sub)	
SuperMatte Attributes submenu	7-8
SuperMatte Patterns submenu	7-4
Trans (Auto Trans submenu)	7-25
Trans (SuperMatte Patterns submenu)	7-6
User SuperMatte submenu	7-10
MIX button	1-16, 3-5, 3-18, 15-10
Mix transition	3-7
MODIFY button	
Quick Keyframes	1-17, 10-14, 15-10
TimeFrame effects editor	1-18, 15-11
Motion path types	10-18
assigning	10-26

JP (jump)	10-18
LN (linear)	10-19
SL (smooth-linear)	10-19
SM (smoothed motion)	10-26
T1 (TBC 1)	10-19
T2 (TCB 2)	10-19
N	
NAM button	1-16, 3-5, 3-19, 15-11
NEXT button	1-20, 15-11
Numeric keypad	15-11
O	
Outputs	
aux	7-12
configuring	13-21 - 13-25
P	
PATH button	15-11
Personality menu	12-1 - 12-18
Assign (GPIs submenu)	12-11
Auto Menus (User Keys & MISC submenu)	
Current Selection (Input Names submenu)	
Cursor (Preview Monitor Overlays submenu)	
Cursor Color (Preview Monitor Overlays sub)	
GPIs (GPIs submenu)	12-11
GPIs (Remote Port Enables submenu)	12-15
GPIs submenu	12-10
GPOs (Remote Port Enables submenu)	12-15
Grid Overlay (Preview Monitor Overlays sub)	
Input Assign submenu	12-4
Input GPI Functions (GPIs submenu)	12-11
Input Names submenu	12-2
Inputs (Input Names submenu)	12-3
MENU UNDO Key (User Keys & MISC submenu)	
Name (Input Names submenu)	12-3
Overlay Color (Preview Monitor Overlays sub)	
Port 1- 3 (Remote Port Enables submenu)	
Preview Monitor Overlays submenu	12-16

Reference Lines (Preview Monitor Overlay sub)	
Remote Port Enables submenu	12-14
Safe Action (Preview Monitor Overlays sub)	
User Keys & MISC submenu	12-6
PERSONALITY menu button	12-1, 15-12
Personality setups	
saving to disk	11-1, 11-6
PGM PST button	1-15, 3-2, 3-5, 6-13, 15-13
Power up	2-1 - 2-2
Preview monitor	6-22, 7-21
overlays	12-16
Preview outputs	2-3 - 2-5, 2-7, 4-18, 7-21
PREVIOUS button	1-20, 15-13
PRIORITY button	1-16, 3-3, 3-5, 3-17, 15-13
Pushknobs	15-13

R

RECALL KEYFRAME button	10-4, 15-14
Registers	
save and recall	10-3
Remote ports	
configuring	13-3 - 13-4
enabling	12-14
REMOVE button	1-18, 15-14
Replacing colors	9-11
REV button	1-20, 15-14
RS-422 communications	14-2
RUN button	1-20, 15-14

S

SAVE KEYFRAME button	10-4, 15-14
Saving files to disk	11-5
Selecting sources	2-6 - 2-8
Settings, default	1-14
Settings, entering and changing	1-13
SHIFT button	1-2, 2-2, 3-4 - 3-5

SHIFT buttons	15-15
SHOW STATUS menu button	2-16, 15-15
Signal paths	1-22 - 1-26
SL (smooth-linear)	
motion path type	10-19
SM (smoothed motion)	
motion path type	10-26
Snapshot effects	10-1
save and recall	10-4, 10-6 - 10-7
saving to disk	11-6
Softkeys	15-15
Software update	13-2
Source Memory	4-29 - 4-34, 4-40, 4-64 - 4-65, 4-69, 10-8
copying	4-29 - 4-34
effects recall	4-33
Source tallies	14-10
Sources	
key	2-9 - 2-11
naming and assigning inputs	12-2 - 12-5
selecting	2-6 - 2-8
Split transition	3-9, 3-11
START (REW) button	1-18, 15-15
Status menu	2-16 - 2-18
STOP NEXT button	1-20, 15-15
SuperMatte	6-22, 7-5, 7-9
attributes	7-8
colors	7-7
creating a background	7-3
patterns	7-4 - 7-5
user registers	7-10
user setups, saving to disk	11-6
System	
aspect ratio	13-27
description of	1-1 - 1-4
power up	2-1 - 2-2
setups	13-1
software update	13-2, 13-37
video standard	13-26

