



SNELL & WILCOX



Magic DaVE

MODEL 8DOE

Also Models 4DE & 4DOE

USER MANUAL

Version 3.00

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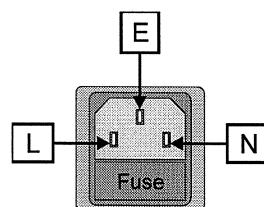
SAFETY WARNINGS

- Always ensure that the unit is properly earthed and power connections correctly made.
- This equipment shall be supplied from a power system providing a protective earth connection and having an earthed neutral that can be reliably identified.
- The control panel shall be separately earthed via the terminal on the rear of its case.
- The power terminals of the IEC mains input connector are identified as shown below:

E = Protective Earth Conductor

N = Earthed Neutral Conductor

L = Phase Conductor



- The equipment is normally shipped with a power cable with a standard IEC moulded free socket on one end and a UK 13 amp mains plug on the other. If this plug should be removed then the colour-coded conductors should be connected as follows:

GREEN/YELLOW lead connected to **E** (Protective Earth Conductor)

BLUE lead connected to **N** (Earthed Neutral Conductor)

BROWN lead connected to **L** (Phase Conductor)

Note that no power cable is shipped to certain countries, notably the U.S.A. & Canada.

Mains Supply Voltage

Check that the voltage rating on all new equipment corresponds to the local mains supply.

Magic DaVE 4D & 8D units have an auto ranging power supply which is suitable for voltages of 100V to 127V @ 50 to 60Hz AC and 200V to 250V @ 50 to 60Hz AC. The safety standard specifies testing outside of these voltage ranges.

MAINS VOLTAGES!

Voltages within this unit can be lethal under certain circumstances. Never remove or replace any of the covers with the power connected. Take great care to avoid contact with these voltages if power is connected to the unit during servicing.

The supply fuse is located in the IEC power inlet connector if required to be found.

If the system does develop a fault, contact your Snell & Wilcox Distributor who will be able to service the unit. Maintenance should only be carried out by suitably qualified personnel.

SAFETY WARNINGS - *continued*

Lithium Battery

CAUTION

Danger of Explosion if battery is incorrectly replaced.

Replace with one the same or equivalent type recommended by the manufacturer.

Dispose of used batteries according to the manufacturer's instructions.

OTHER WARNINGS

Static Sensitive Devices

The printed circuit cards in these units are sensitive to damage from static electricity. If it is necessary to remove any of the cards, earthed anti-static mats should be used and personnel must ensure that they are electrically connected to ground using a wrist strap. If this is not done, serious damage may be caused to the unit. Users who do not have these facilities should not remove any printed circuit cards.

Surface Mount Technology

The printed circuit cards in these units use multi-layer and surface mount techniques. If the system does develop a fault, contact your Snell & Wilcox Distributor who will be able to service the unit.

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Every care has been taken in the preparation of this manual, however Snell & Wilcox accepts no responsibility for any inaccuracies that it may contain.

Snell & Wilcox reserves the right to make changes and improvements, without notice, both to this publication and to the equipment it describes.

EMC Standards



Units comply with the following standards:

Electromagnetic Compatibility-Generic Immunity Standard BS EN 50082-1:1992

The European Standard EN 50082-1:1992 has the status of a British Standard and is related to European Council Directive 89/336/EEC dated 3rd May 1989.

Electromagnetic Compatibility-Generic Emission Standard BS EN 50081-1:1992

The European Standard EN 50081-1:1992 has the status of a British Standard and is related to European Council Directive 89/336/EEC dated 3rd May 1989.

EMC Performance of Cables and Connectors

Snell & Wilcox products are designed to meet or exceed the requirements of the appropriate European EMC standards. In order to achieve this performance in real installations it is essential to use cables and connectors with good EMC characteristics. Cables supplied with the unit should be used.

All signal connections (including remote control connections) shall be made with screened cables terminated in connectors having a metal shell. The cable screen shall have a large-area contact with the connector shell.

COAXIAL CABLES

Coaxial cable connections shall be made with high-quality double-screened coaxial cables such as Belden 8281 or BBC type PSF1/2M.

D-TYPE CONNECTORS

D-type connectors shall have metal shells making good RF contact with the cable screen. Plugs having "dimples" that improve the contact between the plug and socket shells are recommended.

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SECTION A

INTRODUCTION & OPERATION

ABOUT THIS MANUAL

Hardware

This manual covers the four & eight-input serial digital versions of **Magic DaVE** with the extended control panel fitted. It describes both the standard configuration, i.e. a single-DVE-channel with mix and wipe facilities, and also this system with the option card assembly fitted. The option card assembly is compulsory with the eight-input unit.

Software

This manual has been updated to reflect software release **V3.00**.

Organisation

Section A of this manual describes the capabilities of the **Magic DaVE** system and details the operation of the control panel. The structure of the menu system is described and the features that are common to all control menus are detailed.

Section B describes the individual menus in detail.

Section C aims to answer some of the more common questions that might be, or in some cases have been, asked by users of **Magic DaVE**.

Section D details how to install and set up the system, and how to fit options.

Section E gives technical specifications of the system.

Section F contains the appendices

Section G is the index.

Typographical Conventions

In the text the names of "hard" buttons on the control panel are shown in CAPS.

The names of control panel display menus and of individual controls are shown in **Bold**.

Important points are emphasised by being placed in *Italics*.

Comments

If you have any comments about this manual or indeed about **Magic DaVE** itself, please feel free to write to us at the address shown on the first page of this manual. If you prefer, you can E-Mail us at magic.dave@snellwilcox.com. E-Mail requests for technical support should be sent to post.support@snellwilcox.com.

OTHER MANUALS**Tutorial**

There is a tutorial on using Magic DaVE, a copy of which will have been included with this manual if available.

Technical Information

The Magic DaVE Service Manual is available from Snell & Wilcox and their authorised representatives. This two volume guide contains complete schematics for all Magic DaVE systems together with much technical information about the system, including circuit descriptions and test & servicing procedures.

SYSTEM CONCEPT

The three Magic DaVE configurations described by this manual are:

Four-Input Standard with Extended Panel (4DE):

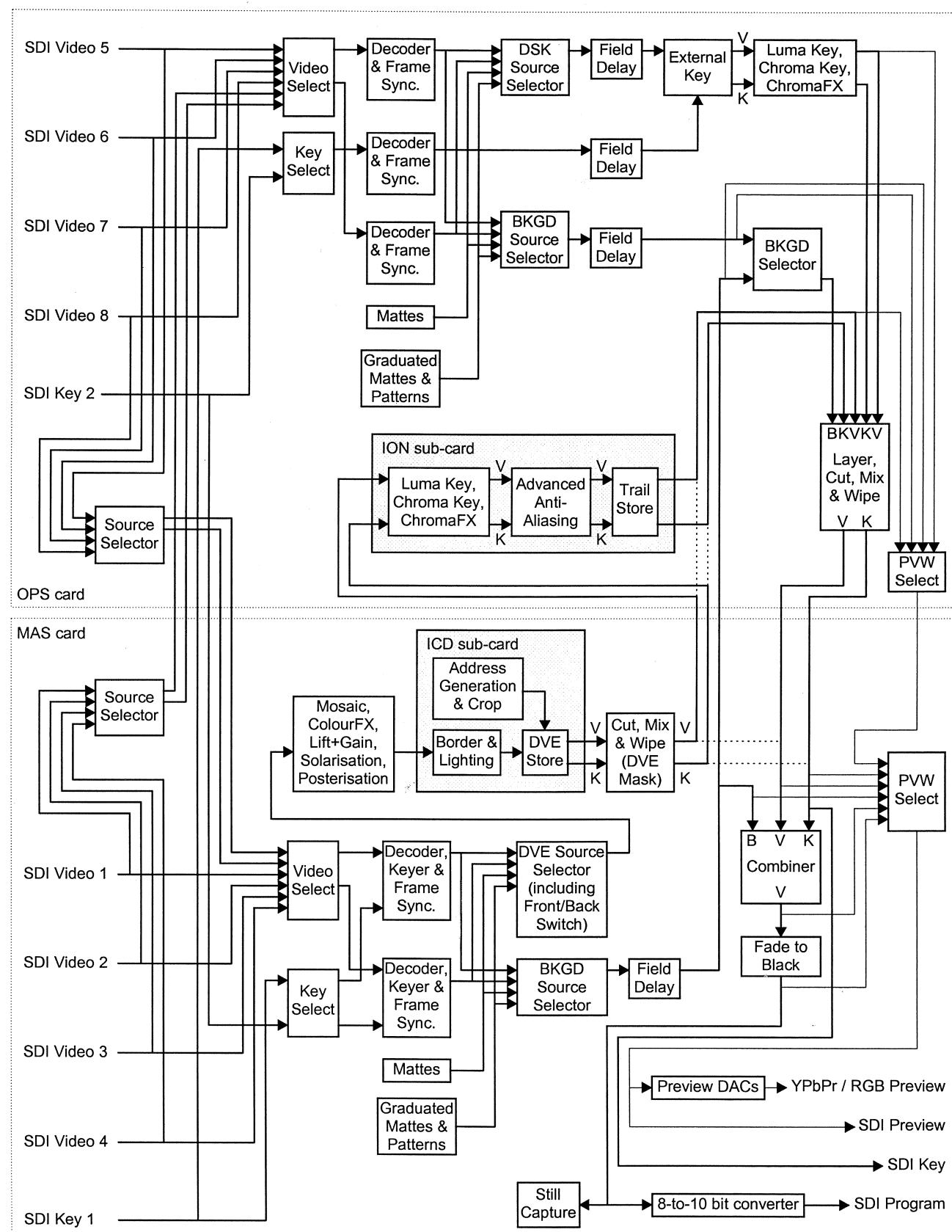
- Four video and one key inputs.
- Basic Program/Preset Mix/Wipe facility with 40 different bordered wipes and fade-to-black.
- Input process effects: Crop, Border, Multigrab, Lighting, Keying, Solarisation, Posterisation, Mosaic, False Colour and YUV Lift & Gain.
- 3-D DVE, giving full control over picture position, size, rotation and perspective in X, Y and Z axes with virtually infinite zoom. Special effects ("models") include page-turns, double page-turns, dual & quad page peels, push-on/push-off, mix or wipe within the DVE picture (completely independent from the main system mix/wipe), drop-shadow, quad-split, multi-tile, fragment, corners, ripple, modifiable warps (including sphere, cinema & goblet) and twin-tile. Many of these models can have two live sources at once, e.g. a double-sided quad peel.
- Two simultaneous live sources from any of the four inputs, in any combination of formats. Both sources have full TBCs on them.
- Internal matte and pattern generators.

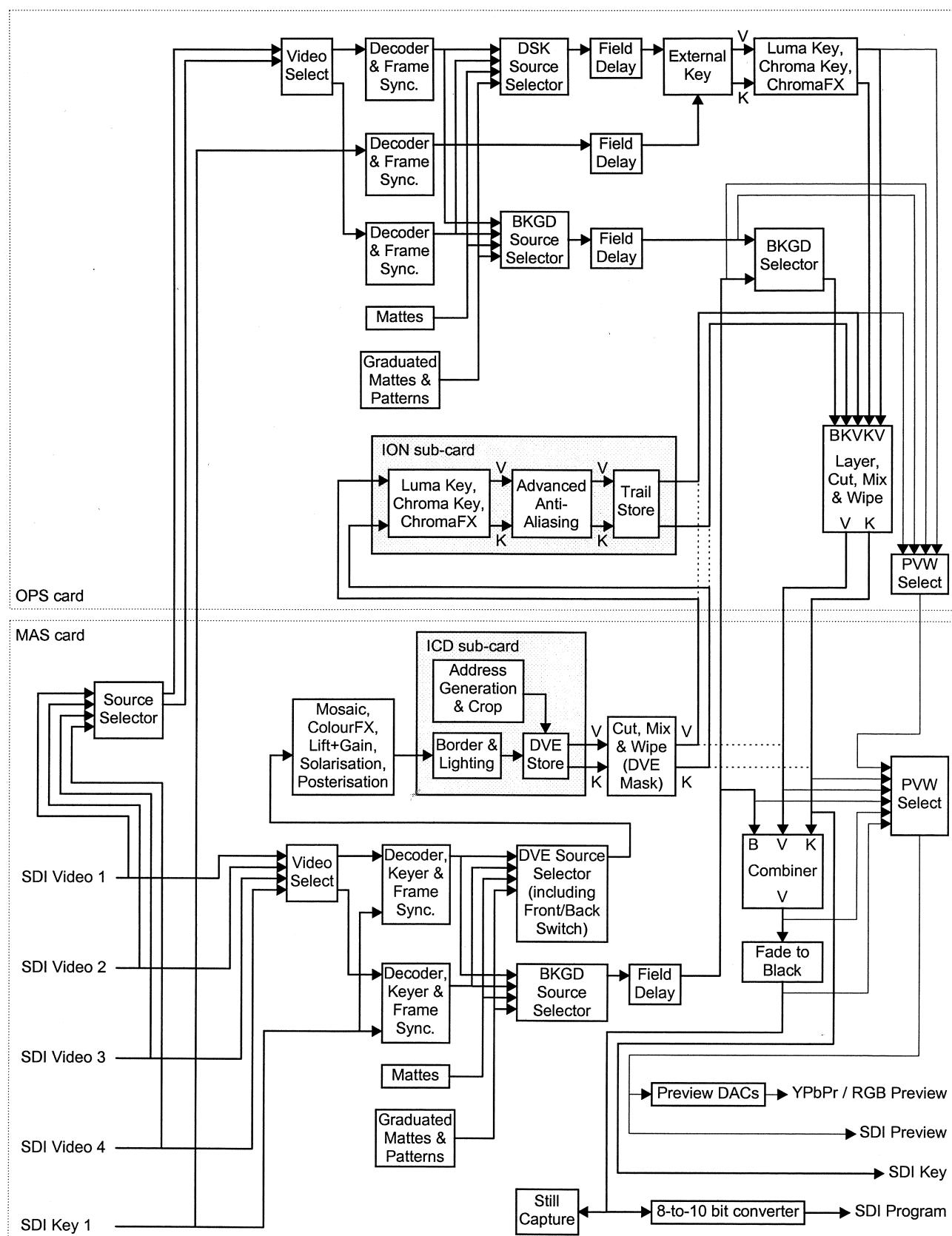
Four or Eight-Input Standard with Option and Extended Panel (4DOE or 8DOE):

As the standard machine, plus:

- Two additional input processors, decoders & TBCs for a total of four simultaneous live sources.
- Downstream Keyer (DSK) with Linear external key, Luma key and Chroma key modes. The active key area can be cropped ("key mask").
- Advanced mixer allows any combination of DVE, DSK and Background to be mixed, wiped or cut, on or off, at the same time. The DSK can be placed under the DVE layer instead of over it if desired.
- 60 additional wipe patterns, including circle, heart, star, polygon and various matrix wipes (checkerboard, zigzag, spiral, random, etc.).
- Two additional DVE models: Slab and Dual. These give the ability to have two live sources manipulated by the DVE at once at the cost of slightly reduced bandwidth. Slab allows the illusion of a solid block with different sources on each side to be created, Dual provides two independently controllable tiles, each with different sources.
- JPEG-based Still-Store allows grab, recall and storage of up to 40 images, depending upon compression ratio. When used with *Magic DaVE for Windows*, full 4:2:2 images can be transferred over Rollcall™ to the PC.
- Fully-featured and highly-flexible Trail and Sparkle facility, provides trail, strobed trail, sparkles, montage, drop-shadow and motion blur. Both the Video and Key portions of the trail can be independently decayed, textured, rippled and sparkled. All decays and sparkles can have delay times independently set so that they only start to act when the trail has reached a certain length.
- Additional Keyer for the DVE layer allows the DVE content to be luma or chroma self-keyed. This is completely independent of, and can be used with, the similar features of the DSK.
- DVE & DSK ChromaFX - allows a specific colour to be replaced with another (or monochrome), and/or all other colours in the scene to be replaced with another (or monochrome) at the same time.
- Advanced DVE anti-aliasing to smooth edges produced by certain models, for example the diagonal outside edge(s) of a page-turn or the outside of a warp.

Simplified block diagrams of 8DO and 4DO **Magic DaVE** mainframes are shown in **Figure 1** and **Figure 2**.

SYSTEM CONCEPT - continued**Figure 1: Simplified Block Diagram of Magic DaVE 8D(O) Mainframe**

SYSTEM CONCEPT - continued**Figure 2: Simplified Block Diagram of Magic DaVE 4D(O) Mainframe**

SYSTEM CONCEPT - continued

The 2U mainframe contains all the video processing electronics. It provides the Standard system with just a single assembly of two circuit boards. It also takes the option card assembly (two circuit boards) to add the Option functionality.

The mainframe contains a large non-volatile Flash EEPROM memory which is used to store user setups (called DMEMs), effects sequences, etc. This memory can store large amounts of information (see page 196), all of which is retained indefinitely when the power is switched off.

In the Option system, there is additional Flash EEPROM memory to hold a limited number of JPEG stills.

Extended Control Panel

This easy to use interface comprises a high-quality backlit LCD display, together with standard Program/Preset source selection buttons, T-Bar & joystick.

The **Magic DaVE** control panel has an internal floppy disk drive so that user information may be copied to and from the mainframe onto an IBM-compatible floppy disk for backup, client use, and copying to other systems.

The control panel is either connected to the mainframe via a 15-way cable supplying both power and data, or is powered separately via a mains adaptor and communicates with the mainframe via the **Rollcall™** interface.

SEQUENCES AND DMEMS

Sophisticated effects like those provided by the **Magic DaVE** system are generally used in pre-programmed sequences rather than live. This allows complex effects to be perfected off-line, and ensures repeatability. The sequence can be triggered by external equipment, e.g. an editor. Comprehensive sequence storage facilities are provided by the **Magic DaVE** system. See page **Error! Bookmark not defined.**

A sequence is defined as a series of states of the system called *shots* or *keyframes*. The data stored for each keyframe describes the keyframe together with the speed and mode of transition to the next one. A sequence is programmed by making adjustments to the controls to achieve the desired state of each keyframe in turn, and inserting that state into the current sequence. The sequence may be edited (modified) by inserting (adding), modifying or deleting keyframes.

The sequence can be given a name and stored for later use within the mainframe's EEPROM memory, and also on a removable floppy disk via the control panel. **Magic DaVE** can have a cache of 24 sequences available for immediate running or editing. The sequence cache is built by loading sequences into it, and it can then be saved under a single name in a similar way to a single sequence. A sequence cache can then be recalled as a whole to recall up to 24 sequences as a group. The cache not only gives rapid access to a number of sequences, but saving a cache provides a convenient way of storing a group of related sequences together. See page 152 for more details.

The keyframes of a stored sequence do *not* contain the entire state of the **Magic DaVE** system. For example if a sequence was generated using a video source with correct black-level, and was then run with a source that needed the black level to be reduced, you would not want the sequence to override the black level correction. To avoid problems of this sort, some parameters - including all those within the **Setup** menus - are not stored as part of sequences. See **Appendix 1: Non / Optionally-Sequencable Control Parameters** on page 234 for full details.

It is also useful to be able to save an individual state of the system and recall it later. With the **Magic DaVE** system this is achieved with DMEMs. Like sequences, DMEMs can be saved by name. DMEMs store the entire state of the machine, including setup parameters. However, when a DMEM is recalled it will only recall the setup parameters if it is recalled from the special folder called **SYSTEM** (see about folders below, and also see page 154).

Magic DaVE's EEPROM memory can hold over a thousand sequences, sequence caches and DMEMs, known collectively as *Files*. To make finding and organising these files easier, **Magic DaVE** supports the use of *Folders*, each of which can hold as many files as you like (within the capacity of the whole system). A folder can hold a mixture of sequences, DMEMs and sequence caches.

For example, you could have a folder called **PAGETURN** which holds all your page-turn type sequences and sequence caches, and another called **PAUL** which holds all of the sequences, DMEMs and sequence caches created by a colleague with that name. Folders can be equally well organised in terms of work for particular clients or programmes, depending upon your circumstances.

*When saving or recalling files, the current folder is always displayed on **Magic DaVE**'s display; please make sure that you have the correct folder selected.*

Note that it is the mainframe which builds and holds files, not the control panel. The control panel can be turned off and on, or even changed for a different one, without any files being lost.

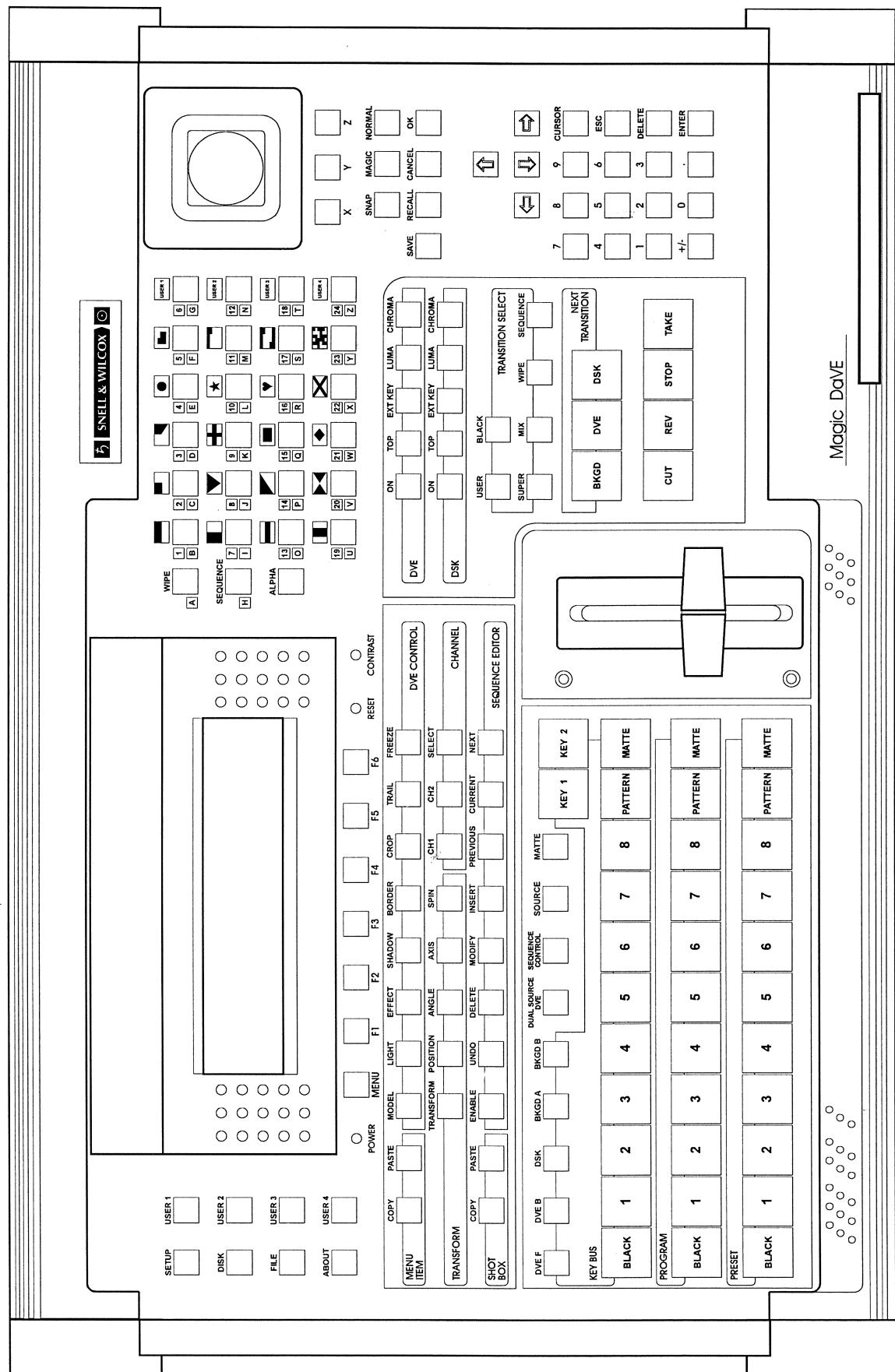


Figure 3: The Magic DaVE Extended Control Panel

OPERATING THE MAGIC DAVE CONTROL PANEL

The **Magic DaVE** control interface is made up of four main parts: the LCD display, the joystick, the T-Bar and the keyboard. These parts are now discussed in turn.

The Display

The display is a high-quality backlit LCD. It displays the current status of **Magic DaVE**. The contrast of the screen is adjustable (see **Magic DaVE Control Panel Setup** on page 220).

The top line of the screen is divided into two sections. The left-hand side is the *Title Bar* and shows the name of the current menu. The right-hand side is the *Status Bar*. This shows various information about the current state of the system. The first piece of information is which keyframe in which sequence cache slot is currently active. This is displayed as, for example, "3^{1/2}" which indicates that cache slot 3 is active, the sequence within it has two shots, of which the first is current. The other piece of information comprises two icons which indicate whether the DVE and DSK (option system only) are currently switched onto the system output. The DVE is indicated by a "page-turn" icon, the DSK by a "caption" icon (a picture of a TV screen with a line along the bottom).

On the next row down may be up to three quantities, e.g. X, Y & Z position, which are those that are currently controllable by the joystick. The position of the quantities on the screen (left, middle or right) implies which axes of the joystick they are attached to (X, Y & Z respectively). There may also be other quantities on the screen, one of which may be controllable by the T-Bar if the T-Bar's USER button is lit (see the next page).

The bottom of the screen contains "buttons" that can be changed by the keyboard, usually by means of the F-Keys directly under the screen (see later in this section). These "buttons" allow the user to change various parameters in **Magic DaVE** and also help the user navigate around the menu system.

The rest of the screen may also contain buttons, information or quantities, depending upon the menu concerned.

The Joystick

As mentioned above, the joystick allows direct "online" control of various **Magic DaVE** parameters, e.g. Picture Position, Picture Rotation etc. The current parameters under joystick control are indicated by the second line of the display, next to the little picture of a joystick. The joystick should be moved horizontally to control quantities shown on the left-hand side of the second line, vertically to control those shown in the middle of that line, and to control the third (right-hand side) parameter, the joystick knob should be twisted clockwise (to increase the value) or anticlockwise (to decrease the value).

For **Border & Crop** control, the joystick operates in a special way where it can control one, two or all edges at once. See the description of the **Effects - Crop Menu** on page 69 for details.

OPERATING THE MAGIC DAVE CONTROL PANEL - *continued***The T-Bar**

The T-Bar is used mainly to effect transitions from one source to another, although it can also be used to adjust other quantities when the light in the USER button next to the T-Bar is lit. In such cases there is usually a little picture of the T-Bar beside the parameter on the display.

The lights at either end of the T-Bar generally light to show the end to which the T-Bar must be moved to complete a transition. When the control panel is first powered on, the T-Bar will be "dead" and the lights will flash alternately. These indicate that the T-Bar must be moved end-to-end twice before it can be used.

For more details on the T-Bar's various modes, see the discussion of its related keys under **Keyboard - Transition Select Group** on page 15.

The Keyboard

The **Magic DaVE** keyboard comprises several groups of buttons, as can be seen in Figure 3 on page 9.

These groups of buttons are now discussed individually on the following pages.

OPERATING THE MAGIC DAVE CONTROL PANEL - continued**Keyboard - Menu Access Group****SETUP**

Takes you to the **Setup** menu that allows you to (a) select input and output video formats, sources, levels, line-standard etc., (b) control the aspect ratio of the system, (c) adjust the editor interfaces, (d) set the date & time, and (e) set default power-up states and (f) perform various engineering functions, e.g. resetting the system. See page 160 onwards.

DISK

Takes you to the **Disk Filing System** menus, which allow you to copy Sequences, DMEMs, Sequence Caches and even whole Folders to and from the floppy disk in the floppy disk drive.

FILE

Takes you to the **EEPROM Filing System** utility menus, which allow you to delete, copy and move files within the **Magic DaVE** mainframe. This is also the place from which to make new folders.

ABOUT

Displays some information about the system, including the software version numbers and the current line-standard. Press the MENU button to return to the **Main Menu**.

There are also four user menu keys. These can be assigned to go to any menu you choose. When in the chosen menu, press and hold down the required USER button until the panel says "Stored" in the status window. The menu is now memorised under that button.

USER 1

Goes to (or defines) the first user-defined menu.

USER 2

Goes to (or defines) the second user-defined menu.

USER 3

Goes to (or defines) the third user-defined menu.

USER 4

Goes to (or defines) the fourth user-defined menu.

OPERATING THE MAGIC DAVE CONTROL PANEL - continued**Keyboard - Source Selection Group**

These buttons select the sources for the PROGRAM, PRESET & KEY busses. The PROGRAM bus is what is currently visible on the output. The PRESET bus is what will be visible after the next transition (Mix, Wipe, etc.). Usually the PRESET bus will be visible on the Preview output, although this can be changed by the **Setup - Preview** menu (see page 165).

The KEY bus allows the source to be changed on any of the five surfaces, i.e. DVE Front, DVE Back, DSK, Background A and Background B. In addition the three non-Background sources can have a Key applied to them using the KEY 1 and KEY 2 buttons.

Keyboard - Source Control Group

DUAL SOURCE
DVE

When lit, the DVE will have separate Front and Back sources. In this mode the user must choose between only having one Background, or having no DSK channel. If, when this button is pressed to turn it on, there is already two backgrounds and a DSK in use, the panel will flash various buttons to give the user the choice of which part of the system to keep.

SEQUENCE
CONTROL

Goes to the **SEQUENCE CONTROL MENU** (see page 138).

SOURCE

Allows the PATTerN type and colour to be adjusted and test patterns (for example, colour bars) to be selected.

MATTE

Brings up a menu which allows the user to adjust the matte for the source currently selected on the KEY BUS. If the cursor (see section below) is off, then the joystick will control the matte colour as usual. If the cursor is on, then the joystick will control the cursor and allow a matte colour to be picked up from the video output.

OPERATING THE MAGIC DAVE CONTROL PANEL - continued**Keyboard - Transition Control Group**

This group consists of the four buttons CUT, REV, STOP & TAKE, which together control starting, stopping and reversing transitions.

The buttons are as follows:

CUT

This button simply performs an instant cut from one source to the other.

REV

When TAKE is pressed the WIPE or SEQUENCE will run in the reverse direction to normal. This button has no effect on the other transition types.

STOP

If the transition is running it will be stopped. Press TAKE to restart it. If the current transition is a sequence, and it is not running, then the first shot of the sequence is shown on the output, ready to go.

TAKE

The transition will be started and will run in the time specified in the **Transition Control** menu. It is the same as moving the T-Bar from one end of its travel to the other in the specified time.

Usually upon completion of a transition the sources on the PROGRAM and PRESET busses swap, and the next source can be selected on the PRESET bus.

There are a further three buttons that can be pressed in any combination. These define which parts of the system will be in the next transition.

BKGD

Puts the Background into the Next Transition.

DVE

Puts the DVE into the Next Transition.

DSK

Puts the DSK into the next Transition.

OPERATING THE MAGIC DAVE CONTROL PANEL - continued**Keyboard - Transition Select Group**

This group of six buttons determines the function of the T-Bar and the Transition Control buttons. For example, pressing the MIX button means that the T-Bar directly controls the mix between the Program and Preset busses; pressing TAKE will simulate the T-Bar being moved at a rate determined by the **Time** control that appears when the MIX button is pressed - the default is one second.

When any of the six buttons except USER is pressed, the **Transition Control Menu** will be displayed. This allows control of the details of the transition, for example the transition time (as mentioned above). On the standard machine it controls whether a "bus-swap" occurs at the end of the transition, i.e. whether or not the Program and Preset busses exchange sources or not. On the option system it controls whether the DVE and/or DSK are brought on or off by the transition, and, if they stay the same, whether they remain on or off throughout.

See page 105 onwards for a description of the **Transition Control Menu**.

The buttons are as follows:

SUPER

The transition will take the form of a super-mix - a dissolve by way of a matte. When this button is pressed a menu appears allowing the type and colour of the super-mix to be changed. See page 107.

MIX

The transition will take the form of a mix (also known as a "dissolve").

WIPE

The transition will take the form of a wipe. The shape of the wipe can be selected by the **Wipe** menus (page 110).

SEQUENCE

SEQUENCE gives control of the current sequence, i.e. a pre-programmed move. *This button must be lit in order to run a pre-programmed sequence (including by means of pressing the TAKE button). If there is no sequence currently loaded, the TAKE light will go out (it is normally lit).* A sequence should normally be run by using the TAKE button. This will give much smoother moves than manually moving the T-bar, especially if the sequence is long. The T-Bar assignment is primarily an aid to previewing and editing.

USER

The USER button provides control of various parameters depending upon the current menu. Common examples are Picture Zoom and Page Turn Position. This key remembers the last such use so that, for instance, Picture Zoom can be controlled, then WIPE pressed to do a wipe, then USER pressed to control Picture Zoom again. The busses are not affected by the T-Bar in this mode.

BLACK

Produces a simple fade-to-black on the output. It does not affect the state of any of the busses.

OPERATING THE MAGIC DAVE CONTROL PANEL - *continued***Keyboard - DVE Group**

ON	Turns the DVE key layer on.
TOP	Makes sure the DVE is over the top of the DSK.
EXT KEY	Goes to the DVE External Keyer menu (see page 75).
LUMA	Goes to the DVE Luma Self Keyer menu (see page 77).
CHROMA	Goes to the DVE Chroma Keyer menu (see page 78).

Keyboard - DSK Group

ON	Turns the DSK key layer on.
TOP	Makes sure the DSK is over the top of the DVE.
EXT KEY	Goes to the DSK External Keyer menu (see page 86).
LUMA	Goes to the DSK Luma Self Keyer menu (see page 88).
CHROMA	Goes to the DSK Chroma Keyer menu (see page 89).

OPERATING THE MAGIC DAVE CONTROL PANEL - continued**Keyboard - Menu Item Group****MENU ITEM COPY**

Copies the current menu item (e.g. a PosX, PosY & PosZ combination or a matte colour) to the menu buffer. When the cursor is on copies the colour underneath the cursor to the menu buffer as a matte.

MENU ITEM PASTE

Copies the contents of the menu buffer to the current menu item. For example you can copy the colour of the DVE's Front Border to the Back Border by going to the **Effects-Border-Front** menu, pressing MENU ITEM COPY, then pressing the **F3 BACK** button and pressing MENU ITEM PASTE.

Keyboard - Shot Box Group**SHOT BOX COPY**

Temporarily saves the current state of the machine. Up to six such states can be saved; the seventh state saved will overwrite the first one saved. Note that these states will be lost when the power is turned off - think of them as a "scratchpad".

SHOT BOX PASTE

This button recalls the last state saved by SAVE BOX COPY. Pressing it again will recall, in succession, the other five states saved by SHOT BOX COPY. Pressing it a seventh time will recall the first one again. These buttons are especially useful for sequence editing. If the NORMAL button has just been pressed then this button will recall the state the machine was in just prior to the normalisation.

OPERATING THE MAGIC DAVE CONTROL PANEL - continued**Keyboard - Menu & Function Keys Group**

The function or F-Keys situated just underneath the LCD display have their control functions, if any, assigned according to the contents of the display. The buttons along the bottom of the display relate directly to the F-Keys below them. These buttons come in two main "flavours" as follows:

- Buttons that change menus are usually drawn like the "tab" in a filing cabinet, as shown in the top part of Figure 4 below. For instance pressing **F2** in the example will take you from the **Transform-Advanced** menu "down" to the **Transform-Advanced-Input** menu.
- Buttons that change some sort of setting within the DVE itself are usually drawn as "bubble"s, as shown in the bottom part of Figure 4. The function of the button is inside the "bubble", with the button's current setting being shown between the lines drawn above the "bubble". In the example below the **Type** of the Page Turn is **Single**, the **Mode** of it is **Turn**, and the **Lights** are **Fixed**. Pressing the button will change the setting in the lines, for example pressing **F2** in this example would change the **Mode** from **Turn** to **Roll**.

The MENU button is also in this Group, when pressed it takes you to the next highest menu, if one exists (if at the top-level "**Magic DaVE**" menu this button does nothing). This is especially useful when in one of the **Model** or **Effect** sub-menus as it allows you to quickly select a different Model or Effect type.

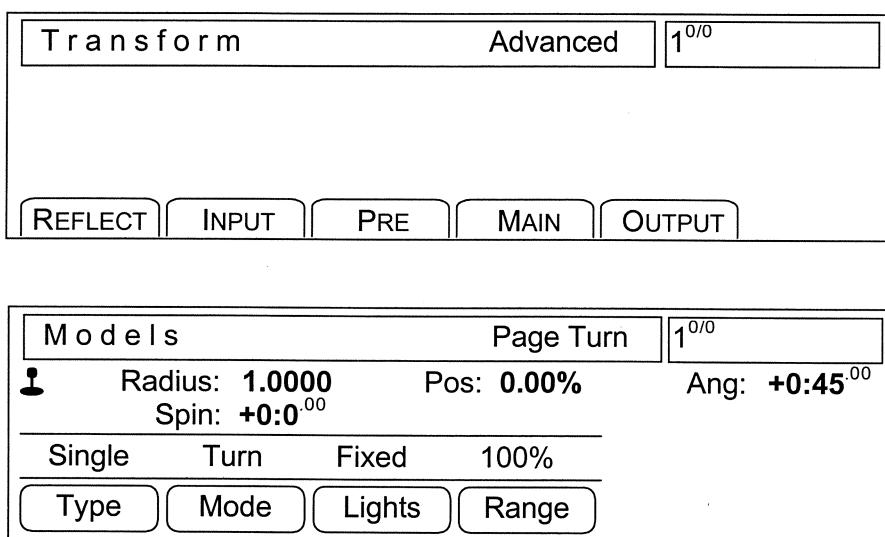


Figure 4: The two different types of F-Key buttons

OPERATING THE MAGIC DAVE CONTROL PANEL - continued**Keyboard - DVE Control Group**

After powering up, the control panel shows the top-level menu, whose title bar reads "**Magic Dave**". This menu can always be regained by repeated presses of the MENU button until it appears, or, of course, by powering the control panel off and then on again.

Although the menus are available by way of the top-level menu's **Start** button, you can also gain access to them via the eight Menu Selection keys, i.e. MODEL, LIGHT, EFFECT, SHADOW, BORDER, CROP, TRAIL & FREEZE. Pressing one of these buttons takes you to the relevant menu. Pressing it a second time will take you to the menu within that section where you were last. The contents of the menus are described in **Section B**, however a brief description of them follows:

MODEL

Allows the user to select and control a particular model, e.g. Page Turn, Corners, Ripples Warps, etc.

LIGHT

Goes directly to the **Effects-Lights** menu which allows control of lighting on the DVE tile.

EFFECT

Controls the process effects, in other words Crop, Border, MultiGrab, Lighting, Keyers, Solarisation, Posterisation, Mosaic and False Colour Effects.

SHADOW

In non-option systems, goes directly to the **Model-Shadow** menu. In option systems goes directly to the **Trail-Shadow** menu.

BORDER

Goes directly to the **Effects-Border** menu which allows control of the DVE Border.

CROP

Goes directly to the **Effects-Crop** menu which allows control of the DVE Crop.

TRAIL

Goes to the **Trail** menus, and is only effective on systems that have the option card fitted.

FREEZE

FREEZE allows video on all the busses to be frozen.

OPERATING THE MAGIC DAVE CONTROL PANEL - *continued***Keyboard - Transform Group**

These five buttons allow access to the DVE **Transform** menus, used for moving and rotating the DVE tile. For more details on the **Transform** menus, see page 65.

TRANSFORM

Goes directly to the **Transform-Advanced** menu.

POSITION

Goes directly to the **Transform-Position** menu.

ANGLE

Goes directly to the **Transform-Angle** menu.

AXIS

Goes directly to the **Transform-Axis** menu.

SPIN

Goes directly to the **Transform-Spin** menu.

OPERATING THE MAGIC DAVE CONTROL PANEL - continued**Keyboard - Channel Group**

CH 1	Tells panel to now control the first Magic DaVE mainframe connected.
CH 2	Tells panel to now control the second Magic DaVE mainframe connected.
SELECT	Allows the user to change which Magic DaVE mainframes the CH 1 and CH 2 buttons are controlling. For more details of all three of these buttons see the Rollcall™ Installation section on page 212.

Keyboard - Sequence Editor Group

An overview of sequences is given in SEQUENCES AND DMEMS on page 8, and an example of how to create and edit one starts on page 190.

Magic DaVE maintains a local (RAM) *cache* of up to twenty-four sequences. Each sequence occupies a *cache slot* numbered between 1 and 24 inclusive. The user can save any of these sequences to **Magic DaVE**'s permanent memory (EEPROM), and recall them back to any cache slot at a later date.

There now follows a list of the buttons in this group:

ENABLE	This button, when pressed so that the red light within it starts flashing, allows sequences to be created and edited. Pressing it again turns the light off and protects the current sequence from being accidentally modified. IF THE LIGHT IN THIS BUTTON IS NOT FLASHING, NO SEQUENCE EDITING CAN TAKE PLACE. However the PREVIOUS & NEXT buttons (see next page) can be used to change the current cache slot. { XE "ENABLE" }{ XE "EDIT SEQUENCE" }{ XE "See ENABLE" }
--------	--

OPERATING THE MAGIC DAVE CONTROL PANEL - continued**Keyboard - Sequence Editor Group - continued**

The following group of buttons is only active for editing sequences when the ENABLE button is lit. When **Magic DaVE** is first turned on, the ENABLE button is not lit, and creating and/or editing sequences is not allowed. Simply pressing it makes it flash, at which point sequence manipulation is then permitted. *Note:* When editing a sequence remember that the shot time (and other shot parameters) of a shot relates to the transition *to the next shot*.

UNDO	UNDO (when ENABLE is flashing) undoes the last INSERT, MODIFY or DELETE operation. It can undo up to a hundred "keyframe events". (Each INSERT or DELETE is one event, the event count for a MODIFY is however many keyframes the MODIFY affects.) It will also remember cache slot changes, and will undo those correctly, but beware: it cannot undo such things as a Load Sequence operation - if you load a sequence over your current one this button will not get it back!
DELETE	DELETE deletes the current shot in the current sequence.
MODIFY	MODIFY replaces the current sequence's current shot with the current state of the machine. The shot time is also modified if changed in the menu as mentioned above. When MODIFY is pressed the Modify menu appears which allows a choice of modify operations. See the Modify Menu section on the next page.
INSERT	INSERT inserts the current state of the machine as a shot in the current sequence, after the previously entered shot if any exists. The key frame numbering is automatic. Shot time is as per default unless set up <i>before</i> inserting the new shot using the control in the SEQUENCE CONTROL MENU explained on page 138.
PREVIOUS	PREVIOUS selects the previous shot (if any) within the current sequence. <i>When the ENABLE light is off this button will move to the previous cache slot.</i>
CURRENT	CURRENT reshows the current shot of the current sequence. This is useful if the current state was inadvertently changed, e.g. by accidentally nudging the joystick or T-Bar. <i>When the ENABLE light is off this button shows the first shot of the current sequence.</i>
NEXT	NEXT selects the next shot (if any) within the current sequence. <i>When the ENABLE light is off this button will move to the next cache slot.</i>

OPERATING THE MAGIC DAVE CONTROL PANEL - continued**Keyboard - Sequence Editor Group - continued****Modify Menu**

As mentioned on the previous page, this menu “pops up” when the MODIFY button is pressed to edit a sequence. It allows control of whether the modify operation only changes the current keyframe, or whether it affects other keyframes as well.

For example: you build a sequence which has the DVE tile at full size, you then shrink it, and make the DVE spin off the screen. After you have built it you decide that you want to put a border on the DVE. Rather than having to modify every keyframe to add exactly the same border, you can modify just one of the shots to add the border and tell Magic DaVE to ripple the change throughout the whole sequence.

The choices are:

F1

⇒ MODIFY

The current shot will be replaced by the current state of the machine. All the differences between the two will be rippled backwards through the sequence. Once the ripple process comes across a shot that contains other changes to the control that was changed in the current shot, the ripple process will stop.

F2

⇒ HERE ⇒

Only the current shot will be modified. No other shots will be affected.

TIP ✓

Because this option is the most common modify operation, you can do it by just pressing the MODIFY button again.

F3

MODIFY ⇒

The current shot will be replaced by the current state of the machine. All the differences between the two will be rippled forwards through the sequence. Once the ripple process comes across a shot that contains other changes to the control that was changed in the current shot, the ripple process will stop.

F4

⇒ ALL ⇒

The current shot will be modified. The changes made to the current shot will be rippled both forwards and backwards to the ends of the sequence, regardless of whether the changed parameters are also changed in any of the other shots.

F6

PROPERTIES

Modifies the global Properties of the sequence only. These are all the controls in the **Sequence Control - Properties** menu except the **F5 Type** button - for example the **Enable** controls.

Once one of the above buttons is pressed, the MODIFY operation is carried out and **Magic DaVE** then returns you to the menu that you were in when you pressed the MODIFY button.

OPERATING THE MAGIC DAVE CONTROL PANEL - continued**Keyboard - Numeric Keypad Group**

This group's primary function, as the name suggests, is to allow entry of numbers into **Magic Dave**. This is usually so that the user can specify an exact position, rotation, colour, etc., rather than just using the ↑ & ↓ buttons, the T-Bar or Joystick to specify a value. The 0-9 and “.” buttons are self-explanatory. The +/- button is pressed after typing a number but before pressing ENTER to make it negative. The other buttons have the following functions:

CURSOR

This button turns the Preview Output Cursor on and off. For more details see the section Preview Output Cursor on page 29.

ESC

This button cancels any entry currently in progress.

DELETE

The DELETE button acts like a backspace key, removing the last digit or letter entered. It also allows a value that is already displayed on the screen to be re-edited, for example to change the last letter of a filename in the **Save** menu.

ENTER

The ENTER button should be pressed when entering a number or name has been completed, to tell **Magic Dave** that you have finished. The format of the number shown should match the display box, e.g.: Perspective shows 0 to 1.000, it will therefore accept 0.123 ENTER but not 123 ENTER.

Keyboard - Joystick Control Group

This group is very simple, consisting of the three keys X, Y & Z. These are used whenever the joystick is placed “online” to control a group of parameters, e.g. Picture Position. They light up to indicate when an axis is not at its normal setting (as defined in the NORMAL DMEM). When a particular axis button is lit, you can then press it to normalise that axis of the joystick and the light for that axis will then go out.

OPERATING THE MAGIC DAVE CONTROL PANEL - continued**Keyboard - General Control Group**

SNAP

When pressed “snaps” parameters to the nearest power of two.

MAGIC

This button is reserved for future use.

NORMAL

NORMAL is used to normalise some or all of the machine. A single click on NORMAL will normalise every control in the current menu. Double-clicking NORMAL will normalise every control in the whole current menu group (for example, the whole of the TRANSFORM menus). Triple-clicking NORMAL will normalise every control in **Magic DaVE**.

The values used for normalisation are those specified in the NORMAL DMEM (see pages 154 & 179). Also see the description of the joystick X, Y & Z buttons below for more about normalisation.

SAVE

This button brings up a menu that allows the user to save the current sequence to **Magic DaVE**'s permanent memory. Pressing it twice allows a DMEM to be saved and pressing it a third time allows a sequence cache to be saved. See page 144.

RECALL

This button brings up a menu that allows the user to recall a previously saved sequence from **Magic DaVE**'s permanent memory back into a cache slot. Pressing it twice allows a DMEM to be recalled and pressing it a third time allows a sequence cache to be recalled. See page 148.

CANCEL

Whenever a menu offers a CANCEL button (usually on F5), this button can be pressed instead. (The button on the small panel called CANCEL is called DELETE on the enhanced panel - see below.)

OK

Whenever a menu offers an OK button (usually on F6), this button can be pressed instead.

The other buttons in this group are the 4 cursor arrows (\uparrow , \downarrow , \leftarrow & \rightarrow).

Generally the \leftarrow & \rightarrow arrows are used to move between different parameters in a menu until the user reaches the one they want to adjust, then the \uparrow & \downarrow arrows (or the numeric keypad, see below) are used to adjust the value. **The value that will be adjusted is shown in reverse, i.e. white on black. This highlighted area is known as the “input focus”, as it is where any input (either from the arrows or the keypad) will be placed.**

OPERATING THE MAGIC DAVE CONTROL PANEL - continued**Keyboard - Wipe/Selection/Alpha Selection Group****WIPE**

Says that the 24 Wipe/Sequence/Alpha buttons will select a Wipe Pattern. If pressed when the ALPHA button is flashing, generates an "A". The four USER wipe buttons can be programmed to any desired wipe: select the wipe you want in the Wipe menu, then hold one of the four user buttons down until the panel says "Stored" in the status window. When that USER button is next pressed it will recall the stored wipe pattern.

SEQUENCE

Says that the 24 Wipe/Sequence/Alpha buttons will select one of the 24 Sequence Cache slots. If pressed when ALPHA is flashing, generates "H".

ALPHA

Says that the 24 Wipe/Sequence/Alpha buttons and the WIPE and SEQUENCE buttons above will generate the 26 letters of the alphabet. Unlike with the small panel, you do not need press the ALPHA button between each letter. Once you are in ALPHA mode, this button will flash as a reminder. To exit ALPHA mode you must press this button again (you cannot press WIPE or SEQUENCE to exit ALPHA mode as they will generate "A" and "H" respectively!).

**24
Wipe/Seq/Alpha
buttons**

Selects either a Wipe Pattern, a Sequence Cache slot, or generates a letter of the alphabet, depending upon whether the WIPE, SEQUENCE or ALPHA buttons are lit.

OPERATING THE MAGIC DAVE CONTROL PANEL - continued**A Note about Rotations**

Note that the internal range of control is ± 8 turns for all rotation parameters.

In a sequence the **Magic DaVE** will take the shortest route between the angles set for the keyframes for two successive shots. Therefore if the turns parameter is incremented by more than 8 turns between two successive keyframes, the apparent rotation may switch to the opposite direction. If this occurs, simply add additional keyframe(s) between the two concerned, so as to "split the difference" such that there are never more than 8 turns between two consecutive keyframes.

Continuous rotation is much easier to obtain by using spin parameters. All angles and phase controls (except those in the **Model - Fragment** menu) have an associated spin control that produces continuous variation of the nearby rotation parameter. The spin controls are shown in degrees per video field, and the maximum spin is just over 11° per field, i.e. 558° per second ($625/50$) or 669° per second ($525/59.94$).

Spin in Sequences

If spin is applied to a rotational parameter, the spin (rate of rotation) is applied *in addition to* the angle value. For example, if a small positive spin is applied at two keyframes in a sequence, but the angle value at the second is negative relative to the first, the rotation will slow down and may even reverse between the keyframes when the sequence is run!

Naturally, when spin is applied at a keyframe, it is unlikely that the rotation will pass through the actual angle value specified for the keyframe. When a keyframe is reached where spin is zero, a smooth correction is made to the angle value specified for that keyframe. If you want rotation with predictable angles at the keyframes - do not use spin!

Note that spins can only be sequenced in linear or instant mode, while angles can also be sequenced in curved mode.

OPERATING THE MAGIC DAVE CONTROL PANEL - continued**Colour Control**

In menus that allow control of matte or pattern colours etc., the colour is shown as Saturation, Luminance and Hue.

Saturation controls how much of the given **Hue** is applied. It ranges from **0%** (no colouration at all, i.e. black/grey/white), to **100%** (fully saturated colour).

The Luminance control applies a *relative* amplitude value to the Hue & Sat selected. Hence for zero Luma the colour that is set will be black irrespective of the Hue & Sat. As Luma is increased, the matte colour will be held constant for the luminance set without breaking the system gamut rules (i.e. no illegal colours). Genuine luminance at **100%** is only obtained if the Saturation (Sat) is set to zero.

The Hue control works on a scale of **0** to **360** degrees, where the following values produce the following colours:

0	Red
60	Yellow
120	Green
180	Cyan
240	Blue
300	Magenta

Examples:

- | | |
|-----------------------------|--|
| Sat/Luma/Hue of 100/100/0: | Bright Red |
| Sat/Luma/Hue of 50/100/0: | Pale Pink (Pink being Red diluted with White) |
| Sat/Luma/Hue of 100/50/270: | Dark Purple |

Note that the hue angles are *not* the same as those on a vectorscope.

OPERATING THE MAGIC DAVE CONTROL PANEL - continued**Preview Output Cursor**

There is a cross-hair cursor on the Preview output. This eases the setting-up of DVE moves by indicating the location of the DVE at all times. It also provides auto-setup of the Chroma Keyers and the new ChromaFX effects - see their sections below.

The cursor operation is context sensitive, for example:

- It indicates the centre of the tile when the DVE is being positioned.
- It indicates the axis (Centre of Rotation) when the DVE is being rotated, or the Axis is being altered.
- It indicates the Corner being controlled in the Corners Model.
- When in a Matte menu, the cursor can be used to pick a colour from the screen and copy it into that matte by pressing the MENU ITEM COPY then the MENU ITEM PASTE buttons.

The cursor is turned on and off using the CURSOR button at the top of the number pad. The light in the button shows when the cursor is on. The **Preview Source** will be automatically set to **Pgm-FTB** while the cursor is turned on, the previous source being restored when the cursor is turned off again.

Note that turning the cursor on can change the use of the joystick. For example, in a Matte menu the joystick will adjust the matte colour with the cursor off, but adjust the cursor position (so that a matte colour can be picked up from the video output) when the cursor is on.

If the point that the cursor is following moves off-screen, then one or both of the cursor cross-hairs will stop at the edge of the screen and flash on and off. This can be especially useful in order to "find" the DVE if it has moved off-screen.

SECTION B

CONTROL MENU REFERENCE

OPENING MENU

When **Magic DaVE** is first turned on, this menu appears. It shows you a list of Magic DaVE mainframe names that are present on the current RollCall™ network, plus the options **SERIAL** and **NONE**. If there is no RollCall™ network present, then **SERIAL** and **NONE** will be the only options in the list.

Choosing **SERIAL** makes a connection via the traditional serial cable interface. It is not possible to choose the **NONE** option. Choosing anything else attempts a RollCall™ network connection to that machine.

If only the serial cable is connected, then normally **Magic DaVE** will automatically select the **SERIAL** option and connect to it without allowing any user intervention. (The exception to this is immediately after a software upgrade, when the user has to select **SERIAL** manually the first time the unit is powered on.)

If the panel is connected to a RollCall™ network, then a list of mainframe names will appear. Use the ↑ and ↓ keys to select the desired machine (or **SERIAL**), and press the **F6 OK** button.

After the **F6 OK** button is pressed, the control panel will ask you to "Please wait". After a few seconds it should report "Connected", unless an error occurs. The most common error is "Device Busy", which is caused by an attempt to connect to a mainframe that already has two network controllers.

To change which mainframe you are connected to, simply press the CHANNEL button on the panel to return to this menu. For more details see the description of that menu on page 137.

Note: if there was no RollCall™ connection detected at power-up, the CHANNEL button is locked out. If you connect the network cable after power-up you will need to turn the panel off and on again before you can connect via the network.

MAIN MENU

This is the menu that appears once the control panel is connected to a mainframe. The title bar reads "Magic DaVE" followed by a version number. There is only one option in this menu:

F1**START**

Takes you to the **Start** menu that allows entry to the main portion of the menu system. See the next page.

This **Main Menu** can be regained at any time without powering off and on by pressing the MENU button until it is reached.

TIP ✓ You can move quickly to the **Main Menu** wherever you are by double-clicking on the MENU button.

START MENU

This menu is reached by pressing **F1** in the **Main Menu**. It acts as a gateway into the main menu system, allowing the user to select any of the sub-menus without using the dedicated menu keys.

The available menus are shown in two rows. Any menu shown on the bottom row can be selected by pressing one of the buttons **F1** to **F5**. To choose a menu shown on the top row, press the **F6** button (marked as \downarrow) to bring the top row down to the bottom row; one of **F1** to **F5** can then be used to select the desired menu.

The bottom row of keys are:

F1
MODELS

Goes to the main **Models** menu, which allows the user to select the **Model** to use (for example **Page Turn** or **Ripples**).

F2
TRANSFRM

Goes to the **Transform** menus, which allow the user to position the DVE picture in 3-D space.

F3
EFFECTS

Goes to the **Effects** menus, which allow the user to crop the picture, add borders & lights, and perform other special effects on the picture content.

F4
SOURCES

Goes to the **Sources** menu, which allows the details of the various sources to be controlled and also where they will be placed.

F5
WIPES

Goes to the **Wipes** menu, which allows the type and shape of the current wipe to be controlled.

F6
 \downarrow

Swaps over the two rows of menu buttons, allowing the next five menus to be selected on the function keys. See the following page.

TIP ✓

If you find it easier to do so, you can also use the \uparrow and \downarrow buttons on the keyboard to swap the rows over.

START MENU - continued

The other row of menu buttons, reached by pressing **F6** from the first row (or by pressing **MENU** from one of the following sub-menus) is as follows:

F1

FREEZE

Goes to the **Freeze** menu, which allows the picture to be frozen.

F2

TRAIL

Goes to the **Trail** menu, which allows Trail & Sparkle effects to be controlled. *Only available with the Option system.*

F3

CHANNEL

Goes to the **Channel** menu, which allows control of the different mainframes in a multi-Magic DaVE system (using RollCall™).
Only available in a system with RollCall™ active.

F4

SEQCACHE

Goes to the **Sequence Cache** menu, which allows quick access to the sequences in the Sequence Cache and also allows Sequence Caches to be saved and recalled.

F5

SEQCTRL

Goes to the **Sequence Control** menu, which provides control over the fine details of building a sequence.

F6

Swaps over the two rows of menu buttons, allowing the original five menus to be selected on the function keys. See the previous page.

Remember that all the above listed menus (except **Start** itself) can also be reached simply by pressing the corresponding menu hot-key (see page 19).

If **MENU** is pressed to return to the **Start** menu from one of the second row of menus (**Freeze**, **Trail**, etc.), then that row will be on the bottom of the screen.

MODELS MENU

Pressing **F1** from the **Start** menu, or pressing the **MODEL** button once leads the user to the top-level **Models** menu. Pressing the **MODEL** button again will go to the last **Model** menu used.

This menu presents the user with four rows of different **Model** types, which are the different types of advanced manipulation that can be performed on the tile. In the same way as the **Start** menu, use **F6** (marked with a \downarrow) to move the rows down a place until the row you want appears just above the function keys. You can then use one of the keys **F1** to **F5** to select the model you want.

All the models except **Flat** have their own sub-menu that allows the **Model** to be controlled in fine detail.

The list of models is:

- | | |
|-------------------|---|
| FLAT | Simple flat tile. |
| PUSH | PushOn - PushOff effect. |
| MIX/WIPE | Mix or wipe within the DVE tile (independently of the main system mix/wipe). |
| FRAGMENT | A range of effects where the tile is split into pieces bit by bit. |
| PAGE TURN | Page effects, not only Turns but Rolls, Peels (Double & Quad) etc. |
| SHADOW | Simple flat tile with drop shadow. |
| CORNERS | Each tile corner can be positioned separately - including twisting the tile . |
| RIPPLES | Applies a rotatable rippling effect to the tile, can ripple position or density. |
| XYRIPPLES | Applies two different ripples at once, one horizontally & one vertically. |
| WARP | Provides various effects, including Sphere and Widescreen. |
| TWIN TILES | Provides two independent copies of the tile which can be intersected. |
| QUAD SPLIT | Allows the picture to be split into four pieces. Also includes mirror effects. |
| MULTITILE | Repeats the tile horizontally and/or vertically throughout the "universe". |
| SLAB | Slab effect: each of the sides has its own source. (<i>Option system only</i>) |
| DUAL | Simple dual channel: two tiles each with its own source. (<i>Option system only</i>) |
| SHEAR | Allows the tile to be sheared and skewed. |
| POND | Gives a circular ("pond") ripple to the tile. (<i>Pond-ripple-capable systems only</i>) |

MODELS MENU - continued

Once inside a **Model** sub-menu, the user can return to the main **Model** menu to choose another model type by pressing the MENU button (which always takes you “up” one level in the menu structure), or by pressing the MODEL button again. If the MENU button is pressed to do this then the row on the bottom will be whichever one you were last using. However if the MODEL button is pressed to return to the main **Model** menu then the menus will always reappear with the first row (the one that starts with “Flat”) on the bottom.

TIP ✓ Remember: you can use the ↑ and ↓ buttons on the keyboard to shuffle the rows of models up and down.

When you enter a **Model** control menu, that **Model** is automatically enabled, and *remains enabled* when you leave the menu. When you go to another **Model** menu, the new **Model** becomes current, but the settings of the old one are not lost: if you return to the **Model** menu you previously used, it will return with the controls set as you left them.

Models and Lighting

Note that some **Models**, notably **Page Turn**, **Warps & Pond**, have special lighting optimised for them. This means that some controls in the **Effect - Lights** menu will have no effect with these models.

Models and Sequences

When programming sequences, make sure that the control parameters which you want to stay constant when a particular model is present are set that way when you INSERT the first shot using that model. For example when programming a simple Page Turn/Roll sequence, ensure that the **Radius** and **Angle** settings you want on the “turned” shot of the sequence are set the same on the “flat” shot. Only the **Position** parameter must change during the sequence, otherwise, the “page” will change angle and radius as it rolls up. This may be desirable in certain situations, but not for the simple case.

MODELS - PUSH MENU

This simple model provides a quick and easy way of doing a Push-On/Push-Off effect. The source that is brought on is the one specified as the **DVE BACK**.

OPTION CARD USERS ONLY:	Make sure that the system is set to have a double-sided DVE, otherwise the two sources will be the same. You can check this by pressing the MIX, WIPE, CUT or SEQUENCE button on the keyboard and ensuring that F5 DVE says Double - if it does not, then simply press F5 to change it.
------------------------------------	--

The controls in this menu are as follows:

Level	Performs the actual Push effect. This control is also on the T-Bar.
Range	0.00% - 100.0%
Spacing	Sets the spacing between the two pictures. At the default setting of 0.0000 there will always be a small gap. The gap can be closed by setting this parameter negative, but in this case the DVE tile will be narrower than normal during the transition. Range -1.0000 - +1.0000
F1 Direction: \Rightarrow	Selects the direction in which the Push happens: \Rightarrow , \Downarrow , \Leftarrow or \Uparrow .

MODELS - MIX/WIPE MENU

This model allows either a mix or one of a simple range of wipes to be performed inside the DVE tile. The mix or wipe is between the **DVE FRONT** and **DVE BACK** sources. This mix or wipe is completely independent of any other mix or wipe in the system.

**OPTION CARD
USERS ONLY:**

Make sure that the system is set to have a double-sided DVE, otherwise the two sources will be the same. You can check this by pressing the **MIX**, **WIPE**, **CUT** or **SEQUENCE** button on the keyboard and ensuring that **F5 DVE** says **Double** - if it does not, then simply press **F5** to change it.

The main control in this menu is:

F6
Mix/Wipe: Wipe

This button simply controls whether this model performs a **Mix** or a **Wipe** on the contents of the DVE tile.

Wipe Controls - General Controls

When **Wipe** is selected, the menu has two sub-menus, **WIPE** and **COLOUR**, selected by the **F1** and **F2** keys as indicated.

The following controls appear in both parts of the menu:

F4
Direction: \Rightarrow

Selects the direction of the Wipe: \Rightarrow , \downarrow , \Leftarrow , \uparrow , \nwarrow , \swarrow , \nearrow or \searrow .

F5
Aspect: Screen

This button controls whether the diagonal wipes are at 45° (**Square** mode) or pass through the corners of the screen (**Screen** mode).

Wipe Controls - Wipe Sub-Menu (F1)

Width

Controls the width of the Wipe Border.

Range 0.00% - 100.0%

Level

Controls the actual Wipe position. This control is also on the T-Bar.

Range 0.00% - 100.0%

Wipe Controls - Colour Sub-Menu (F2)

Sat/Luma/Hue

Sets the colour and brightness of the wipe border.

MODELS - MIX/WIPE MENU - continued**Mix Controls**

When **Mix** is selected, the only control is:

Level	Controls the actual Mix amount. This control is also on the T-Bar.
Range	0.00% - 100.0%

*Note that when **Mix** mode is selected, the DVE cannot have a Border applied to it. If the border is switched on, it will be temporarily switched off while **Mix** mode is selected.*

MODELS - FRAGMENT MENU

This model comprises a range of effects where the tile is split into pieces bit by bit, each of which shoot off the screen and/or disappear, one after the other. There are two basic types of fragmentation, either the tile is divided into square pieces which fly off in turn starting at a corner, or the tile is sliced into strips which fly off starting from one edge. Since there are four corners at which the effect can start, and also four edges from which to start cutting strips, there are in fact eight different directions in which the tile can disintegrate.

The number of fragments is adjustable. Further flexibility is added by the fact that the direction and distance that the fragments move can be adjusted, as can their final size. Furthermore, the fragments can be programmed to carry out a certain number of rotations before they disappear.

The menu has two parts, **MOVEMENT** and **ROTATE**, selected by the **F1** and **F2** keys as indicated.

Fragment Controls - General Controls**Position**

Controls the actual progression through the effect, i.e. at 0% the tile is completely together, at 100% it is completely fragmented.
Range 0 - 100%.

F3

Type: Corners

Selects the main fragmentation method to be either **Corners** or **Strips**.

F4

Edges: Soft

Selects whether the edges of the fragments have hard or soft edges.

Soft: The edges will be anti-aliased as usual. If the fragments cross the main tile, some of the background may show through.

Hard: The edges will be totally hard, but fragments that cross the main tiles will cross cleanly.

F5 and **F6** appear as follows when **F3** is set to **Type: Corners**.

F5

Corners: x2

Selects how many squares the tile will be fragmented into:
x2, **x3**, **x4**, **x5**, **x6**, **x7**, **x8** or **x9**.

F6

Corners:Corner ↴

Selects the corner from which the fragmentation starts:
Corner ↴, **Corner ↵**, **Corner ⇧** or **Corner ⇩**.

F5 and **F6** appear as follows when **F3** is set to **Type: Strips**.

F5

Strips: 8

Selects how many strips the tile will be sliced into:
2, **4**, **8**, **16**, **32**, **64**, **128** or **256**.

F6

Strips: Strip ⇴

Selects the edge from which the fragmentation starts:
Strip ⇴, **Strip ↑**, **Strip ⇵** or **Strip ⇩**.

MODELS - FRAGMENT MENU - continued**Fragment Controls - Movement Sub-Menu (F1)**

Distance

Sets the distance through which each fragment will move as it separates from the main tile. At 100% it will fly off the edge of the screen very rapidly, at 0% it will not move - just remaining where it is until it disappears. This can be used to make the tile simply disappear, bit by bit.

Range 0 - 100%.

Size

Sets the final size of each fragment just before it disappears. At 0.0000, each fragment will shrink away to nothing. At 15.9999 each fragment will grow to huge proportions before disappearing to make way for the next one.

Range 0.0000 - 15.9999

Ang(le)

Sets the primary angle at which each fragment leaves the main tile. This angle operates "along the flat", i.e. in the plane of the tile.

Range 0 - $\pm 7:359$

Fragment Controls - Rotate Sub-Menu (F2)

AngX

Sets the amount of X rotation each fragment suffers before it disappears.

Range 0 - $\pm 7^{15}/_{16}$ turns.

AngY

Sets the amount of Y rotation each fragment suffers before it disappears.

Range 0 - $\pm 7^{15}/_{16}$ turns.

AngZ

Sets the amount of Z rotation each fragment suffers before it disappears.

Range 0 - $\pm 7^{15}/_{16}$ turns.

MODELS - PAGE TURN MENU

The page turn effect is a 2-D deformation which can model a moving paper page or a scroll. The page turn can be manipulated and rotated, but extreme side-on angles should be avoided - especially for the five **Peel** types (see below) - as they can spoil the 3-D illusion.

The effect is enhanced by the use of a special lighting mode which puts a glint on the "curved" parts of the page as it turns and a shadow on the part "underneath" the curved parts. A variable lighting mode allows more adjustment.

There are a variety of page-turn effects available, the following list details the seven basic types. For each of these the page can simply turn, or roll-up as it moves, giving a total of fourteen effects.

Single	The "normal" page-turn/roll, provides a single turning edge.
Double	"Roll-on/Roll-off", i.e. as one page goes off, a second one comes on.
Peel ↓	The page peels into two pieces from the top downwards.
Peel ↑	The page peels into two pieces from the bottom upwards.
Peel ⇒	The page peels into two pieces from the left towards the right.
Peel ⇢	The page peels into two pieces from the right towards the left.
Quad Peel	The page peels into four pieces from the centre outwards.

A second video source can be applied to the "other side" of the page as it turns. This source will be that selected as the **DVE BACK**.

TIP ✓ *In **Double** mode, this second source appears on the front of the second page, giving a very effective source transition.*

Note that when a second source is used, normal DVE front / back switching is disabled: a mirror-image version of the page turn appears on the back if the tile is rotated.

OPTION CARD USERS ONLY:	Make sure that the system is set to have a double-sided DVE, otherwise the two sources will be the same. You can check this by pressing the MIX, WIPE, CUT or SEQUENCE button on the keyboard and ensuring that F5 DVE says Double - if it does not, then simply press F5 to change it.
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MODELS - PAGE TURN MENU - continued**Page Turn Controls**

Radius	Sets the curvature at the bend. Extremely large or small values are not recommended except for unusual effects. Range 0 - 16.000 A typical value would be 1.000 Note: with Type: Double this also sets the separation of the turned edges of the two pages.
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Position	Actually performs the page-turn effect. This control is on the T-Bar as well as the Y-axis of the joystick. Range 0% - 100%
----------	---

Ang(le) & Spin	Sets the angle at which the turn peels off relative to the image plane. When the angle is zero the turn is parallel to the X source axis. Range ± 7.359 turns:degrees
----------------	---

F1
Type: Single
Selects the basic type of the Page Effect out of the seven types listed on the previous page.

F2
Mode: Turn
Turn: The "normal" page turn as when turning the page of a book.
Roll: The image "rolls up" like a cylinder.

F3
Lights: Fixed
Fixed: Special lighting mode, most lighting controls (in the **Effects - Lights Menu** menu, see page 72) are disabled; the lights are optimised to produce a realistic page effect.
Free: The position of the light can be varied somewhat.

F4
Range: 100%
Allows the range of the **Position** control to be adjusted between **100%, 200%, 400% and 800%**. At **100%** the **Position** control will just take the page off-screen when the DVE is full-size. If the DVE is shrunk down, you may need to increase the range by pressing this button.

MODELS - SHADOW MENU

This model enhances the basic tile with a shadow effect. The shadow can be filled with a matte (usually black) or with a copy of the tile's video. The shadow can be faded to any desired degree.

This shadow model is available on the basic system, and is completely independent of the drop-shadow facility available with the trail-store on the Option system (which can shadow any model, not just the simple flat tile).

The menu has two parts, **POSITION** and **COLOUR**, selected by the **F1** and **F2** keys as indicated.

Shadow Controls - General Control

The following control appears in both parts of the menu:

F6

Fill: Black

This button specifies what the shadow will be filled with:

Black: The shadow will be filled with a black matte.

Matte: The shadow will be filled with the matte set by the **Colours** sub-menu.

Video: The shadow will be filled with a copy of the main tile's video.

Shadow Controls - Position Sub-Menu (F1)

PosX

Controls the position of the shadow along the X-axis (horizontal).

Range

0 - ± 1.0000 screen width

PosY

Controls the position of the shadow along the Y-axis (vertical).

Range

0 - ± 1.0000 screen width

Scale

Controls the size of the shadow relative to the main tile.

Range

0 - + 15.9999

Fade

Controls the transparency of the shadow. This is normally 50%.

Range

0.00% - 100.0%

Shadow Controls - Colour Sub-Menu (F2)

Sat/Luma/Hue

Sets the colour and brightness of the shadow, when the **Fill** button is set to **Matte**.

MODELS - CORNERS MENU

In the corners model, each of the four corners of the source picture are separately movable in both horizontal and vertical directions. This allows trapezoidal deformation. Since the deformation is effective on the input side (before the **Transform** menu controls), the distorted image can be manipulated in 3-D space as if it were a normal plane.

In addition *twist* can be applied to the picture, where a pair of adjacent corners reverse positions and the rest of the picture gradually follows suit. A second video source (**DVE BACK**) can be applied to the portion of the picture which is reversed, allowing the effect to be used as a source transition. Note that when a second source is used, normal DVE front / back switching is disabled: the same sources appear on the back if the tile is rotated.

OPTION CARD USERS ONLY:	Make sure that the system is set to have a double-sided DVE, otherwise the two sources will be the same. You can check this by pressing the MIX, WIPE, CUT or SEQUENCE button on the keyboard and ensuring that F5 DVE says Double - if it does not, then simply press F5 to change it.
------------------------------------	--

Corners Controls (F1 - F4)

There are 4 pairs of controls, accessible by the four buttons (F1 - F4) labelled TOP LEFT, TOP RIGHT, BOT(tom) LEFT and BOT(tom) RIGHT. Each pair moves each corner independently.

For example the TOP LEFT controls:

TOP LEFT X	Sets the relative position of the corner horizontally with respect to its normal picture position. Range 0 - ± 1.000 Width
TOP LEFT Y	Sets the relative position of the corner vertically with respect to its normal picture position. Range 0 - ± 1.000 Height

These corner controls do not allow the corners to cross each other to give a twist effect.

Twist Controls (F5) & Mode Button (F6)

The twist controls (accessed by the **TWIST** button above F5) allow either the top or bottom of the picture to be reversed horizontally, or the left or right of the picture to be reversed vertically. In either case a twisted effect results. Which axis the twist runs in depends upon the setting of the **Mode** button above **F6**. The normal corner controls can still be used to give a wide variety of distortions. A twist can be used as a transition if a second source is used.

Twist	Distorts the DVE tile as if a twist was running down or across it. Range 0 - 100% a relative scale. If the Lag control is set to zero, the tile rotates about a vertical/horizontal axis without twisting.
Lag	Sets the sharpness of any twist applied. Range 0 - 100% a relative scale. Has no effect when Twist is at 0% or 100%.

MODELS - RIPPLES MENU

This model allows the tile to be rippled (i.e. modulated) at an arbitrary angle. The modulation can be of position or density. This menu can be used to produce simple ripples, blinds & flag-wave effects.

There are two parts to this menu: **Ripple & Rotation**. When the menu is entered the **Ripple** part is shown, the two parts can be selected by pressing **F1** & **F2** respectively. **Ripple** controls the amount and depth of the ripple and **Rotation** controls the angle of the ripple.

Ripple Controls - General

The following controls appear in both sub-menus:

F5
Type: None

Sets the ripple type, from a choice of **None**, **Square**, **Sine**, **Triangle**, **Sawtooth** & **Random**.

F6
Ripple Mode: Position

Controls the effect that the ripple waveform has upon the tile.

Position: Modulation affects the positioning of the tile (normal mode).

Density: Modulation affects the density of the tile, i.e. instead of areas of the tile being moved one way or the other, they are alternately stretched and compressed.

Ripple Controls - Ripple Menu (F1)

Cycles	Modulation frequency - density of ripples. Sets the number of ripples or blinds. Range 0 - 100.0%
Depth	Modulation amplitude (Displacement). Sets the amount of ripple applied. Range 0 - ± 1.000, negative values reverse the deviation.
Phase	Modulation phase (Displacement start) position. Sets the position of the crests of the ripple function. Range 0 - ± 180° or up to ±7:359 turns : degrees.

Ripple Controls - Rotation Menu (F2)

Ang(le)	Sets the angle at which the modulation lies across the tile. When the angle is zero the axis is vertical. Multiple rotations are allowable. Range 0 - ± 180 or ± 7:359 turns : degrees
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Both the **Phase** and **Angle** controls have **Spin** controls associated with them.

MODELS - XYRIPPLES MENU

This model, unlike the standard **Ripples** model, allows the tile to be rippled (i.e. modulated) in two axes (directions) at once. The price paid for this is that the axes are fixed at X & Y (i.e. horizontal & vertical), and the modulation can only be of position, not density. However, all the parameters, including the type of modulation applied (Sine, Square, etc.) can be different for each axis.

XYRipple Controls - General

The **F5** and **F6** buttons select which modulation function is used on the two axes. It is recommended that the X selection should match the Y selection for the best effects, however any combination of X and Y functions is permissible. The choices for each button are as follows: **None, Square, Sine, Triangle, Sawtooth & Random**, i.e. the same as in the standard **Ripples** menu.

There are two sub-menus, one for each axis, reached by pressing **F1** for **RIPPLE X** and **F2** for **RIPPLE Y**. Since the two menus are identical, they will be described together.

XYRipple Controls - Ripple Menu (F1 & F2)

Cycles	Modulation frequency - density of ripples. Sets the number of ripples or blinds. Range 0 - 100.0%
Depth	Modulation amplitude (Displacement). Sets the amount of ripple applied. Range 0 - ± 1.000, negative values reverse the deviation.
Phase	Modulation phase (Displacement start) position. Sets the position of the crests of the ripple function. Range 0 - ± 180° or up to ±7:359 turns : degrees.

The **Phase** control has an associated **Spin** control.

MODELS - WARP MENU

The warp effects are 2-D deformations which distort the source image horizontally or vertically into a variety of shapes. These can be adjusted to model 3-D solids. Such effects are enhanced by the use of special lighting modes.

A unique feature of Warps is that the input picture can slip over the surface of the shape, creating, for example, the illusion of a rotating ball. A second video source (**DVE BACK**) can be applied in conjunction with the slip, giving a range of sophisticated "push-on/push-off" transitions. Furthermore, the shapes created can be made to appear either as a **Solid**, a hollow **Shell**, or as if they were **sliced** through the middle - for example with the **Sphere** type of deformation these types would appear as a sphere, a hollow hemisphere, and a solid hemisphere.

The warped input source image can be manipulated and rotated in the normal way, but side-on angles should be avoided as they spoil the 3-D illusion. Note that when a second source is used, normal DVE front / back switching is disabled: a mirror-image version of the front appears on the back if the tile is rotated.

There are three sub-menus within **Models - Warp**, reached by pressing **F1**, **F2** & **F3**. These will be described in turn.

Warp Controls - Warp Main Menu (F1)

Intensity	Adjusts the degree of distortion applied. Range 0 - 100% an arbitrary scale. Note little or no effect will be seen if Cycles is zero. Should normally be set to 100%.
Cycles	Adjusts the number of repeats of the warp shape which are applied. Range 0 to 4.000 an arbitrary scale. Should normally be set to 1.000.

F4 Mode: Solid	Controls whether the shape is Solid , Shell or Sliced , as described above.
F5 Shape: Sphere	Selects between the eight different types of deformation, namely Sphere , RugbyBall , Sine , Cinema , Pincushion , Cushion , Diamond & Octagon .
F6 Lighting: Vertical	Controls whether the light bar runs Vertically or Horizontally across the shape.

MODELS - WARP MENU - continued**Warp Controls - Warp Squeeze Menu (F2)**

X	Adjusts the degree of horizontal non-linear distortion applied to the video within the warp shape. Gives the illusion of perspective. Range 0 to 100% an arbitrary range <i>Note:</i> does not affect the outside shape of the warp.
Y	Adjusts the degree of vertical non-linear distortion applied to the video within the warp shape. Gives the illusion of perspective. Range 0 to 100% an arbitrary range <i>Note:</i> does not affect the outside shape of the warp.

NOTE: for realistic spheres, etc., both the above controls should be set to maximum!

Gap	Adjusts the gap between the two "sides" of the warp.
-----	--

This menu has the same function keys as the main Warp menu.

Warp Controls - Warp Slip & Slide Menu (F3)

Slip	Adjusts the position of the picture "around" the warp shape. Use this to simulate rotating spheres, etc. This can also be used for Push On/Push Off effects when the Intensity control is zero.
Slide	Adjusts the position of the warp "along" the picture. This acts like a Phase control on the waveform produced by the number of Cycles , and therefore does nothing when the Intensity control is zero.

Both the above controls have associated Spin controls. Function keys **F4** - **F6** are different in this menu: **F4** is not used, and **F5** & **F6** are as follows:

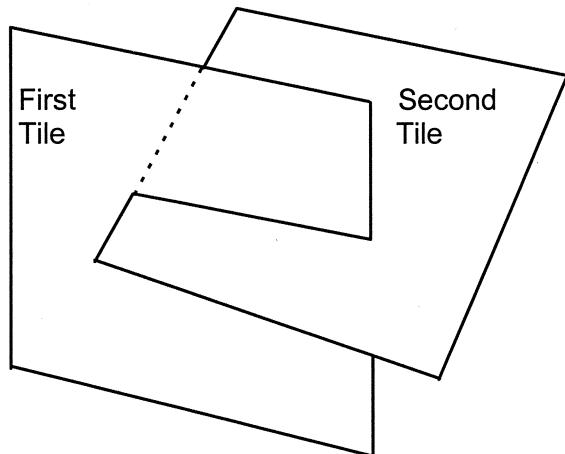
F5 Slip Dir: Horizontal	Controls the direction in which the Slip effect works. Unless unusual effects are desired, this is best set to be the opposite to the Slide Dir control below.
F6 Slide Dir: Vertical	Controls the direction in which the Slide effect works, and thus also implies the direction in which the warp distortion is applied. Vertical: Horizontal distortion along the vertical axis, slides vertically. Horizontal: Vertical distortion along the horizontal axis, slides horz'y.

OPTION CARD USERS ONLY:	Make sure that the system is set to have a double-sided DVE, otherwise the two sources will be the same. You can check this by pressing the MIX, WIPE, CUT or SEQUENCE button on the keyboard and ensuring that F5 DVE says Double - if it does not, then simply press F5 to change it.
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MODELS - TWIN TILES MENU

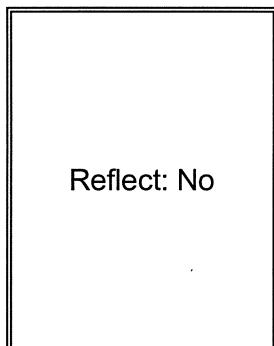
In this model the system duplicates the tile. This second image is fully mobile with respect to the original in 3-D space. It can separate horizontally, vertically and go in front of or behind the original, and it can also be resized. Significantly, when the secondary image is rotated, it can intersect with the original. The normal DVE manipulation controls can be applied to the composite model.

Note that in this model the normal DVE front / back switching is disabled: DVE front video appears on both sides of both planes.



The content of this menu is extremely similar to the main **Transform** menu, i.e. **F1** to **F4** lead to **Position**, **Angle**, **Axis** & **Spin** menus. The difference is that there is no **Advanced** button. By default these controls specify the position etc. of the second tile with respect to the first in 3-D space, just as the **Transform** menu specifies the position of the original tile in 3-D space.

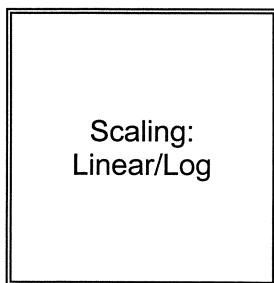
The **Position** menu contains the following two buttons:



Controls the relative movement mode of the two tiles.

No: Normal mode. The **Position**, **Angle**, **Axis** & **Spin** controls affect the second tile only; **Position** relative to the first tile, **Axis** relative to the centre of the second tile. The **Reflect** buttons in the **Angle**, **Axis** & **Spin** menus will be disabled, see next page.

Yes: Reflect mode. The **Position**, **Angle**, **Axis** & **Spin** controls affect both tiles equally in opposite directions, at - except for **Axis** - half the normal scaling. The reflection of **Angle/Spin** and **Axis** can be individually turned **Off** or **On** by the **Reflect** buttons in the **Angle**, **Axis** & **Spin** menus, see next page.



Scaling mode for the **PosX**, **PosY** & **PosZ** controls.

Linear: Effect is proportional to the movement of the controls, as usual.

Log: The scale is compressed towards zero giving finer control in that region, but has much greater effect than normal as the controls reach maximum. This mode allows very fine positioning near zero, and also allows the tiles to be pulled away from each other off-screen even if they are both greatly zoomed down.

MODELS - TWIN TILES MENU - continued

As well as the **Reflect** control in the **Position** menu, there is also a **Reflect** button in each of the **Angle**, **Axis** & **Spin** menus.

- When the **Reflect** button in the **Position** menu is set to **No**, these three buttons are all set to **Disabled** and cannot be changed.
- When the **Reflect** button in the **Position** menu is set to **Yes**, these three buttons can be changed to allow the reflection of the **Angle** and **Axis** to be individually turned off if desired. The button in the **Spin** menu is simply a copy of the one in the **Angle** menu.

To get a practical feel for these buttons the following experiment is suggested. Starting with a normal picture, enter the **Transform - Main - Position** menu and set a **Zoom** size of about **0.35**. Then enter the **Model - Twin Tiles** menu and ensure that the controls read as follows (the only ones that normally need to be changed are shown underlined):

POSITION	<u>PosX: +0.5000</u>	PosY: +0.0000	PosZ: +0.0000	Zoom: 1.0000
ANGLE	<u>AngX: +0:0⁰⁰</u>	AngY: +0:0 ⁰⁰	AngZ: +0:0 ⁰⁰	
AXIS	<u>PosX: +0.5000</u>	PosY: +0.0000	PosZ: +0.0000	
SPIN	SpinX: +0:0 ⁰⁰	SpinY: +0:0 ⁰⁰	<u>SpinZ: +0:2⁰²</u>	

Now experiment with the various **Reflect** buttons to see the effect that they have. Also try setting other **Spin** values, e.g. resetting **SpinZ** to zero and setting a value in **SpinX**.

MODELS - QUAD SPLIT MENU

In the Quad Split model the source image can be separated across vertical and/or horizontal lines into two or four tiles prior to normal manipulation. The separations are individually controllable. In addition, at the boundaries it is possible to extend the tiles to give an overlap area, the end result of which can be to have four complete copies of the original tile. The image can also be reflected about the horizontal and/or vertical boundaries to give mirror effects.

Quad Split Controls - General Controls.**F4**

H Mirror: Off

Controls whether the Horizontal Mirror (i.e. about a vertical split line) is **Off**, **Left**-hand side mirrored onto the right-hand side, or **Right**-hand side mirrored onto the left-hand side.

F5

V Mirror: Off

Controls whether the Vertical Mirror (i.e. about a horizontal split line) is **Off**, **Top** half mirrored onto the bottom half, or **Bottom** half mirrored onto the top half.

F6

Mirror: Variable

When mirrors are used and the Split Point is moved off-centre, controls whether the tile size stays **Fixed** or becomes **Variable** as the Split Point is moved around. The latter mode retains the trueness of the mirror effect at the cost of the tile size changing.

Clip: Off

Toggles between **Clip: Off** & **Clip: On** modes. In the **Clip: On** mode, moving **X** and/or **Y Spacing** negative will collapse the picture to extinction. In the **Clip: Off** mode, the tiles will "pass through" each other and reappear on the other side.

The three buttons over **F1**, **F2** & **F3** labelled **SPACING**, **OVERLAP** & **SPLIT PT** lead to the following sub-menus (described on the next page):

MODELS - QUAD SPLIT MENU - continued**Quad Split Controls - Spacing Menu (F1)**

X	Sets the horizontal distance between the sub-tiles when the Position control is at maximum. Range 0 - ± 1.000 (beyond ± 0.500 is logarithmic scale)
Y	Sets the vertical distance between the sub-tiles when the Position control is at maximum. Range 0 - ± 1.000 (beyond ± 0.500 is logarithmic scale)
Position	Actually controls the amount of displacement experienced by the sub-tiles - acts as a multiplier on the X and Y controls above. Range 0 - 100.00%

The theory of operation is that first, with the **Position** control (on the T-Bar) set to **100%**, the desired end-points of the split should be set up on the **X** & **Y** controls by adjusting the joystick: **X = 0.500** & **Y = 0.500** are typically good values. Then the T-Bar can be used to adjust the **Position** control to actually perform the split.