T

T1 (TCB 1)	
motion path type	10-19
T2 (TCB 2)	
motion path type	10-19
Tallies	14-10
THIS button	1-18, 15-16
Time and date	
setting system	11-2, 11-33
Timeline	10-1 - 10-8
basic operations	10-9
creating	10-9 - 10-44
delegation	10-13
display	10-11
editing	10-32
editor control	10-3
master	10-12
save and recall	10-3, 10-41 - 10-42, 10-44
saving to disk	11-6
using LINC	10-38
TIMELINE 1 - 4 buttons	10-13, 15-16
Timeline menu	10-45 - 10-60
Add (Assign Timelines submenu)	10-51
Assign Timelines submenu	10-49
Delete (Assign Timelines submenu)	10-51
Dev Enable (LINC submenu)	10-59
Display Timelines submenu	10-46
Global Events submenu	10-55
Keyframe Events submenu	10-52
LINC submenu	10-59
Loop (Global Events submenu)	10-55
M/E Trans (Keyframe Events submenu)	10-52
P/P Trans (Keyframe Events submenu)	10-53
Paths submenu	10-57
Pause (Keyframe Events submenu)	10-53
Play (LINC submenu)	10-60
Select (Paths submenu)	10-58

Stop (LINC submenu)	10-60
TimeLine (Display Timelines submenu)	10-47
Toggle GPO (Keyframe Events submenu)	
XPoints (Global Events submenu)	10-56
TIMELINE menu button	10-11, 15-16
TO button	1-18, 15-16
Transition	
forcing or inhibiting in an effect	10-31
Transition control	
AUTO TRAN button	3-20
BKND button	3-17
Bus Row Delegation buttons	3-16
CUT button	3-20
DSK button	3-18
EFFECT button	3-19
FTB button	3-21
KEY 1 button	3-17
KEY 2 button	3-17
Key Bus Delegation button	3-18
MIX button	3-18
NAM button	3-19
Overview	3-2 - 3-15
PGM PST button	3-17
PRIORITY button	3-17
Transition buttons	3-18
WIPE button	3-18
Transition curves	3-15, 7-25
Transition rates	
changing	3-13, 7-24 - 7-25
Transitions	
basic	2-6 - 2-8
color coding	3-5
creating	3-6 - 3-8
M/E, SHIFT, & crosspoint delegation	3-4
overview	3-2
split, on PGM/PST	3-9
split, on the M/E	3-11
triggering remotely	14-5 - 14-6

wipe 6-2, 6-13
 TRIM button 1-13, 15-16

U

UNDO KF EDIT button 1-17, 10-14, 15-17
 UNDO MENU button 1-10, 1-14, 15-17
 enabling and disabling 12-9

V

Video
 aspect ratio, setting 13-27
 signal path 1-22 - 1-26
 standard, switching 13-26

W

WIPE
 menu button 6-13, 15-5, 15-18
 pattern mixing 6-10
 transition button 1-16, 2-5, 3-5, 3-18, 15-17
 Wipe menu 6-13 - 6-34
 Aspect (Attributes submenu) 6-17
 Attributes submenu 6-15
 Auto Center (Attributes submenu) 6-19
 Background Border (Border submenu) 6-24
 Border Adjust (Border submenu) 6-20
 Border Fill (Border submenu) 6-21
 Border Modes (Border submenu) 6-23
 Border submenu 6-20
 Clear (User Wipes submenu) 6-33
 Color Pick (Border submenu) 6-22
 Horizontal Modulation (Special submenu) 6-7, 6-25
 Matrix submenu 6-8, 6-30
 Multiply (Attributes submenu) 6-6, 6-18
 Pattern (Matrix submenu) 6-30
 Pattern (Patterns submenu) 6-14
 Pattern Mix (Special submenu) 6-10, 6-27
 Pattern Split (Attributes submenu) 6-18
 Patterns submenu 6-14

Position (Attributes submenu)	6-15
Preset Pattern (Special submenu)	6-12, 6-29
Recall (User Wipes submenu)	6-33
Save (User Wipes submenu)	6-33
Shape Modifier One (Special submenu)	6-26
Shape Modifier Two (Special submenu)	6-26
Special submenu	6-25
Transition Direction (Attributes submenu)	
User Wipes submenu	6-32
Vertical Modulation (Special submenu)	6-7, 6-25
Wipe transition	3-8
Wipes	6-1
advanced option	6-5 - 6-12
for key masks	6-3 - 6-4
user setups, saving to disk	11-6