*Note: if either the **X** & **Y** controls are zero or the **Position** control is zero, adjusting the other will produce no visible effect!*

Quad Split Controls - Overlap Menu (F2)

X	Sets the amount of horizontal extension beyond the nominal boundaries of the tiles. Range 0 - ± 1.000 - negative values cut into the tiles
Y	Sets the amount of vertical extension beyond the nominal boundaries of the tiles. Range 0 ± 1.000 - negative values cut into the tiles

Quad Split Controls - Split Point Menu (F3)

X	Sets the horizontal position of the split on the input plane. Range 0 - ± 1.000
Y	Sets the vertical position of the split on the input plane. Range 0 ± 1.000

MODELS - QUAD SPLIT MENU - *continued***Hints on using Quad Split**

- When the **Overlap** controls are both set to their maximum positions, the edges are fully duplicated, making 4 complete replicas. These can be moved completely apart, horizontally and vertically using the **Spacing & Position** controls.
- When one or both of the **Overlap** controls are set to their minimum positions, the tiles disappear entirely. Therefore changing the **Overlap** controls from zero to their minimum positions during a sequence can be used to perform a bar or cross-shaped upstream wipe to background. In this case the **Spacing** controls should be left at zero.
- The **Clip: On** setting can be useful for performing reveals, by starting with the tile fully collapsed to a point and then rapidly bringing it out to full size.

MODELS - MULTI TILE MENU

In the multi-tile mode the tile is infinitely replicated both horizontally and vertically, rather like a montage. This infinite plane can be manipulated with the normal DVE controls. The horizontal and vertical separations between the tiles are individually controllable.

If desired, the tiles can be made to repeat horizontally only or vertically only. There is also a further mode where the tiles repeat in both directions but only for a limited amount of times, making an effect similar to a video wall.

By default, if the multi-tiled plane is tilted with the DVE rotation controls so that the "horizon" can be seen, the tiles converge to a point at that horizon. This is known as **Clip: On** mode. However, this clipping can be turned off, in which case the tiles then repeat, inverted, back from the horizon, "wrapping" back round.

Multi-Tile Control Summary

SepX

Sets the horizontal separation between the tiles.

Range 0 - ±1.000 Negative values push the tiles into each other.

SepY

Sets the vertical separation between the tiles.

Range 0 - ±1.000 Negative values push the tiles into each other.

F1

Repeat:
XY Repeat

Selects **XY Repeat** (normal) mode, **Wall** mode, **X Repeat** only or **Y Repeat** only, see above.

F2

Clip: On

This button does not appear in Repeat: Wall mode.

Selects **Clip: On** or **Clip: Off** modes as described above.

F3

Edges: Soft

Selects whether the edges of the tiles have hard or soft edges.

Soft: The edges will be anti-aliased as usual. However the size of the gaps between the tiles may increase if they are zoomed down.

Hard: The edges will be totally hard. The relative gap size between the tiles will not change as the tiles are zoomed down.

The following two buttons only appear when F1 is set to **Repeat: Wall**.

F4

Wall X: x2

Selects how many tiles are in the wall along the X axis (horizontally).

Range: x2 to x5.

F5

Wall Y: x2

Selects how many tiles are in the wall along the Y axis (vertically).

Range: x2 to x5.

MODELS - SLAB MENU

THIS MENU IS ONLY AVAILABLE WHEN THE OPTION IS FITTED

This model generates a solid-looking "slab" or "block" type-effect by placing a second picture at right-angles along the edge of the main picture. The width and position of the edge picture may be varied.

The second (edge) picture will be the **DVE BACK** source. Make sure that the system is set to have a double-sided DVE, otherwise the two sources will be the same. You can check this by pressing the MIX, WIPE, CUT or SEQUENCE button on the keyboard and ensuring that **F5 DVE** says **Double** - if it does not, then simply press **F5** to change it.

The controls in this menu are as follows:

Width	Controls the width of the edge picture. Range 0.00% - 100.0%
Gap	Controls the gap between the edge picture and the main picture. Range 0.00% - 100.0%
Pos	<i>This control is only active in Side: Crop mode (see F2 below).</i> Controls which part of the second picture the cropped edge picture is taken from. Range 0 - ±1.000

TIP ✓

The Pos control is especially useful when the edge of the slab carries a caption, as it can be used to dynamically change the caption text during a move by selecting different sections of the caption generator's output.

F1 Side: ⇡	Selects to which edges the second picture will be added: ⇡: The edge picture will be added to the left and right sides of the main picture. ⇢: The edge picture will be added to the top and bottom sides of the main picture.
F2 Side: Squeeze	Selects how the edge picture will be reduced to the required Width . Squeeze : The edge picture will be squeezed down. Crop : The edge picture will be cropped about its centre point.
F3 Rotation: ↑	Selects the rotation of the edge picture: ↑, ⇡, ↓ or ⇢. The arrow shows the direction of the left-hand edge in Side: ⇡ mode and of the top edge in Side: ⇢ mode. See notes on next page.

MODELS - SLAB MENU - continued**F4**

Axis: Face

Selects where the axis of the main tile is deemed to be when rotated:

Face: The axis will be at the centre of the main tile, as usual.**Centre:** The axis will be at the centre of the imaginary slab.**F5**

Edges: Hard

Selects whether the edges of the two pictures have hard or soft edges:

Soft: The edges will be anti-aliased as usual. If the two pictures are set to touch or intersect each other, some of the background may show through.**Hard:** The edges will be totally hard, but if the two pictures are set to touch or intersect each other, they will do so cleanly.**F6**

Priority: Fixed

Selects the priority of the two pictures over each other::

Fixed: One of the two pictures will always be over the other. This is the best mode for conventional "slab" effects.**Intersect:** The two pictures will intersect if required. This can be useful for unusual effects.

Note that the controls in the **Transform-Advanced-Reflect** menu will act on the surfaces of the "slab" as follows:

Front: Will reflect the front of the slab and also the left (**Side:** ⇡ mode) or top (**Side:** ⇧ mode) edges of the slab.

Back: Will reflect the back of the slab and also the right (**Side:** ⇢ mode) or bottom (**Side:** ⇤ mode) edges of the slab.

The **Back** reflect control can be especially useful in ⇤ mode.

Please note that the bandwidth (horizontal definition) of both pictures will be slightly reduced in this model compared to normal. If the slab is being "flown" up to full-screen as part of a sequence we recommend that you change the **Model** to **Flat** as soon as it reaches full-size in order to get full transparency. This is an unavoidable side-effect of "flying" what is effectively two channels of DVE at once.

MODELS - DUAL MENU

THIS MENU IS ONLY AVAILABLE WHEN THE OPTION IS FITTED

This model allows two simple tiles, each with a different picture inside it, to be independently controlled: in essence making a simple dual-channel system. The second picture will be the **DVE BACK** source. Both tiles will have the same picture on both sides of them: the normal front/back switching is disabled in this model.

Make sure that the system is set to have a double-sided DVE, otherwise the two sources will be the same. You can check this by pressing the MIX, WIPE, CUT or SEQUENCE button on the keyboard and ensuring that **F5 DVE** says **Double** - if it does not, then simply press **F5** to change it.

The controls in this menu are as follows:

- | | |
|---|---|
| <div style="border: 1px solid black; padding: 5px; width: 150px; height: 100px; margin-bottom: 10px;"> F1
 TILE¹ </div> <div style="border: 1px solid black; padding: 5px; width: 150px; height: 100px; margin-bottom: 10px;"> F2
 TILE² </div> <div style="border: 1px solid black; padding: 5px; width: 150px; height: 100px; margin-bottom: 10px;"> F5
 Priority: Fixed </div> <div style="border: 1px solid black; padding: 5px; width: 150px; height: 100px; margin-bottom: 10px;"> F6
 Edges: Hard </div> | <p>Leads to the menu containing the controls for the first tile.</p> <p>Leads to the menu containing the controls for the second tile.</p> <p>Selects the priority of the two pictures over each other:::
 Intersect: The two pictures will automatically take priority over each other according to their Z positions and will intersect if necessary.
 1 Over 2: Tile 1 will always be over Tile 2.
 2 Over 1: Tile 2 will always be over Tile 1.</p> <p>Selects whether the edges of the two pictures have hard or soft edges:
 Soft: The edges will be anti-aliased as usual. If the two pictures are set to touch or intersect each other, some of the background may show through.
 Hard: The edges will be totally hard, but if the two pictures are set to touch or intersect each other, they will do so cleanly.</p> |
|---|---|

The content of the **Tile¹** and **Tile²** sub-menus is extremely similar to the main **Transform** menu. In each menu **F1** to **F4** lead to **Position**, **Angle**, **Axis** & **Spin** sub-menus. **F5** leads to a **Scale** menu allowing each tile to have its **X** and **Y** scale changed. There is no **Advanced** button.

To return to the main **Dual** menu from either of the **Tile** sub-menus, simply press the **MENU** button as usual.

TIP ✓ When in the **Tile¹-Position** menu, you can press the **F1-Position** button to swap to the **Tile²-Position** menu. Pressing it again will take you back to the **Tile¹-Position** menu. This works for all the "bottom-level" menus, for example pressing **F2-Angle** in the **Tile¹-Angle** menu will take you to the **Tile²-Angle** menu and so on. This saves you having to go back "up" to the main **Dual** menu with the **MENU** button just to swap from one tile to the other.

MODELS - DUAL MENU - *continued*

Note that the controls in the **Transform-Advanced-Reflect** menu will act on the two pictures as follows:

Front: Will reflect both sides of the first tile.

Back: Will reflect both sides of the second tile.

Please note that the bandwidth (horizontal definition) of both pictures will be slightly reduced in this model compared to normal. If one of the tiles is being "flown" up to full-screen as part of a sequence we recommend that you change the **Model** to **Flat** as soon as it reaches full-size in order to get full transparency. This is an unavoidable side-effect of "flying" what is effectively two channels of DVE at once.

MODELS - SHEAR MENU

This model allows the tile to be sheared and/or skewed.

The menu has three parts, **SHEAR**, **ANGLE** and **POSITION**, selected by the **F1**, **F2** and **F3** keys as indicated.

Shear Controls - Shear Sub-Menu (F1)

Shear	Sets the amount of shear - the amount that the sides of the tile are moved in parallel. Range 0 - ± 1.000
Skew	Sets the amount of skew - the amount that the sides of the tile are moved in opposition. Range 0 - ± 1.000

Shear Controls - Angle Sub-Menu (F2)

Ang(le) & Spin	Sets the angle at which the effect distorts the tile. Usually 0 or 90 degrees. Range 0 - ± 180° or up to ±7:359 turns : degrees.
----------------	--

Shear Controls - Position Sub-Menu (F3)

PosX	Sets the horizontal centre position of the shear/skew effect. Range 0 - ± 1.000 tile width
PosY	Sets the vertical centre position of the shear/skew effect. Range 0 - ± 1.000 tile width

MODELS - POND MENU

This model applies pond (circular) ripples to the tile.

There are three parts to this menu: **RIPPLE**, **ROTATION & POSITION**. When the menu is entered the **Ripple** part is shown, the three parts can be selected by pressing **F1**, **F2** or **F3**. **Ripple** controls the amount and depth of the ripple and **Rotation** controls the angle of the ripple.

*Note: Magic DaVE 4D(O) mainframes shipped before May 1997 need a hardware upgrade in order to support pond ripples (and also spotlight, see page 72). If trying to select **Pond** gives the message “**Not Available**”, and you wish to purchase this low-cost upgrade, please contact Snell & Wilcox or your nearest dealer for more details.*

All production Magic DaVE 8D(O) mainframes support these features as standard.

Pond Controls - General

The following control appears in all sub-menus:

F5
Type: None

Sets the ripple type, from a choice of **None**, **Square**, **Sine**, **Triangle** & **Sawtooth**.

Pond Controls - Ripple Menu (F1)

Cycles

Modulation frequency - density of ripples.
Sets the number of ripples.

Range 0 - 100.0%

Depth

Modulation amplitude (Displacement).
Sets the amount of ripple applied.

Range 0 - ± 1.000, negative values reverse the deviation.

Phase

Modulation phase (Displacement start) position.
Sets the position of the crests of the ripple function.

Range 0 - ± 180° or up to ±7:359 turns : degrees.

The **Phase** control has a **Spin** control associated with it.

Pond Controls - Rotation Menu (F2)

Ang(le)

Sets the angle at which the modulation distorts the tile.

Multiple rotations are allowable.

Range 0 - ± 180 or ± 7:359 turns : degrees

The **Angle** control has a **Spin** control associated with it.

MODELS - POND MENU - *continued***Pond Controls - Position Sub-Menu (F3)****PosX**

Sets the horizontal centre position of the ripples.

Range 0 - ± 1.000 tile width**PosY**

Sets the vertical centre position of the ripples.

Range 0 - ± 1.000 tile width

TRANSFORM MENU

Pressing **F2** from the **Start** menu, or pressing the **TRANSFORM** button once leads the user to the top-level **Transform** menu (**Transform-Main**). Pressing the **TRANSFORM** button again will go to the last **Transform** menu used.

This top-level menu provides all the controls for simple movement of the model, as follows:

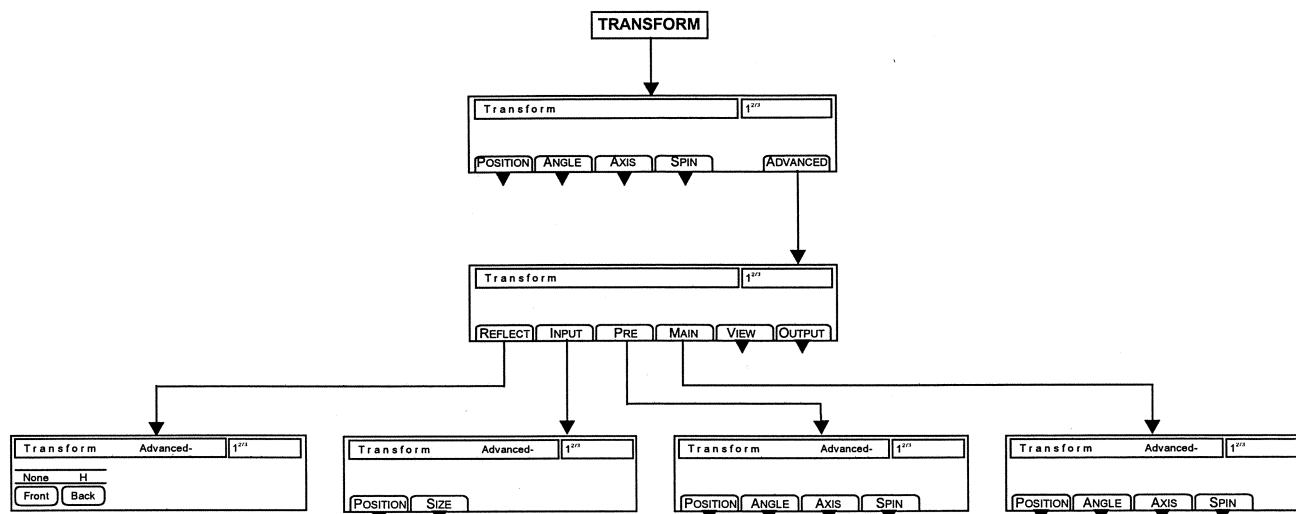
- | | |
|----------------------|--|
| F1 - Position | Tile Position X, Y & Z, including Zoom on the T-Bar's USER button. |
| F2 - Angle | Rotation of the Tile. |
| F3 - Axis | Controls the axis about which the Tile rotates (Centre of Rotation). |
| F4 - Spin | Controls Tile Spin (continuous rotation). |

If more complicated movement is required, using more of the degrees of freedom, then the **F6 - Advanced** button leads on to the **Transform-Advanced** menu. This is a menu that allows six other menus to be selected. These are arranged left-to-right in the order that their controls are actually applied to the picture. The contents of this **Transform-Advanced** menu is as follows:

- | | |
|---------------------|--|
| F1 - Reflect | Leads to a sub-menu that allows the user to reflect the front and/or back of the tile horizontally and/or vertically. The back reflections are particularly useful as they allow A/B type transitions to be performed by rotating the tile 180°, without the picture on the back appearing back-to-front or upside-down. <i>Note that it is only the picture content that is reversed, not the shape or orientation of the tile.</i> |
| F2 - Input | Leads to a sub-menu that allows the user to place the input picture upon the input plane (rarely used) and also the X/Y aspect for squeeze effects . |
| F3 - Pre | Leads to a sub-menu that allows the user to apply a Pre-Transform (a second set of Position/Angle/Axis/Spin controls) to the tile, i.e. a second degree of freedom. This is useful for, say, making the tile rotate about its own axis while using Main to rotate and move it around the whole screen. |
| F4 - Main | Leads to a second copy of the Transform-Main menu. This menu contains the same controls as the top-level Transform-Main menu and works in the same way, except that there is no Advanced button. |
| F5 - View | Allows the Perspective of the tile to be adjusted, i.e. the Viewpoint. Large values produce small perspective, since the Viewpoint is then a long way away; small values produce large perspective, since the Viewpoint is then very close to the tile. |
| F6 - Output | Allows the Output Screen (upon which the image is projected) to be moved and resized, as a final global manoeuvre. This is useful if a complicated movement has been achieved with the rest of the controls, but the finished result is not quite in the correct place or is not quite the right size to suit the final edit. |

*Remember: from any of these menus pressing the **MENU** button will take you to the next highest menu.*

See the diagram (Figure 5) showing these menus on the following page.

TRANSFORM MENU - continued**Figure 5: Magic DaVE TRANSFORM menu tree****Image Manipulation**

Magic DaVE, being a 3-D image manipulation digital effects system, can move the input picture virtually anywhere and in any orientation in apparent 3-D space. Movement is controlled in terms of X, Y & Z co-ordinates where X is the horizontal axis and Y the vertical axis. The Z axis controls movement from front to back. Positive values of Z will move the image towards the viewer, out of the screen, whereas negative values move it away into the distance.

To make the tile larger or smaller, use the Zoom control rather than the Z position. The former actually changes the size of the tile, whereas the latter only makes the tile look larger or smaller due to it moving nearer to you or farther away from you in 3-D space.

Rotation of the image can be about any or all three axes X, Y & Z. The perspective hardware makes the image deliberately foreshortened as it orients away from the viewer, heightening the illusion of 3-D spacial positioning. The amount of perspective can be varied to exaggerate the effect if required, the result being similar to the changing the focal length of the lens on a camera. The lighting effect, when applied, can also help in promoting the illusion of 3-D by making the picture surface look shiny.

TRANSFORM MENU - continued**Degrees of Freedom - Order of Manipulation**

The basic **Transform** menu suffices for simple moves and effects, but in complex moves, compound motion can greatly enhance the appearance. In order to simplify the process of setting such compound trajectories the system allows positioning and rotation on more than one set of co-ordinates simultaneously via the **Transform-Advanced** sub-menus.

The starting point is the normal flat tile, from there it is manipulated successively as follows:

1. The **Transform-Advanced-Reflect** menu's controls are applied first to reflect the tile (if desired), followed by the results of any special effects **Models** (e.g. **Quad Split** or **Ripples**).
2. The tile is positioned in X,Y,Z, and then scaled horizontally and vertically for variable X & Y Aspect by the controls in the **Transform-Advanced-Input** menu.
3. The tile is then scaled by the Zoom size in the **Transform-Advanced-Pre-Position** menu.

It is then rotated about a centre (defined relative to its own centre) in X,Y,Z by the controls in the **Transform-Advanced-Pre-Angle** menu.

The (possibly) rotated tile is now positioned in 3-D space in X,Y,Z by the controls in the **Transform-Advanced-Pre-Position** menu.

4. The result of the first set of 3-D manipulations is scaled by a second Zoom size, which is the commonly-used one in **Transform-(Advanced-)Main-Position**.

The **Transform-(Advanced-)Main-Angle** menu's controls then orientate this result with a second rotation about another centre (which again, could be its own centre) as the most commonly-used rotation.

This is then positioned in 3-D space in X,Y,Z as the most commonly used position control, found in **Transform-(Advanced-)Main**.

5. The result is 'projected' onto the Output Screen with Perspective according to the **Transform-Advanced-View** menu.
6. The Output Screen itself can be moved and scaled by the **Transform-Advanced-Output** menu for a further global manoeuvre.

This is not quite as complicated as it looks! Basically the tile is manipulated according to the order, left-to-right, of the **Transform-Advanced** menus. **Transform-Main** appears twice, once under the **Advanced** menu where it belongs, and again at the top of the **Transform** menus so that simple moves can be made quickly and easily without delving into the **Advanced** menus.

An example of the use of the **Pre** and **Post** sets of controls would be to have the DVE tile spinning round the screen (using the **Post** controls) whilst simultaneously spinning about its own axis (using the **Pre** controls).

TIP ✓ When experimenting with the **Transform** controls, especially the **Axis** controls, turn on the Preview Output Cursor to gain extra help and understanding. See page 29.

EFFECTS MENU

Pressing **F3** from the **Start** menu, or pressing the **EFFECT** button once leads the user to the top-level **Effects** menu. Pressing the **EFFECT** button again will go to the last **Effects** menu used.

These menus provide the controls for manipulation of the content, rather than the shape of the tile as the **Model** menus do. This alteration of the content happens before the tile's shape is changed and/or it is manipulated in 3-D space (with the exception of some of the **Keyers** effects). Note that, unlike the **Models**, you can combine multiple **Effects** at once.

This menu presents the user with two rows of different **Effects** types. In the same way as the **Start** and **Model** menus, use **F6** (marked with a ↓) to move the rows down a place until the row you want appears just above the function keys. You can then use one of the keys **F1** to **F5** to select the model you want.

The list of effects is:

CROP	Allows the edges of the picture to be cropped together or individually.
BORDER	Applies a border of variable size and colour to both sides of the picture.
MULTIGRAB	Allows control of automatic periodic freeze effects.
LIGHTS	Allows the lighting of the picture to be controlled.
KEYERS	Allows control of the various keyers within the system.
SOLARISE	Applies special effects to the luminance of the picture.
POSTERISE	Applies special effects to the chrominance of the picture.
MOSAIC	Breaks the picture down into a matrix of regular squares or rectangles.
COLOURFX	Allows the picture to be "painted" with a set of false colours.
L AND G	Allows the lift and gain of the picture components to be adjusted.
DVE Fx	Allows individual colours to be altered. (<i>Option card only</i>)
DSK Fx	Allows individual colours to be altered for the DSK. (<i>Option card only</i>)

Once inside a **Effects** sub-menu, the user can return to the main **Effects** menu to choose another model type by pressing the **MENU** button, or by pressing the **EFFECT** button again. If the **MENU** button is pressed to do this then the row on the bottom will be whichever one you were last using. However if the **EFFECT** button is pressed to return to the main **Effects** menu then the menus will always reappear with the first row (the one that starts with "**Crop**") on the bottom.

TIP ✓ You can use the ↑ and ↓ buttons on the keyboard to shuffle the rows of effects up and down.

EFFECTS MENU - continued**Effects - Crop Menu**

Crop is the first effect applied. It can be used to remove a rectangular boundary from around the source picture or from any edge or combination of edges. Crop can be any size, including the total picture, which allows a rectangular wipe to background to be performed. While crop can be used to fix blanking problems, it is better to use the setup crops available from the **Main Menu - Setup - Input - Crop** menus (see pages 160 & 162) for this purpose. The setup crops should be left set up to suit the edges of the source picture, whilst the crops in this menu are used purely for effects.

Cropping is most easily controlled by the Joystick, although as usual numbers can be typed in if required. The Joystick has a special mode to make adjusting Crop (& Border, see below) that much easier. Which edges are adjusted is controlled by the X & Y axes. The amount of adjustment is controlled by the Z axis. So to change the size of all four edges at once, leave the joystick in its centre position and turn the joystick knob. To change the size of just one edge, lean the joystick in the direction of that edge and then turn the joystick knob to adjust it. To change the size of two edges, lean the joystick diagonally in the direction of the two edges, and turn the knob as before.

The Edge **Softness**, which affects the softness of the outside edge of the picture, is assigned to the T-Bar's **USER** button in this menu.

The only other control in this menu is:

F4

Aspect: Screen

This button controls whether the edges of the tile are cropped according to the aspect ratio of the **Screen** (as on previous versions of software), or whether they are all cropped by an equal amount (**Square**).

EFFECTS MENU - continued**Effects - Border Menu**

The border, which can be any size including the total picture area, is applied to the inside of each of the four cropped edges. The border matte colour is independent of any other matte colour. The inside edge of the border can be softened.

There are three parts to the **Border** menu: **Size**, **Front** and **Back**. The **Size** menu works in an identical fashion to the **Effects - Crop** menu, with Position controlled by the special mode of the Joystick as described in the previous section, and Softness controlled by the T-Bar (press the USER button next to the T-Bar).

The **Front** and **Back** sub-menus allow you to set the colour of the border separately for both the front and back of the tile. They also allow you to **Fade** the border away, although this control is the same for both the front and the back.

Common to all **Border** menus are the following three buttons:

F4

Aspect: Screen

This button controls whether the width of the border's edges are scaled by the aspect ratio of the **Screen** (as on previous versions of software), or whether they are all an equal width (**Square**).

F5

Style: Border

Controls whether the border is a conventional **Border** or whether it is inverted to form an **Area** within the middle of the screen. This can be used as another method of hiding part of the picture - for example a number plate.

F6

Border: On

Simply turns the border **On** or **Off**. Regardless of the other controls, no border will be visible until this button reads **On**.

*Note: the DVE border is not available when the **Mix/Wipe** model is selected and that model is in **Mix** mode.*

EFFECTS MENU - continued**Effects - MultiGrab Menu**

This effect automatically freezes and unfreezes the DVE picture on a regular basis, producing a variety of jerky and/or "stop-frame" effects. The length of time for which the picture is frozen can be adjusted, as can the length of time for which it is "live", allowing many different effects to be produced. The freeze itself can be a field or frame freeze.

FreezeT

Sets the length of time for which the picture will be frozen before being unfrozen.

Range 0^{:00} to 1310^{:35} seconds^{:fields} in 625-line standards.
 0^{:00} to 1092^{:15} seconds^{:fields} in 525-line standards.

LiveT

Sets the length of time for which the picture will be a normal unfrozen live picture between each freeze. *For "classic" multigrab effects, set to zero.*

Range 0^{:00} to 1310^{:35} seconds^{:fields} in 625 line standards.
 0^{:00} to 1092^{:15} seconds^{:fields} in 525 line standards.

F1**Multigrab: Off**

Turns the Multigrab effect **On** and **Off**.

F2**Mode: Frame**

Sets whether the frozen images will be of the whole **Frame** or just the first **Field** of a frame.

EFFECTS MENU - continued**Effects - Lights Menu**

The lighting effects provide a highlight to the manipulated picture which enhances the 3-D illusion. The effect takes the form of a bar which is shone onto the DVE tile from a point in the screen 3-D space. The angle at which the light bar falls can be rotated throughout 360 degrees. The light can be of any colour and focused to provide an illumination bar of variable width and density.

If desired, the light can be made to shine everywhere on the picture except for the defined bar area, this can be useful for shading the picture to a darker colour.

Notice that the light bar's position is referenced in terms of the screen, not the DVE tile. Thus as the tile is "flown" around the screen the light will automatically reflect off of the appropriate parts of the tile without this having to be specially programmed.

Note: the **Page Turn, Warp & Pond** models have special pre-programmed lighting; in these cases some lighting controls are fixed or have only a restricted range. Also in some models the lighting may not appear quite as expected due to the nature of the model's effect on the tile. In particular in the **Dual & Slab** models the lighting will cover the whole of the secondary tile.

With Magic DaVE 4D(O) mainframes shipped after June 1997 the light can take the form of a circular ("spot") light as well as a bar. With these machines the F5 button can be used to select a lighting Type of Bar or Spot. If your machine does not have this button, then it can be upgraded to support the spotlight (and also pond ripples, see page 63) with a low-cost hardware upgrade. Please contact Snell & Wilcox or your nearest dealer for more details.

All production Magic DaVE 8D(O) mainframes support these features as standard.

Lighting Controls - All Lights Menus

The following controls appear in all four **Lights** sub-menus.

F5

Type: Bar

As mentioned above, controls whether the light takes the form of a **Bar** or a **Spot**. The **Spotlight** is automatically selected when in the **Pond** ripple model, regardless of the setting of this button. Likewise the type is forced to **Bar** when in any of the following models: **Push, Page Turn, Corners, Warp, Slab & Dual**.

F6

Mode: Off

This button controls whether the light is on or off, and what form it takes.

Off: All lighting effects are turned off.

Light Wht: The lighting effect will be white.

Light Col: The lighting effect will be coloured, the colour being set by the **Colour** sub-menu.

Shade Blk: The lighting effect will appear as black shading everywhere except where the light is, which will appear as normal picture.

Shade Col: As **Shade Blk** except that the colour of the shading can be set by the **Colour** sub-menu.

EFFECTS MENU - continued**Lighting Controls - Lights Sub-Menu (F1)**

Width	Lighting width, high settings will result in an overall wash effect.
Range	0 - 100%
Fade	Sets the transparency of the lighting effect to the source picture.
Range	0 - 100%

Lighting Controls - Position Sub-Menu (F2)

PosX	Horizontal position of the virtual light source in screen plane 3-D space.
Range	0 - ± 1.000 screen widths ± 15.999 max
PosY	Vertical position of the virtual light source in screen plane 3-D space.
Range	0 - ± 1.000 screen widths ± 15.999 max
PosZ	Z axis position of the virtual light source in screen plane 3-D space. Range 0 - ± 1.000 screen widths ± 15.999 max Note: Positive Z values are most effective. Negative values might put the light source behind DVE image, preventing any lighting being seen!

Note: the **Spotlight** has a certain minimum width. If reduced below this size (whether by small values in the **Width** control or a small **PosZ** relative to the Z position of the tile) it will gently fade away.

Lighting Controls - Angle Sub-Menu (F3)

Angle (& Spin)	Sets the angle of the light bar.
Range	0 - ± 180° or ± up to 7:359 turns

Note: these controls have no effect when **Type** is set to **Spot**.

Lighting Controls - Colour Sub-Menu (F4)

Sat/Luma/Hue	Sets the colour of the light source for the Light Col & Shade Col modes.
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EFFECTS MENU - continued**Effects - Keyers Menu**

This menu allows access to the various keyers in the system. Without the option fitted, this menu will only contain one button:

F1

EXT KEY

Goes to the **DVE External Keyer** sub-menu, which allows control of the DVE quasi-linear "flying" keyer.

With the option card fitted and enabled, this menu will contain six sub-menus, as follows:

F1

DVE EXT KEY

Goes to the **DVE External Keyer** sub-menu, which allows control of the DVE quasi-linear "flying" keyer.

F2

DVE LUMA

Goes to the **DVE Luma Self Key** sub-menu, which allows control of the DVE Luma-Self Keyer.

F3

DVE CHROMA

Goes to the **DVE Chroma Keyer** sub-menu, which allows control of the DVE Chroma Keyer.

The above three menus all allow access into the **DVE Mask** sub-menu (page 84), which allows the area of the screen in which the DVE will appear to be restricted.

F4

DSK EXT KEY

Goes to the **DSK External Keyer** sub-menu, which allows control of the Downstream Linear Keyer.

F5

DSK LUMA

Goes to the **DSK Luma Self Key** sub-menu, which allows control of the Downstream Luma-Self Keyer.

F6

DSK CHROMA

Goes to the **DSK Chroma Keyer** sub-menu, which allows control of the Downstream Chroma Keyer.

These last three menus all allow access to the **DSK Crop** controls (page 89), which allow the area affected by the Downstream Keyer to be set (masked).

The individual sub-menus will now be discussed, starting on the next page.

EFFECTS MENU - continued**Effects - Keyers - DVE External Keyer Menu**

The controls in this menu are as follows:

Transp.

This control only appears if the option card is fitted and enabled.
Sets the overall transparency of the DVE tile, regardless of any keying action that may be taking place.
Range 0 - 100%

F1**MASK**

This control only appears if the option card is fitted and enabled.
Goes to the **DVE Mask** sub-menu (page 84), which allows the area of the screen in which the DVE will appear to be restricted.

F4**Key Invert: Off**

This button inverts the action of the DVE keyer when set to **On**.

F5**Matte Key: Off**

Controls the key action when the DVE source is a matte:

- Off:** If the source is MATTE, it will not be keyed.
Key 1: If the source is MATTE, it will be keyed by Key Input 1.
Key 2: If the source is MATTE, it will be keyed by Key Input 2.

F6**Video Key: Off**

Controls the key action when the DVE source is live video:

- Off:** If the source is live video, it will not be keyed.
Key 1: If the source is live video, it will always be keyed by Key 1.
Key 2: If the source is live video, it will always be keyed by Key 2.
By Source: If the source is live video, it will be keyed only if the **Key** button in the source's **Setup-Input** menu is set to **Key 1** or **Key 2** (see page 162).

*Four-input versions of Magic DaVE (Models 4DE & 4DOE) have only one key input. Therefore on these machines the above two buttons have a simple **On** selection instead of the **Key 1** and **Key 2** settings.*

Note that BLACK is always unkeyable. If you wish to key black, select MATTE and set the matte colour to black. Patterns and Test Patterns cannot be externally keyed on the DVE Keyer - see the notes on the next page.

There are no other adjustments available with this keyer.

EFFECTS MENU - continued**General information about the Magic DaVE DVE Keyer**

The DVE within **Magic DaVE** produces a key which is the shape of the outline of the picture after any manipulation. This is used internally to cut a "hole" in the background in which the DVE image appears. Alternatively, the shape of the DVE foreground image may be defined by an external key input signal fed to the key input. A common example is a caption generator, which generates a key signal (in addition to video) to allow captions to overlay the background. (In common with most DVEs **Magic DaVE** itself has a key output!). Note that the size of the foreground image is always constrained by the key shape generated by the DVE; the key input always cuts away part of the foreground image to reveal part of the background.

Only video sources or mattes can be keyed; not patterns or test patterns. In general mattes will be keyed to a better quality than live video, as when keying a matte the whole key signal is passed through the DVE channel and the matte colour is filled in downstream.

Since keying of a video source through the DVE is performed in **Magic DaVE** upstream of the input frame synchroniser, the key input MUST be synchronous (within $\pm\frac{1}{2}$ line) to the video source which you want to key. (With most video+key sources e.g. caption generators, this is inherently the case.) To obtain the best results when keying video in this way, there are a few points to note:

- Effects such as **Solarise** and **ColourFX** can be applied while keying, but effects in which dark areas are made very light (e.g. **Solarise-Invert: On** or some settings of **ColourFX**) should be avoided. They will spoil the keyed edges. **Mosaic** can be applied, but will be applied to the key as well as the video. (When a matte is being keyed, however, these controls can all be used to modify the key signal, in particular see the tips on pages 90 and 93.)
- The key input signal should be full level. Fading the input key will not produce satisfactory results. Similarly, a key signal in which parts of the image have reduced amplitude to give a semi-transparent effect (e.g. a darkened or tinted box around a caption) are not suitable.
- You may notice a slight increase in noise in the picture when keying; this is normal.
- If keying is switched on but no key input is connected the DVE image will disappear!

Please note that the above points apply only to the DVE Keyer; the DSK (when fitted) has no such restrictions.

EFFECTS MENU - continued**Effects - Keyers - DVE Luma Self Key Menu****THIS MENU IS ONLY AVAILABLE WHEN THE OPTION IS FITTED**

This keyer takes the output from the DVE, analyses the luma content of it, and performs a Luma Self Key on it as specified by the controls below. This is ideal for keying a caption from a camera, where the caption is solid letters against a black background.

On the DVE this may be a better solution than using an external key, as the luma-self key is performed on the output side of the DVE and therefore doesn't suffer from the restrictions that the DVE external key does (see the previous page).

Note: the DVE Luma-Self Keyer and DVE Chroma Keyer are mutually exclusive - they cannot be used at the same time. When you turn one of them on, the other will automatically be turned off.

Lift

Adjusts the clipping point for the keying action.

Range -2.00 to +1.99**Gain**

Adjust the gain (steepness) of the keying action. Negative values invert the keying action.

Range -2.00 to +1.99**F1****MASK**Goes to the **DVE Mask** sub-menu (page 84), which allows the area of the screen in which the DVE will appear to be restricted.**F6****Keyer: Off**Simply controls whether the Luma Self Keyer is **On** or **Off**.

EFFECTS MENU - continued**Effects - Keyers - DVE Chroma Keyer Menu****THIS MENU IS ONLY AVAILABLE WHEN THE OPTION IS FITTED**

This keyer takes the output from the DVE, analyses the colour content of it, and performs a Chroma Key on it as specified by the controls. All areas of the specified colour, known as the *Background Colour* - normally a shade of blue - will be removed (keyed out) from the DVE picture and replaced by the background.

Note: the DVE Chroma Keyer and DVE Luma-Self Keyer are mutually exclusive - they cannot be used at the same time. When you turn one of them on, the other will automatically be turned off.

First the available controls will be listed, and then a short section on how to set up the Chroma Keyer to get the best results will be given. If you are new to Chroma Keyers then you may wish to skip straight to the latter section on page 81.

Chroma Key Controls

There are five sub-menus: **MASK**, **COLOUR**, **APERTURE**, **K LEVELS & AUTO**, reached in the usual manner by pressing **F1** to **F5** respectively. There is also one button on **F6** which is visible in all the sub-menus except **MASK**, this is:

F6

Keyer: Off

Simply controls whether the Chroma Keyer is **On** or **Off**.**Chroma Key Controls - Mask Sub-Menu (F1)**

This is the same menu that is under the other two DVE Keyer menus. It allows the area of the screen in which the DVE will appear to be restricted. See page 84 for more details.

Chroma Key Controls - Colour Sub-Menu (F2)

This menu controls the all-important colour that is deemed to be the Background colour - normally this is a shade of blue.

Luma

Sets the Luma of the Background colour (the colour that will be rejected by the Keyer).

Range 0 - 100%

Hue

Sets the Hue of the Background colour (the colour that will be rejected by the Keyer).

Range 0 - 360° Normally set to 240° for Blue.

EFFECTS MENU - continued**Chroma Key Controls - Aperture Sub-Menu (F3)**

This menu controls the range of colours that are considered to be the Background.

Key	Sets the angle around the specified Hue for which the key will be generated. Range $\pm 0^\circ$ - $\pm 179^\circ$
Chroma	Sets the angle around the specified Hue for which the Chroma part of the signal will be suppressed. Range $\pm 0^\circ$ - $\pm 179^\circ$ Normally set to about $\pm 45^\circ$
C. Suppr	Controls the severity with which the Chroma is suppressed. It controls how steep the slope of the Chroma from the edges to the middle of the Chroma Aperture is. Range 0 - 100% Normally set to about 5% - 10%.

Chroma Key Controls - K(ey) Levels Sub-Menu (F4)

This menu controls the cut-off points for the Foreground and Background Key levels.

Foreground	This is the percentage along the Hue axis (saturation strength) below which the signal is treated as fully Foreground. Range 0 - 100%
Background	This is the percentage along the Hue axis (saturation strength) above which the signal is treated as fully Background. Range 0 - 100%

If the **Background** is set too low, then the edges will be very hard. If it is set too high then too much of the Background will be let through.

The range of **Foreground** to **Background** controls the softness of the key. Usually somewhere below 10% is a good setting for the **Foreground** control, with the **Background** control set somewhere above that, say 20% to 30%.

*The **Background** control must be set higher than the **Foreground** control otherwise extremely hard edges will result!*

EFFECTS MENU - continued**Chroma Key Controls - Auto Sub-Menu (F5)**

This menu allows semi-automatic setup of the Chroma Keyer.

Once in this menu, the Preview Output Cursor will be turned on. Use the joystick to point the Cursor at the background colour to be removed and press the **F1 Store** button - the controls in the other menus will be automatically set up. Up to eight points can be sampled in this way to cover variations in the background colour. If a ninth point is sampled, the first point is lost; if a tenth point is sampled, the second point is lost, and so on, i.e. the machine uses the last eight points **Stored** to set the Chroma Key controls.

If you accidentally store an unwanted point or points, then press the **F2 Delete** button to remove it or them from your list. The button deletes the newest point first, then the next newest, and so on, until finally the oldest is removed.

The **F3 Clear** button clears the whole list of points, letting you start the process again.

The points to be included in the list must only cover 180 degrees of colour space. A point set outside of this range will be ignored and the panel will flash up "**Bad Point in List**". You cannot set points on red, blue & green and then expect them all to be removed! For a visualisation of what is happening, set the source to **COLCHART**.

The same procedure applies to the **DVE** and **DSK Chroma Fx Auto** controls, see pages 97 & 98.

The controls in this menu (apart from **F6**) are:

F1
Store

Stores the details of the colour under the cursor into the Chroma Keyer analysis buffer, and alters the Chroma Keyer controls appropriately.

F2
Delete

Deletes the last point **Stored** from the Chroma Keyer analysis buffer, and alters the Chroma Keyer controls appropriately.

F3
Clear

Clears all points from the Chroma Keyer analysis buffer.

Also in this menu is the following control. It is not confined to **Auto** mode, indeed it is very useful when setting up the Chroma Keyer manually:

F5
Mode: Full

This button controls the mode of the Chroma Keyer:

Full: Normal mode: produces the full Chroma-Keyed picture.

Setup C: Shows the source with the chroma of the Background Colour suppressed. Used for setting the chroma part (Hue & Aperture) of the Keyer.

Setup K: Shows the key that the keyer will produce. Used for setting the key levels of the Keyer.

Setup Y: Shows the source Chroma-Keyed to black. Used for setting the luma part of the Keyer.

EFFECTS MENU - continued**Setting up the Chroma Keyer**

Usually the best way to set up a **Magic DaVE** Chroma Keyer is to use the **Auto** sub-menu in the manner described on the previous page. However, if you want to set up the Chroma Keyer manually, below is the suggested method.

Please note that, unlike the rest of the controls within **Magic DaVE**, the video output will take a little time to respond when an adjustment is made within the Chroma Key menus. A light touch on the controls is recommended!

TIP ✓

If you have not got a good Chroma Key source to hand (or even if you have and want to better understand the Chroma Key controls), try selecting **COLCHART** as the source to be Chroma Keyed. This will vividly show the effects of the Chroma Key controls as they are adjusted.

1. Turn the Chroma Keyer **On** using the **F6** button.
2. Press **F5** to go to the **Auto** sub-menu and then **F5** again so that the **Mode** is **Setup C**. You will now be shown the source with its Chroma suppressed.
3. Press **MENU** and then **F3** to go to the **Aperture** sub-menu. Set the **Chroma** control to a low value, say $\pm 5^\circ$.
4. Press **F2** to go to the **Colour** sub-menu. Adjust the **Hue** angle until most of the Background Colour's Chroma disappears. You now have the correct **Hue** angle.
5. Press **F3** to go back to the **Aperture** sub-menu. Set the **C Suppr.** control to about **10%** or less and adjust the **Chroma** aperture control until the Background Chroma is nicely suppressed.
6. Press **F5** to go to the **Auto** sub-menu and then **F5** again so that the **Mode** is **Setup K**. You will now be shown the Key that will be generated by the Chroma Keyer. Press **MENU** and then **F3** to go back to the **Aperture** sub-menu. Adjust the **Key** aperture control until the key looks good. The **Key** aperture should be somewhat less than the **Chroma** aperture control.
7. Press **F4** to go to the **K Levels** sub-menu. Set the **Foreground** control to around **10%** or less, and the **Background** control to somewhere around **20%** to **30%**. Adjust the two controls into the key signal is good and clean. *Remember that the **Background** control should be set higher than the **Foreground** control.*
8. Press **F5** to go to the **Auto** sub-menu and then **F5** again so that the **Mode** is **Setup Y**. You will now be shown the Foreground video source keyed to black (rather than the Background).
9. Press **MENU** and then **F2** to go to the **Colour** sub-menu once more. Adjust the **Luma** control until the background is "just black" with no hint of grey.
10. Press **F5** to go to the **Auto** sub-menu and then **F5** again so that the **Mode** is back to **Full**. You will now be shown the final output of the Chroma Keyer.

See the next page for troubleshooting tips.

EFFECTS MENU - continued**Chroma Keyer Troubleshooting Tips**

If you are having difficulty getting good results from the Chroma Keyer, try the following tips. All of them assume that the Chroma Keyer is in **Full** mode.

- If the Foreground object(s) has a black border then the **Luma** value is probably too high. If the object has a grey border then the **Luma** value is probably too low.
- Background colour spilling onto the foreground source means that the **Chroma** aperture is too low. This control is generally set to a high value (e.g. $\pm 45^\circ$) and is relatively non-critical in nature.
- Grey edges to the foreground object mean that the **C Suppr.** control has been set too high.
- If the edges seem very hard, try increasing the **Background** Key Level control.
- The background breaking through into dark areas of the foreground source probably means that the **Foreground** Key Level has been set too low.
- Remember to change the various controls slowly and keep a careful eye on the results. It is not possible for us to give exact figures for the controls as the best settings depend very much upon the source material.

EFFECTS MENU - continued**Effects - Keyers - DVE Mask Menu****THIS MENU IS ONLY AVAILABLE WHEN THE OPTION IS FITTED**

This feature allows the area of the screen in which the DVE will appear to be masked. It basically takes the form of a wipe, one side of which the DVE will appear, the other side of which it will not. The DVE can also be mixed away if required.

This menu is accessible by pressing **F1** from any of the **DVE External Keyer**, **DVE Luma Self Keyer** and **DVE Chroma Keyer** menus.

The controls in this menu allow the type of wipe that will be performed to be precisely adjusted. Note that not all the controls can be applied to all the wipe patterns. Some patterns allow more control than others. See the Appendix on page 239 for full details.

There are three sub-menus, accessed in the usual way by pressing **F1** to **F3**.

Effects - Keyers - DVE Mask Menu - Wipe Controls (F1)

These controls appear by default when the **DVE Masks** menu is entered.

Mix

Adjusts the amount of Mix applied to the DVE.

Wipe

Adjusts the position of the wipe edge(s).

Soft

Softens the edge of the wipe pattern. If the wipe border is on, both edges of the border are softened.

Horizontal 10

This button selects the Wipe Pattern (i.e. shape) to be used as the DVE mask. A complete list of the Wipe Patterns can be found in **Appendix 4: List of Wipe Patterns** on page 239. The (SMPTE-compatible) Wipe Pattern number is also shown in this box. The Wipe number can be directly typed in. The patterns can be stepped through using the **F5 +** and **F6 -** buttons as well as the usual **↑** and **↓** buttons.

EFFECTS MENU - continued**Effects - Keyers - DVE Mask Menu - Border Controls (F2)**

Sat/Luma/Hue	Sets the colour and brightness of the wipe border.
Width	Adjusts the width of the wipe border.

Effects - Keyers - DVE Mask Controls - Position Sub-Menu (F3)

PosX	Sets the wipe pattern horizontal position (where available). Range 0 - ± 1.0000
PosY	Sets the wipe pattern vertical position (where available). Range 0 - ± 1.0000
Ang(le) & Spin	Sets the wipe pattern rotation, where available. Range 0 - ± 180°
Aspect	Changes the wipe pattern aspect ratio (where available). Range 0 - ± 1.0000 an arbitrary scale

F4 Aspect: Screen	This button controls whether patterns such as Diagonal Crosses & Lines are at 45° (Square mode) or pass through the corners of the screen (Screen mode).
F5 Position: Fixed	This button controls whether the position of the Wipe Pattern can be adjusted. In Position: Fixed mode it cannot be, in Position: Free it can be adjusted using the PosX , PosY & Ang controls in this sub-menu
F6 Aspect: Off	This button controls whether the aspect of the Wipe Pattern can be adjusted. In Aspect: Off mode it cannot be, in Aspect: On mode it can be adjusted using the Aspect control in this sub-menu.

EFFECTS MENU - continued**Effects - Keyers - DSK External Keyer Menu****THIS MENU IS ONLY AVAILABLE WHEN THE OPTION IS FITTED**

This menu allows control of the Downstream Linear Keyer. Unlike the DVE Keyer this is a fully Linear Keyer with Lift & Gain controls. The key signal for it is taken from the external Key Input connector. However in this case the key signal is passed through a frame synchroniser like the video inputs, so that any source can be used.

Typically the DSK is used to overlay captions over the DVE and Background. Note however that the DSK can be placed underneath instead of over the DVE if desired.

There are two sub-menus: **CROP** and **LEVELS**, reached in the usual way by **F1** & **F2**. The main menu has the following controls:

Transp.

Sets the overall transparency of the DSK, regardless of any keying action that may be taking place.

Range 0% - 100%

F4**Key Invert: Off**

This button inverts the action of the DSK keyer when set to **On**.

F5**Matte Key: Off**

Controls the key action when the DSK source is a matte, pattern or test pattern:

Off: If the source is one of the above, it will not be keyed.

Key 1: If the source is MATTE, it will be keyed by Key Input 1.

Key 2: If the source is MATTE, it will be keyed by Key Input 2.

F6**Video Key: Off**

Controls the key action when the DSK source is live video:

Off: If the source is live video, it will not be keyed.

Key 1: If the source is live video, it will always be keyed by Key 1.

Key 2: If the source is live video, it will always be keyed by Key 2.

By Source: If the source is live video, it will be keyed only if the **Key** button in the source's **Setup-Input** menu is set to **Key 1** or **Key 2** (see page 162).

*Four-input versions of Magic DaVE (Models 4DE & 4DOE) have only one key input. Therefore on these machines the above two buttons have a simple **On** selection instead of the **Key 1** and **Key 2** settings.*

Note that BLACK is always unkeyable. If you wish to key black, select MATTE and set the matte colour to black.

EFFECTS MENU - continued**DSK External Keyer Controls - Crop Sub-Menu (F1)**

See page 89 for a description of this menu.

DSK External Keyer Controls - Levels Sub-Menu (F2)

This menu controls the **Lift** and **Gain** of the Keyer. Their exact effect depends upon the setting of the **Type** button in the **Setup-Input (DSK Key)** menu (see page 163). This button can be set to either **Linear** or **Sliced** mode. In **Linear** mode the key is used as it is with adjustable **Lift** and **Gain**; in **Sliced** mode the key is sliced with variable slice level (**Lift**) and softness (**Gain**). That menu also has a **Key Invert** button and several other non-sequenceable DSK controls.

Lift affects the level at which the key operates. At high gain it becomes a clip level. At its extremes it will completely cut-off the video, or completely suppress the key action giving solid video.

Gain scales the amplitude of the key signal and affects both the hardness (at high levels of gain) and the softness or transparency at low levels.

Gain	Adjusts the gain of the key signal.	
	Range	0 - ±127 Normal = 0
Lift	Adjusts the clipping point for the key signal.	
	Range	0 - ±127 Normal = 0

These same controls are also in the **Setup-Input (DSK Key)** menu.

EFFECTS MENU - continued**Effects - Keyers - DSK Luma Self Key Menu****THIS MENU IS ONLY AVAILABLE WHEN THE OPTION IS FITTED**

This keyer takes the DSK signal, analyses the luma content of it, and performs a Luma Self Key on it as specified by the controls below. This is ideal for keying a caption from a camera, where the caption is solid letters against a black background.

Note: the DSK Luma-Self Keyer and DSK Chroma Keyer are mutually exclusive - they cannot be used at the same time. When you turn one of them on, the other will automatically be turned off.

Lift

Adjusts the clipping point for the keying action.

Range -2.00 to +1.99

Gain

Adjust the gain (steepness) of the keying action. Negative values invert the keying action.

Range -2.00 to +1.99

F1**CROP**

Goes to the **DSK Crop** sub-menu (page 89), which allows the area of the screen in which the DVE will appear to be restricted.

F6**Keyer: Off**

Simply controls whether the Luma Self Keyer is **On** or **Off**.

EFFECTS MENU - continued**Effects - Keyers - DSK Chroma Keyer Menu**

THIS MENU IS ONLY AVAILABLE WHEN THE OPTION IS FITTED

This keyer takes the DSK video source, analyses the colour content of it, and performs a Chroma Key on it as specified by the controls. All areas of the specified colour - normally a shade of blue - will be removed (keyed out) from the DSK video source and replaced by the background.

Note: the DSK Chroma Keyer and DSK Luma-Self Keyer are mutually exclusive - they cannot be used at the same time. When you turn one of them on, the other will automatically be turned off.

The controls and method of operation of the DSK Chroma Keyer are identical to those of the DVE Chroma Keyer (except that **F1** goes to the **DSK Crop** menu rather than the **DVE Mask** menu).

To avoid unnecessary repetition see the sections **Chroma Key Controls** starting on page 78 and **Setting up the Chroma Keyer** on page 81 for full details.

Note that the DSK Linear Keyer and DSK Chroma Keyer can be used together.

Effects - Keyers - DSK Crop Menu

This menu allows the Downstream Keyer to be cropped so that only part of the picture is visible. It is accessible by pressing **F1** from any of the **DSK External Keyer**, **DSK Luma Self Keyer** and **DSK Chroma Keyer** menus.

This menu works identically to the main crop menu (except it has no Softness control!), see the description of the **Effects - Crop Menu** on page 69 to see how to adjust the figures quickly and easily with the joystick.

This concludes the discussion of the **Effects-Keyers** menus. We will now proceed with the rest of the **Effects** menus.

EFFECTS MENU - continued

Note: Extreme settings of some of the following **Effects** should be used with caution, because it is possible to generate out of range combinations of luma and chroma, i.e. "illegal colours". Also, if any of the effects controls are set, however slightly, then the video signal will have an effects distortion applied to it. It is therefore very important to remember on the last frame of a sequence to check that these controls are clear.

Effects - Solarise Menu

Solarise applies luma quantisation (a special bit reduction) to the picture to produce luminance contouring. At the penultimate setting this reduces the picture to just two levels, producing an outline effect. At the extreme setting, all Luma is removed, leaving a chroma-only picture. The chroma signal is unaffected, still giving full resolution colour in the effect.

Level	Sets the Solarisation (Luminance Quantise) level, high levels are coarse.	
	Range	0 - 100% Normal is 0
Soft	Sets the softness of the transition between each Quantisation level. Low levels mean that the transitions are abrupt, higher levels mean that the transitions are much more subtle.	
	Range	0 - 100% Normal is 0
F6 Invert: Off	When pressed so that it changes to On , inverts the luminance part of the signal, so that dark areas of the picture appear light, and light areas appear dark.	

TIP ✓ When keying a **Matte** using the DVE Keyer, the **Invert** button will have the effect of inverting the key signal.

EFFECTS MENU - continued**Effects - Posterise Menu**

Posterise reduces the number of levels in the colour signal (chroma quantisation) making for a pastel type of effect. At the extreme this reduces the picture to monochrome. The luminance signal is unaffected, still giving full resolution of the brightness part of the video unless the **Solarise** and **Posterise** effects are used in combination.

Level	Sets the Posterise (Chrominance Quantise) level, high levels are coarse.	
	Range	0 - 100% Normal is 0

Soft	Sets the softness of the transition between each Quantisation level. Low levels mean that the transitions are abrupt, higher levels mean that the transitions are much more subtle.	
	Range	0 - 100% Normal is 0

F6 Invert: Off	When pressed so that it changes to On , inverts the chrominance part of the signal, so that red areas of the picture appear as cyan, green areas appear as magenta, blue areas appear yellow, and vice versa.	
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TIP ✓ An unusual way to introduce the solarisation or posterisation effects is to set the desired final **Level** (with **Soft** set to **0%** in order to see the effect), then set **Soft** to **100%** to restore a normal picture. Now wind in the effect gradually using the **Soft** control.

Effects - Mosaic Menu

Mosaic breaks the picture down into a matrix of variable sized regular squares or rectangles. The effect can be applied separately to both horizontal and vertical axes.

X	Sets the horizontal mosaic level, high levels make large blocks.	
	Range	0 - 255 pixels/block Normal is 0

Y	Sets the vertical mosaic level, high levels make large blocks.	
	Range	0 - 255 lines/block Normal is 0

XY	Controls the X and Y controls simultaneously for easy square blocks.	
	Range	0 - 255 lines & pixels/block Normal is 0

EFFECTS MENU - continued**Effects - ColourFX Menu**

ColourFX allows the picture to be "painted" with a set of false colours based on the original luminance signal. There are up to four sub-menus (**Black**, **Lower**, **Upper** & **White**) each containing **Sat**, **Luma** & **Hue** controls, which are used in order to set the false colours. There are also three different modes of **ColourFX** operation. *The sub-menus appear and disappear according to the mode selected.* The modes will now be described.

Off mode is the default when the **ColourFX** menu is first entered. No sub-menus are available, and as the name suggests, no false colour mode is in operation. Use the ↑ and ↓ keys to select between the four modes.

2 Colour Wash mode uses the **Sat** & **Hue** controls of the **Lower** & **Upper** sub-menus only. The original luminance signal is unchanged, and the **Luma** controls in the sub-menus have no effect. This mode replaces the chrominance signal throughout, using the specified **Sat** & **Hue** levels as a guide. For each of the two colours, the system calculates the optimum luma level for the specified combination of **Sat** & **Hue**, also taking the other colour into account, and then uses this calculated luma level as the point at which the maximum amount of that colour is applied. *Note that if a bright colour (e.g. green) is chosen for the **Lower** control, and a dark colour (e.g. blue) is chosen for the **Upper** control, then illegal colours may be produced. It is best to bear in mind the natural brightness of individual colours when setting these two colours.*

2 Colour Legal Wash mode is similar to the **2 Colour Wash** mode described above, except that it is not possible to generate illegal colours. In the case described above in italics, the end result would tend to be quite grey (desaturated) in order that the colours are kept within legal limits (again, see **Colour Control** on page 28). The previous mode has been made available since the user may be happy to risk generating illegal colours in order to get such colour combinations.

4 Colour Paint mode replaces the entire video signal with a new set of colours as specified within this menu. For each of the four original luma levels **Black** (0%), **Lower** (33%), **Upper** 66% & **White** (100%) the original luma & chroma are replaced by the new **Sat**, **Luma** & **Hue** specified for each of these levels. For original luma levels between these values the new colour is determined by interpolation. Since the specified new colours are, by definition, legal (see **Colour Control** on page 28), this mode cannot produce illegal colours. This mode is best suited for producing outlandish colour effects.

ColourFX modes are selected or turned off by the large button in the centre of the display, adjustable as usual with the ↑ and ↓ keys. The **F1** to **F4** buttons provide access to the four colour setting sub-menus, i.e. **Black**, **Lower**, **Upper** & **White**, where available.

To return to the **Effects** menu from this menu simply press **MENU**.

EFFECTS MENU - continued**Effects - Lift & Gain Menu**

This set of menus allows the overall brightness and colouration of the picture to be adjusted. They allow the digital signal components of **Y** (Luminance), **U** (Blue colour difference axis) and **V** (Red colour difference axis) to have their **Lift** and **Gain** individually adjusted.

There are three sub-menus: **WHITE**, **BLUE** and **RED**, reached in the usual way via **F1**, **F2** and **F3**. Each of these sub-menus has the following controls:

Lift	Adjusts the "floor" (black level) of the signal. For instance in the WHITE menu this acts rather like the "Brightness" control on a domestic television set.	
	Range	0 - ±2.00 Normal = 0
Gain	Adjusts the gain of the signal. For instance in the WHITE menu this acts rather like the "Contrast" control on a domestic television set.	
	Range	0 - ±2.00 Normal = +1.00

TIP ✓ When keying a **Matte** using the DVE Keyer, the **WHITE** menu can be used to adjust the **Lift** and **Gain** of the key signal.

EFFECTS MENU - continued**Effects - DVE ChromaFX Menu****THIS MENU IS ONLY AVAILABLE WHEN THE OPTION IS FITTED**

The ChromaFX feature allows a specified colour (the "Target" colour) in a live scene to be changed to a different colour. The luminance detail is not changed. This effect can be used to change a red shirt to a blue shirt for example, whilst maintaining the luma detail of the shirt. All the other colours in the scene can be left unaltered, or alternatively they can be set to a different colour (including monochrome) - a colour wash. Alternatively the shirt could be selected to remain as it is, and all other colours set to a different colour (including monochrome). As with the chroma keyer, this effect works best with highly saturated colours.

This effect can be applied independently to both the DSK & DVE layers, and can be used in addition to the Luma-Self Keyer or Chroma Keyer for that channel. For example, the Chroma Keyer could be used to key out a blue background behind a presenter wearing a red shirt, and the ChromaFX could then be used to change the presenter's red shirt to blue (which would not be keyed out).

The controls are similar to that of the Chroma Keyer, including an Auto mode for easy setup.

ChromaFX Controls

There are four sub-menus: **COLOUR**, **APERTURE**, **K LEVELS** & **AUTO**, reached in the usual manner by pressing **F1** to **F4** respectively. There are also two buttons on **F5** and **F6** which are visible in all the sub-menus:

F5Fgnd|Bgnd:
Wash|Video

This important button controls the overall mode of the effect:

Wash|Video: The **TARGET** colour will be replaced with the colour wash set by the **COLOUR-FGND COL** menu, and the rest of the colours in the scene will remain unchanged.

Video|Wash: The **TARGET** colour will remain unchanged as normal video. The rest of the colours in the scene are replaced with the colour wash set by the **COLOUR-BGND COL** menu.

Wash|Wash: Both the foreground (**TARGET**) and background colours can be replaced by their respective colour wash mattes.

F6

ChromaFX: Off

Simply controls whether the whole effect is **On** or **Off**.

Note that the effect takes a short time (about half-a-second) to switch on.

EFFECTS MENU - continued**ChromaFX Controls - Colour Sub-Menu (F1)**

This menu sets the three colours involved - the Target colour, the new Foreground colour (that replaces the Target colour) and the new Background colour (that replaces all the other colours). Therefore it has three sub-menus:

ChromaFX Controls - Colour - Target Sub-Menu (F1-F1)

Hue	Sets the Hue of the Target colour.
Range	0 - 360°

ChromaFX Controls - Colour - Bgnd Col Sub-Menu (F1-F2)

*These two controls only apply if the **Fgnd|Bgnd** button is set to **Video|Wash** or **Wash|Wash**, i.e. if the background is a colour wash.*

Sat	Sets the Saturation of the colour to replace the other colours in the scene (the ones that aren't the Target colour).
Range	0 - 100.00%
Hue	Sets the Hue of the colour to replace the other colours in the scene (the ones that aren't the Target colour).
Range	0 - 360°

ChromaFX Controls - Colour - Fgnd Col Sub-Menu (F1-F3)

*These two controls only apply if the **Fgnd|Bgnd** button is set to **Wash|Video** or **Wash|Wash**, i.e. if the foreground is a colour wash.*

Sat	Sets the Saturation of the colour to replace the Target colour.
Range	0 - 100.00%
Hue	Sets the Hue of the colour to replace the Target colour.
Range	0 - 360°

EFFECTS MENU - continued**ChromaFX Controls - Aperture Sub-Menu (F2)**

This menu controls the range of colours that are considered to be the Target Colour. It can usually be ignored as the **Auto** sub-menu will set the controls up for you.

Acc	Sets the angle around the specified Target Hue for which the Chroma part of the signal will be replaced. Range $\pm 0^\circ$ - $\pm 179^\circ$ Normally set to about $\pm 45^\circ$
Key	Sets the angle around the specified Target Hue for which the key will be generated. Range $\pm 0^\circ$ - $\pm 179^\circ$
C. Suppr	Controls the severity with which the Chroma is replaced. It controls how steep the slope of the Chroma change from the edges to the middle of the aperture is. Range 0 - 100% Normally set to about 5% - 10%.

ChromaFX Controls - K(ey) Levels Sub-Menu (F3)

This menu controls the cut-off points for the Foreground and Background Key levels used in the Chroma replacement process. Again these controls can usually be ignored as the **Auto** sub-menu will set them up for you.

Foreground	This is the percentage along the Hue axis (saturation strength) below which the signal is treated as fully Foreground. Range 0 - 100%
Background	This is the percentage along the Hue axis (saturation strength) above which the signal is treated as fully Background. Range 0 - 100%

The range of **Foreground** to **Background** controls the softness of the colour transition. Usually somewhere below 10% is a good setting for the **Foreground** control, with the **Background** control set somewhere above that, say 20% to 30%.

*The **Background** control must be set higher than the **Foreground** control otherwise extremely hard edges between the colours will result!*

EFFECTS MENU - continued**ChromaFX Controls - Auto Sub-Menu (F4)**

This menu allows semi-automatic setup of the ChromaFX in the same way as the Chroma Keyer Auto mode (page 80).

Once in this menu, the Preview Output Cursor will be turned on. Use the joystick to point the Cursor at the Target colour to (possibly) be replaced and press the **F1 Store** button - the controls in the other menus will be automatically set up. Up to eight points can be sampled in this way to cover variations in the Target colour. If a ninth point is sampled, the first point is lost; if a tenth point is sampled, the second point is lost, and so on, i.e. the machine uses the last eight points **Stored** to set the ChromaFX controls.

If you accidentally store an unwanted point or points, then press the **F2 Delete** button to remove it or them from your list. The button deletes the newest point first, then the next newest, and so on, until finally the oldest is removed.

The **F3 Clear** button clears the whole list of points, letting you start the process again.

The points to be included in the list must only cover 180 degrees of colour space. A point set outside of this range will be ignored and the panel will flash up "**Bad Point in List**". You cannot set points on red, blue & green and then expect them all to be removed! For a visualisation of what is happening, set the source to **ColChart**.

Using this facility will set up the **TARGET Hue** and all the controls in the **APERTURE** and **K LEVELS** menus, leaving only the **FGND COL** and/or **BGND COL** colour wash mattes to be set up as required.

The controls in this menu (apart from **F6**) are:

F1

Store

Stores the details of the colour under the cursor into the ChromaFX analysis buffer, and alters the ChromaFX controls appropriately.

F2

Delete

Deletes the last point **Stored** from the ChromaFX analysis buffer, and alters the ChromaFX controls appropriately.

F3

Clear

Clears all points from the ChromaFX analysis buffer.

EFFECTS MENU - *continued***Effects - DSK ChromaFX Menu**

THIS MENU IS ONLY AVAILABLE WHEN THE OPTION IS FITTED

The DSK ChromaFX feature is identical to DVE ChromaFX, except that of course it applies to the DSK rather than the DVE.

The DVE & DSK ChromaFX can be used at the same time with completely different settings. It can be used in addition to the DSK Luma-Self Keyer or Chroma Keyer.

For full details of this feature, see **ChromaFX Controls** on page 94 onwards.

SOURCES MENU

Pressing **F4** from the **Start** menu, or pressing the SOURCE button once leads the user to the top-level **Sources** menu. Pressing the SOURCE button again will go to the last **Sources** menu used.

The main **Sources** menu contains the controls which state which video sources are in use. There is also a sub-menu which allows the contents of the PATTERN source to be controlled.

The main **Sources** menu will now be explained. It is somewhat different between the standard and the option system; the standard system will be explained below, followed by the option system.

STANDARD (NON-OPTION) SYSTEM

In a non-option system there are three surfaces: the front of the DVE tile (**DVE FRONT**), the back of the tile (**DVE BACK**) and the background (**BKGD**). The DVE is always used to perform the transition. The PROGRAM source is always placed on the **DVE FRONT**, but the contents of the other two surfaces can be varied to suit the type of transition required.

For instance, in the case of a page turn that takes the foreground picture off to reveal the background underneath, then the transition is from the **DVE FRONT** to the **BKGD**.

A simple mix or wipe, where the DVE is mixed or wiped away, is also from **DVE FRONT** to **BKGD**.

However, in the case where the transition is made from one side of the DVE tile to the other, whether by simply flipping the DVE tile over or by something more complicated such as a push-on/push-off or a twist, then the transition is from the **DVE FRONT** to the **DVE BACK**.

Which mode is used depends upon the **F5 Type** button in the **Sequence Control - Properties** menu (page 141). The default is **DVE FRONT** to **BKGD**.

The menu indicates which surfaces are used for PROGRAM and PRESET by putting those words above the appropriate controls.

Note that with the standard (non-option) system it is not possible to have more than two live input video sources on the screen at once. The two surfaces associated with the PROGRAM and PRESET busses take precedence, since they are supposed to be the start and end sources of any transition.

*For example if, in the normal **DVE FRONT** to **BKGD** mode, **Video 1** is selected on the PROGRAM bus (DVE front source), and **Video 2** is selected as the **DVE BACK** source, then selecting **Video 3** on the PRESET bus (background) will cause the **DVE BACK** to go to **Black**. This is not a fault! In such cases the third source has to be **Black**, **Matte** or a **Pattern** (but note that a test pattern (see page 104) counts as a live video source).*

The controls in this menu are shown on page 101.

SOURCES MENU - continued**OPTION SYSTEM**

The **Sources** menu when an option card is present is similar to the non-option card except that there are five surfaces instead of three - the extra ones being a second background and the DSK fill.

Most of the time, an option-card Magic DaVE operates in an industry-standard Program/Preset "background and key" style of operation, with transitions occurring between the two backgrounds (**BKGD A** and **BKGD B**). The DVE and DSK are treated as two key layers on top of the backgrounds which can be brought on or off independently or in combination with the background transition. The exact details of this are controlled by the **Transition Control Menu** (page 105). This is known as **Mix/Wipe** mode.

However there will be times where the user needs to use the DVE itself to produce the transition. For instance, in the case of a page turn that takes the foreground picture off to reveal the background underneath, then the transition is from the **DVE FRONT** to the **BKGD**.

Or, in the case where the transition is made from one side of the DVE tile to the other, whether by simply flipping the DVE tile over or by something more complicated such as a push-on/push-off or a twist, then the transition is from the **DVE FRONT** to the **DVE BACK**.

Which of these three modes is used (**Mix/Wipe**, **DVE FRONT** to **BKGD** or **DVE BACK** to **BKGD**) depends upon the **F5 Type** button in the **Sequence Control - Properties** menu (page 141). The default is **Mix/Wipe**.

The menu indicates which surfaces are used for PROGRAM and PRESET by putting those words above the appropriate controls.

*Note that in the option system it is not possible to have more than four live input video sources on the screen at once. Therefore the system will prevent you from using a double-sided DVE with a DSK at the same time as doing a background transition. See the notes on the **Transition Control Menu** (page 105) for more on this.*

The controls in this menu are shown on the next page.

SOURCES MENU - continued**Source Menu Controls****F1**

BKGD A

This button controls the source for the first Background. To change this source, press this button and use the flashing PRESET bus or the cursor keys to select the desired source.

F2

BKGD B

This button is only present on Option systems.

This button controls the source for the second Background. To change this source, press this button and use the flashing PRESET bus or the cursor keys to select the desired source.

F3

DVE FRONT

This button controls the source for the front of the DVE tile. To change this source, press this button and use the flashing PRESET bus or the cursor keys to select the desired source.

F4

DVE BACK

This button controls the source for the back of the DVE tile. To change this source, press this button and use the flashing PRESET bus or the cursor keys to select the desired source.

F5

DSK FILL

This button is only present on Option systems.

This button controls the video source for the DSK. To change this source, press this button and use the flashing PRESET bus or the cursor keys to select the desired source.

To change any of the above sources, press the appropriate button. You can then press any of the buttons on the - now flashing - PRESET bus to change the source. Alternatively, you can use the cursor keys, which also allow you to select various sources not available on the hard keys, for example test patterns.

When a button has been pressed, the matte colour controls for that source will appear. Also, the **F6 PATTERN** button will appear, allowing you to adjust the pattern.

F6

PATTERN

This button goes to the **Pattern** sub-menus that allow the pattern type and colour to be changed (see the next page).

Of course, the two sources indicated by the "PROGRAM" and "PRESET" texts can be changed directly using the PROGRAM and PRESET buttons without pressing any of the buttons in this menu.

SOURCES MENU - continued**Sources - Pattern Menu**

Whenever one of **F1** to **F5** is pressed to select a source, the **F6 PATTERN** button appears. Pressing this goes to the **Sources-Pattern** menu. The main source offered by the menu is the Patterned Matte. This can be a graduated matte or a repetitive colour pattern. It is available as an internal video source, and hence can be selected on DVE front, background etc. It cannot be externally keyed on the DVE, as patterns are injected into the DVE signal path after the keying process takes place. However it can be keyed on the DSK, and can be self-keyed anywhere in the system.

The Graduated Matte generator uses two matte colour sources set up within the **COLOUR¹** and **COLOUR²** sub-menus. A sweep between the two colours is set up by the **Gradient** control, at an angle across the screen set by the **Angle** control. Negative values for the **Gradient** swap the direction of sweep between **COLOUR¹** and **COLOUR²**. There are eight different types of Graduated Matte, each one having differing colour sweeps.

In the Pattern Mode the **Colour**, **Angle** & **Gradient** controls are ineffective. Instead there are 8 fixed full-colour patterns. Note that the fixed patterns take a small time to change; this is normal. Once the desired pattern has been "loaded" it can be selected instantly on a bus, like any other source.

SOURCES MENU - continued**Pattern Controls - Control Sub-Menu (F1)**

Grad(ient)

Only operational when Type is Grad 0 to Grad 7 inclusive.

Controls the rate of graduation across the screen.

Range

-1.000 - +1.000

Ang(le)
(and Spin)*Only operational when Type is Grad 0 to Grad 7 inclusive.*

Controls the angle across the screen of the graduation. If the Gradient is small or zero the effect will not be visible.

Range

0 - 359, 0 being vertical and 90 horizontal, etc.

F6Type:
Grad 0This button selects the current Graduated Matte or Pattern from the following: **Graduated 0 to Graduated 7** and **Pattern 0 to Pattern 7**.**Pattern Controls - Colour Sub-Menus (F2 & F3)**COLOUR¹

Sets the first colour used for the patterned and graduated mattes.

COLOUR²

Sets the second colour used for the patterned and graduated mattes.

SOURCES MENU - continued**Sources - Test Patterns Available**

The F1 to F5 buttons in the main **Source** menu have the ability to call up eleven additional sources, namely full-screen test patterns (e.g. Colour Bars, Multiburst, etc.). The exact test patterns shown depend upon the current line-standard and are as follows:

Name	625-line (PAL) test pattern	525-line (NTSC) test pattern
75% Bars	EBU Colour Bars	SMPTE Colour Bars
100% Bars		100% Colour Bars
BARS/RED	EBU Colour Bars split to Red	FCC Bars (split to Red)
TARTAN		"Tartan" Colour Bars
M BURST	CCIR Multiburst	FCC Multiburst
PULSEBAR		CCIR Pulse & Bar
PLUGE		Safe Area Pattern and PLUGE*
SPLITBARS		100% & 75% Split Colour Bars (100% White)
RAMPS		Ramps: Chroma 100%, Shallow Luma & Chroma, Luma 100%
BOWTIE		Bowtie: Y/C delay ±20ns markers
COLCHART		Colour Chart (aids Chroma Keying)

- * This pattern comprises two main parts. The first part is the Safe Area Pattern, which consists of two parallel lines along each edge, placed at 5% and 10% of the picture width & height. These are usually taken as being, respectively, the safety area for action in the picture and the area to ensure that captions can be seen by the viewer. The central part of the pattern (known as PLUGE) consisting of the black and grey blocks is for picture monitor alignment.

Note that, like Background Patterns, Test Patterns cannot be keyed. Test Patterns take some time to appear; this is normal. However once the desired test pattern has been "loaded" it can be selected instantly (on the standard system provided that not more than one live video source is used).

TRANSITION CONTROL MENU

When any of the SUPER, MIX, WIPE, BLACK or SEQUENCE T-Bar buttons is pressed, this menu will appear. It allows control of the details of the transition. On the standard machine this is mainly whether a "bus-swap" occurs at the end of the transition, i.e. whether or not the Program and Preset busses exchange sources or not. On the option system it includes whether the DVE and/or DSK are brought on or off by the transition, and if they stay the same, whether they remain on or remain off throughout.

STANDARD (NON-OPTION) SYSTEM - EXCEPT SEQUENCE TRANSITIONS

In the standard system this menu is as follows (except for sequence transitions - see page 108):

Level	<i>Only appears in MIX, WIPE and BLACK modes.</i> Controls the level of the MIX, WIPE or Fade-to-BLACK. This is the quantity that is directly controlled by the T-Bar.
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Time	<i>Only appears in MIX, WIPE and BLACK modes.</i> Sets how long the MIX, WIPE or Fade-to-BLACK transition takes when the TAKE button is pressed. Units are seconds & fields.
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F1 STYLE	<i>Only appears in WIPE mode.</i> This button takes you to the Wipe menu to allow you to set the style of the wipe (pattern, border width and colour, etc.). See page 110.
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F4 In Next Transition: BGND.	<i>Only appears in MIX and WIPE modes.</i> This button is highlighted if there is a "bus-swap" at the end of the transition. It is the equivalent of the old " Transition " mode in V1.xx software.
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F5 In Next Transition: DVE.	<i>Only appears in MIX and WIPE modes.</i> This button is highlighted if there is no "bus-swap" at the end of the transition, i.e. the DVE is MIXed or WIPEd on or off without affecting the background. It is the equivalent of the old " Animation " mode in V1.xx software.
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In order to keep some familiarity for users of V1.xx **Magic DaVE** software, the lights in the MIX, WIPE, etc. buttons behave as they did in that software, i.e. they stay steady to indicate that there will be a bus-swap at the end of the transition, and flash to indicate that there will not be.

TRANSITION CONTROL MENU - continued**OPTION SYSTEM**

Important Note: Because Magic DaVE can only have four live sources at once, you cannot have a double-sided DVE, a DSK and background wipes, which would be five sources. If you attempt to set this combination (**DVE ON**, **DSK ON**, **DUAL SOURCE DVE** and **NEXT TRANSITION BKGD** all lit) then the panel will flash all the buttons that you can possibly press to resolve the conflict. For example, you can then press **DUAL SOURCE DVE** to change the **DVE** to single-sided, **DSK ON** to turn the DSK off, or **NEXT TRANSITION BKGD** to take the background out of the wipe.

In the option system this menu varies considerably according to the type of transition:

OPTION SYSTEM - MIX AND BLACK TRANSITIONS

Level

Controls the level of the MIX or Fade-to-BLACK. This is the quantity that is directly controlled by the T-Bar.

Time

Sets how long the MIX or Fade-to-BLACK transition takes when the TAKE button is pressed. Units are seconds & fields.

OPTION SYSTEM - WIPE TRANSITIONS

When a WIPE transition is selected in an option system, the machine goes directly to the **Transition Control - Wipe** menu, see page 110.

OPTION SYSTEM - SEQUENCE TRANSITIONS

See page 108.

TRANSITION CONTROL MENU - continued**OPTION SYSTEM - SUPERMIX TRANSITIONS**

This function allows a MIX transition from one source to another by way of a matte. When the SUPER button on the panel is pressed the SuperMix is enabled, and the following menu appears on the screen:

Level

Controls the level of the SUPERmix. This is the quantity that is directly controlled by the T-Bar.

Time

Sets how long the SUPERmix transition takes when the TAKE button is pressed. Units are seconds & fields.

Pressing **F2 COLOUR** allows the colour of the mix-through matte to be adjusted:

Sat/Luma/Hue

Sets the colour and brightness of the wipe border.

Pressing **F3 COLOUR** allows the profile of the supermix to be adjusted:

Level

Sets the maximum level of the matte in the mix. At **100%** the matte will be completely solid at the halfway point of the mix; at **0%** there will be no matte at all in the mix (in this case if **Profile** is also zero it will be as a normal mix).

Profile

Sets the curve of the mix, that is how soon into the mix the matte is mixed in.

Pressing **F1 SUPERMIX** returns to the main supermix menu (**Level & Time** controls).

Note: supermix is not available on non-option card systems.

TRANSITION CONTROL MENU - continued**ALL SYSTEMS - SEQUENCE TRANSITIONS ONLY**

In systems performing a sequence transition, the menu looks like this:

SPos

Controls the position through the sequence. This is the quantity that is directly controlled by the T-Bar.

Total

Sets how long the SEQUENCE transition takes when the TAKE button is pressed. Units are seconds & fields.

F1

Transition: Yes

This button specifies whether the current sequence is a **Transition** or not. It is a convenient copy of the **F6** button in the **Sequence Control - Properties** menu, see page 141 for more details.

F2

Type: DVE⇒BKGD

This button controls the overall mode of the sequence. It changes which surfaces are allocated to Program & Preset, thus allowing various different types of transition to be constructed. It is a convenient copy of the **F5** button in the **Sequence Control - Properties** menu, see page 141 for more details.

TRANSITION CONTROL - WIPE MENU

Selecting **Wipes** from the **Start** menu, or pressing the WIPE button near the T-Bar goes to the top-level **Wipe** menu.

The controls in this menu allow the type of wipe that will be performed to be precisely adjusted. Note that not all the controls can be applied to all the wipe patterns. Some patterns allow more control than others. See the Appendix on page 239 for full details.

There are three sub-menus, accessed in the usual way by pressing **F1** to **F3**.

Wipes Menu - Wipe Controls (F1)

These controls appear by default when the **Wipe** menu is entered.

Width

Adjusts the width of the wipe border.

Wipe

Adjusts the position of the wipe edge(s). Normally this control is assigned to the T-bar.

Time

Sets how long the WIPE transition takes when the TAKE button is pressed. Units are seconds & fields.

Soft

Softens the edge of the wipe pattern. If the wipe border is on, both edges of the border are softened.

Horizontal 10

This button selects the Wipe Pattern (i.e. shape) to be used. A complete list of the Wipe Patterns can be found in **Appendix 4: List of Wipe Patterns** on page 239. The (SMPTE-compatible) Wipe Pattern number is also shown in this box. The Wipe number can be directly typed in. The patterns can be stepped through using the **F5 +** and **F6 -** buttons as well as the usual \uparrow and \downarrow buttons.

F4**+**

This button steps up one wipe pattern number.

F5**-**

This button steps down one wipe pattern number.

F6

Direction:
Forward

This button controls the direction of the wipe, **Forward** or **Reverse**.

TRANSITION CONTROL - WIPE MENU - continued**Wipes Menu - Colour Controls (F2)**

Sat/Luma/Hue

Sets the colour and brightness of the wipe border.

Wipe Controls - Position Sub-Menu (F3)

PosX

Sets the wipe pattern horizontal position (where available).

Range

0 - ± 1.0000

PosY

Sets the wipe pattern vertical position (where available).

Range

0 - ± 1.0000

Ang(le) & Spin

Sets the wipe pattern rotation, where available.

Range

0 - ± 180°

Aspect

Changes the wipe pattern aspect ratio (where available).

Range

0 - ± 1.0000 an arbitrary scale

F4

Aspect: Screen

Standard system without Option card. This button controls whether patterns such as Diagonal Crosses & Lines are at 45° (**Square** mode) or pass through the corners of the screen (**Screen** mode).

F4

Aspect: Normal

System with Option card. This button controls whether patterns have their **Normal** aspect (so patterns such as Diagonal Crosses & Lines pass through the corners of the screen, and patterns such as Circle are round), or an **Alternative** aspect (so Diagonal Crosses & Lines are at 45°, and patterns such as Circle touch all sides of the screen at once). *(Effectively this is a Screen/Square control like the standard system, but which way round Screen & Square are depends on the wipe pattern. See **Appendix 4: List of Wipe Patterns** on page 239.)*

F5

Position: Off

This button controls whether the position of the Wipe Pattern can be adjusted. In **Position: Off** mode it cannot be, in **Position: On** it can be adjusted using the **PosX**, **PosY** & **Ang** controls in this sub-menu

F6

Aspect: Off

This button controls whether the aspect of the Wipe Pattern can be adjusted. In **Aspect: Off** mode it cannot be, in **Aspect: On** mode it can be adjusted using the **Aspect** control in this sub-menu.

FREEZE MENU

Selecting **Freeze** from the **Start** menu or pressing the FREEZE button leads the user to the **Freeze** menu.

The controls in this menu allows video on the various busses to be frozen. In a system without an option fitted, there will be four sets of buttons, corresponding to the **BKGD A**, **BKGD B**, **DVEFRONT** & **DVEBACK** surfaces. In a system with an option card there will be six sets of buttons, the extra two being for the **DSK FILL** and **DSK KEY** surfaces.

Freeze Controls

For each bus present in the system, there will be the following pair of buttons, one above the other.

Frame

Selects the output displayed when the bus is frozen.

Frame: The whole frozen frame will be displayed.

Field: Only the first field of the frozen frame will be displayed.

F1**Live**

Actually freezes the bus.

Live: The picture is passed as normal.

Frozen: The picture is frozen.

TRAIL MENU**ALL THESE MENUS ARE ONLY AVAILABLE WHEN THE OPTION IS FITTED**

This facility provides a large variety of secondary background effects. It operates by the use of a recursive video and key framestore with its own keyer, pattern generators and output video mixer.

A trail is generally a copy of the foreground source (DVE) which is *dropped* into a dedicated *trailstore* every field (or frame). The output of the trailstore appears (usually) behind the DVE. The dropped copy can be shifted horizontally and/or vertically, and can also be tinted and/or textured and/or faded. By then feeding back the output of the trailstore to its own input a trail is generated. If no feedback is used then the trail becomes a drop shadow.

The copy of the DVE does not have to be dropped into the trailstore every field/frame. If so desired it can be dropped on a regular basis once every few fields/frames, giving a strobed effect to the trail. Alternatively it can be dropped only on demand, allowing - when no shift is applied - montages of dropped pictures to be built up over the background.

Sparkle is the term used to describe a pattern randomly keyed into the trail. When turned on it can be applied separately to both the video and key parts of the trail, each at different rates with a different pattern. This can be used to produce a wide range of attractive effects, including simulations of rain & fire.

For both video & key sparkle and video & key decay, the effect can be set to only come in after a given field/frame has been fed back a given number of times. This allows the production of effects that only become active after the trail has been in existence for a certain length of time.

Special layering configurations also allow the production of motion blur and multi-grab effects.

For those readers with some audio processing experience, it may help your understanding to realise that the trail facility can be seen as the video equivalent of an audio delay effects unit.

TRAIL MENU - continued**Trail Main Menu**

The main trail menu contains the following controls:

F1 BASIC Leads to a sub-menu that gives a simple trail with optional sparkle.

F2 SHADOW Leads to a sub-menu that gives a drop-shadow.

F3 BLUR Leads to a sub-menu that gives motion-blur and multigrab effects.

F4 MONTAGE Leads to a sub-menu that allows background montages to be built up.

F6 Trail: Off This button controls whether the trail facility is turned **On** or **Off**. Obviously if it is turned **Off** then no trail effects will be seen.

TRAIL MENU - continued**Trail - Basic Menu**

This "get-you-started" menu, reached by pressing **F1** from the main **Trail** menu, gives a simple trail with optional sparkle. The trail can be strobed if desired. There are two sub-menus for **POSITION** and **SPARKLE**, reached by pressing **F3** and **F4** as usual. There are four buttons which are common to the two menus, these are:

F1
Setup

Sets up all the advanced **Trail** controls to give the **Basic** trail effect.

F2
ADVANCED

Leads to a set of sub-menus which gives total access to all the controls for the trail facility.

F5
Sparkle: Off / On

Controls whether or not the key portion of the trail will be sparkled. No sparkles will be seen unless the **Rate** control in the **SPARKLE** sub-menu is non-zero.

F6
Strobe: Off / On

Controls whether or not the trail will be strobed. Once this control is turned **On**, the **StrbT** control in the **POSITION** sub-menu can be used to adjust the interval between strobe events.

Trail - Basic - Position Menu (F1)

X

Controls how much the picture is shifted horizontally between each pass through the trailstore - in other words the horizontal gap between each picture in the trail.

Range 0 - ± 1.000 screen width

Y

Controls how much the picture is shifted vertically between each pass through the trailstore - in other words the vertical gap between each picture in the trail.

Range 0 - ± 1.000 screen width *Note that the trail cannot be shifted upwards more than 15 lines (a reading of +0.0504 on this control).*

StrbT

Controls how often the DVE picture is "dropped" into the store. Only appears when the **Strobe** button is set to **On**.

Range 0 to 255 fields.

TRAIL MENU - *continued***Trail - Basic - Sparkle Menu (F2)****Rate**

Controls the rate of the sparkle. Only works when the **Sparkle** button is set to **On**.

Range 0 - 100%

Decay

Controls how much the picture is faded away between each pass through the trailstore - in other words how quickly the trail fades away. (This is not in fact a sparkle-related control.)

Range 0 - 100%

TRAIL MENU - continued**Trail - Shadow Menu**

This "get-you-started" menu, reached by pressing **F2** from the main **Trail** menu, generates a drop shadow. Unlike the shadow generated by the **Models-Shadow** menu (see page 46) this shadow can be used in conjunction with any DVE model. There are two sub-menus for **CONTROL** and **COLOUR**, reached by pressing **F3** and **F4** as usual. There are the usual two buttons which are common to the two menus, these are:

F1
Setup

Sets up all the advanced **Trail** controls to give the **Shadow** effect.

F2
ADVANCED

Leads to a set of sub-menus which gives total access to all the controls for the trail facility.

Trail - Shadow - Control Menu (F3)

PosX

Controls the position of the shadow along the X-axis (horizontal).

Range 0 - ± 1.000 screen width

PosY

Controls the position of the shadow along the Y-axis (vertical).

Range 0 - ± 1.000 screen width *Note that the shadow cannot be shifted upwards more than 15 lines (a reading of +0.0504 on this control).*

Mix

Controls the transparency of the shadow. Is normally about 50%.

Range 0.00% - 100.0%

Trail - Shadow - Colour Menu (F4)

Sat/Luma/Hue

Sets the colour and brightness of the drop shadow matte.

TRAIL MENU - continued**Trail - Blur Menu**

This "get-you-started" menu, reached by pressing **F3** from the main **Trail** menu, gives a motion-blur effect. The blur can be optionally strobed.

This is a very useful menu as motion blur is possibly the most difficult effect to create from scratch using the **Advanced** menus.

The controls are:

F1 Setup	Sets up all the advanced Trail controls to give the Blur effect.
F2 ADVANCED	Leads to a set of sub-menus which gives total access to all the controls for the trail facility.
Blur	Controls how much blur is applied to the picture. At 0.00% there will be no blur, at 100.0% the picture will be blurred frozen. Range 0 - 100.0%
StrbT	Controls how often the blurred picture is refreshed. Range 0 to 255 fields.
F5 Update: Field / Frame	Controls whether just a field or a whole frame is dropped into the store. Field: The images fed into the trailstore will be single fields. There will be no motion judder but the vertical resolution will be halved. Frame: The images fed into the trailstore will be whole frames. The image will be at full resolution but may suffer from motion judder if there was a lot of movement at the time of the drop.
F6 Trail: Live / Frozen	Allows the contents of the trailstore to be frozen Live: The trailstore recurses (feeds back) as normal. Frozen: The trailstore contents are frozen and no recursion (feedback) takes place. All trailstore action halts with the blurred images frozen on screen.

TRAIL MENU - continued**Trail - Montage Menu**

This last "get-you-started" menu, reached by pressing **F4** from the main **Trail** menu, allows montages to be built up. These montages comprise frozen copies of the DVE manually "dropped" onto the background.

A typical way this feature might be used is to bring a quarter-size DVE onto the screen, drop it onto the background, instantly move the DVE off-screen, then bring it on again with a second quarter-size picture, drop that onto the background, and again twice more until the screen holds four different pictures in the four quarters of the screen.

The controls in this menu are as follows:

F1
Setup

Sets up all the advanced **Trail** controls to give the **Montage** effect.

F2
ADVANCED

Leads to a set of sub-menus which gives total access to all the controls for the trail facility.

F4

Update: Field /
Frame

Controls whether just a field or a whole frame is dropped into the store.

Field: The image dropped into the trailstore will be a single field. There will be no motion judder but the vertical resolution will be halved.

Frame: The image dropped into the trailstore will be a whole frame. The image will be at full resolution but may suffer from motion judder if there was a lot of movement at the time of the drop.

F5
Drop

Drops the current DVE image into the trailstore.

F6
Clear

Clears the trailstore of any frozen images.

TRAIL MENU - continued**Trail - Advanced Menu**

This menu is reached by pressing **F2** from any of the main **Trail** "get-you-started" menus. As described in the **Trail Controls Overview** on page 115, it gives access to the full set of trail controls. Although there are many such controls, they are laid out in a fairly straightforward manner, allowing most trail effects to be quickly and easily generated. However we would still recommend the **Trail - Blur** and **Trail - Montage** menus for generating those particular effects quickly and easily.

The buttons in this menu are as follows:

F1

MODE

Leads to a sub-menu that allows selection of the various trail modes.

F2

POSITION

Allows the amount of shift applied to the trail images to be controlled.

F3

TRAIL

Leads to a sub-menu that allows you to control the content, texture, decay rate and transparency of the trail.

F4

SPARKLE

Leads to a sub-menu that allows you to control the sparkling of the trail.

F5

COLOURS

Leads to a sub-menu that allows you to control the colours of the trail.

F6

OUTPUT

Leads to a sub-menu that allows the mixing of the DVE and trail, and their priority over each other, to be controlled

These sub-menus will now be described.

TRAIL MENU - continued**Trail - Advanced - Mode Menu**

This menu, as its name suggests, allows you to specify the mode of the trail. There are various buttons in this menu that appear and disappear as you change the main mode control (**F1**), depending upon whether they apply to that mode. The usual mode to use is **Normal**.

The controls in this menu that are always present are:

F1

Mode: Smooth /
Strobed /
Montage /
Shadow

Controls the master mode of the trailstore:

Smooth: A smooth trail will be generated, in other words a copy of the DVE will be dropped into the trailstore every field/frame. This mode is therefore the same as **Strobed** with a Strobe Time of zero.

Strobed: A trail will be generated but the copy of the DVE will only be dropped into the trailstore every few fields. The interval at which the DVE is dropped is controlled by the Strobe Time (**StrbT**) control in this menu.

Montage: The copy of the DVE is only dropped into the trailstore when the **Drop** button is pressed. This is usually used to build up a montage of frozen images by setting the trail position and decays to zero: for this purpose the main **Trail - Montage** menu is recommended.

Shadow: Only the first image of the trail is generated. This produces a drop-shadow. Unlike the shadow generated by the **Models-Shadow** menu this shadow can be used in conjunction with any DVE model, and can have any of the other trail effects (such as texture) applied to it.

F2

Update: Field /
Frame

Controls whether just a field or a whole frame is dropped into the store.

Field: The images dropped into the trailstore will be single fields. There will be no motion judder but the vertical resolution will be halved.

Frame: The images dropped into the trailstore will be whole frames. The image will be at full resolution but may suffer from motion judder if there is a lot of movement in the dropped pictures.

F3

Trail: Live /
Frozen

Allows the contents of the trailstore to be frozen

Live: The trailstore recurses (feeds back) as normal.

Frozen: The trailstore contents are frozen and no recursion (feedback) takes place. All trailstore action halts with the images frozen on screen.

The controls in this menu that appear and disappear are shown on the next page.

TRAIL MENU - continued**Trail - Advanced - Mode Menu - continued**

The following controls may or may not appear in this menu depending as shown on the setting of the **F1 - Mode** button.

StrbT	<i>Only appears when Mode is set to Strobed.</i> Controls how often the DVE picture is "dropped" into the trailstore.
Range	<i>0 to 255 fields. Note that it does not matter whether the F2 - Update button is set to Field or Frame: this number always counts in fields.</i>

F5	<i>Only appears when Mode is set to Smooth or Strobed.</i> Allows the trail operation to be stopped completely. This control has fairly specialised uses, and is usually only needed when programming certain types of effects sequences. Most of the time it can be ignored.
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Trail: Running / Stopped	Running: The trailstore operates as normal. Frozen: The trailstore is cleared and no drops into the store occur. This is subtly different from turning the trailstore Off using the control in the main Trail menu. When the trailstore is turned Off using <u>that</u> control, the trail actually keeps running but the output cannot be seen. When the trailstore is turned back On the trail will reappear as a whole. When <u>this</u> control is used, the trailstore actually stops running entirely, and when it is set back to Running the trail will be regenerated from scratch.
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F5 Drop	<i>Only appears when Mode is set to Montage.</i> Drops the current DVE image into the trailstore. Usually used to build up a montage of frozen images.
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F6 Clear	<i>Appears in all Modes except Shadow.</i> Instantly clears the trailstore of all its contents, whether live trails or frozen images. If a live trail is being used, it will immediately start to generate again.
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The numbers shown above the **Drop** & **Clear** buttons increment every time those buttons are pressed. For a **Drop** or a **Clear** to happen in a sequence, the number must change between keyframes.

TIP ✓ The **Drop** and **Clear** functions are best programmed into a sequence by pressing the **Drop** or **Clear** button before inserting (or modifying) the shot. When the sequence is run the trail will be dropped or cleared as the keyframe is passed.

Note that neither **Drop** nor **Clear** can be programmed into the first shot of a sequence. To do so first insert a "dummy" shot with a short (1 field) shot-time, then press the **Drop** or **Clear** button as required, then insert the second shot (which would have been the first).

TRAIL MENU - continued**Trail - Advanced - Position Menu**

This menu allows you to control the amount of shift applied to the trail image.

PosX

Controls how much the picture is shifted horizontally between each pass through the trailstore - in other words the horizontal gap between each picture in the trail. In **Mode: Shadow** this affects the shadow position.

Range

0 - ± 1.000 screen width.

PosY

Controls how much the picture is shifted vertically between each pass through the trailstore - in other words the vertical gap between each picture in the trail. In **Mode: Shadow** this affects the shadow position.

Range

0 - ± 1.000 screen width. *Note that the trail cannot be shifted upwards more than 15 lines (a reading of +0.0504 on this control). This amount is the same for all modes.*

TRAIL MENU - continued**Trail - Advanced - Trail Menu**

This menu allows you to control the content, texture, decay rate and transparency of the trail. The **F1** and **F2** buttons allow access to the two sets of variable controls for **VIDEO** and **KEY**. The other four function keys (described on the following page) stay the same within this menu.

Trail - Advanced - Trail - Video Controls (F1)

These controls affect just the video portion of the trail.

Decay	Sets the rate of decay of the video to the Sparkle Colour (set in the Trail - Advanced - Colours menu). If set to 0% then there will be no decay and the trail will remain at its initial colour (see the Mix control).
Delay	Sets the delay down the trail before the Decay will start. Range 0 to 255 fields/frames.
Mix	Sets the starting mix between the original DVE video and the Trail Colour (set in the Trail - Advanced - Colours menu). At 0% the trail will contain pure DVE video, at 100% the trail will contain pure Trail Colour matte. Depending upon the setting of the Decay & Delay controls this video/colour mix will then decay to the Sparkle Colour. Range 0 to 100%

Trail - Advanced - Trail - Key Controls (F2)

These controls affect just the key portion of the trail.

Decay	Sets the rate of decay of the key, in other words how soon the whole trail fades out to the background. If set to 0% then there will be no decay and the trail will remain solid. <i>Caution: If set to 100% the trail will disappear!</i>
Delay	Sets the delay down the trail before the Decay will start. Range 0 to 255 fields/frames.
Mix	Sets the key mix value, in other words the overall trail transparency over previous trail layers as well as the background. A value of 0% gives a solid trail and 100% an invisible trail. See also the note on page 133. Range 0 to 100%

TRAIL MENU - continued**Trail - Advanced - Trail Menu - continued**

The rest of the controls in this menu act as follows:

F3

Texture: Off

Selects which parts of the trail, if any, will be textured. The texturing happens as the image is dropped into the trailstore for the first time.

Off: The trail will not be textured.

Video: The video part of the trail will be textured with the **Video Texture** pattern specified by the **F5** button. This has the effect of "stamping" the selected pattern onto the video in the Trail Colour (set in the **Trail - Advanced - Colours** menu).

Key: The key part of the trail will be textured with the **Key Texture** pattern specified by the **F6** button. This has the effect of cutting the trail to the background in the shape of the selected pattern.

Video-Key: Both the video and key parts of the trail will be textured.

F4

Ripple: Off

Selects which of the trail decays, if either, will be rippled. This rippling can help give a three-dimensional effect to the trail.

Off: The trail will not be rippled.

Video: The decay of the video part of the trail to the Sparkle Colour will have a ripple effect applied to it.

Key: The decay of the key part of the trail (the fade to the background) will have a ripple effect applied to it.

Video-Key: Both the video and key decays will be rippled.

F5Video Texture:
Concrete

Selects which of the 20 different patterns to texture the video signal with. The list is: **Concrete, Stipple, Leather, Wicker, Earth, Wall, Indian, Rough1, Rough2, Mosaic, Stars, L.Weave1, S.Weave1, L.Weave2, S.Weave2, Boxes, Diamond, Square, Pyramid1 and Pyramid2.**

F6Key Texture:
Concrete

Selects which of the 20 different patterns to texture the key signal with. The list is the same as for the **Video Texture**.

TRAIL MENU - continued**Trail - Advanced - Sparkle Menu**

This menu allows you to control the Sparkling of the trail. Unlike Textures, which are regular patterns, Sparkles are applied randomly. Also, Sparkles are applied to the trail as a whole, while Textures are applied to the individual fields/frames within the trail at the moment that they are first dropped into the store.

This menu is laid out in a very similar way to the previous menu. The **F1** and **F2** buttons allow access to the two sets of variable controls for **VIDEO** and **KEY**. The other four function keys (described on the following page) stay the same within this menu.

Trail - Advanced - Sparkle - Video Controls (F1)

These controls affect just the video portion of the trail.

Rate	Sets the rate that the video part of the trail will be sparkled using the Video Pattern . The sparkles take the form of the pattern shape randomly "stamped" onto the trail in the Sparkle Colour (set in the Trail - Advanced - Colours menu). If set to 0% there will be no sparkles. If set to 100% the trail will be solid with the Sparkle Colour. <i>No sparkling will take place until the sparkling is turned on using the F3 button in this menu!</i>
Range	0 to 100%

Delay	Sets the delay down the trail before the video sparkling will start. (The sparkling of the video is only applied to those parts of the trail that have been in existence for longer than the setting of this control.)
Range	0 to 255 fields/frames.

Trail - Advanced - Sparkle - Key Controls (F2)

These controls affect just the key portion of the trail.

Rate	Sets the rate that the key part of the trail will be sparkled using the Key Pattern . The sparkles take the form of the pattern shape cut randomly through the trail to reveal the background. If set to 0% there will be no sparkles. If set to 100% the trail will be sparkled away entirely. <i>No sparkling will take place until the sparkling is turned on using the F3 button in this menu!</i>
Range	0 to 100%

Delay	Sets the delay down the trail before the key sparkling will start. (The sparkling of the key is only applied to those parts of the trail that have been in existence for longer than the setting of this control.)
Range	0 to 255 fields/frames.

TRAIL MENU - continued**Trail - Advanced - Sparkle Menu - continued**

The rest of the controls in this menu act as follows:

F3

Sparkle: Off

Selects which parts of the trail, if any, will be sparkled.

Off: The trail will not be sparkled.

Video: The video part of the trail will be sparkled with the **Video Pattern** specified by the **F5** button. This has the effect of randomly "stamping" the selected pattern onto the video in the Sparkle Colour (set in the **Trail - Advanced - Colours** menu). *Note: no sparkles will be seen until the **Rate** control in the **Video** sub-section of this menu is non-zero!*

Key: The key part of the trail will be sparkled with the **Key Pattern** specified by the **F6** button. This has the effect of randomly cutting through the trail to the background in the shape of the selected pattern. *Note: no sparkles will be seen until the **Rate** control in the **Key** sub-section of this menu is non-zero!*

Video-Key: Both the video and key parts of the trail will be sparkled.

F4

Ripple: Off

Selects which of the sparkle rates, if either, will be rippled. This makes the density of the sparkles ripple as they pass down the trail.

Off: The sparkle rates will not be rippled.

Video: The video sparkle rate will ripple up and down as the trail gets older.

Key: The key sparkle rate will ripple up and down as the trail gets older.

Video-Key: Both the video and key sparkle rates will be rippled.

F5

Video Pattern

Selects which of the 16 different patterns to sparkle the video signal with. The currently selected pattern is shown on the display.

F6

Key Pattern

Selects which of the 16 different patterns to sparkle the key signal with. The currently selected pattern is shown on the display.

TRAIL MENU - continued**Trail - Advanced - Colours Menu**

This menu simply allows the two matte colours used by the trailstore to be adjusted. These colours are unlike any others in the system in that they also have **Spin** controls which make the **Hue** of the colour continuously vary.

Controls are:

F1

TRAIL...

Allows control of the Trail Colour matte. This colour is the one that the DVE video is mixed with at the start of the trail, using the **Mix** control in the **Trail-Advanced-Trail-Video** menu. This is also the colour "stamped" onto the video by the **Video Texture** pattern.

When the top-right hand quantity is **Hue**, you can press this button again to change it to **Spin**, then again to change it back to **Hue**.

F2

SPARKLE...

Allows control of the Sparkle Colour matte. This is the colour with which the video part of the trail will be sparkled. It is also the colour to which the video part of the trail will decay, as controlled by the **Decay** control in the **Trail-Advanced-Trail-Video** menu.

When the top-right hand quantity is **Hue**, you can press this button again to change it to **Spin**, then again to change it back to **Hue**.

Note that the two **Spin** controls are normally set slightly positive, so that the trail colours are constantly changing. If you want to set a particular colour, remember to set the **Spins** to zero first!

TRAIL MENU - continued**Trail - Advanced - Output Menu**

This menu allows the mixing and priority levels of the DVE and trail to be controlled.

These controls affect the priority of the Trail Store's two layering systems: the layering that it performs on the internal feedback loop, and the layering of its output. The controls are as follows:

DVE	Sets the transparency of the original DVE picture. At 0% the DVE will be fully solid. At 100% the DVE will be fully faded away and only the trail generated from it will be visible. Range 0 to 100%
Trail	Sets the transparency of the entire generated trail. At 0% the trail will be as fully solid as the other trail controls allow. At 100% the trail will be fully faded away and only the original DVE picture will be left visible. Range 0 to 100%

Technical Note: There is a subtle difference between the above **Trail** control and the **Mix** control in the **Trail-Advanced-Trail-Key** menu (bottom of page 128). The control in this menu fades the trail output as a whole. The **Mix** control in the other menu affects the transparency of the picture as it is fed back round inside the store, therefore allowing different layers within the trail to be visible through each other.

F2 Priority: New/Old	Sets the priority mode of the layering applied to the pictures within the trailstore itself. New/Old: The old parts of the trail are overlaid with the newer parts. This is the normal mode to use. Old/New: The new parts of the trail are inserted behind the older parts. They become revealed as and when the old ones decay or are sparkled away. This mode is used for special effects.
F4 Output: DVE/Trail	Sets the layering of the output from the trailstore. DVE/Trail: The normal mode where the generated trail is always placed behind the foreground DVE source image. DVE/Under: The generated trail is always in the foreground with the DVE source image behind it. No DVE: Only the generated trail is visible.

TIP ✓ The latter two **Output** modes can be used to obtain motion blur and/or multigrab effects by setting **PosX**, **PosY**, **Video Decay** & **Key Decay** to **0**, and then adjusting the **Key Mix** control for the amount of blur required. Selecting **Mode - Strobed** rather than **Mode - Smooth** will give a multigrab effect, which again can be blurred using **Key Mix**. Choose between **DVE Under Trail** and **No DVE** depending upon the exact effect desired.
Having said this, for most purposes the main **Trail-Blur** menu does this all for you automatically with the minimum of fuss.

TRAIL MENU - continued**The Trail Process - A Description**

Having gone through all the **Trail** controls, this page presents a summary of all the processes that happen within the trailstore. All sub-menus mentioned are under the **Trail-Advanced** menu.

Mode sub-menu

1. The trail initially consists of a copy of the DVE video & key (the outline of the DVE) "dropped" into the trailstore. Whether this happens every field/frame (**Smooth**), or at regular intervals (**Strobed**), or only on demand (**Montage**) is controlled by the **Mode** button and **StrbT** control.

Trail-Video sub-menu

2. The dropped video may be tinted with the Trail Colour matte, with the mix between the video and the matte colour set by the **Mix** control. This (possibly) mixed video can then have a **Video Texture** pattern "stamped" onto it, also using the Trail Colour matte.

Trail-Key sub-menu

3. The dropped key (which controls the transparency of the dropped video) can be faded using the **Mix** control, so that the older layers in the trailstore and/or the background can be seen through the dropped video. This (possibly) faded key can then be cut through with a **Key Texture** pattern to reveal the older layers and/or the background through the dropped video.

Trail-Video sub-menu

4. The tinted and/or textured video then decays at a rate controlled by the **Decay** control to the Sparkle Colour. The **Delay** control can be used to make the **Decay** start only after the trail is a certain number of fields/frames old. The **Decay** rate can be set to **Ripple** up and down.

Trail-Key sub-menu

5. The faded and/or textured key then decays, fading the trail, at a rate controlled by the **Decay** control. The **Delay** control can be used to make the **Decay** start only after the trail is a certain number of fields/frames old. The **Decay** rate can be set to **Ripple** up and down.

Sparkle-Video sub-menu

6. If **Sparkle Video** is enabled, then the **Video Sparkle Pattern** is randomly stamped over the entire trail using the Sparkle Colour matte. The amount of sparkle is controlled by the **Rate** control, and it can be set to only affect parts of the trail that have been in existence for longer than **Delay** fields/frames. The sparkle **Rate** can be set to **Ripple** up and down.

Sparkle-Key sub-menu

7. If **Sparkle Key** is enabled, then the **Key Sparkle Pattern** is randomly cut through the entire trail to reveal the background. The amount of sparkle is controlled by the **Rate** control, and it can be set to only affect parts of the trail that have been in existence for longer than **Delay** fields/frames. Once more the sparkle **Rate** can be set to **Ripple** up and down.

Position sub-menu

8. The contents of the trailstore are shifted by the amount specified by **PosX** and **PosY**.

Output sub-menu

9. The result is then fed back to step 4 of the process, with the specified internal **Priority** (normally **New Over Old**). At this point the result is also sent to the output, with the **DVE** and **Trail** components faded as required, and with the **Output** priority applied.

TRAIL MENU - continued**Hints and Tips**

- If you cannot see a trail, then check that the **Trail** is switched **On** in the main **Trail** menu. Make sure in the **Trail-Advanced-Mode** menu that the **F1-Mode** button is set to **Smooth**, that the **F3-Trail** button is set to **Live** (not **Frozen**) and that the **F5-Trail** button is set to **Running**. Check in the **Trail-Advanced-Trail-Key** menu that neither the **Decay** nor the **Mix** control is set at or near to **100%**. Also check in the **Trail-Advanced-Trail-Output** menu that the **Trail** control is not set at or near to **100%**. Remember that, in most cases, a trail will not be seen if the DVE is full size - zoom the DVE down using the **Transform** menu to see the effect.
- A reasonable rain effect can be obtained by setting **PosX** and **PosY** to zero, switching on **Sparkle Video** using the **\|\|** or **///** patterns, with the Sparkle Colour set to black or white. Make sure that the **Delay** control for the **Sparkle Video** is set to zero. Finally, set the **Output** priority control to **DVE Under Trail** to complete the effect. Selecting the **Small *** or **Large *** patterns gives a snow effect instead. Other sparkle patterns can give the illusion of a transmission breakdown, etc.
- Although motion-blur and montage effects can be obtained using the **Advanced** menus, do remember that for nearly all purposes the **Trail-Blur** and **Trail-Montage** effects will produce these effects quickly and easily. To try creating a montage using the **Advanced** menus, select **Mode: Montage**, then set **PosX**, **PosY**, **Video Decay & Mix**, **Key Decay & Mix** all to **0%**. You can then use the **Drop** button in the **Mode** menu to perform the drop as usual.

The best tip of all is to simply experiment with the trail store. Set a **Zoom** size in the **Transform** menu of about **0.4000**, and move the DVE down to near the bottom-left hand corner of the screen. Enter the **Trail-Advanced-Mode** menu and set **Mode: Smooth**. Set both the **PosX** and **PosY** controls to about **+0.0020**, which will give a slow drift towards the top-right of the screen. Then simply experiment with the controls in each of the menus. You may like to work through the description on the previous page control by control to observe the effect that each one has.

Above all, have fun!

CHANNEL MENU

Selecting **Channel** from the **Start** menu or pressing the CHANNEL button leads the user to the **Channel** menu. This menu allows connection to different machines on the RollCall™ network.

If, when you do this, you get the message "Sorry! This function is not available" then you need to connect the panel to a RollCall™ network. See **Rollcall™ Installation** on page 212. You will then need to turn the panel off and on before it will notice the presence of the network (if no network is detected at power-up then all RollCall™ activity is shut down).

This menu shows you a list of Magic DaVE mainframe names that are present on the current RollCall™ network, plus the options **SERIAL** and **NONE**. If there is no RollCall™ network present, then **SERIAL** and **NONE** will be the only options in the list.

Choosing **SERIAL** makes a connection via the traditional serial cable interface. It is not possible to choose the **NONE** option. Choosing anything else attempts a RollCall™ network connection to that machine.

Use the ↑ and ↓ keys to select the desired machine (or **SERIAL**), and press the **F6 OK** button.

After the **F6 OK** button is pressed, the control panel will ask you to "Please wait". After a few seconds it should report "Connected", unless an error occurs. The most common error is "Device Busy", which is caused by an attempt to connect to a mainframe that already has two network controllers.

To change which mainframe you are connected to, simply press the **SELECT** button on the panel, and you will be presented with the machine list again. (Note that if there was no RollCall™ connection detected at power-up, the **SELECT** button is locked out. If you connect the network cable after power-up you will need to turn the panel off and on again before you can connect via the network.)

To control a second mainframe on the other channel, press the **CH 2** button on the control panel, and you will get the list again. Once you have connected to a mainframe on both channels, you can then instantly swap between the channels using the **CH 1** and **CH 2** buttons. You will not get the list again unless you press **SELECT**, in which case you will be able to change the machine on the current channel (**CH 1** or **CH 2**).

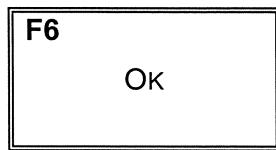
Note: because there is only one serial port available, you should not attempt to connect to **SERIAL** on both channels at once.



Switches control to the first mainframe to be connected. To change which mainframe Channel 1 is connected to, use the ↑ and ↓ buttons to scroll the list up and down and then press **F6 OK**.



Switches control to the second mainframe to be connected. To change which mainframe Channel 2 is connected to, use the ↑ and ↓ buttons to scroll the list up and down and then press **F6 OK**.



Confirms which mainframe to which you want to connect Channel 1 or Channel 2.

SEQUENCE CONTROL MENU

Selecting **SeqCtrl** from the **Start** menu or pressing the **SEQUENCE CONTROL** button once leads the user to the top-level **Sequence Control** menu. Pressing the **SEQUENCE CONTROL** button again will go to the last **Sequence Control** menu used.

For a general description of sequences see **SEQUENCES AND DMEMS** on page 8.

When building a new effects sequence or modifying an existing one, this menu enables the timing and movement of the sequence to be controlled in detail.

Sequence Duration

When a sequence is built, the running duration will be the total sum of the shot to shot times. When shots are inserted or deleted, each shot duration is added to or subtracted from the total sequence time. A sequence can have a minimum of only one shot and no duration, or two shots as a transition, with a minimum of just one field duration. At the other end of the scale, a sequence could be built to be as long as about 10 minutes.

Shot Timing

The system is set for a default shot duration of 1 second between successive keyframes. This may be re-adjusted at any time using the **Shot Time** control. *The shot time of a keyframe applies to the transition to the next keyframe.* Therefore if a mistake is made in building a sequence, go back one shot using the **PREV** key and change the shot duration, followed by the **MODIFY** key to register the change. Then press **NEXT** before carrying on the editing or building.

The minimum shot time is one field. If an instantaneous jump rather than a smooth transition to the next keyframe is required, simply use the **Interpolation - Step** mode. The shot time now defines the delay.

Interaction Between Sequence Duration and Shot Timing

As explained above, when a sequence is being edited, the total duration is the sum of the individual shot times. If the sequence is saved, it is the shot times, not the sequence duration, which is stored. Therefore when a previously-saved sequence is loaded, its duration will be the sum of the shot times. If a sequence is required to run in a longer or shorter time, the duration must be set before it is run.

Note that when the duration has been modified, the shot times shown will be incorrect. When the sequence is run, the individual shot times shown are scaled to achieve the required sequence duration.

The overall duration can be set back to the sum of the shot times by entering an overall duration of zero.

SEQUENCE CONTROL MENU - continued

There are four parts to the **Sequence Control** menu, **Sequence**, **Profile**, **Properties** and **GPO**, reached by pressing **F1**, **F2**, **F3** and **F4** respectively. These will now be described.

Sequence Control - Sequence Sub-Menu**Shot Time**

Sets and shows the duration of the transition to the next keyframe.

SPos

Sets and shows the current position through the sequence, i.e. at the start of a sequence this indicator will read **0.00%**, when the sequence is halfway through running this indicator will read **50.00%** and so on.

Total

Sets and shows the duration of the current sequence. This will be the sum of the shot times, unless you change it.

TIP ✓

To reset the **Total** time back to the sum of the shot times after you have changed it, highlight the **Total** figure using the ← or → buttons, then type in **0** on the keypad and press **ENTER**. The time will change back to the original total.

F6

PauseShot: No

This button selects whether the current shot is a pause shot or not. If a shot is inserted with this control set to **Yes**, the sequence will stop at that shot when it is run. To re-start the sequence press **TAKE** again. This can be useful for sequences that fly the DVE on to show a clip, interview, etc., then fly off again in a different fashion after the clip/interview has finished.

SEQUENCE CONTROL MENU - continued**Sequence Control - Profile Sub-Menu**

The way that parameters move (are interpolated) from keyframe to keyframe is highly adjustable. The transition between the keyframes may be set to happen in basically three different ways:

Interpolation Mode	Sequence Motion
Curve	The transition is made as a curve. If the following shot is also CURVE there will be a smooth transition through the next keyframe position.
Linear	The transition will follow a straight line path to the next keyframe.
Step	There will be no smooth transition. All the keyframe parameters and positions will jump to the next shot.

Which of the three modes is used is set by the **F5** button in this menu. However, as you might expect, all control parameters which are multiple choices rather than continuously variable, e.g. the type of page-turn or tile reflection modes, are always sequenced in **Step** mode. Also, some variable parameters, e.g. matte colours, zoom sizes & light fade, are never sequenced in **Curve** mode; they can only be **Linear** or **Step**. When **Curve** is selected they are sequenced in **Linear** mode. For a full list of these parameters see **Appendix 2: Variable Controls Not Sequenced In “Curve” Mode** on page 236.

Acceleration can be adjusted in both **Linear** and **Curve** modes. It allows the speed of the transition between keyframes to be non-linear. *Note that this only affects the rate of movement, not the trajectory (path).*

Linearity and **Tension** can be adjusted in **Curve** mode only. They allow the shape of the trajectory (path) between the keyframes to be controlled.

Accln	Sets the degree of speed change between keyframes. Zero gives constant speed (in Linear mode) and the “normal” curvy speed change in Curve mode. Whether the acceleration is greatest During the keyframe or Between keyframes is set by the button above F4 in this menu.
Linear(ity)	Linearity acts as a slider between the two movement modes Curve & Linear . Setting linearity to 1.000 in Curve mode is the same as selecting Linear mode.
Tens'n	Tension controls the amount of “spring” put into the movement in Curve mode. The higher the setting the more curvy the curve becomes! At extreme settings the trajectory can even loop. The type of tension - whether it produces Open or Closed loops - is controlled by the button above F6 in this menu.

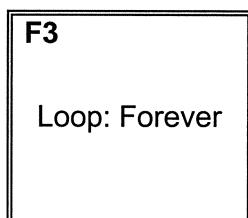
All of these parameters can be adjusted on a keyframe-by-keyframe basis.

SEQUENCE CONTROL MENU - continued**Sequence Control - Properties Sub-Menu**

This menu contains various sequence-related controls that, although stored with the sequence, are not sequenced on a shot-by-shot basis (except for **F5**).

The **F1** (and **F2** if an option card is fitted) buttons lead to the **Enable** sub-menus, which determine which parts of the machine will be sequenced (see below).

The other controls in this menu are:

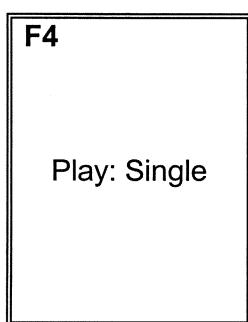


This button only appears when F4 is set to Loop or PingPong modes.

This button controls how many times a sequence will repeat.

Forever: The sequence will repeat forever.

Count: The sequence will repeat the number of times shown above this button. The number can be changed by the numeric keypad, the cursor keys, or with the X-axis of the joystick.

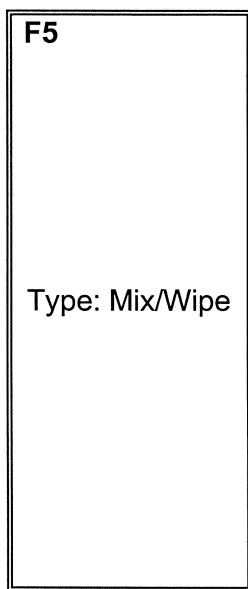


This button specifies whether the sequence will only play once, as normal, or whether it will play many times automatically when TAKE is pressed.

Single: Normal mode. The sequence will play only once.

Loop: The sequence will play more than once, according to the setting of **F4**. When it gets to the end it will do a bus-swap (if **F6** is set to **Yes**), jump back to the beginning and start again.

PingPong: The sequence will play more than once, according to the setting of **F4**. When it gets to the end it will reverse and play backwards to the beginning, and then start again.

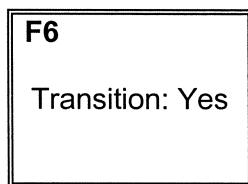


This button controls the overall mode of the sequence. It changes which surfaces are allocated to Program & Preset, thus allowing various different types of transition to be constructed:

Mix/Wipe: This is the usual mode of an option-card machine, allowing transitions between the two backgrounds. However it is fairly unusual to find a sequence built in this mode. If **F6** is set to **Yes**, then the Program/Preset bus-swap will happen between **BKGD A** and **BKGD B**. *This mode is not available in non-option systems.*

DVE \leftrightarrow BACK: Select this mode when building a sequence that will run from **DVE FRONT** to **DVE BACK** over a static background, doing a Program/Preset bus-swap between the two sides of the DVE (the back becomes the next front) at the end.

DVE \leftrightarrow BKGD: Select this mode when building a sequence that will run from the **DVE FRONT** to the background (for example a DVE swooping off of the screen to reveal the background). This mode is the default for systems without option cards.



This button specifies whether the current sequence is a **Transition** or not. When set to **Yes** there will be a Program/Preset bus-swap at the end of the sequence between the two surfaces specified by **F5**. When set to **No** there will not be. Note that no bus-swaps will occur when: (a) the ENABLE light is flashing, or (b) the **F4** button is set to **PingPong**.

SEQUENCE CONTROL MENU - continued**Sequence Control - Properties - Enable Sub-Menus**

These menus set which controls are affected by the running of a sequence.

When a sequence is built, all the control settings (except those in the **Setup** menus) are memorised. However on playback certain controls, e.g. the settings of the **Program & Preset** busses, are normally excluded from the sequence's action, i.e. the sequence has no effect upon them. This is so that the same sequence can be run using (in the example above) different sources on the **Program** and **Preset** busses without having to change the sequence.

In a standard system there are six different sets of controls which can have their sequenceability turned on or off. These are all contained in just one menu under **F1** in the **Properties** menu.

When the option is fitted there are ten different sets of controls. The extra four controls are on a second menu under **F2** in the **Properties** menu.

For full details of exactly which controls are affected by each switch, see **Appendix 1: Non / Optionally-Sequencable Control Parameters** on page 234, but a summary follows:

All systems:

Mix/Wipe	Mix level, mixer mode (<i>option system only</i>), and all Wipe controls.
Freeze	Freeze Controls.
Pattern	Pattern Type, Colours, etc.
Prgm/Prst	Program Bus and Preset Bus Sources & Matte.
Black	Fade-to-Black.

Standard (non-option) systems only:

Aux	Aux Source & Matte
------------	--------------------

Option systems only:

Aux 1	Aux 1 Source & Matte
Aux 2	Aux 2 Source & Matte
DVE Masks	DVE Masks controls
DVE Chroma Keyer	DVE Chroma Keyer controls.
DSK Keyer	DSK Linear & Chroma Keyer & Crop controls.

Normally all the above are set to **Off**.

These settings are saved with the sequence, so when the sequence is recalled these switches will be set as they were when the sequence was saved. Note that they do not affect what information is saved as part of the sequence. As stated above, all the above controls are memorised when a sequence is saved - these switches only affect which controls are "played back" when a sequence is run. Therefore a sequence can be recalled, and some or all of these switches changed to change the behaviour of the sequence.

These switches do not affect DMEMs.

SEQUENCE CONTROL MENU - *continued***Sequence Control - GPO Sub-Menu**

This menu allows shot-by-shot control of the three user-definable GPOs (general purpose outputs). These can be used to trigger external equipment when a sequence runs. For details of the pinout, see **Table 6** on page 222.

The **F1**, **F2** and **F3** buttons control the state of the three outputs.

*These buttons only have an effect when **Mode: Transition** is set in the **Setup-Editor-GPI/O** menu.*

CAUTION: When a sequence is **Archived** to or **Restored** from disk (see page 159), the User GPOs will be asserted according to the first shot of the sequence. Therefore it may be wise to disable the GPO feature when doing this (see page 170).

SAVE MENU

Pressing the **SAVE** button takes you to the **Save** menu, which despite the name of the button actually allows four types of files - sequences, DMEMs, sequence caches and, on option card systems only, JPEG stills - to be saved to the mainframe's permanent EEPROM memory. This menu is illustrated in **Figure 6** at the top of the next page.

Which type of file is saved is controlled by the filetype "bubble" at the top-right hand side of the screen. This indicates whether you are saving **Sequence Files**, **DMEM Files**, **Cache Files** or **JPEG Files**. This can be changed in the usual way using the input focus, but a quicker way is to simply keep pressing the **SAVE** button. Each time you press the **SAVE** button the file type in the "bubble" will cycle through the four types of files.

Once you have chosen the type of file you wish to save, you then have to choose where you want to save it and what name you want to give it. This is done by using the two "bubbles" towards the left-hand side of the screen. Under the "**Folder:**" heading is a partial list of the folders in the system, with the current folder highlighted in the "bubble". (If you are not sure what a folder is, read the section called **SEQUENCES AND DMEMS** on page 8.) In the diagram, the folder currently being looked at is called "HOME". The next one up in the list is called "SYSTEM" and the next one down in the list is called "GVG_SAVE".

To change which folder is currently being looked at, first make sure that the input focus (the "highlight", explained at the foot of page 19) is on the left-hand "bubble", i.e. the one labelled "Current Folder Name" in the diagram. If it is not, then use the \leftarrow or \rightarrow keys to move it to the left-hand bubble, so that the writing on the screen appears as white on a black background.

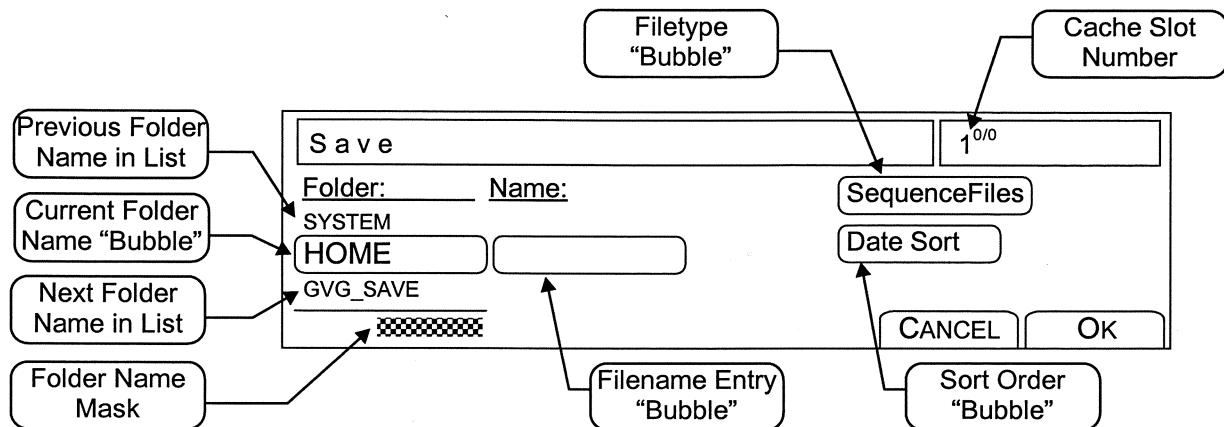
Now, use the \uparrow and \downarrow buttons to scroll up and down the list of folders until you reach the one into which you wish to save the file. (To make a new folder follow the instructions under **File - New Folder Menu** on page 158.) If the end of the list is reached, an arrow will appear either above or below the bubble, depending upon which end was reached.

Once the desired folder has been selected, press the \rightarrow button to move the input focus to the "Name:" (right-hand) bubble. Using the **ALPHA** button if required (see page 24) type in the name you want to give the sequence. You can enter up to eight letters and/or numbers. To rub out the last letter typed, press the **CANCEL** button, to clear the whole name press the **NORMAL** button. When you have finished, press the **ENTER** button, then press **F6** (labelled on the screen as "**OK**"). The word "**Saved**" will flash up on the top-right hand side of the screen for a moment.

If you have decided to save the file, but when you press **F6** ("**OK**"), instead of saying "**Saved**" a message pops up in the centre of the screen saying "**This file exists! Do you wish to overwrite it?**" then the name you have chosen is already being used by another file of the same type. If you want to overwrite this existing file then press **F6** ("**OK**"), but if not then press **F5** ("**CANCEL**") to go back to the main part of the menu and choose a new name.

If you change your mind and do not want to save the file at all, then press the **F5** button (labelled on the screen as "**CANCEL**") from within the main part of the menu, or simply select another menu by pressing one of the menu keys, for example **MODEL**.

Note: it is important that the mainframe is not turned off whilst a file is being saved. Doing so may cause problems in the future.

SAVE MENU - continued**Figure 6: Save Menu****Notes**

If the file you are saving is one that you have previously recalled and which you have presumably just modified, then the name of the file will already be displayed for you. In this case you do not have to type in the name again - simply press **F6 ("Ok")** to save it. As above, you will be asked if you want to overwrite the old version of the file, press **F6** to do so, or **F5** to go and type in a new name.

If you are saving a **Sequence**, you can change which cache slot you are saving the sequence from by using the PREVIOUS and NEXT buttons on the keyboard to change the cache slot. (Make sure that the light in the ENABLE button is off. If it's flashing, then just press the button itself so that the light goes off.) Remember that the cache slot number is displayed in the status bar at the top right-hand corner of the screen (see the diagram).

You can change the order in which folders are displayed by using the filetype "bubble" (see the diagram). This can be set to either **Date Sort** or **Name Sort**, and controls whether the folder names are sorted by date (newest first) or by name. The setting can be changed in the usual way by using the \leftarrow or \rightarrow keys to move the input focus highlight onto the bubble and then using the \uparrow or \downarrow keys to change it.

For advanced users only: To quickly select a folder in a system with many folders, the *folder name mask* (see diagram) can be used. Using the **ALPHA** button (see page 24), type in the first few letters of the folder name you want - they will be displayed under the folder list. The list of folders displayed will be reduced to only those whose names start with the letters you have typed in. If you make a mistake, press the CANCEL button; to clear the whole mask, press the NORMAL button.

To delete, move or copy a file, or to create a new folder to put your file in, see the description of the **File Main Menu** on page 156.

SAVE MENU - continued**THIS FEATURE IS ONLY AVAILABLE WHEN THE OPTION IS FITTED****Grabbing & Saving Stills**

This menu also allows you to grab and save the current Program Output from Magic DaVE as a JPEG still. If you set the filetype to **JPEG Files**, an extra button will appear:



Grabs a JPEG still at the compression ratio shown above the button.

Above this button is the compression ratio indicator. This can be changed by moving the input focus onto it and changing it with the arrow keys in the usual way. There is a range of compression ratios available from **5:1** to **50:1**.

When **F4 GRAB** is pressed, Magic DaVE will freeze all sources, stop any spins, grab the Program Output and compress it as a JPEG still. This will take a few seconds and the **F4 GRAB** button will stay "lit" while this happens. When it has finished, it will unfreeze the sources, restart any spins and turn the **F4 GRAB** button off.

The compressed still is now held in temporary (RAM) storage. To save it permanently, enter a filename in the usual fashion and press **F6 OK**. Sometimes, especially when using low compression ratios, you may get an error. In this case, increase the compression ratio and try again.

The saved stills are stored in a different part of the mainframe than the rest of the Magic DaVE files - i.e. on the option card. Therefore saving stills takes no storage space away from sequences, DMEMs, etc.

After having been saved, a JPEG still can be restored using the **Recall** menu (see the next page and also page 150 in particular).

When used with the *Magic DaVE for Windows* package, uncompressed stills can be grabbed from the mainframe and stored on the PC, and then downloaded from the PC to any of the four active frame-stores. The storage capacity using this method is limited only by the storage capacity of the PC's hard disk. Images stored & retrieved using this method are full bandwidth 4:2:2 images.

RECALL MENU

Pressing the RECALL button takes you to the **Recall** menu, which despite the name of the button actually allows four types of files - sequences, DMEMs, sequence caches and, on option card systems only, JPEG Files - to be recalled from the mainframe's permanent EEPROM memory. This menu is illustrated in **Figure 7** at the top of the next page.

Which type of file is recalled is controlled by the filetype "bubble" at the top-right hand side of the screen. This indicates whether you are recalling **Sequence Files**, **DMEM Files**, **Cache Files** or **JPEG Files**. This can be changed in the usual way using the input focus, but a quicker way is to simply keep pressing the RECALL button. Each time you press the RECALL button the file type in the "bubble" will cycle through the four types of files.

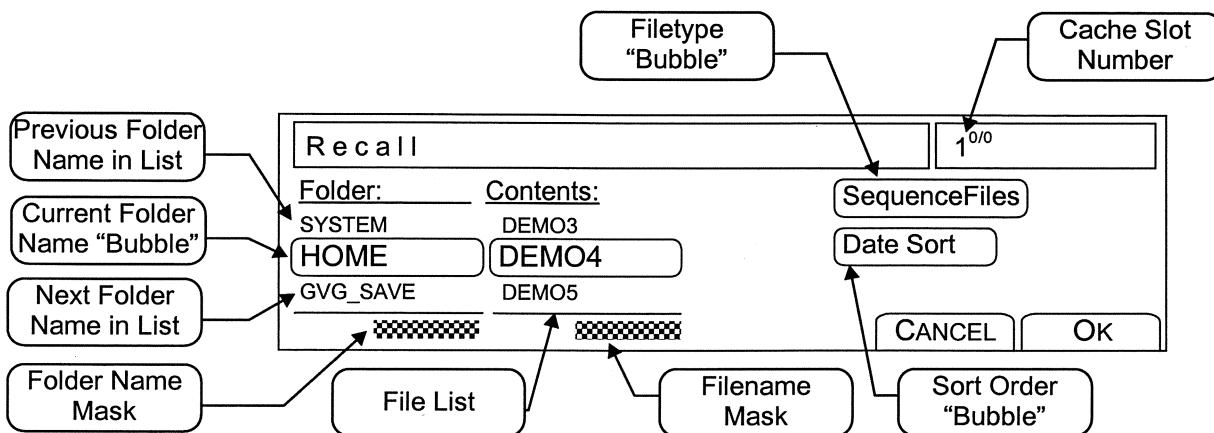
Once you have chosen the type of file you wish to recall, you then have to choose the file that you want to recall. This is done by using the two "bubbles" towards the left-hand side of the screen. Under the "**Folder:**" heading is a partial list of the folders in the system, with the current folder highlighted in the "bubble". (If you are not sure what a folder is, read the section called **SEQUENCES AND DMEMS** on page 8.) In the diagram, the folder currently being looked at is called "HOME". The next one up in the list is called "SYSTEM" and the next one down in the list is called "GVG_SAVE".

To change which folder is currently being looked at, first make sure that the input focus (the "highlight", explained at the foot of page 19) is on the left-hand "bubble", i.e. the one labelled "Current Folder Name" in the diagram. If it is not, then use the \leftarrow or \rightarrow keys to move it to the left-hand bubble, so that the writing on the screen appears as white on a black background.

Now, use the \uparrow and \downarrow buttons to scroll up and down the list of folders until you reach the one from which you wish to recall the file. If the end of the list is reached, an arrow will appear either above or below the bubble, depending upon which end was reached.

Once the desired folder has been selected, press the \rightarrow button to move the input focus to the "Contents:" (right-hand) bubble. In a similar fashion to that when looking for folders, use the \uparrow and \downarrow buttons to scroll up and down the list of files until you have found the one you are looking for. When you have found the required file, press **F6** (labelled on the screen as "OK"). The word "**Recalled**" will flash up on the top-right hand side of the screen for a moment.

If you have changed your mind and do not want to recall a file, then press the **F5** button (labelled on the screen as "**CANCEL**") from within the main part of the menu, or simply select another menu by pressing one of the menu keys, for example MODEL.

RECALL MENU - continued**Figure 7: Recall Menu****Notes**

If you are recalling a **Sequence**, you can change which cache slot you are recalling the sequence into by using the PREVIOUS and NEXT buttons on the keyboard to change the cache slot. (Make sure that the light in the ENABLE button is off. If it's flashing, then just press the button itself so that the light goes off.) Remember that the cache slot number is displayed in the status bar at the top right-hand corner of the screen (see the diagram).

You can change the order in which folders and files are displayed by using the filetype "bubble" (see the diagram). This can be set to either **Date Sort** or **Name Sort**, and controls whether the folder and file names are sorted by date (newest first) or by name. The setting can be changed in the usual way by using the \leftarrow or \rightarrow keys to move the input focus highlight onto the bubble and then using the \uparrow or \downarrow keys to change it.

For advanced users only: To quickly select a folder or file in a system with many files, the *name masks* (see diagram) can be used. Using the **ALPHA** button if required (see page 24), type in the first few letters of the folder or file name you want - they will be displayed under the folder or file list (depending upon where the input focus is). The list of folders or files displayed will be reduced to only those whose names start with the letters you have typed in. To rub out the last letter, press the CANCEL button; to clear the whole mask, press the NORMAL button.

To delete, move or copy a file, see the description of the **File Main Menu** on page 156.

RECALL MENU - continued**THIS FEATURE IS ONLY AVAILABLE WHEN THE OPTION IS FITTED****Recalling & Using Stills**

This menu also allows you to recall and use JPEG stills to any one of the system's four main framestores. If you set the filetype to **JPEG Files**, an extra button will appear:

F4

Input

Selects the active framestore into which to restore the JPEG still.

The list of framestores currently active will differ depending upon whether a double-sided DVE and/or DSK has been selected, but consists of the usual abbreviations such as **DVE FRONT**, **DVE BACK**, **BKGD A**, **BKGD B**, **DSK FILL**, etc.

Note that, in addition, the still can be recalled to the **DSK KEY** framestore. In this case only the luma portion of the still is restored.

It is possible for Magic DaVE to automatically load a selection of stills at power-up. See **Special Folders & Files on page 154**.

SEQUENCE CACHE MENU

Pressing the **SEQCACHE** button in the **Start** menu leads the user to the **Sequence Cache** menu.

For a general description of sequences see **SEQUENCES AND DMEMS** on page 8.

This menu allows the contents of a sequence cache to be examined.

A sequence cache consists of 24 slots, each of which can contain a sequence. A sequence cache is built by using the **F5** (+) and **F6** (-) keys (or the ↑ and ↓ buttons) to select the cache slot into which to save or recall sequences using the **Save** and **Recall** menus. The cache can then be saved using the **Save** menu as usual.

Once saved, a cache can then be recalled later on (by using the **Recall** menu) in order to recall all the sequences to their chosen slots¹. This allows the user to build “shot boxes” of groups of related sequences, or groups of sequences needed for a particular client or production. Note that saving a cache does not save the sequences themselves. The cache file is merely a list of sequences which can be from various folders. This allows the same sequence to be used in more than one cache without duplicating it.

Here are the controls in this menu:

F4 CLEAR	<i>This button only appears when the ENABLE button is flashing.</i> Clears the current cache slot, removing any sequence that was in it. <i>This only clears the sequence from the cache slot. It does not delete the sequence from the filing system (provided that it has been saved).</i>
F5 +	Moves to the next cache slot. (The ↑ button can also be used for this, as can the NEXT button when the ENABLE button is not flashing.)
F6 -	Moves to the previous cache slot. (The ↓ button can also be used for this, as can the PREVIOUS button when the ENABLE button is not flashing.)

The rest of this menu is explained on the following page.

¹ This assumes that all the sequences named in the cache still exist (which they will unless they have been deleted). If some of the sequences are missing, then they obviously cannot be recalled, and the message “Cache Load Incomplete” will appear on the control panel’s screen.

SEQUENCE CACHE MENU - continued

On the right-hand side of the display is an indicator which shows the current slot number, the name of the sequence and the folder it came from, together with the number of keyframes (shots) in the sequence and the current keyframe (i.e. the one that will be edited if any editing operations are performed). In the example below (Figure 8) the contents of slot 3 are being displayed. The sequence loaded into this slot is "ROLL RL", from folder "LIB PAGE". This is the "current sequence", i.e. it will run if the TAKE button is pressed (provided the SEQUENCE button is lit). It has 2 keyframes of which the first is selected.

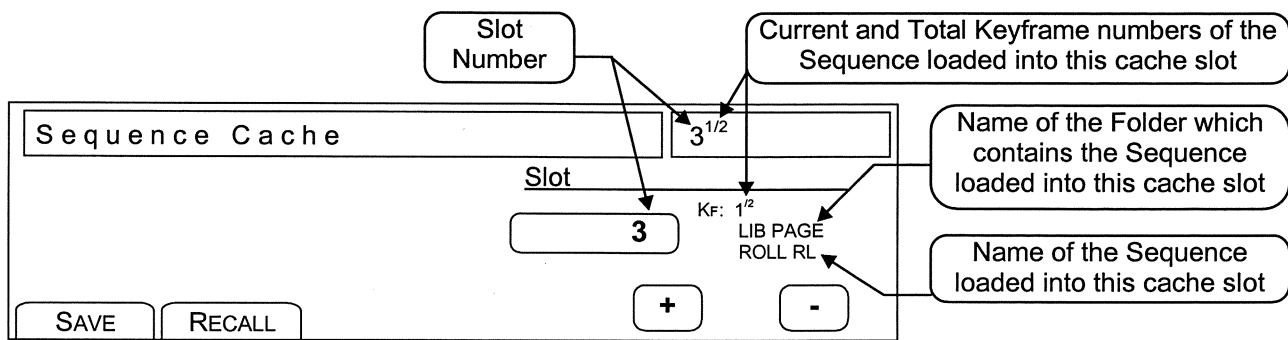


Figure 8: Sequence Cache Main Menu

Note that the numeric keypad can also be used to select a cache slot, simply by typing in the cache slot number and then pressing the ENTER button.

IMPORTANT NOTES ON FILE HANDLING**Special Folders & Files**

On a new system there will be at least one folder and one file. Usually there will be more, as most **Magic DaVE** systems are shipped with several folders of demonstration sequences.

The one folder that always exists is **SYSTEM** (if the user deletes it, it is automatically re-created when the mainframe is next powered-up or reset). Although files can be saved or recalled in this folder as normal, the folder also has a special usage: it exists mainly to hold various special files that will be automatically **Recalled** on power-up or reset.

These are as follows, listed in the order that they are **Recalled**:

- The **NORMAL** DMEM holds the state of the machine which is deemed to be the “normal” state, i.e. the state that the machine will return to when controls are normalised (either by the X, Y & Z buttons underneath the joystick or by the NORMAL button). It is also the state in which the machine will be after power-up unless there is also a **DEFAULT** DMEM (see next entry). Note that this file always exists. If the user deletes it, it is automatically re-created (containing factory settings) when the mainframe is next powered-up or reset.
- The **DEFAULT** DMEM, if present, is loaded at power-up after the **NORMAL** DMEM. This facility is provided so that the machine can display an interesting setup at power-up, while still having a sensible set of normal values.
- The **DEFAULT** Sequence Cache, if present, is also loaded at power-up so that the user can have a set of sequences ready and waiting to use.

In an option card system, the following JPEG still files, if present, will then be automatically **Recalled** as follows:

- The **BKGDA** JPEG File into the Background A framestore.
- The **BKGDB** JPEG File into the Background B framestore (if there is only one background, i.e. the machine is set to have a double-sided DVE and a DSK enabled, then this is ignored).
- The **DVEFRONT** JPEG File into the DVE Front framestore.
- The **DVEBACK** JPEG File into the DVE Back framestore (if the DVE is set to single-sided, then this is ignored).
- The **DSK** JPEG File into the DSK Fill framestore.
- The **DSKKEY** JPEG File (luma only) into the DSK Key framestore.

(If the DVE is set to double-sided with BKGD wipes enabled, i.e. there is no DSK, then these last two are ignored.)

Therefore the machine can be set to power up in a completely defined state, including stills.

IMPORTANT NOTES ON FILE HANDLING - continued**Special Folders & Files - continued**

It is a good idea to leave the **NORMAL** DMEM more-or-less alone, as the one supplied from the factory has the controls set to what most users would consider a "normal" state. The **NORMAL** DMEM is usually only altered to change input & output setup formats, levels, etc. *To return to the original factory **NORMAL** (for example if the current version accidentally becomes unusable), go to the Main Menu and press **Setup-Normal-Factory** and then **OK**.* See the **Setup - Normal Menu** section on page 179 for more on how to save these special files.

Note that DMEMs that are recalled from the **SYSTEM** folder will restore the state of the entire machine, including the Setup menus, so that the **NORMAL** and **DEFAULT** DMEMs can do their jobs properly. DMEMs recalled from other folders leave the **Setup** menus alone (they can, however, be moved or copied to the **SYSTEM** folder and recalled from there to restore the **Setup** information within them).

There is also another special folder: the **GVG-SAVE** folder. This holds files for the EDITOR-SWITCHER (GVG-100) interface. When the editor requests that an E-MEM be read, written, learnt or recalled, the E-MEM information is saved in and/or recalled from this folder. Normally the user need not be concerned about the contents of this folder, although the files in this folder can be saved and recalled like any other if desired. (For those interested in the names of the files that are saved, see **Appendix 3: GVG-SAVE Filename Conventions** on page 238.) This folder only appears if required.

In most systems there will also be a series of folders starting with the letters **LIB**, e.g. **LIBSLIDE**, **LIB ZOOM**, **LIB PAGE**, etc. These each contain a library of commonly-used sequences installed at the factory. Each folder also contains one or more sequence caches which will load sets of the sequences ready for use.

Filing System Actions Performed on Power-Up

The actions performed when the mainframe is powered on or reset are:

- If the **SYSTEM** folder does not exist, then create it.
- If the **SYSTEM** folder's **NORMAL** DMEM does not exist, then make one from **Magic DaVE**'s internal factory settings.
- Recall the **SYSTEM** folder's **NORMAL** DMEM and note down its contents for the X, Y, Z and **NORMAL** buttons.
- If the **SYSTEM** folder's **DEFAULT** DMEM exists, then recall it.
- If the **SYSTEM** folder's **DEFAULT** sequence cache exists, then recall it.
- If the **SYSTEM** folder's JPEG still files exist, then recall them in the order shown on the previous page.

FILE MENUS

General File Maintenance

This menu, reached by pressing the **F2 - File** button from the **Main Menu**, allows you to delete, move & copy files. Which type of file is deleted, moved or copied depends upon the filetype bubble at the top-right hand corner of the screen - like the **Save** and **Recall** menus.

In addition to deleting, moving and copying files, the **File** menu also allows you to create new folders.

File Main Menu

When the **File** button is pressed, you will enter the main **File** menu. Along the bottom, above **F1** to **F4** are the buttons **Delete**, **Move**, **Copy** and **New Fold**, with a **Cancel** button above **F6**. Press the appropriate F-key to perform the function labelled on the button, whose labels are hopefully self-explanatory.

At the top of the screen is a “bubble” button with the input focus on it. This is the filetype control which states whether you are dealing with **Sequence Files**, **DMEM Files**, **JPEG Files** or **Sequence Cache Files**. Press the \uparrow or \downarrow keys as usual to change which type of file you want to work with.

Note: JPEG Files can only be Deleted. They cannot be Moved or Copied.

Beneath the filetype bubble there is another “bubble” button labelled **Date Sort** or **Name Sort**. This button controls whether folder and file names shown within the menus are sorted by name or by date (newest first). This can be changed in the usual fashion by using the \leftarrow or \rightarrow buttons to move the input focus onto it and then using the \uparrow or \downarrow keys to change the setting.

FILE MENUS - continued**File - Delete Menu**

If you have not done so already, then please read **SEQUENCES AND DMEMS** on page 8 and **General File Maintenance** on the previous page before continuing.

This menu is reached by pressing **F1 ("Delete")** from the main **File** menu. It contains the by-now familiar folder and file selection "bubbles". (If they are not "familiar", then it is suggested that you read the description of the **RECALL MENU** on page 148 to understand the principle of them.)

Select the file you wish to delete in the normal manner (use the arrow keys to choose a folder and file), and then press **F6 ("Del File")** to delete it. If you wish you may delete the currently-selected folder by pressing **F5 ("Del Fold")** - this will only work if the folder is empty, i.e. if all files within it (if any) of all types have already been deleted. Otherwise a message will appear.

If you decide not to delete any files, simply press **F4 ("Cancel")** to return to the main **File** menu.

File - Move Menu

If you have not done so already, then please read **SEQUENCES AND DMEMS** on page 8 and **General File Maintenance** on the previous page before continuing.

This menu is reached by pressing **F2 ("Move")** from the main **File** menu. It contains the by-now familiar folder and file selection "bubbles". (If they are not "familiar", then it is suggested that you read the description of the **RECALL MENU** on page 148 to understand the principle of them.)

Select the file you wish to move or rename in the normal manner (use the arrow keys to choose a folder and file), and then press **F6 ("Move...")** to proceed to the next menu. If you decide that you do not wish to move a file, simply press **F5 ("Cancel")** to return to the main **File** menu.

Having pressed **F6**, you will enter the second **Move** menu. This shows the familiar folder and file selection "bubbles" on the left, and the file that you selected in the previous **Move** menu on the right-hand side. As the arrow in the middle of the screen implies, you are now being invited to select a folder and filename into which to move the original file (if the folder is different) or to which to rename the original file (if the folder is the same). Once more, if you have changed your mind, you can press **F5 ("Cancel")** to return to the main **File** menu.

Assuming you wish to carry on, select the new folder (if moving rather than renaming) by means of the \uparrow or \downarrow keys as usual, and then press the \rightarrow key to move to the filename "bubble" where you can type in the new filename in the usual manner.

Once you have selected & typed the new folder and filename for the file, simply press **F6 ("Ok")** to move (or rename) the file.

FILE MENUS - continued**File - Copy Menu**

If you have not done so already, then please read **SEQUENCES AND DMEMS** on page 8 and **General File Maintenance** on page 156 before continuing.

This menu is reached by pressing **F3 ("Copy")** from the main **File** menu. It contains the by-now familiar folder and file selection "bubbles". (If they are not "familiar", then it is suggested that you read the description of the **RECALL MENU** on page 148 to understand the principle of them.)

Select the file you wish to copy in the normal manner (use the arrow keys to choose a folder and file), and then press **F6 ("Copy...")** to proceed to the next menu. If you decide that you do not wish to copy a file, simply press **F5 ("Cancel")** to return to the main **File** menu.

Having pressed **F6**, you will enter the second **Copy** menu. This shows the familiar folder and file selection "bubbles" on the left, and the file that you selected in the previous **Copy** menu on the right-hand side. As the arrow in the middle of the screen implies, you are now being invited to select a folder and filename into which to copy the original file. Once more, if you have changed your mind, you can press **F5 ("Cancel")** to return to the main **File** menu.

Assuming you wish to carry on, select the new folder (if required) by means of the \uparrow or \downarrow keys as usual, and then press the \rightarrow key to move to the filename "bubble" where you can type in the new filename in the usual manner.

Once you have selected & typed the new folder and filename for the file, simply press **F6 ("Ok")** to copy the file.

File - New Folder Menu

If you have not done so already, then please read **SEQUENCES AND DMEMS** on page 8 and **General File Maintenance** on page 156 before continuing.

This menu is reached by pressing **F4 ("New Fold")** from the main **File** menu. It contains simply a folder "bubble", into which you should type the new folder's name (ignore the name displayed, if any), as usual using the **ALPHA** button (page 24) if necessary.

When you have done so, press the **ENTER** button and then **F6 ("OK")** to make the new folder. The text "**Created**" will pop up briefly at the top-right hand corner of the screen. If you have changed your mind and do not wish to make a new folder, then press **F5 ("Cancel")** to return to the main **File** menu.

DISK MENUS

These menus allow you to **Archive** files and folders from the EEPROM filing system to the floppy disk drive, and to **Restore** files and folders from the floppy disk drive back to the EEPROM filing system.

Once you have used the other filing system menus, there should be no problem in using these menus, and so they will not be described in detail. There are just four differences that will be mentioned here:

- You cannot **Archive** or **Restore** **JPEG Files**. The only way **JPEG Files** can be transferred into or out of the mainframe is by using a PC running *Magic DaVE for Windows*. (This method can also be used to transfer full-bandwidth 4:2:2 stills into and out of the mainframe framestores directly.)
- As well as the **Sequence Files**, **DMEM Files** and **Cache Files** options, there is also a **Folders** option. This allows you to **Archive** or **Restore** a whole folder at once.
- When you **Archive** or **Restore** a cache you will be asked if you want to also **Archive** or **Restore** all the sequences listed in that cache.
- When restoring files from the floppy disk the lists of folders and files may take a little longer than usual to appear, due to the delay while the floppy disk is read.

IMPORTANT NOTE:

Magic DaVE uses standard IBM-compatible high-density floppy disks, DS HD, 1.44MB capacity.

The disks have to be already formatted using DOS version 4.00 or higher (for example 5.00 or 6.22). Disks formatted under earlier versions of DOS (for example 3.30) are not suitable, and give the message "Cannot use this kind of disk".

Unfortunately most, if not all, brands of pre-formatted floppy disk are only formatted to DOS 3.30 standard and therefore at present cannot be used with Magic DaVE.

Any floppy disks to be used with Magic DaVE must be (re-)formatted in a PC running DOS version 4.00 or higher. A typical way to do this from the DOS command line would be:

```
FORMAT A: /U /F:1440
```

SETUP MENUS

This menu, reached by pressing **F4** from the **Magic DaVE Main Menu**, contains a large range of controls for setting up the machine, which once set are not normally adjusted again. All the settings in these menus are memorised within DMEMs, but are not memorised as part of sequences.

This menu presents the user with three rows of sub-menus. In the same way as the **Start**, **Model** and **Effect** menus, use **F6** (marked with a ↓) to move the rows down a place until the row you want appears just above the function keys (you can also use the ↑ and ↓ buttons). You can then use one of the keys **F1** to **F5** to select the sub-menu you want. The available sub-menus are:

- | | |
|-----------------|---|
| INPUT | Goes to a series of sub-menus which allows detailed setup of the four or eight video inputs, their formats, levels, etc. |
| OUTPUT | Goes to a sub-menu that allows some control over the content and format of the Preview (and in 525-lines, Program) outputs. |
| EDITOR | Goes to a sub-menu that allows control over the SW'ER, VTR & GPI/O Editor (and external master Switcher) interfaces. |
| TIMING | Goes to a sub-menu that allows the line-standard and various timing controls to be altered. |
| NORMAL | Goes to a sub-menu that allows the NORMAL and DEFAULT power-up states to be easily set. |
| RESET | Goes to a sub-menu that allows you to reset Magic DaVE. |
| FILE | Goes to a sub-menu that allows you to perform internal filing system maintenance. |
| TIME | Goes to a sub-menu that allows you to set the system date and time. |
| ASPECT | Goes to a sub-menu that allows the input and output aspect ratio of the system to be controlled, together with the conversion mode if applicable. |
| PANEL | Goes to a sub-menu that allows control over the panel's own setup |
| ENG | Goes to a sub-menu for Service Engineers only. |
| ROLLCALL | Goes to a sub-menu that allows you to set the RollCall name of your control panel and the currently connected Magic DaVE mainframe. |
| OPTION | <i>This button only works if an option card is fitted.</i>
Goes to a sub-menu that allows you to turn the option card on or off. |

SETUP MENUS - continued**Setup - Input Menu**

This menu allows all eight Video inputs and the processing of both Key inputs to be adjusted. The "bubble" at the top right-hand side of the screen indicates which input (from **Video 1** to **Video 8**, plus **Key 1** and **Key 2**) is currently being adjusted. The current input under adjustment can be changed in either of two ways, either:

- Use the ↑ and ↓ buttons to choose which input to adjust,
- or -
- Press any of the buttons on either of the PROGRAM or PRESET busses. Buttons **1** to **8** will naturally select those **Video** inputs, **BLACK**, **PATN** or **MATTE** will select the first **Key** input.

(On four-input models there are only four video inputs and one key input.)

The **Video** and **Key** menus are rather different, as shown on the following pages.

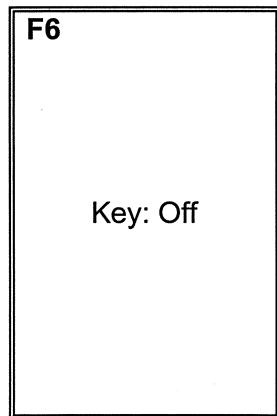
SETUP MENUS - continued**Setup - Input (Video) Menu**

This menu is in two parts, a main part and a sub-menu for the **Crop** control, reached in the usual way by pressing **F1**.

The main section has these controls:

H Position	Sets the input picture position.
Range	$\pm 2.3\mu s$ in 74ns (pixel) steps.

The **F1** button selects the **Crop** sub-menu as previously described.



- Off:** The video source will not be keyed unless the DVE and/or DSK keyers are explicitly set to **On** in the **Effects-Keyers-DVE/DSK-External Key** menus (see pages 75 and 86).
- Key 1:** The video source will be automatically keyed by Key Input 1 on either the DVE and/or the DSK if they are set to key **By Source** in those menus. This can be useful to ensure that sources like caption generators are keyed wherever they are used.
- Key 2:** As **Key 1** but using Key Input 2.
Four-input versions of Magic DaVE (Models 4DE & 4DOE) have only one key input. Therefore on these machines this button is a simple Off/On selection.

Setup - Input (Video) - Crop Menu

This menu allows the DVE tile to be precisely cropped to fit the edges of the input video. This is useful to cope with over blanking or bad framing problems on an input-by-input basis before the main effects crop comes in. This menu works identically to the main crop menu (except it has no Softness control!), see the description of the **Effects - Crop Menu** on page 69 to see how to adjust the figures quickly and easily with the joystick.

Note that this crop control should be adjusted with the DVE tile zoomed down slightly or moved so that the edge being adjusted is well clear of the edge of the screen. Small amounts of crop are intentionally removed when the tile is full-size centred to ensure that no background is visible around the edges of the tile.

SETUP MENUS - continued**Setup - Input (Key) Menu****H Position**Sets the input key position for the DSK only.**Range** ±2.3µs in 74ns (pixel) steps.**F5**

Key Invert: Off

This button affects all uses of the key signal, both DVE and DSK. It acts as a "master" invert of the key signal, before all others.**Off:** The key signal will not be inverted.**On:** The key signal will be inverted.**F6**

Range: 16..235

This button controls the expected range of the input key signal for both DVE and DSK.

16..235: The range of input key sample values is expected to be from 16 to 235 decimal (10 to EB hex).**16..144:** The range of input key sample values is expected to be from 16 to 144 decimal (10 to 90 hex).

SETUP MENUS - *continued*

We have dealt with all the **Setup - Input** menus. We now move onto the other **Setup** menus.

SETUP MENUS - *continued***Setup - Output Menu**

This menu - reached by pressing **F2** from the main **Setup** menu - allows some control over the content and format of the Preview and Key outputs.

The Preview Output is available in both serial digital and analogue component formats.

Note that, unlike the analogue version of Magic DaVE, the analogue component Preview Output is of broadcast quality and can be used as an alternative main output if desired. The **Pgm+FTB** setting of the Preview **Source** control has been provided for this purpose.

SETUP MENUS - continued**Setup - Output - Preview Controls****F1**

Source: Preset

Selects the source to be displayed on the Preview Outputs (Digital and Analogue):

Pgm-FTB: The current Program output, prior to the Fade-to-Black.

Pgm+FTB: The current Program output, after the Fade-to-Black.

DVE: The raw DVE output signal. (See note below.)

Preset: The current Preset bus setting.

DSK FILL: The DSK fill source, before any keying or crop is applied. (This is only available if the option card is fitted.)

Key: The output key signal.

Note: The **DVE** setting has the following limitations:

- On the standard system only, when the DVE is in the process of being wiped on or off the whole Preview picture will be filled with the wipe border colour.
- On the option card system, when the trail is turned on, the trail will be visible throughout the Preview picture, not just where it will be visible in the final output.
- On the option card system, the DVE tile shown on the Preview picture will not be “decogged”.

These are normal side-effects of the **DVE** Preview mode and should not cause concern.

F2

Mode: YPbPr / RGB

Sets the signal format for the Analogue Preview Output, **YPbPr** or **RGB**.

F3

PbPrLEVEL: EBU

Sets the signal levels for the Analogue Preview Output:

EBU: Pb/Pr levels will be 700mV pk-pk for 100% colour bars.

Betacam: Pb/Pr levels will be 700mV pk-pk for 75% (EBU or SMPTE) bars. This setting is normally required for NTSC and older PAL Betacam VTRs.

The following button only appears in 525-line mode:.

F4

525 Out: Setup

Selects whether the Analogue Preview Output luma (Y) signal will have setup on it:

No Setup: Output has no setup (pedestal) - for “Japanese” NTSC.

Setup: 100 IRE output, 7.5 IRE setup - for normal NTSC.

SETUP MENUS - continued**Setup - Output - Program Control****F5**

Output: 8 Bit

Selects whether the Serial Digital Program Output is 8-bit or 10-bit.

8 Bit: Output will be 8 bit. Select this if downstream equipment is only 8-bit capable.**10 Bit:** Output will be 10 bit. Select this if downstream equipment is 10-bit capable.

Normally the output from Magic DaVE is 8 bits. However, if Magic DaVE's output is feeding 10-bit equipment downstream, then this control should be switched to 10 bits. In this case Magic DaVE applies an adaptive low-pass spatial filter to the output to regenerate the two extra bits. This gives an improvement in picture quality, especially over areas of near-constant brightness. Note that this process will improve any 8 bit signal fed through Magic DaVE, not just those generated within Magic DaVE itself (e.g. mattes & patterns).

If the output of Magic DaVE is feeding 8-bit equipment downstream, then this control should be left set to 8 bits, to ensure transparency. This is because the top 8 bits of the generated 10-bit signal may differ from the original 8-bit signal by one LSB.

Note that this feature is only present on the Serial Digital Program Output. Neither the Serial Digital or Analogue Preview Outputs are 10-bit capable, even if switched to view the Program output.

10-bit output is not possible in 2-line Pre-Read mode (see page 174).

Setup - Output - Key Control**F6**

Key: 16..235

This button controls the range of the output key signal

16..235: The nominal range of output key sample values will be from 16 to 235 decimal (10 to EB hex).**16..144:** The nominal range of output key sample values will be from 16 to 144 decimal (10 to 90 hex).

SETUP MENUS - continued**Setup - Editor Menu**

This menu - reached by pressing **F3** from the main **Setup** menu - allows **Magic DaVE**'s behaviour when controlled from a remote editor or master switcher to be finely controlled. Throughout this section the word "editor" is used to describe any controlling device, be it editor, switcher or custom controller.

GPI Operation

The GPI facility allows the current sequence to be controlled remotely, by providing the ability to effectively control the TAKE, STOP & REV panel keys from an external source. The connection is made via the GPI port on the back of the mainframe, see **Edit Controller** on page 209 and **Table 6** on page 222 for details. Tally and user-definable GPOs are also available, see **Table 6** on page 222 and also **Table 7** on page 223 for details.

Switcher Operation

The SWitcheR interface allows **Magic DaVE** to be controlled as if it were a GVG-100 type mixer. Mixes, wipes and source selection can all be remotely controlled. Sequences can also be controlled as if they were a wipe, any sequences present in the 24 sequence cache slots being treated as wipe numbers 50 to 73 inclusive (these numbers can be changed).

The interface also supports the DPM-100/700 extensions to the GVG-100 protocol which allow sequences to be controlled in a similar way to the VTR interface (see below).

The only adjustment that may need to be made to this interface is whether the editor type is **Generic** or **BVE-2000**. This latter mode, which is the default, prevents **Magic DaVE** from responding to a command to set the Program bus to Black. This is to avoid a timing problem with certain editors, including the BVE-2000.

These editors, apparently in order to help certain VTRs lock up properly, set the Program bus on the switcher to Black until a moment before the edit-in point, when they then tell the switcher to switch back to the starting source specified in the edit list. Unfortunately, due to the timing delay through the **Magic DaVE** system, this can sometimes result in a single field of black appearing at the start of the edit. Setting the control to **BVE-2000** stops **Magic DaVE** responding to a "Set Program Bus to Black" command, setting it to **Generic** allows it to do so.

Note that commands to set the Keyer, DSK or Preset busses to Black are always obeyed. If your system suffers from this timing problem (so that you have to set the control to **BVE-2000**) but you need to set Black on the Program Bus, then set the Background Colour Generator setting on the Editor to be black and then set the Program Bus to Colour Bkgd (Matte) instead. If you prefer you can set video inputs 5 to 8, as these also give Black and ignore the setting of this control.

The physical connection is made via the EDITOR - SW'R port on the back of the mainframe. See **Edit Controller** on page 209 and **Table 5** on page 222 for further details.

SETUP MENUS - continued**Setup - Editor Menu - continued****VTR Operation**

The VTR Editor interface allows sequences to be controlled from a VTR Editor as if they were on videotape, i.e. they can be played, shuttled forward, backward, etc. It treats the **Magic DaVE** sequence cache as if it were a 24-hour long videotape in a playback VTR. Each hour corresponds to a different sequence. Therefore the VTR Editor can be programmed to play back different sections of the "tape" in order to run the various sequences in the **Magic DaVE** sequence cache.

The physical connection is made via the EDITOR - VTR port on the back of the mainframe. See **Edit Controller** on page 209 and **Table 5** on page 222 for further details.

The first sequence in the cache (slot 1) corresponds to timecode hour "00". The second sequence (slot 2) corresponds to timecode hour "01", and so on until the twenty-fourth sequence (slot 24) which equals timecode hour "23".

Each sequence starts 1 minute into the hour. Therefore sequence 1 starts at **00:01:00:00**, sequence 2 starts at **01:01:00:00** and so on. This allows time for preroll, etc. Although this time is factory set to 1 minute, this can be changed by means of the **VTR Sequence Offset** control within this menu.

Each sequence occupies the same amount of time on the "tape" as its overall sequence time, e.g. a 3 second sequence in cache slot 5 will run from **04:01:00:00** to **04:01:03:00**.

The VTR interface is timed to allow for the video delay through the DVE. No adjustment at the editor should be necessary. Should edits be consistently early or late, then an adjustment to the interface timing can be made by means of the **VTR Timecode Delay** control within this menu.

SETUP MENUS - continued**Setup - Editor Menu - continued****Setup - Editor Menu Controls**

F1 GPI/O	Displays the GPI/O interface controls, allowing them to be adjusted. (These controls are displayed by default when the Setup-Editor menu is first entered.)
F2 VTR	Displays the VTR interface controls, allowing them to be adjusted.
F3 SW'R	Displays the SW'R interface controls, allowing them to be adjusted.

GPI/O Controls

F4 GPO: On	Controls whether GPOs, of whatever type, will work. Default is On .
F5 GPI: On	Controls whether GPIs will be noticed by Magic DaVE . Default is On .
F6 Mode: Video	Controls whether the GPOs will be in Video tally mode, or Transition (User GPO) mode. For more details of the pinout of the two modes see Table 6 on page 222.

SETUP MENUS - continued**Setup - Editor Menu - continued****VTR Controls**

Seq Start @ Min	Sets the point within each hour of timecode at which the selected sequence will start running. Setting a value of at least 1 minute (the default) is recommended in order to allow for the preroll.
	Range 0 - 59 minutes.

Timecode Delay	Controls the timing of the Magic DaVE 's sequence playback. The default setting should produce field-perfect edits without adjustment, but if you find that, for example, Magic DaVE is always two fields late in starting to play back a sequence, then enter -2 to correct it. Similarly, if you find that Magic DaVE is always one field early, then type in 1 to correct it.
	Range -4 to +6 fields.

F5 Ballistics: On	Controls whether the VTR interface attempts to simulate a real VTR (with its mechanical limitations) or not. Off: The VTR interface will respond to "Goto" commands by jumping instantly to the requested timecode and stopping. This obviously makes the response very quick but will confuse some editors by achieving what appears to be physically impossible for a real VTR. On: The VTR interface will respond to "Goto" commands by winding to one second before the requested timecode and then crawling up to the requested timecode itself. This is enough like a real VTR to keep most, if not all, editors happy.
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F6 VTR: On	Sets the mode of the EDITOR - VTR interface: Off: The VTR interface is effectively disabled. Magic DaVE will appear to be a VTR switched to Local mode. In other words it will respond to requests for timecode etc., but it cannot be controlled by the remote editor. On: The VTR interface is enabled. The remote editor can command Magic DaVE to run any of the 24 sequences in the sequence cache at any time, overriding Magic DaVE 's current operation.
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SETUP MENUS - continued**Setup - Editor Menu - continued****SW'R Controls**

Seq Cache / Wipe Start	<p>Controls the wipe number at which Magic DaVE will select a sequence from the sequence cache rather than a wipe (if a sequence is loaded into that cache slot). This control only applies when GVG-100 commands are being received.</p> <p>Range 0 to 255. Default: 50.</p>
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F5

DVE: On Key 2

Sets which **Magic DaVE** key layers respond to which Switcher protocol key commands:
On Key 1: DVE responds to Key 1, DSK responds to Key 2
On Key 2: DVE responds to Key 2, DSK responds to Key 1 (default).
This control only applies when GVG-100 commands are being received.

F6SW'R: Off /
Generic /
BVE 2000 /
DME

Sets the mode of the EDITOR - SWitcheR interface:

- Off:** Switcher interface is disabled. **Magic DaVE** will accept, but ignore, all commands sent to it from an editor via the SW'R port.
- Generic:** Switcher interface is enabled. **Magic DaVE** will accept GVG-100 & DPM-100/700 (not ESbus mode) commands via the SW'R port.
- BVE 2000:** Switcher interface is enabled as above but will reject the specific command to set the Program Bus to Black.
- DME:** Switcher interface is enabled. **Magic DaVE** will accept DME format commands to select and run DVE effects sequences.

SETUP MENUS - continued**Setup - Editor Menu - continued****Notes on using the VTR Interface**

This section assumes that the standard **Sequence Offset** of 1 minute is in effect.

Your VTR Editor should automatically detect the VTR type from the **Magic DaVE**; if the type has to be selected manually then we suggest that BVH-2000 is chosen.

When editing, simply treat the **Magic DaVE** as an extra playback VTR. Arrange the timing of its "playback" so that the **Magic DaVE** timecode passes xx:01:00:00 at the point you wish the sequence to commence. Providing that you do not cross an hour boundary (because then a new sequence will be selected), the **Magic DaVE** "tape" may be run past the ends of the sequence. In such cases the **Magic DaVE** will simply show the first or last keyframe of the sequence as appropriate.

Let's take an example using a standard A/B-roll type configuration. You have a twenty second shot on VTR A followed by a fifteen second shot on VTR B. You wish to "cut" from one to the other by means of a DVE transition; say the DVE tile containing VTR A's video spins off the screen revealing VTR B's video on the background. The DVE sequence lasts two seconds, and to simplify matters, the material is such that the last two seconds of VTR A can be used as part of the transition, as can the first two seconds of VTR B. (If this was not the case, then the DVE could use freezes or unwanted material from the tapes could be used for the duration of the transition.)

VTR A's material lasts from **00:12:34:15** to **00:12:54:15**.

VTR B's material lasts from **00:04:10:05** to **00:04:25:05**.

The **Magic DaVE** sequence concerned is in (say) slot 8 and thus runs from **07:01:00:00** to **07:01:02:00**.

The position on the record VTR for these two shots to be placed is **00:25:01:20**, and the whole edit will last 33 seconds (20 + 15 - 2 for the overlap between the two VTRs' output during the DVE transition).

Therefore the edit parameters (depending upon your Editor's layout) might look something like this:

	Start	Stop
Master Record	00:25:01:20	00:25:34:20
Playback A	00:12:34:15	(00:13:07:15)
Playback B	00:03:52:05	(00:04:25:05)
Playback C (Magic DaVE)	07:00:42:00	(07:01:15:00)

Thus the **Magic DaVE** is timed such that it will reach **07:01:00:00** (and thus run its two-second transition) eighteen seconds after the start of the edit, i.e. two seconds before the end of VTR A's material, and just as VTR B's material starts.

SETUP MENUS - continued**Setup - Timing Menu**

This menu - reached by pressing **F4** from the main **Setup** menu - allows the line-standard and timing of the system to be changed. The controls in this menu are:

F1

Standard: 625

Sets the system line-standard:

- 625:** 625 lines at 50Hz field rate
525: 525 lines at 59.94Hz field rate

F2

Pre-Read: Off

Sets the delay scheme through Magic DaVE:

- Off:** All paths through Magic DaVE will have a delay of two fields (in a fully genlocked system) or between one and three fields (in an asynchronous system).
2 Lines: All paths - except the DVE - through Magic DaVE will have a delay of 2 lines. The system must be fully genlocked, and 10-bit output (see page 167) is not possible. This mode is provided chiefly for "Digital-S" VTRs; the 4-line mode is to be preferred where possible.
4 Lines: All paths - except the DVE - through Magic DaVE will have a delay of 4 lines (in a fully genlocked system) or between 4 lines and 2 fields & 4 lines (in an asynchronous system).

See the notes on the following pages for further information.

F3

Genlock: Auto

Sets the genlock source for Magic DaVE:

- Off:** Magic DaVE will free-run regardless of any genlock inputs.
Auto: Magic DaVE will lock to either the Analogue Reference Input or the signal on SDI Video Input 4. If both are connected then the Analogue Reference Input takes precedence.
Analogue: Magic DaVE will lock to the Analogue Reference Input only.
Digital-4: Magic DaVE will lock to the signal on SDI Video Input 4 only.

Note that for this button to work, sections 1 & 4 of DIP switch SW1 must be UP, see page 216.

F5Pre-Read Timing
Blck Brst: Normal

This button only applies when F2 Pre-Read is set to On.

Controls the timing of Magic DaVE's black-burst outputs:

- Normal:** Magic DaVE's black-burst outputs will be timed to the main system outputs.
Advanced: Magic DaVE's black-burst outputs will be advanced 4 lines before the main system outputs.

F6Pre-Read Timing
Genlock: Normal

This button only applies when F2 Pre-Read is set to On and Magic DaVE is genlocked to its external reference input.

Controls the timing of Magic DaVE's genlock:

- Normal:** Magic DaVE's output will be timed to the genlock reference input.
Delayed: Magic DaVE's output will be timed 4 lines later than the genlock reference input. This allows sources that are timed to the genlock reference input to only suffer the minimum delay, rather than being delayed by a frame.

SETUP MENUS - continued**Notes on Magic DaVE System Timing**Introduction

Normally Magic DaVE ensures that the video delay through the system is constant no matter what the path for the video is, i.e. the background is delayed by 1 frame to compensate for the frame of delay through the DVE. This allows DVE Transitions (where the DVE is used to Transition from Program to Preset) to happen without a frame jump at the beginning or end.

However, for some applications this is undesirable, such as when using Pre-Read VTRs. To support this the non-DVE paths can be set to a "Minimum Delay" mode of 4 lines. (For certain applications this can be further reduced to just 2 lines, however this mode has significant limitations and so it will only be discussed at the end of this section.)

Normal Mode

Normally in a fully genlocked system, Magic DaVE has a delay of one frame through all video and key paths. For asynchronous sources, the delay is between approximately one field and three fields depending on the actual timing of the inputs. If a source is running through relative to the output, the input framestore will eventually 'overtake'. As this happens a frame is repeated or omitted. The point at which this happens has hysteresis to ensure that a single clean time jump of 40mS (33mS for NTSC) is the only effect seen at the output.

Apart from the ability to use asynchronous sources, this arrangement has the advantage that sources may be selected freely through any path in the system, without having to worry about delays. For example, a Program/Preset bus-swap is possible between the DVE output and a background without a time jump. This is not possible with a conventional switcher plus DVE because of the extra frame of delay which is always present in the DVE path.

Minimum Delay Mode

There are two uses for minimum delay mode. The first is to allow pre-read VTR editing. This is where the record VTR is also a source VTR. Its video play head is deflected so that it plays one or more tracks in advance of where it records. This is very popular because it saves one VTR in an edit suite. For example, to mix or wipe to the next source, the edit starts with the material previously recorded being played back through the switcher and recorded onto the same place on the tape. The switcher can then perform a wipe or mix to the next source. Clearly, this is only possible if the delay through the switcher is within the pre-read advance capability of the VTR.

The second use of minimum delay mode is to allow Magic DaVE to directly replace a conventional switcher and DVE. A 'zero delay' switcher has the advantage that audio is not delayed relative to video. In addition it may be more familiar to operators. However, the expense of audio delays is more than compensated by the extra freedom which the normal operating mode of Magic DaVE provides.

In addition, the switcher in Magic DaVE can be used to combine the output of its own DVE with that of a second Magic DaVE to form a two DVE channel system. The second channel is selected as the DSK source, which can be placed over or behind the internal DVE image, using the key from the second Magic DaVE.

SETUP MENUS - continued**Notes on Magic DaVE System Timing - continued**Minimum Delay Mode Options

Even in minimum delay mode the input frame synchronisers in Magic DaVE are active. This still allows asynchronous remote sources to be used, and provides extra flexibility. The actual minimum delay through Magic DaVE is four lines. Essentially, for paths other than the DVE, sources which are at least four lines earlier than the output of Magic DaVE will have no extra delay added, while sources which are timed to the output of Magic DaVE will be delayed by a frame.

Hence Magic DaVE will emulate a conventional switcher plus DVE if the sources are advanced (or the output delayed) by four lines. If the sources are co-timed to the output of Magic DaVE there will be a frame delay through all paths, and the operational flexibility of normal mode will be obtained. The only source which must be advanced is the pre-read from the record VTR. Clearly the pre-read source must not be selected to the DVE at the start of an edit; if it is there will be a time jump at the in-point.

The obvious question is "Why not use minimum delay mode all the time?". There are two reasons. Firstly, if a pattern is used as a DVE and background source simultaneously, it may be shifted vertically by one line on the background owing to internal timing constraints. Secondly, for asynchronous sources the difference in delay between the DVE and other paths through Magic DaVE will vary with source timing. This is because the overtaking point of the framestores on the DVE input is different from the background or DSK inputs in minimum delay mode.

Minimum Delay Mode Installation

To control Minimum Delay Mode the **Setup-Timing** menu described above is used. The main Minimum Delay mode control is the **F2 Pre-Read** switch.

To assist in referencing the system there are the two **Pre-Read Timing** controls: **F5 Blck Brst** and **F6 Genlock**. When **F6** is set to **Delayed** (rather than **Normal**), then the output of Magic DaVE is delayed by four lines relative to the genlock reference. When **F5** is set to **Advanced** (rather than **Normal**) then the black-burst outputs are advanced from the main output by four lines.

Both these controls only apply in Minimum Delay mode.

Here is a diagrammatic explanation of their action:

Timing	Position of Magic DaVE's Main Program Output	Position of Magic DaVE's Black-Burst Outputs
Genlock Reference – 4 lines		Blck Brst: Advanced
Genlock Reference – 3 lines		
Genlock Reference – 2 lines		
Genlock Reference – 1 lines		
Genlock Reference	Genlock: Normal	Blck Brst: Normal Blck Brst: Advanced
Genlock Reference + 1 lines		
Genlock Reference + 2 lines		
Genlock Reference + 3 lines		
Genlock Reference + 4 lines	Genlock: Delayed	Blck Brst: Normal

Note: if there is no incoming Genlock signal, the **Genlock: Delayed** setting has no effect.

SETUP MENUS - continued**Notes on Magic DaVE System Timing - continued**

The various referencing options which give predictable video delays are summarised below, but note that Magic DaVE will always cope with asynchronous inputs such as remotes (except in 2-line mode - see below).

Normal Mode Configurations:

Set **F2 Pre-Read** to **Off**.

1. Genlock Magic DaVE to station reference.
Genlock the sources to Magic DaVE black-burst or station reference.
2. Magic DaVE free-running.
Genlock the sources to Magic DaVE black burst output.

Minimum-Delay Mode Switcher-Emulation Configurations:

Set **F2 Pre-Read** to **4 Lines**.

1. Genlock Magic DaVE to station reference.
Set F5 Pre-Read Timing Blck Brst to Advanced.
Set F6 Pre-Read Timing Genlock to Delayed.
Genlock the sources to station reference or Magic DaVE black-burst output.
Connect the playback reference of the Record VTR to station reference or Magic DaVE black-burst.
(*Magic DaVE's program output is 4 lines later than station reference; sources are timed to station reference (either directly or via Magic DaVE's advanced black-burst outputs).*)
2. Genlock Magic DaVE to station reference.
Set F5 Pre-Read Timing Blck Brst to Advanced.
Set F6 Pre-Read Timing Genlock to Normal.
Genlock the sources to Magic DaVE black-burst outputs.
Connect the playback reference of the Record VTR to Magic DaVE black-burst output.
(*Magic DaVE's program output is timed to station reference; sources are timed to Magic DaVE's black-burst outputs and are therefore 4 lines earlier.*)
3. Magic DaVE not genlocked.
Set F5 Pre-Read Timing Blck Brst to Advanced.
Genlock the sources to Magic DaVE black-burst outputs.
Connect the playback reference of the Record VTR to Magic DaVE black-burst output.
(*Sources are 4 lines earlier than Magic DaVE output.*)

(More configurations on the next page)

SETUP MENUS - continued**Notes on Magic DaVE System Timing - continued**

Minimum-Delay Mode VTR Pre-Read Configurations - other sources have one frame delay:

Set **F2 Pre-Read to 4 Lines.**

1. Genlock Magic DaVE to station reference.

Set **F5 Pre-Read Timing Blck Brst to Normal.**

Set **F6 Pre-Read Timing Genlock to Delayed.**

Genlock the sources to Magic DaVE black-burst outputs.

Connect the playback reference of the Record VTR to the station reference.

(*Magic DaVE output and sources are 4 lines later than station reference.*)

2. Genlock Magic DaVE to station reference.

Set **F5 Pre-Read Timing Blck Brst to Advanced.**

Set **F6 Pre-Read Timing Genlock to Normal.**

Genlock the sources to station reference.

Connect the playback reference of the Record VTR to Magic DaVE black-burst output.

(*Magic DaVE output and sources are timed to station reference.*)

The best arrangement to use will usually depend on other system requirements. For example, if the same sources also feed another destination where they must be timed to station reference, then Normal Configuration 1, Switcher-Emulation Configuration 1, or VTR Pre-Read Configuration 2 would be appropriate.

When using another Magic DaVE as a second DVE channel, the 'main' Magic DaVE can be set up for Switcher-Emulation or VTR Pre-Read as preferred. If Switcher-Emulation is used, treat the second Magic DaVE as another source which requires minimum delay. To obtain the same delay through all paths use one of the VTR Pre-Read configurations, and reference the second Magic DaVE in the same way as the record VTR playback. On the second Magic DaVE, which is used only as a DVE, it is best to select normal (not minimum-delay) mode to ensure that there is no offset in its genlock timing.

Minimum Delay - 2-line mode

As mentioned above, the **4 Lines** mode is to be preferred where possible when using Minimum Delay mode. Unfortunately this is still too much delay for certain applications. Therefore there is a **2 Lines** mode also available. However in this mode 10-bit output is not available, and clean framestore overtaking is not possible. Hence this mode does not cope with asynchronous sources - the system must always be properly genlocked. It is mainly intended for use with "Digital-S" tape machines which have 8-bit serial I/O and can only perform pre-read editing with a maximum of 2 lines delay.

The two **Pre-Read Timing** controls work the same in **2 Lines** mode as they do in **4 Lines** mode, except that they only advance black-burst and delay genlock by 2 lines instead of 4.

SETUP MENUS - continued**Setup - Normal Menu**

This menu - reached by pressing **F5** from the main **Setup** menu - allows you to easily set the machine's NORMAL and DEFAULT (power-up) states. The choices you have are as follows:

F1

Normal - CURRENT

This button asks you whether you want to save the current machine state as the new NORMAL state. This is the state that the machine will assume when the NORMAL button next to the numeric keypad is pressed three times in a row. It is also - if no DEFAULT state has been saved - the state that the machine will assume when first powered up or reset.

*(This is exactly the same as saving the current state into a DMEM called NORMAL in the SYSTEM folder, see **Special Folders & Files** on page 154. This button is just a simple way of doing this.)*

F2

Normal - FACTORY

This button asks you whether you want to set the machine back to its original FACTORY setting, and then make that the new NORMAL state. This is useful if you have accidentally created a NORMAL state with unusable settings.

F5

Default - CACHE

This button asks you whether you want to make the currently loaded Sequence Cache the new DEFAULT cache. This is the cache that will be automatically loaded on power-up or reset.

*(This is exactly the same as saving the current sequence cache into a cache called DEFAULT in the SYSTEM folder, see **Special Folders & Files** on page 154. This button is just a simple way of doing this.)*

F6

Default - DMEM

This button asks you whether you want to make the current machine state the new DEFAULT power-on state. When **Magic DaVE** is turned on or reset, it first loads the NORMAL state. Then - if one exists - it loads the DEFAULT state. This allows you to have an "interesting" or commonly-used power-on state in DEFAULT, yet when the NORMAL buttons on the panel are pressed, go back to a more "sensible" setting.

*(This is exactly the same as saving the current state into a DMEM called DEFAULT in the SYSTEM folder, see **Special Folders & Files** on page 154. This button is just a simple way of doing this.)*

For each of the above, after you have pressed it, simply press **F6 OK** to confirm the operation or **F5 CANCEL** if you don't want to do it.

SETUP MENUS - continued**Setup - Reset Menu**

This menu - reached by pressing **F6, F1** from the main **Setup** menu - allows you to reset the **Magic DaVE** mainframe remotely. This is effectively the same as powering the mainframe off and then on again, and is therefore most useful when the mainframe is located some distance away from the control panel. Apart from the operations listed on page 155, no changes to the filing system are made by a reset.

You will be asked: "Are you really sure you want to proceed?". Press **F6 RESET** to confirm it, or **F5 CANCEL** if you have changed your mind. The reset takes about five to ten seconds, during which there will be some picture disturbance. This is perfectly normal.

Setup - File Menu

This menu - reached by pressing **F6, F2** from the main **Setup** menu - contains some utilities related to the filing system. In practice these will be rarely, if ever, used, but the information is included here for completeness. There are three buttons in this menu, as follows:

F1

Format

This button completely wipes the filing system, losing all stored files, and is normally only used when the system is being (re-)commissioned. If you press this button you will be presented with no less than two different warnings of the consequences and asked to confirm that you really mean it both times.

F2

Check

This button, when pressed, performs a non-destructive check of the filing system. In the unlikely event of any problems, this procedure will correct minor errors if any are present. The main cause of such problems is the mainframe being powered off at the exact moment that a Save, Move, Copy, Delete or Purge (see below) operation is requested; in normal use such problems should never occur.

F3

Purge

This button basically performs a "tidy-up" (or "defragmentation") of the filing system, recovering any space lost due to deleted files and generally speeding things up. If it seems to take a long time to save a file then purging the system can help. It may also free up some more space for files. The procedure will take a few seconds and it is very important that the mainframe is not turned off while this is taking place (see above).

We would like to emphasise that the above procedures are rarely required and are mainly provided for system commissioning, contingency and engineering use.

SETUP MENUS - continued**Setup - Time Menu**

This menu - reached by pressing F6, F3 from the main **Setup** menu - allows you to set the date and time that is held within the **Magic DaVE** mainframe. At present this date and time is only used for display within the main **About** menu and for stamping the date and time on files that are archived onto the floppy disk.

In each case - apart from the seconds - after the button is pressed you can, as usual, either type in a new figure and then press Enter, or use the ↑ and ↓ buttons to change the number.

F1

YEAR

Press to set the current year.

Range: 1980 - 2043.**F2**

MONTH

Press to set the current month.

Range: 1 - 12.**F3**

DAY

Press to set the current day.

Range: 1 - 31.**F4**

HOURS

Press to set the current hour. Note that the seconds will stop ticking while you do this (although they will continue inside the machine).

Range: 0 - 23.**F5**

MINUTES

Press to set the current minute. Note that the seconds will stop ticking while you do this (although they will continue inside the machine).

Range: 0 - 59.**F6**

SECONDS

Press to reset the seconds back to zero in the current minute.

SETUP MENUS - continued**Setup - Aspect Menu**

This menu - reached by pressing **F6**, **F4** from the main **Setup** menu - contains two groups of controls related to aspect ratio.. These allow the system to be used with normal 4:3 or 16:9 wide-screen formats. The first group of controls are as follows:

F1

Input: 4:3 / 16:9

Sets the aspect ratio of the DVE input.

F2

Output: 4:3 / 16:9

Sets the aspect ratio of the system output. If necessary the DVE will convert to this ratio where possible.

F3Mode: Full H /
Full W

Sets the conversion mode when the input/output aspects are not the same.

Full H: The height of the picture is maintained. Therefore when converting from **16:9** to **4:3** the left & right edges are lost; in **4:3** to **16:9** there will be gaps at the left & right edges.

Full W: The width of the picture is maintained. Therefore when converting from **16:9** to **4:3** there will be gaps at the top & bottom of the picture ("letterbox" effect), and in **4:3** to **16:9** the top and bottom edges of the picture will be lost.

TIPS:

- Select **Output: 16:9** if you want to produce correct display on a 16:9 monitor - *not* for "letterbox" display on a normal 4:3 monitor.
- Select **Input: 16:9** if your source looks horizontally compressed on a normal 4:3 monitor; for "letter-box" format source, select **Input: 4:3**.
- Where the **Input** and **Output** controls are different, the DVE will convert the aspect ratio.
- Use the **Mode** control to choose whether the converted picture appears cropped or with borders.

Note: the system cannot modify the aspect ratio of the background or DSK layers!

SETUP MENUS - continued**Setup - Aspect Menu - continued**

The other two controls in this menu are:

F5

SafeArea: Off

This control turns **On** and **Off** the Safe Area indicators on the Preview Output. These are lines at 5% and 10% of the picture area, showing the "safe areas" for action and caption respectively. The Safe Area works with all Preview sources and can be used together with the cursor if required.

F6

Aspect: Square

Sets the aspect ratio of the DVE Transform co-ordinate system:

Square: Y-axis is scaled identically to the X-axis - space is "square". This has been the only setting available in previous versions of Magic DaVE software.

For example: to move the DVE so that its centre is at the top-right corner of the screen, X would be 0.5000 and Y would be 0.3750 (3/4 of 0.5000) in 4:3 mode and 0.2812 (9/16 of 0.5000) in 16:9 mode.

Screen: Y-axis is automatically scaled from the X-axis according to the **Output** aspect ratio of the machine (the **F2** button in this menu).

For example: to move the DVE as above, both X and Y would be 0.5000 whatever the output aspect ratio. However space is no longer "square" - movement in the Y axis for a given number is smaller than that in the X axis for the same number.

Whatever the setting of this control, the Z-axis is scaled identically to the X-axis - only the Y-axis ever changes.

SETUP MENUS - continued**Setup - Panel Menu**

This menu - reached by pressing **F6**, **F5** from the main **Setup** menu - contains controls related to the operation of the panel itself.

There are four controls in this menu, the first three control panel sounds, the fourth controls the backlight:

F1

Warnings: Off

Says whether the warning noise the panel makes for user errors is **On** or **Off**.

F2

Success: Off

Says whether the noise that the panel makes to register success (for example storing a User Menu or User Wipe Pattern) is **On** or **Off**.

F3

Clicks: Off

Says whether the simple key click made when a key is pressed is **On** or **Off**.

F6

Saver: On / Off

Controls the display's backlight-saver.

- On:** After approximately 11½ minutes without a key being pressed, the display's backlight will be turned off and the display itself will be blanked. This is the normal setting.
- Off:** The display and its backlight will be on permanently. This mode may be useful for certain situations, but is not recommended for long-term use as it will reduce the life of the backlight.

When the display is blanked, simply press any of the "grey" keys on the keyboard to restore it, the key will not perform its usual function on this first press. Pressing any of the "white" keys, i.e. on the PROGRAM or PRESET busses, or one of the REV, STOP or TAKE keys, will also bring the display back, but will perform their usual function as well.

Setup - Eng Menu

This menu - reached by pressing **F6**, **F6**, **F3** from the main **Setup** menu - contains controls of use to Test and Service Engineers only. Do not use the controls in this menu unless told to do so by members of Snell & Wilcox or their authorised representatives.

SETUP MENUS - continued**Setup - RollCall™ Menu**

This menu - reached by pressing **F6, F6, F4** from the main **Setup** menu - allows the user to change the Rollcall™ name of both the current control panel and the mainframe to which it is currently attached.

To change the name of the control panel, press **F1 PANEL**. You can then type in a new name or edit the existing name using the **CANCEL** key to rubout characters. When you have finished typing in the new name, press **F6 OK** to confirm it or **F5 CANCEL** to abandon it.

To change the name of the currently connected mainframe, press **F2 MAIN** and carry on as above. *Note: you cannot change the name if you are connected by the **SERIAL** cable. If you try you will get an error message. You have to be connected via RollCall™ to change the RollCall™ name.*

Other Notes:

- *The control panel's name will not survive a control panel software upgrade. After any software upgrade is done, the control panel's name will have to be re-entered.*
- *The mainframe's name is held in the backplane of the mainframe, not the main boards. Therefore the name should survive any software upgrades or board replacements.*

SETUP MENUS - continued**Setup - Option Menu**

This menu - reached by pressing **F6, F6, F5** from the main **Setup** menu - allows you turn the option card on and off. Normally in a system where the option card is fitted the option card will be **ENABLED**.

If you enter this menu with the option card enabled, you can then press **F6** to **DISABLE**, or **F5 CANCEL** if you have changed your mind. When the option card is disabled the system will then accurately emulate a standard (non-option) system, with one exception: the still-store will be available.

Entering this menu again and pressing **F6 ENABLE** will turn the option card back on again. Note that whether you are enabling or disabling the option card, the changeover will take a few seconds to complete, during which there will be some picture disturbance. This is perfectly normal.

At the top of the main **Setup** menu is an indicator of whether the **Option** card is **ENABLED**, **DISABLED**, or **NOT FITTED**. If the option card is present, then this menu allows you to turn it off to emulate a non-option card system if you so desire.

SECTION C

QUESTIONS AND ANSWERS

INTRODUCTION

This section aims to answer some of the more common questions that might be, or in some cases have been, asked by users of **Magic DaVE**. The questions are grouped together by topic, in roughly ascending order of difficulty.

FILES AND FOLDERS

What is a File?

A “file” is a shorthand way of referring to a Sequence, DMEM or Sequence Cache, i.e. any of the objects that can be stored inside **Magic DaVE**’s permanent memory. It is called a file because of the analogy with a filing cabinet - think of **Magic DaVE**’s permanent memory as a filing cabinet draw full of files, some of them Sequences, some of them DMEMs and some of them Sequence Caches. These files can be saved (stored), recalled, copied, moved, renamed or even deleted (removed).

What is a Folder?

A “folder” is an area in **Magic DaVE**’s permanent memory which groups together several files. Again, think of a filing cabinet draw. The draw can have many hanging folders inside it, each of which can contain several files, grouped according to their purpose. Folders generally have no special meaning as such¹, they are your tool: a way of allowing you to group together files which you think should be kept together, such as those for a particular project or client.

The other advantage of folders is that they provide a way of organising your work when you have a large number of files. (If you are familiar with personal computers, then a folder is like a directory.)

To make a new folder, follow the instructions under **File - New Folder Menu** on page 158.

SEQUENCES

What is a Sequence and when would I use one?

A sequence is a means of storing a particular sequence (no pun intended) of effects. The concept is somewhat like a tape-recorder: a series of control and button settings is “recorded” in the sequence, which can then be “played back” on demand to reproduce a particular effect. Each set of settings is called a “shot” or “keyframe”.

Sequences are used most of the time, especially in an online (direct to air) situation. A sequence can be used to remember things from simple moves (e.g. the picture sliding off the screen to one side, revealing another underneath) to complex ones which could not possibly be performed live by a human operator. An example of a more complex move might be a picture that arrives over the top of the existing one in four pieces which join together; the picture then pauses for a few seconds so that its contents can be seen, after which it peels off the screen in two pieces from the top down, revealing the original background picture once more.

¹ There are some harmless exceptions; see **Special Folders & Files** on page 154 for more details.

SEQUENCES - continued**How do I create a Sequence?**

The most important thing before building a sequence is to have a clear idea in your head of what it is you actually want to do. For example, do you want to fly the DVE off to reveal the background; do you want to flip the DVE over from front to back; or do you want to bring it on, pause it, and then fly it off again (action replay)? The various **Types** of transition in the **Sequence Control - Properties** menu (see page 141) are designed for these different situations.

Here is an example of how to create and edit a simple sequence which flies the DVE off-screen.

1. Check the ENABLE button. If the light within the button is not lit, then press the button so that the light starts flashing. This enables the creation and editing of sequences.
2. Press the SEQUENCE CACHE button. Press the **F5** or **F6** buttons until the text above them reads "**EMPTY**". You now have an empty cache slot to build your sequence in. (Alternatively you could have picked a non-empty slot and pressed **F4** to clear it.)
3. Press the SEQUENCE CONTROL button, then the **F3 PROPERTIES** button. Since we want the PROGRAM and PRESET busses to swap at the end of this sequence, make sure that the **F6 Transition** button is set to **Yes**.
4. We have already decided to create a transition using the DVE, by flying it off of the screen to reveal the background.

Therefore, press the **F5 Type** button so that it says **DVE→BKGD** (not **DVE→BACK** or **Mix/Wipe**). We have now set a DVE to Background type transition mode - if you go to the SOURCES menu you will see that the PROGRAM and PRESET busses are set to **DVEFRONT** and **BKGD A** respectively.

5. If you have an option card fitted, press the SEQUENCE button (beside the T-Bar) and make sure that the DSK is turned off (**F3**). This won't be stored as part of the sequence, but we don't want the DSK layer in the way while we're building the sequence.
6. Press the TRANSFORM button and nudge the joystick a bit to prove that the DVE is visible; then press the X, Y & Z buttons to normalise it back to full-size centre. (If the DVE at this point is not visible, check the rest of the **Transform** menus to make sure that it's not parked off-screen somewhere.)
7. Press the INSERT button to insert the first keyframe of the sequence (the DVE at full-size centre). Note that the indicator at the top-right of the screen now says ^{1/1}.
8. Move the T-Bar to shrink the DVE picture to a fairly small size, and move it somewhere on the screen using the joystick. If you lose it off screen, simply press the X, Y & Z buttons to bring it back.
9. Press the INSERT button again to insert the second keyframe of the sequence, with the picture in its new position. Note that the keyframe indicator increments to ^{2/2}.
10. Use the joystick to move the picture off-screen.
11. Press the INSERT button a third time to insert this final keyframe (^{3/3}).
12. Press ENABLE to turn its light off and finish editing the sequence.
13. Press the SEQUENCE button (beside the T-Bar) so that the T-Bar now controls the sequence position. Press TAKE to trigger the move, or use the T-Bar to manually run through the sequence. Note that when the sequence finishes running, the PROGRAM and PRESET busses swap ready for the next time round.

SEQUENCES - continued**How do I edit a Sequence?**

Assuming that you have just built the sequence on the previous page, here is an example of how to edit it:

1. Press the ENABLE button to turn its light back on and enable sequence editing.
2. Press the PREVIOUS and NEXT buttons to move back and forth through the three keyframes. After you have seen the effect of doing this, stop on the second keyframe, the one with the picture on-screen at a small size. The keyframe indicator should read $2/3$.
3. Press the TRANSFORM button, then the F2 ANGLE button. Use the joystick to rotate the tile as you wish.
4. Press the MODIFY button twice. This will modify the second keyframe with the angle you have applied.
5. Press the ENABLE button to turn its light off and disable sequence editing.
6. Press the SEQUENCE button (beside the T-Bar) so that the T-Bar now controls the sequence position once more. As before, press TAKE or move the T-Bar to run through the sequence. The DVE tile should now rotate as it flies off the screen.

I'm trying to create/edit a sequence, but nothing seems to work. What am I doing wrong?

Are you sure that you pressed the ENABLE key so that the light within it started flashing? If the ENABLE key is not flashing, then you cannot create or edit a sequence.

DMEMS**What is a DMEM?**

A DMEM is simply a record of the state of **Magic DaVE** - a "snapshot" if you like. It memorises the state of all **Magic DaVE**'s various controls and buttons, so that you can save your current state - something that you were working on, or maybe a favourite setup - and recall it later on.

In fact even the state of **Magic DaVE** when it is first powered-on is held inside a **DMEM** called **NORMAL**, which lives inside the folder called **SYSTEM**. This **DMEM** can be changed to change the way in which **Magic DaVE** starts up (see **MORE FILES & FOLDERS** on page 194, later on in this section).

A DMEM memorises the entire state of the machine, including the contents of the **Setup** menus. However it will only restore the state of the **Setup** menus when recalled if it is in the **SYSTEM** folder; if it's in some other folder then recalling it will leave the **Setup** menus alone.

What does the word "DMEM" stand for, if anything?

"DMEM" stands for "**DaVE Memory**". Simple as that!

NORMAL OPERATION

How do I get a highlight on a Page Turn?

Press the EFFECT button on the keyboard. Then press F5 ("LIGHTS") to go to the Effect - Lights menu. Press F6 to change the lighting mode from "Off" to one of the four different lighting modes. The first one ("Light Wht") is the one usually used. See the description of the Effects - Lights Menu on page 72 for more details.

I selected a new source, but all I get is a grey colour. Why?

This is because the new source you have selected (from 1 to 4) does not exist. Check that there is a serial D1 source connected to the mainframe. Other serial digital sources (e.g. D2, D3) will not work with **Magic DaVE**.

How can I localise the mosaic effect to disguise a face or a number plate?

First, place the desired source on the front of the DVE, and set the DVE to be full-size centred. (If you have an option card, ensure that the DVE is switched on.) Then apply the mosaic effect as usual, see Effects - Mosaic Menu on page 91 for more details. Then place the same source on the background.

Then you can use a WIPE to switch between the "clean" source on the background and the "mosaic'd" source on the DVE foreground. Wipe Pattern 23 ("Box") is the usual one to use in such circumstances, although of course any pattern can be used. Don't forget that the aspect ratio of the box can be changed to fit the subject exactly. See the description of the TRANSITION CONTROL - WIPE MENU on page 110. If you have an option card, don't forget to include the DVE in the wipe.

How can I fade a picture to a monochrome version of itself?

The answer to this is quite similar to the previous query. First, place the desired source on the front of the DVE, and set the DVE to be full-size centred. (If you have an option card, ensure that the DVE is switched on.) Then use the Effects - Posterise Menu (page 91) to change the DVE source to monochrome (set Level to 100% and Soft to 0.00%). Then place the same source on the background.

Then you can simply use the MIX T-Bar function to fade from the monochrome version on the DVE to the full-colour version on the background, and back again. If you have an option card, don't forget to include the DVE in the mix.

NORMAL OPERATION - continued

When I go into the Model-Twin Tiles-Angle menu, the Reflect button says "Disabled" and I can't change it.

(The same query can apply to the **Model-Twin Tiles-Axis** and **Spin** menus too.)

This is because you haven't enabled the reflection modes by setting the **Reflect** button in the **Model-Twin Tiles-Position** menu to **Yes** instead of **No**. Until that button reads **Yes**, you cannot change the **Reflect** buttons in the **Angle**, **Axis** or **Spin** sub-menus. See **MODELS - TWIN TILES MENU** on pages 52 and 53 for more details.

What is the difference between setting a Zoom size of 0.5000 and a PosZ of -4.0000?
They appear to give the same result.

The difference is that the **Zoom** control changes the actual size of the tile, whereas the Z position (**PosZ**) control changes the position of the tile in 3-D space along the Z-axis (front-to-back). Therefore changing the Z position indeed makes the tile look smaller, because it has receded into the distance, but conceptually its actual size has not changed. Changing the **Zoom** leaves the tile where it is but genuinely shrinks its dimensions. The end result may look the same (in the simple case only, see below), but it is conceptually different.

This is not just "visual semantics". For one thing, you cannot make the tile shrink out of existence using the Z position (unless you have the **Transform-Advanced-View Perspective** control set very close to zero). You can only move it so far back in the universe before you hit the "back wall". Also, applying a rotation to a tile which has already been moved in its Z-axis will produce different results than if the tile had just been shrunk using the **Zoom** control. And as implied above, the final tile size that you get from moving the Z-position is dependent upon the setting of the **Perspective** control.

To sum up, a **Zoom** of **0.5000** shrinks the tile to half its original size. Setting a **PosZ** of **-4.0000** moves the tile four screenwidths away from you into the distance, which at the default **Perspective** (viewpoint) setting of **1.0000** makes the tile appear to be half-size.

Why can't I have more than two video sources "live" on the screen at once?

This is a design feature of the basic **Magic DaVE** system. There is enough circuitry inside **Magic DaVE** to decode and synchronise two live video sources at once. However, the third source can be a matte, a graduated matte or a full-colour pattern (but not a test pattern, as they use one of the synchroniser framestores), and the placement of the two live sources can be freely adjusted using the **F5 Type** button in the **Sequence Control - Properties** menu.

The **Magic DaVE** option card contains two extra decoders & synchronisers so that you can have all four video inputs live at once.

MORE FILES & FOLDERS

I have a set of sequences for a show that I wish to save and load as a group. How do I do this?

The mechanism you are looking for is called a **Sequence Cache**. For a full explanation, see the description of the **SEQUENCE CACHE MENU** from page 152 onwards.

I have changed several settings under the Setup menus in order to integrate Magic DaVE into my system. I now wish to save these settings permanently so that I do not have to enter them every time I turn the system on. How do I do this?

When the system is powered up, it always loads a DMEM called **NORMAL** from the **SYSTEM** folder (see **Special Folders & Files** on page 154). This DMEM can be changed to change the way your **Magic DaVE** system starts up. The following step-by-step process is suggested:

1. Press the **NORMAL** button three times in quick succession to ensure that the machine is in the (previously) normal state.
2. Make the required changes to this normal state (for example changing the source and format for the preview output).
3. Now we need to save this new state back to the **NORMAL** DMEM. Press the **MENU** button until you get to the top-level **Magic DaVE** menu. Press the **F4 SETUP** button, then the **F6 NORMAL** button, then the **F1 CURRENT** button. You will be asked "Are you sure you want to save the current state as the new NORMAL state?". Press **F6** to confirm that you do.

MORE FILES & FOLDERS - continued

I have accidentally saved a **NORMAL DMEM** with some bad settings in it.
How can I restore a sensible set of factory power-up settings?

Simply press the MENU button until you get to the top-level **Magic DaVE** menu. Press the **F4 SETUP** button, then the **F6 NORMAL** button, then the **F2 FACTORY** button. You will be asked "Are you sure you want to select the FACTORY state and make it the new NORMAL state?". Press **F6** to confirm that you do.

You may want to then change some settings (for example the source and format of the preview output), and then use the **F1 CURRENT** button to make those your normal state.

If after you have done that, you still find that you are getting an unusable or unwanted state on power-up, then you probably have a **DEFAULT DMEM** that is loading the unwanted settings after the **NORMAL DMEM** has loaded. Either:

- Delete the **DEFAULT DMEM** from the **SYSTEM** folder using the **File-Delete** menu
- or
- Press the **NORMAL** button three times in quick succession to ensure that the machine is in the normal state, and use the **F3 DEFAULT** button (in the **Setup-Normal** menu) to save the **DEFAULT** state to be the same as the **NORMAL** state.

MORE FILES & FOLDERS - continued**How many files can Magic DaVE store and where are they stored?**

Magic Dave stores its files in a special chip known as a "Flash EEPROM" (Electrically Erasable Programmable Read Only Memory) inside the mainframe. This chip remembers all of **Magic DaVE**'s different folders & files, even after **Magic Dave** has been turned off. Note that it only remembers files that have been saved using the various **Save** menus. It does not remember the sequence etc. that you are currently working on unless you save them before turning the mainframe off (however you can turn the panel off at any time).

The exact number of files that can be stored depends upon how big they are. DMEMs and Sequence Caches are always the same size, but Sequence size can vary depending upon how many shots they contain and the complexity of those shots (sequence information is held in a compressed form). For those of a mathematical bent, here is an rough guide to the relative file sizes:

Sequence - First Shot	12 units
Sequence - Each Subsequent Shot	1 to 10 units (nearly always just 1 unit, however)
Sequence Cache	23 units
DMEM	28 units
Folder	2 units
Total File System Capacity	25300 units ¹

Therefore **Magic DaVE** can hold $(25300-30)/(12+1) = 1943$ two-shot sequences, or $(25300-30)/(12+4) = 1579$ five-shot sequences, or $(25300-30)/28 = 902$ DMEMs and so on. A more complex example would be $(25300-30)/(12+2+28) = 601$ three-shot sequences & 601 DMEMs together.

It should be stressed that these figures are approximate; sequence shot size can vary according to how much information changes from shot to shot (up to a theoretical maximum of 10 units per shot, although this is highly unlikely in practice - every control would have to be changed between each shot!).

Remember: these files are inside the mainframe. The control panel has no memory of any files, and can therefore be removed or changed over at will.

¹ Don't forget that 30 of these units will always be in use due to the NORMAL DMEM in the SYSTEM folder.

MORE FILES & FOLDERS - continued**What are the crosshatch areas under the folder and file “bubbles” for?**

These are the file and folder masks. They are, briefly, a way of quickly selecting folders and files without having to step through a large amount of them using the ↑ and ↓ buttons. For more details see the third paragraph under **“Notes”** on page 149. Although the menu described is the **Recall Menu**, the principle works everywhere the masks appear.

I'm trying to delete an apparently empty folder but DaVE says that the folder isn't empty. What am I doing wrong?

Are you sure you have deleted all the files that might be in the folder? Remember that **Magic DaVE** only shows you the files of the particular type you have selected (**Sequence Files**, **DMEM Files** and **Sequence Cache Files**). Is it possible that there are some files of another type still existing within the folder, which are only visible when you change the setting of the filetype bubble? (See **File Main Menu** on page 156 for a description of the filetype bubble.)

Try selecting all three filetypes to ensure that you really have deleted all the files from the folder, then try to delete the folder again.

What happens if I move or rename a sequence that is used by a cache? Does it still find it?

Yes, **Magic DaVE** will still find a moved or renamed sequence when a sequence cache containing that sequence is recalled. Obviously though, if the sequence has been deleted, then it will not be able to find it, and **Magic DaVE** will display the message “**Cache Load Incomplete**” on the screen if such a cache is loaded.

Magic DaVE says “Cannot use this kind of disk”. What kind of disk does it need?

Magic DaVE uses standard IBM-compatible high-density floppy disks, DS HD, 1.44MB capacity. However, pre-formatted disks are generally not suitable. See the box labelled **IMPORTANT NOTE** on page 159 for full details.

INPUTS AND OUTPUTS

Help! The output is completely black no matter what I do. What's the problem?

Are you sure that you do not have the output entirely faded-to-black? Press the BLACK button next to the T-Bar, and check that the **Level** is at **0.00%**. You may wish to move the T-Bar back and forth a few times to check. Do not leave the **Level** at **100.0%**, which means fully faded to black!

Is it normal for the Model 4D to have eight video and two key input sockets?

Yes. The Model 4D and 8D family share the same mainframe backplane. The extra four video and one key inputs are not used on the **Magic DaVE Model 4D** and are usually covered by plastic "boots" when shipped.

MISCELLANEOUS**How far away can the Magic DaVE control panel be from the mainframe?**

The standard cable supplied is 10 metres, however lengths up to 50 metres can be used. Greater distances are not recommended unless a separate power supply is used for the control panel. (Since the data connection is RS-422, the limiting factor is the drop in power supply voltage from the mainframe to the panel over a long cable run.)

When I look through the front panel of the DaVE mainframe I can see a flashing red light. Does this indicate a fault of some kind?

No. The flashing red light in fact indicates that all is well - it is turned on and off every 16 fields (8 on, 8 off) by **Magic DaVE**'s main processor, simply to indicate that the processor is running. If the light ever stops flashing (except for a few seconds during power-up, reset, and option card enable/disable) then that is the time to worry!

Option card systems have two flashing lights, one for the main card, and one for the option card. They run at the same rate, but not necessarily in step with each other.

For more details see the section called **LED Indicators** on page 215.

Inside my Magic DaVE there are seven pairs of connectors but only six are linked together. Is this a mistake?

No. Only the left-hand six pairs of connectors between the boards should be linked together. The right-hand pair of connectors are for a different purpose entirely and must not be linked. Newer Magic DaVEs have the seventh option card connector moved to one side to reduce confusion. See **Figure 14** on page 215 for a diagram of how the connectors should be linked.

The Magic Dave mainframe is making a rapid beeping sound. What does this mean?

This is **serious!** This sound is a warning that the fan inside the **Magic Dave** mainframe has failed, and that your **Magic DaVE** is in danger of overheating. You should turn off your unit immediately to avoid permanent damage. Then contact Snell & Wilcox or your Snell & Wilcox dealer for repair. Do not attempt to use the unit while this noise is sounding. See **Cooling Fan Failure** on page 221.

SECTION D

SYSTEM INSTALLATION

INSTALLATION

These installation instructions provide a guide to the installation of the **Magic DaVE** system.

ON DELIVERY OF THE SYSTEM

1. Unpack the system components and check them against the packing list. If there is anything incorrect, notify your dealer or Snell and Wilcox directly at once.
2. Check that the equipment has not been damaged in transit. If any damage has occurred, notify your dealer or Snell and Wilcox directly at once as well as the carrier.
3. Always retain the original packing materials if possible, they could prove useful should it ever be necessary to transport or ship the system units.

The system components are:

1. **Magic DaVE** Mainframe 2U rack unit.
2. **Magic DaVE** System Control Panel.
3. Mainframe - System Control Panel Interconnection cable.
4. Mains supply cable (not supplied in all countries).
5. User manual.

LOCATION AND ENVIRONMENT

Environmental Considerations

The ambient temperature for all the supplied equipment should not exceed the limits of 5 and 40 degrees C. at a relative humidity of 10 to 90% (non-condensing).

Installing the equipment in a clean environment with moderate temperature and humidity will promote a long and trouble-free equipment life.

Mainframe

The **Magic DaVE** 2U mainframe may be used free-standing (table-top configuration) or installed in a standard 483mm (19 inch) equipment rack. The following precautions should be observed:

- a) The cooling fan exhaust at the back left-hand corner of the unit must not be obstructed - a minimum clearance of 50mm (2 inches) is **ESSENTIAL**. When mounting the unit in a 483mm (19 inch) rack ensure that the fan is not obstructed by rack slides.
- b) The slots in the front panel are to allow the inlet of cooling air and **MUST NOT BE OBSTRUCTED**.
- c) When mounting the mainframe in an equipment rack it **MUST** be supported at the rear, not by the rack-mounting ears alone. M4 tapped holes are provided on both sides for this purpose.
- d) Remove the front panel (4 screws) to gain access to the rack ears. Refit the front panel after rack mounting.

Cooling is provided by drawing air in at the front of the unit and exhausting it at the rear. The mainframe unit air filters must be regularly cleaned to prevent overheating due to airflow restriction by accumulated airborne dust, see **Cleaning the Air Filter** on page 221 for details.

The mainframe should never be operated for any significant period of time with any covers removed as this will affect the internal airflow and cause overheating.

LOCATION AND ENVIRONMENT - continued**Control Panel**

The **Magic DaVE** control panel can be used on top of a control desk or table, or it can be sunk into a control desk. A cutout approx 355mm by 215mm (14 inches by 8½ inches) is suitable. Note that the floppy disk cannot be used if the unit is sunk into a desk. However an optional disk drive mounting kit is available to allow the disk drive to be mounted separately in this case.

The control cable supplied will allow the **Magic DaVE** control panel to be sited up to 10m (33 feet) from the mainframe. Longer cables can be supplied to special order up to 50m (164 feet).

No special precautions are needed concerning ventilation, but as with any electronic equipment a cool environment will promote a long and trouble-free life. The unit should be kept free of dust and dirt and moisture, which could damage floppy disks and the disk drive.

POWER SUPPLY

AC power from the local mains supply is fed to the **Magic DaVE** mainframe via a standard (IEC type) 3 pin connector on the rear panel (Figure 11 on page 207 and Figure 9 below).

For safety a mains earth connection should be provided.

The unit has auto-ranging mains input, and can be connected to any standard AC supply between the voltages specified under **Mains Supply Voltage** on page iv without adjustment.

The **Magic DaVE** control panel is powered from the mainframe via the control cable and needs no other power source. It is recommended to switch the mainframe off before connecting or disconnecting the control panel.

The mainframe is protected by a 10 amp anti-surge (slow-blow) fuse, mounted in the mains inlet panel.

Also see the warnings on page iv at the beginning of this manual.

E = Protective Earth Conductor

N = Earthing Neutral Conductor

L = Phase Conductor

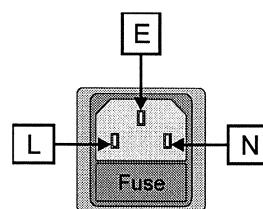


Figure 9: Wiring of IEC mains inlet connector

SYSTEM INTERCONNECTION

Introduction

Your system has been set up and tested before shipment. As a result, there are usually no adjustments to link or switch settings to make inside the unit. Installation normally consists of siting and interconnecting the system components, connecting video and key inputs and outputs and setting up.

The interconnection of a typical **Magic DaVE** system is shown in Figure 10 on page 206.

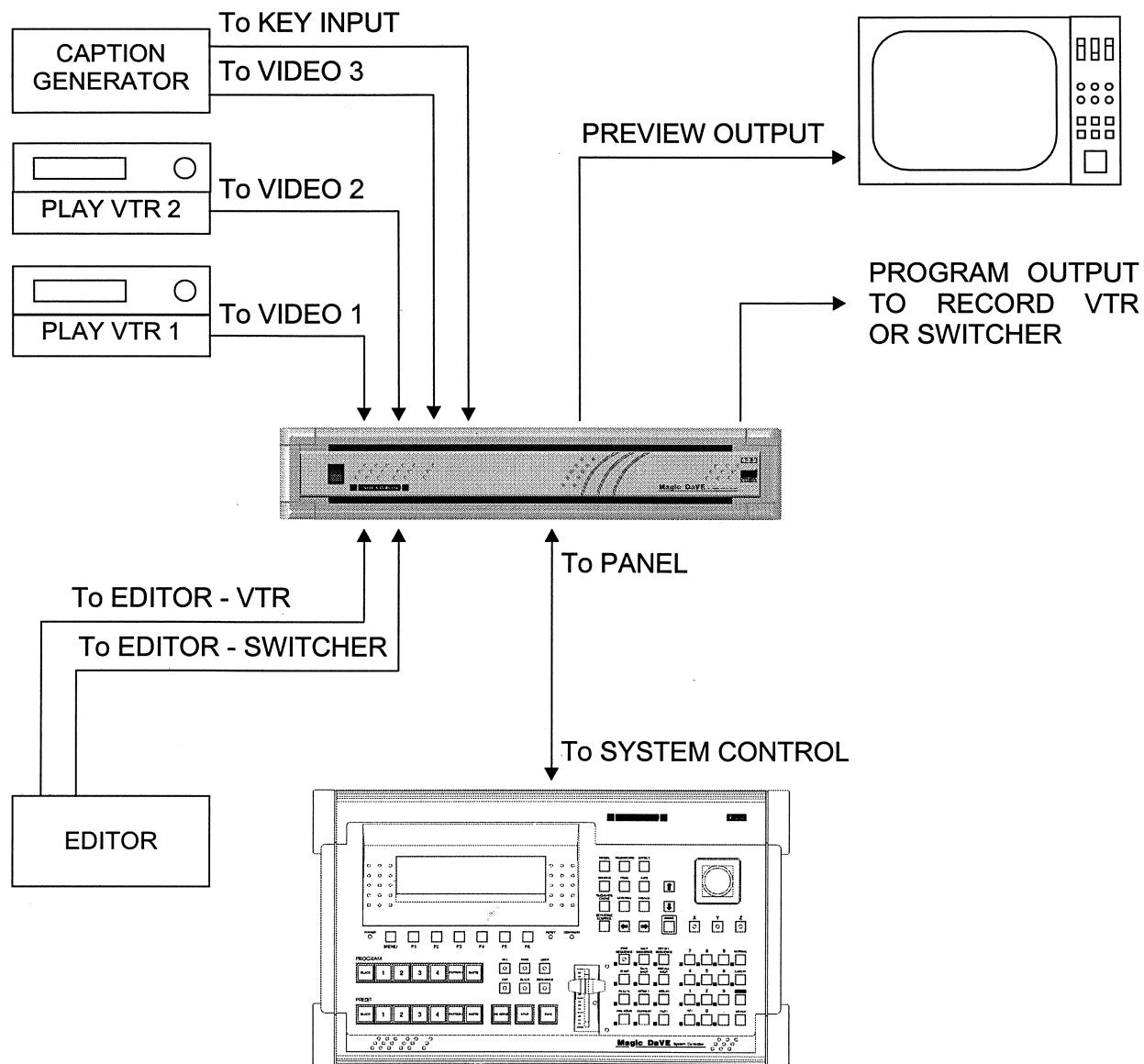
Power

Switch all power switches to their OFF states. Connect an IEC power cable from the power socket on the rear of the mainframe to the appropriate AC mains distribution socket. Normally the control panel is powered from the mainframe, so no special action for it needs to be taken.

Control

With the mainframe switched off, connect the PANEL connector on the rear of the mainframe to the SYSTEM CONTROL connector on the rear of the **Magic DaVE** control panel using the cable provided (15 way D-type plug to 15 way D-type socket).

More than one control panel and/or mainframe can be connected via **Rollcall™**; in this case the normal control cable is not needed, but a separate power supply for the control panel(s) is. See **Rollcall™** Installation section on page 212.

SYSTEM INTERCONNECTION - *continued*

References not shown.

Figure 10: Typical Magic DaVE System Interconnection

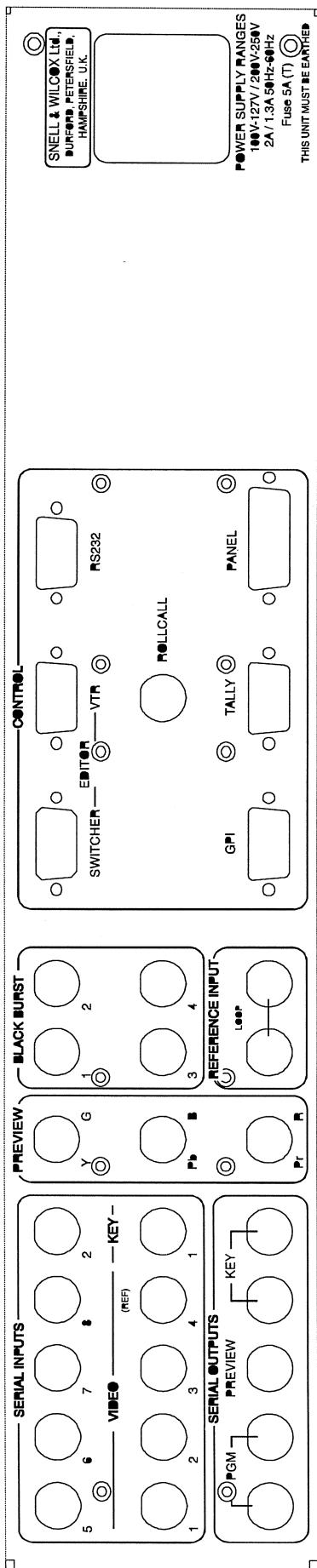


Figure 11: Magic DaVE 4D(O) & 8D(O) Mainframe Rear Panel

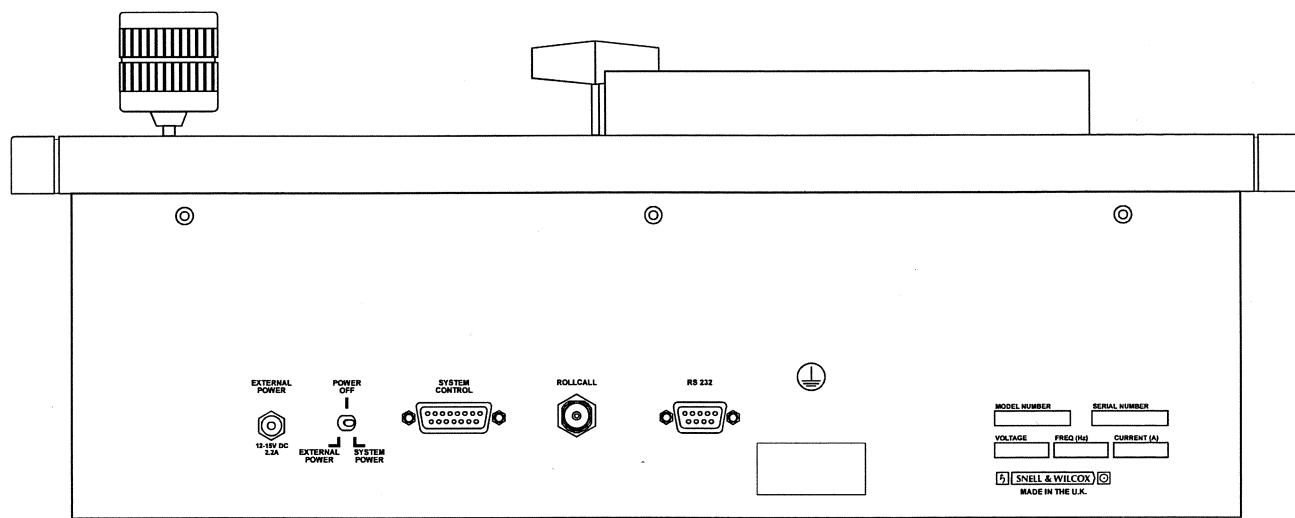


Figure 12: Magic DaVE Extended Control Panel - Rear View

SYSTEM INTERCONNECTION - continued**Edit Controller**

Three methods of controlling **Magic DaVE** from an editing system are provided: VTR (emulation), mixer (emulation) and general purpose inputs (GPI's). They may be used singly or in combination, according to the facilities provided by your editor. In addition, outputs are provided (GPO's).

Details of how to configure and use the following interfaces can be found within the description of the **Setup - Editor Menu** starting on page 168.

- Switcher emulation.** **Magic DaVE** can be controlled as if it were a mixer (switcher) using the standard GVG-100 / DPM-100/700 protocols. Connect the 9 way D-type socket marked "EDITOR - SWITCHER" (or just "EDITOR") on the rear panel of the **Magic DaVE** mainframe to the mixer (switcher) port on your editor. The pinout of the RS-422 port is given in Table 5 on page 222. Refer to the editor manual as necessary.
- VTR emulation.** **Magic DaVE** can be controlled as if it were a VTR, replaying an effects sequence like a portion of videotape. The industry-standard protocol is supported. Connect the 9 way D-type socket marked "VTR" to a playback-VTR control port on your editor. The pinout of the RS-422 port is given in Table 5 on page 222. Refer to the editor manual as necessary.
- GPI and GPO.** Contact closure can be used to obtain simple remote control of **Magic DaVE** effects (GPI). The GPI outputs (GPOs) can be used to trigger external equipment or light indicator lamps. Connection is via the 9 way D-type socket on the rear of the **Magic DaVE** mainframe labeled "GPI". The pinout is shown in Table 6 on page 222. All GPI/GPO circuits are active low (0V). They are also TTL (5V logic) compatible.

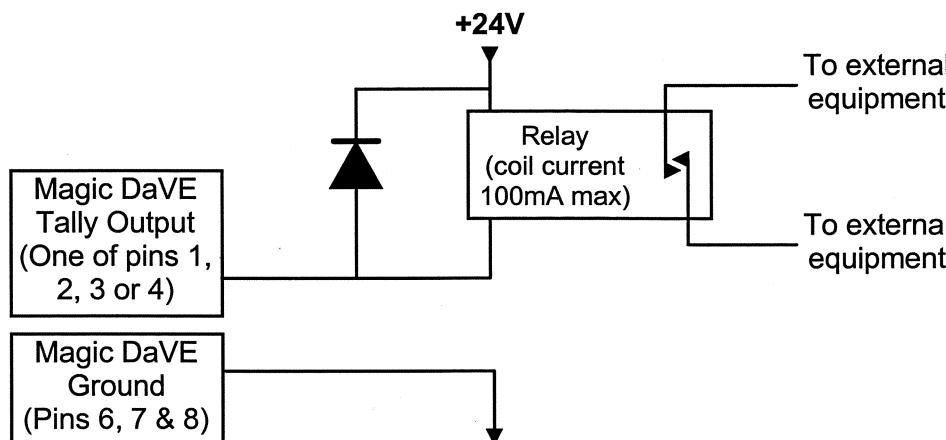
	Inactive state	Active state
GPI	Floating or high (> +2V)	< +1V, current sink < 0.5mA.
GPO	Internal 10kΩ pull-up to +4.3V approximately.	< +1V at current sink up to 100mA. Current sink must not exceed 100mA.

NOTE: on both GPI & GPO pins any externally applied voltage must not exceed +32V.

A suitable circuit to enable a GPO output to drive relays for contact-closure is shown in **Figure 13** on the next page. You will need to supply a voltage from an external power supply to drive the relay: in the example shown it is 24 volts. *Do not apply more than 32 volts to any of the pins on the **Magic DaVE** GPI connector.* The diode (for example type 1N4001 etc.) is required to prevent damage to **Magic DaVE** when the relay is turned off.

Of course, if the lamps you wish to drive take less than 100mA, at less than 32 volts, then they can be connected directly in place of the relay coil; in this case the diode can be omitted.

The outputs from the GPI socket can be either tally outputs or user-definable outputs, depending upon a setting in the **Setup-Editor-GPI/O** menu. The outputs from the TALLY connector are always tallys, and are electrically identical to those of the GPI connector.

SYSTEM INTERCONNECTION - continued

PINS 7, 8, 9 PAGINA 223, TABLET PENTRU VERSIUNEA "8-INPUTS"

Figure 13: Circuit to obtain contact closure from a Magic DaVE tally output

Video & Key Inputs

Connect SDI (D1) video sources to any of the Video Inputs provided on the rear of the **Magic DaVE** mainframe. All inputs are terminated internally with 75 ohms.

Sources may be referenced by connecting their analogue reference inputs to the "BLACK BURST" outputs from the **Magic DaVE** mainframe. Refer to SETTING UP MAGIC DAVE on page 214 for more information.

Key sources can be connected to the Key Input connectors on the rear of the **Magic DaVE** mainframe. Refer to SETTING UP MAGIC DAVE on page 214 for more information on the use of the key inputs.

Program Outputs

Connect program output connectors of the appropriate format to the record VTR or other destinations. Two feeds are available simultaneously. All outputs are 75 ohm impedance.

If the destination equipment such as a mixer (switcher) or keyer has a key input, connect it to one of the two SDI key outputs of the **Magic DaVE** mainframe. Refer to SETTING UP MAGIC DAVE on page 214.

SYSTEM INTERCONNECTION - continued**Preview Monitor Output**

The preview output is available in both SDI and analogue format simultaneously. The analogue output can be switched between component (YPbPr) or RGB format from the **Magic DaVE** control panel. Connect the preview output BNCs to the destination equipment's input. Note, sync is present on Y for component (YPbPr) format. In the case of RGB, sync is present on all three.

Many RGB (and some component) monitors require a separate sync input. In this case connect the Y or G preview output of **Magic DaVE** to the monitor sync (loop-through) input, and connect the second sync loop connector to the Y or G input. In some cases the monitor requires a sync input greater than 300mV. In this case connect Y or G normally and connect one of the BLACK BURST outputs of the **Magic DaVE** mainframe to the monitor's sync input; leaving the sync input unterminated.

If a component or RGB input monitor is not available, the PVW Y/G (luminance) output may be connected to a composite input monitor for a monochrome (Black & White) display.

*Note that - unlike analogue models of **Magic DaVE** - the Preview outputs (both SDI and analogue) can be used for recording or transmission purposes if desired. By changing the **Setup-Output** menu's **Source** button to **Pgm+FTB** the Preview output becomes an exact copy of the SDI Program output.*

Genlock Reference

Magic DaVE can be genlocked to a master system SPG if a station analogue black-burst or sync signal is connected to the "REFERENCE INPUT" connector on the **Magic DaVE** mainframe. The loop-through can be used to connect the reference to other equipment. If this is not done, fit a 75 ohm terminating plug to the loop-through output.

Magic DaVE can also be referenced to the serial digital **Video 4** input in cases where no analogue black-burst is available. This is switchable from the DIP switches inside the mainframe or from the **Setup-Timing** menu. Refer to SETTING UP MAGIC DAVE on page 214.

If no reference is connected, **Magic DaVE** will free-run as a master SPG (genlock off) and the genlock controls will have no effect. Again refer to SETTING UP MAGIC DAVE on page 214.

SYSTEM INTERCONNECTION - *continued***Rollcall™ Installation**Introduction

Rollcall™ is Snell & Wilcox's equipment control network. This allows multiple mainframes, control panels, and PCs running *Magic DaVE for Windows* to be connected together in a single network. Any controller (a panel or a PC) can choose to control any mainframe on the network.

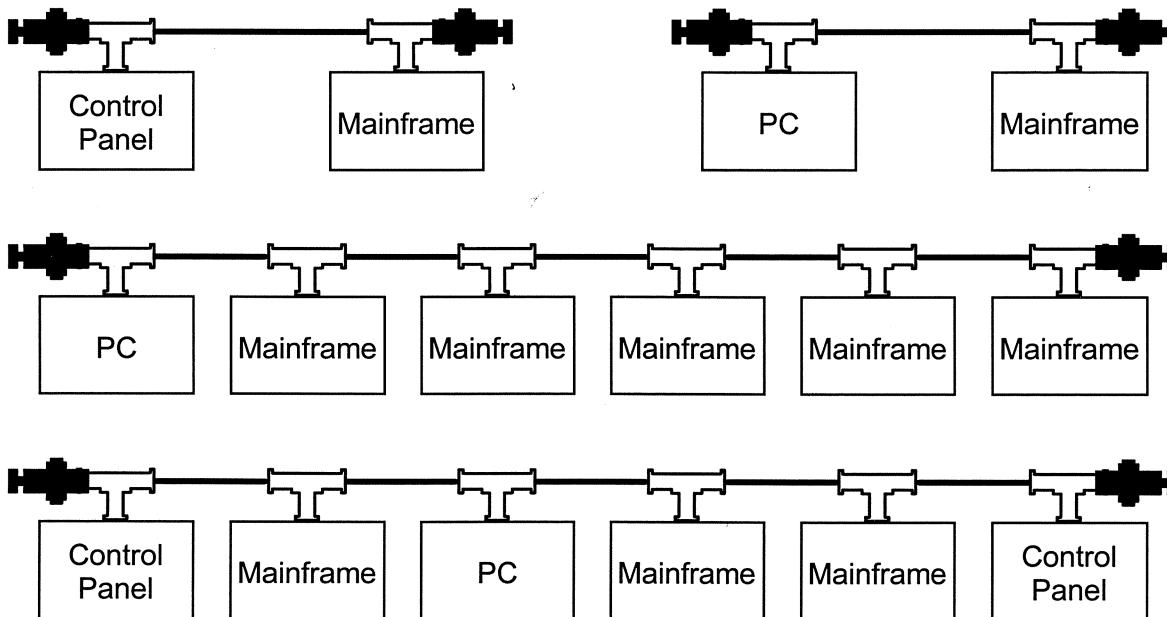
A mainframe can be simultaneously controlled by up to two controllers (panels or PCs) via the network, plus another panel via the traditional serial cable arrangement.

A control panel can control any two mainframes at once.

Hardware

The RollCall™ network is implemented using traditional 75Ω video cable, T-pieces and terminators. This is to avoid any complications with mixing 75Ω and 50Ω (as used with "thin Ethernet™") equipment.

Each piece of equipment should be connected to the network via a T-piece; the cable end should never be plugged directly into a RollCall™ socket, even at the ends of the network. Both ends of the network should be terminated on the last T-piece with a 75Ω terminator. The maximum end-to-end length of the network is 1500 metres. The order of equipment on the network is not critical. Some example setups are shown below.



In this type of installation, the standard 15 pin D-type control panel cable is not needed, provided that each **Magic DaVE** control panel is powered by a separate stand-alone power supply unit. The characteristics of the power supply and lead are given in the **Specifications** section.

Important Note: When connecting a new device to an existing powered-up RollCall™ network, it is most important that the new device is turned off while its T-piece is being connected. Failure to observe this rule may cause the RollCall™ network to crash.

SYSTEM INTERCONNECTION - *continued***Rollcall™ Installation - *continued*****Software**

The control panel's RollCall™ user-interface is fairly straightforward. On power-up the panel will present you with a list of the names of other machines on the network, plus the options **SERIAL** and **NONE**. (If there are only two choices in the list, one of them will be repeated on the screen - you can choose either.) Use the ↑ and ↓ keys to select the desired machine, and press the **F6 OK** button. As you might expect, choosing **SERIAL** connects you via the traditional serial interface, and choosing **NONE** allows you to start up the panel without controlling anything (e.g. for practice purposes). Choosing anything else attempts a RollCall™ network connection to that machine.

After the **F6 OK** button is pressed, the control panel will ask you to "Please wait". After a few seconds it should report "Connected", unless an error occurs. The most common error is "Device Busy", which is caused by an attempt to connect to a mainframe that already has two network controllers.

To change which mainframe you are connected to, simply press the **SELECT** button on the panel, and you will be presented with the machine list again. (Note that if there was no RollCall™ connection detected at power-up, the **SELECT** button is locked out. If you connect the network cable after power-up you will need to turn the panel off and on again before you can connect via the network.)

To control a second mainframe on the other channel, press the **CH 2** button on the control panel, and you will get the list again. Once you have connected to a mainframe on both channels, you can then instantly swap between the channels using the **CH 1** and **CH 2** buttons. You will not get the list again unless you press **SELECT**, in which case you will be able to change the machine on the current channel (**CH 1** or **CH 2**).

Finally, please note that you can only perform software upgrades if the serial cable is connected. You cannot upgrade a Magic DaVE mainframe's software across the RollCall™ network from the control panel.

SETTING UP MAGIC DAVE

TV Standard

Serial digital versions of **Magic DaVE** can operate in both 525 & 625 line-standards.

To change the line standard remove the front panel from the **Magic DaVE** mainframe (4 screws) and locate SW3 - the left hand one of a pair of four way DIP switches - at the right hand side of the MAS (lower) PCB. See **Figure 14** on the next page. Set section 1 of SW3 **down** for 625 line operation, or **up** for 525 lines. Refit the front cover. The switch setting will not take effect until the next time the unit is powered up. The line standard can also be changed using the **Setup-Timing** menu in the control panel (see page 174).

Other sections of SW3 on the MAS card and SW1 on the OPS card should be left as set at the factory. Section 2 of SW3 on the MAS card can be in either position, but is factory set to minimise startup time when the unit is switched on. Refer to **Table 1, Table 2 & Figure 14**.

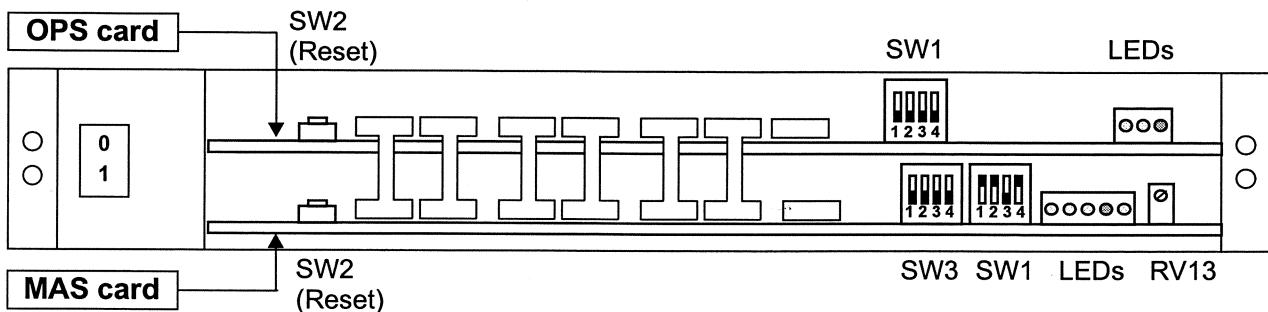
Table 1: MAS Card DIP-Switch SW3

SECTION	FUNCTION	DOWN	UP
1	TV line-standard	625	525
2	Unused	Normal	-
3	Control	Normal	RS232 port
4	Main software enable	Normal	Test

Table 2: OPS Card DIP-Switch SW1

SECTION	FUNCTION	DOWN	UP
1	Unused	Normal	-
2	Unused	Normal	-
3	Unused	Normal	-
4	Main software enable	Normal	Test

Note that the functions of these switches may be altered by future software releases; if in doubt refer to the latest software release documentation.

SETTING UP MAGIC DAVE - continued

- The OPS card is only present in Magic DaVE option systems.
- The DIP switch settings shown are examples only - consult **Tables 1, 2 & 3** for details.

Figure 14: Position of Magic DaVE 4D(O) & 8D(O) internal adjustments (front view)

LED Indicators

As shown above, the MAS card has five and the OPS card three LED indicators.

MAS card

The left-hand three LEDs - all green - should be permanently lit to indicate that the three power rails (+5V, +12V & -12V, in that order) are active.

The next LED is red, and flashes on and off every 16 fields (8 on, 8 off) to indicate that the main processor is running.

The last (right-hand-most) LED is the sync-lock LED. It is green, and will light if and only if sync lock has been achieved, the idea being that the sync lock DIP switch (see next page) can be left permanently ON, the LED then indicating whether **Magic DaVE** is actually locked to a reference.

OPS card

The left-hand two LEDs - both green - should be permanently lit to indicate that the two power rails (+5V & +12V, in that order) are active. (Since there is no analogue circuitry on the OPS card, there is no -12V rail.)

The last LED is red, and - just like the one on the MAS card - flashes on and off every 16 fields (8 on, 8 off) to indicate that the main processor is running. Note that the red LEDs on the MAS and OPS cards should flash at the same rate, but not necessarily in step.

SETTING UP MAGIC DAVE- continued**Output Timing - Genlock**

Magic DaVE can be used as the master SPG in a system or it can be genlocked to a station reference analogue black burst or sync signal if one is connected. **Magic DaVE** can also be referenced to the serial digital Video 4 input in cases where no analogue black-burst is available.

To gain access to the genlock controls, remove the front cover of the **Magic DaVE** mainframe (4 screws). The right-hand DIP switches (SW1) at the right hand side of the lower circuit board, together with an adjacent rotary preset, control the genlock function. Refer to **Table 3** and **Figure 14**. Refit the front cover.

Table 3: Genlock controls (MAS Card DIP-Switch SW1; RV13)

SW1 SECTION	FUNCTION	DOWN	UP
1	Genlock to analogue reference input*	Disabled	Set by Control Panel
2	Analogue genlock PAL V-switch lock**	Off	On
3	Analogue genlock PAL V-switch lock phase**	Normal	Inverted
4	Genlock to SDI video input 4*	Disabled	Set by Control Panel

CONTROL	FUNCTION
RV13	Genlock H-phase

NOTES:

* Genlock is automatically inhibited if no signal is connected to the appropriate reference input to the **Magic DaVE** mainframe. If SW1 sections 1 and 4 are both UP, then **Magic DaVE** will lock according to the **Setup-Timing** menu (page 174). This is how the unit is shipped by default. If both types of reference are present then the analogue reference takes precedence.

** When genlocked to an analogue black-burst reference in 625 line mode, the PAL switch on the **Magic DaVE** black burst output can be locked to the input reference. This may be required to obtain consistent colour-framing with certain VTRs. SW1 section 2 enables this; section 3 inverts the V-switch and hence the PAL four-field sequence. These switches are inactive in 525-lines. V-switch locking is automatically inhibited if there is no colour burst on the incoming reference signal.

SETTING UP MAGIC DAVE- *continued***Input Timing**

Since **Magic DaVE** incorporates framestore synchronisers, it is not normally necessary to reference any inputs. However, to obtain repeatable frame-accurate tape editing, all sources should be genlocked to the black-burst outputs provided. This will also prevent a one frame time jump as the input runs through. With genlocked sources, the video delay through **Magic DaVE** is one frame.

If the key input is used to key a video source on the DVE, the key and video source must be co-timed within $\pm\frac{1}{2}$ line of each other. It is not recommended that the key be externally faded when used with the DVE - a full amplitude incoming key signal is essential for good results.

The key signal fed to the DSK passes through a full TBC, therefore the key signal does not need to be co-timed if it is not going to be used with the DVE.

For further information on this topic, see **Notes on Magic DaVE System Timing** on page 175.

Output Levels and Configuration

The **Magic DaVE** mainframe Preview Output is factory set for standard analogue component Pb and Pr output levels of 700mV pk-pk for 100% colour bars. Some VTRs may be aligned for "Betacam" levels: 700mV pk-pk for 75% colour bars. The **PbPrLEVEL** control in the **Setup-Output** menu allows this to be selected if desired.

The content of the key output is the outline of the DVE tile after it has been passed through the MIX & WIPE circuitry but before the fade-to-BLACK.

SETTING UP MAGIC DAVE- continued**Changing a Link Setting**

To change an internal link setting proceed as follows:

- a) Ensure the **Magic DaVE** mainframe is switched off.
- b) Remove the front cover (4 screws). On early units a 2.5mm allen (hex) key is required.

BEWARE!!

**THE PCBs IN THE MAGIC DAVE MAINFRAME CONTAIN
STATIC-SENSITIVE COMPONENTS.**

**WORK WITH THE UNIT ON A CONDUCTIVE MAT, AND ENSURE THAT YOU ARE
GROUNDED TO THE MAT.**

- c) If an OPS card is present in the upper position, carefully pull off the six link cards.
- d) Carefully withdraw the MAS PCB assembly from the lower position using the card ejectors at each side.
- e) Carefully remove the screws securing the ICD subcard to the front of the main (MAS) card. Unplug the subcard by separating the connectors at the edge. *Note: Minimise flexing of the subcard.* Lift the screening plate clear.
- f) Change links on the main (MAS) card as required.
- g) Refit the ICD subcard and its metal screen, ensuring that the connectors are correctly located. *Note: engage the connectors by applying pressure at the connectors to minimise flexing.* Refit the securing screws.
- h) Re-fit the card assembly in the lower position in the mainframe, ensuring that the card ejectors engage correctly at both sides. Push on the ejector handles to ensure the card is fully home.
- i) If an OPS card is fitted, refit the link cards in the six left-most positions. Note orientate with the legend "OPT" at the top and "MAG" at the bottom.
- j) Re-fit the front panel.

SETTING UP MAGIC DAVE - continued**Table 4: Internal Links****MAS CARD LINKS**

LK	FUNCTION	SETTINGS	
1	Fan-Fail Detection	LINK: OPEN:	Disable (testing purposes only) Enable (normal operation)
2	System Clock	LINK: OPEN:	Master (normal setting) Slave
3	System Clock	LINK: OPEN:	Master (normal setting) Slave
4	System Clock	A: B:	Master (normal setting) Slave
5	Master Clock	A: B:	13.5MHz (normal setting) 27MHz
6	System Clock	LINK: OPEN:	Master (normal setting) Slave
7	Analogue Preview Output 525-line Risetime	A: B:	Slow - 280ns Fast - 140ns (normal setting)
8	525-line Black-Burst *	A: B:	Setup (normal) No setup

Other wire links are all OPEN.

- * This link (LK8) controls the Setup on the Black-Burst outputs only. Setup on the analogue Preview Video output is controlled by the **525 Out** button in the **Setup-Output** menu (see page 166).

SETTING UP MAGIC DAVE- *continued***Magic DaVE Control Panel Setup**

The control panel has a three-position power switch located on the rear. The centre position is OFF. Moving the switch to the left (as viewed from the front) powers the control panel from the mainframe. Naturally in this case, the control panel will not operate unless the mainframe is on and the control cable connected. The control panel's power switch can be left in this position permanently.

Moving the power switch to the right (as viewed from the front) allows the control panel to be powered from an optional stand-alone power supply. Plug it in to the DC power connector located adjacent to the switch. This is intended for systems using control via **Rollcall™** where multiple **Magic DaVE** control panels and/or mainframes are connected together. See **Rollcall™ Installation** section for further information.

A preset adjustment is provided to optimise the contrast of the display on the **Magic DaVE** control panel for the viewing angle. The adjuster is accessible through a hole in the panel, located at the bottom right hand corner of the display. Sit in the normal operating position and adjust using a small flat-bladed screwdriver for the clearest display.

System Setup from the Magic DaVE Control Panel

The format of the Preview output and all Input Signal Setup is performed from the control panel. See the description of the **Setup - Input Menu** and **Setup - Output Menu** on pages 161 and 165 for details.

MAINTENANCE OF MAGIC DAVE

Routine Maintenance and Faults

The **Magic DaVE** control panel and mainframe require no routine maintenance other than periodic cleaning of the mainframe air filter, described below. In the event of a breakdown of the system, contact Snell and Wilcox or your Snell and Wilcox dealer for assistance.

Cleaning the Air Filter

The front panel of the **Magic DaVE** mainframe contains an air filter to remove dirt and dust from the cooling air.

IT IS ESSENTIAL FOR RELIABLE OPERATION OF THE EQUIPMENT THAT THE AIR FILTER IS NOT ALLOWED TO BECOME BLOCKED!

The frequency of cleaning needed will depend on how much the system is used, and on the cleanliness of the operating environment. As a guide the filter should be checked every three to six months in a typical installation.

To check and clean the filter, proceed as follows:

- a) Ensure that the system is switched off.
- b) Remove the **Magic DaVE** mainframe front panel (4 screws). On early units a 2.5mm allen (hex) key is required.
- c) Remove the filter retainer from the rear of the panel (2 screws). Take care not to damage the phosphor-bronze EMC gaskets at the top and bottom of the filter retainer.
- d) Clean the filter using a vacuum cleaner or other means.
- e) Refit the filter and retaining gauze to the front panel.
- f) Refit the front panel.

Cooling Fan Failure

If the cooling fan in the **Magic DaVE** mainframe should stop for any reason, an audible warning consisting of rapid beeps will sound at the mainframe.

IF THIS HAPPENS THEN THE SYSTEM SHOULD BE SWITCHED OFF IMMEDIATELY OR PERMANENT DAMAGE MAY RESULT.

The system should be returned to Snell and Wilcox or your Snell and Wilcox dealer for repair.

CONNECTOR TABLES**Table 5: Editor (Switcher & VTR) Connector Pinout**

9-way female D-type	FUNCTION
1	Frame Ground
2	Transmit A (Tx-)
3	Receive B (Rx+)
4	Receive Common
5	[No connection]
6	Transmit Common
7	Transmit B (Tx+)
8	Receive A (Rx-)
9	Frame Ground

This is the industry-standard pinout. In most cases only a pin-to-pin cable is required to connect these sockets to an external editor.

Table 6: GPI Connector Pinout

The GPI connector can work in two modes, depending upon the setting of the **Mode** button in the **Setup-Editor-GPI/O** menu. There are two modes: **Video** and **Transition**, as shown below.

Pin	GPI/GPO - Video mode		GPI/GPO - Transition mode	
1	Output	Tally - Video 1 (active low)	Output	User GPO 3 (active low)
2	Output	Tally - Video 2 (active low)	Output	User GPO 2 (active low)
3	Output	Tally - Video 3 (active low)	Output	User GPO 1 (active low)
4	Output	Tally - Video 4 (active low)	Input	Transition Reset (Negative Edge)
5	Input	Transition Direction (Open-Circuit = Forwards, Grounded = Reverse.)	Input	Transition Direction (Open-Circuit = Forwards, Grounded = Reverse.)
6	Ground		Ground	
7				
8				
9	Input	Trigger / Stop Transition (Negative Edge)	Input	Trigger / Stop Transition (Negative Edge)

Note that on eight-input units there is a separate tally connector which gives tallies for all eight inputs.

The connector is a 9-way female D-type. For details of the electrical characteristics of this connector, please see the Edit Controller section on page 209.

CONNECTOR TABLES - continued**Table 7: Tally Connector Pinout**

This connector always provides video tally outputs regardless of the setting of the **Mode** button in the **Setup-Editor-GPI/O** menu.

9-way female D-type		FUNCTION
1		Tally - Video 1 (active low)
2		Tally - Video 2 (active low)
3		Tally - Video 3 (active low)
4		Tally - Video 4 (active low)
5		Tally - Video 5 (active low)
6		Ground
7		Tally - Video 6 (active low)
8		Tally - Video 7 (active low)
9		Tally - Video 8 (active low)

The electrical characteristics of this connector are the same as the GPI connector.

Table 8: Mainframe to Control Panel Cable Connections

Control Panel 15-way D-type Female		Cable	Mainframe 15-way D-type Male	
Earth	Shell	Shield	Shell	Earth
Rx- Rx+	Pin 2 Pin 10	Blue Green	Pin 2 Pin 10	Tx- Tx+
Tx+ Tx-	Pin 3 Pin 11	Yellow White	Pin 3 Pin 11	Rx+ Rx-
+12v +12v	Pin 6 Pin 13	Red Violet	Pin 6 Pin 13	+12v +12v
GND GND	Pin 8 Pin 15	Brown Black	Pin 8 Pin 15	GND GND

The standard length of control cable supplied is 10 metres, lengths up to 50 metres can be supplied upon request.

The cable used has eight cores of 7/0.2mm wire and an overall shield.

SECTION E

SPECIFICATIONS

Television Standards

Television Standards: Dual-standard 525-line / 625-line switchable.

Picture Format
On-line Switchable: 4:3 (normal)
16:9 (wide screen)

Internal Processing

Luma Data Rate 13.5 MHz

Pb & Pr Data Rate 6.75 MHz (4:2:2)

Resolution 8 bits with Dynamic Rounding™
10 bit inputs are Dynamically Rounded™ to 8 bits.
(Dynamic Rounding™ is licensed from Quantel Ltd.)

Synchronisation Input frame synchronisers on all paths.

INPUTS**Number of Video Inputs:**4 (*Model 4D(O)*) or 8 (*Model 8DO*) serial digital (SDI, see below)**Video Input Format:**

270 Mbits/second serial digital interface as per CCIR REC-656 / SMPTE RP125. (D1)

Key Inputs:1 (*Model 4D(O)*) or 2 (*Model 8DO*) serial digital (SDI, see above)**Reference Input:**On-line Switchable between:
Analogue black & burst 2 x BNC loop-through.
From (serial digital) Video Input 4.**INPUT LEVELS****Key:**Digital input range on-line switchable between:
16 - 144 (decimal)
16 - 235 (decimal)**Analogue reference:**300mV sync with 300mV pk-pk burst $\pm 6\text{dB}$ **Impedance:**

75 ohms (except reference input).

OUTPUTS**Program Outputs:**

2-off SDI (see below)
Output on-line switchable between 8 and 10 bits.

Preview Outputs:

1-off SDI (see below)
1-off on-line switchable YPbPr / RGB on 3 x BNC

Key Outputs:

2-off SDI (see below)

Reference Outputs:

4-off Analogue Black-Burst (BNC)

Digital Video Output Format:

270 Mbits/second serial digital interface as per
CCIR REC-656 / SMPTE RP125. (D1)

OUTPUT LEVELS**Analogue Preview Y:**

625: 700mV black-white.
525: On-line switchable between:
700mV black-white
100 IRE blanking-white with 7.5 IRE setup.

Analogue Preview Pr / Pb:

On-line switchable between:
700mV pk-pk for 100% bars (EBU)
700mV pk-pk for 75% bars (Betacam).

Digital Key:

Digital output range on-line switchable between:
16 - 144 (decimal)
16 - 235 (decimal)

Analogue Reference:

625: 300mV sync with 300mV pk-pk PAL burst.
525: 40 IRE pk-pk sync with 40 IRE pk-pk NTSC
burst.

Output impedance:

75 ohms.

VIDEO PERFORMANCE**Frequency Response**

Luma:

±0.5dB to 5.5MHz

Pb, Pr:

±0.5dB to 2.75MHz

K rating:

Less than 2%

Y-C delay:

Less than 20ns.

ADJUSTMENTS - available from the control panel.

Horizontal input position: $\pm 2.3\mu s$ (video: 148ns steps; DSK key: 74ns steps).

Analogue Preview output luma setup: On/Off (525-line only).

Analogue Preview Pr, Pb output levels: EBU / Betacam.

Analogue Preview output format: YPbPr / RGB.

Genlock (sync): On/Off.

Genlock Select: Analogue Reference Input or SDI Video Input 4

ADJUSTMENTS - on the internal card edge.

Genlock (Black-Burst PAL V-Phase): On/Off.

Black-Burst PAL V-Phase adjust: Normal or Inverted

Genlock horizontal phase: $\pm 1.5\mu s$ nominal.

POWER REQUIREMENTS

Voltage:

See page ii.

Power including extended control panel:

No option card: less than 125 Watts.
With option card: less than 175 Watts.

Extended control panel:

12 to 15V DC @ 2.2A, normally via control cable.
When an external power supply is used the connector required is a 3.5mm locking jack plug,
nominally tip positive although either polarity will work. The external supply can be unregulated.

CONTROL INTERFACES - Mainframe

Control panel (RS-422 & power):

15-way female D-type.

Editor interface - VTR emulation (RS-422):

9-way female D-type.

Editor interface - Switcher emulation (RS-422):

9-way female D-type.

RS232:

9-way female D-type.

GPI/GPO interface:

9-way female D-type.

Tally outputs:

9-way female D-type.

Rollcall:

1 x BNC.

PHYSICAL - Mainframe**SIZE**

Height
Width
Depth

2U (rack units) ~ 89 mm.
19 inches nominal ~ 485 mm including brackets.*
17½ inches nominal ~ 445 mm including connectors

* The width of the main body (excluding the non-removable mounting brackets and the front panel) is ~440mm.

Weight (basic system)
(with option cards fitted)

~ 10.7 kg.
~ 12.3 kg.

Environmental

5 to 40 °C non-condensing.

PHYSICAL - Extended Control Panel**SIZE**

Height
Width
Depth

~ 200 mm including Joystick & T-Bar.
~ 484 mm (19 inches)
~ 331 mm including connectors.

Weight

~ 6.1 kg.

Environmental

5 to 40 °C non-condensing.

SECTION F

APPENDICES

APPENDIX 1: NON / OPTIONAL-SEQUENCABLE CONTROL PARAMETERS

The following parameters are never stored as part of a sequence.

All controls under the Main Menu-Setup menu (e.g. Setup-Input-Format).	
Effects-Keyers-DSK Keyer	Key: Normal/Invert
Effects-Keyers-DSK Keyer-Levels	Gain & Lift.

The following parameters may be stored as part of a sequence depending upon the setting of the switches in the **Sequence Control - Properties - Enable** menus (page 141).

Mix/Wipe (Standard system)

Wipes-Wipe	Mix, Wipe, Soft & Pattern Number.
Wipes-Border	Sat, Luma, Hue & Width.
Wipes-Position	PosX, PosY, Ang, Aspect, Spin, Aspect Normal/Alt, Position Free/Fixed & Aspect Off/On

Mix/Wipe (Option system)

Transition Control	Key Bus Status (DVE, Priority, DSK) & In Next Transition (BGND, DVE, DSK).
Effect-Keyers-DVE Keyer-Mix	Transp.
Effect-Keyers-DSK Lin-Mix	Transp.
Wipes-Wipe	Width, Wipe, Soft & Pattern Number.
Wipes-Border	Sat, Luma & Hue.
Wipes-Position	PosX, PosY, Ang, Aspect, Spin, Aspect Normal/Alt, Position Free/Fixed & Aspect Off/On

Freeze

Freeze	All controls.
--------	---------------

Pattern

Source-Pattern-Control	Spin, Grad, Ang & Type.
Source-Pattern-Colour ¹	Sat, Luma & Hue.
Source-Pattern-Colour ²	Sat, Luma & Hue.

Pgrm/Prst

Sources	Program Source (also panel buttons), Sat, Luma & Hue.
Sources	Preset Source (also panel buttons), Sat, Luma & Hue.

Appendix 1: Non / Optionally-Sequencable Control Parameters - *continued***Black**

Fade-to-BLACK T-Bar control.

Aux (Standard system only)

Sources	Aux Bus Source, Sat, Luma & Hue.
---------	----------------------------------

Aux I (Option system only)

Sources	Aux Bus [left] Source, Sat, Luma & Hue.
---------	---

Aux II (Option system only)

Sources	Aux Bus [right] Source, Sat, Luma & Hue.
---------	--

DVE Mask (Option system only)

Effects-Keyers-DVE Masks-Wipe	Mix, Wipe, Soft & Pattern Number.
Effects-Keyers-DVE Masks-Border	Sat, Luma, Hue & Width.
Effects-Keyers-DVE Masks-Position	PosX, PosY, Ang, Aspect, Spin, Aspect Normal/Alt, Position Free/Fixed & Aspect Off/On.

DVE Chroma Keyer (Option system only)

Effects-Keyers-DVE Chrm	Keyer & Mode.
Effects-Keyers-DVE Chrm-Colour	Luma & Hue.
Effects-Keyers-DVE Chrm-Aperture	Key, Chroma & C Suppr.
Effects-Keyers-DVE Chrm-K Levels	Foreground & Background.

DSK Keyer (Option system only)

Effects-Keyers-DSK Keyer	Keyer Off/On (and nothing else!).
Effects-Keyers-DSK Chrm	Keyer & Mode.
Effects-Keyers-DSK Chrm-Colour	Luma & Hue.
Effects-Keyers-DSK Chrm-Aperture	Key, Chroma & C Suppr.
Effects-Keyers-DSK Chrm-K Levels	Foreground & Background.
Effects-Keyers-DSK Crop	Top, Left, Bottom & Right.

APPENDIX 2: VARIABLE CONTROLS NOT SEQUENCED IN “CURVE” MODE

The following variable control parameters can only be sequenced in “Linear” mode:

General Controls

All matte colours (including those for Effect-ColourFX).
All spins.

Specific Controls (ordered by menu).

Models-Push	Level & Spacing.
Models-Wipe	Width & Level.
Models-Fragment-Movement	Distance, Position & Size.
Models-Page Turn	Radius, Range & Position.
Models-Shadow-Position	PosX, PosY & Fade.
Models-Corners-Twist	Twist & Lag.
Models-Ripples-Ripple	Cycles & Depth.
Models-XYRipples-Ripple X	Cycles & Depth.
Models-XYRipples-Ripple Y	Cycles & Depth.
Models-Warp-Warp	Intensity & Cycles.
Models-Warp-Squeeze	X, Y & Gap.
Models-Twin Tiles-Position	Zoom.
Models-Quad Split-Spacing	X, Y & Position.
Models-Quad Split-Overlap	X & Y.
Models-Quad Split-Split Pt	X & Y
Models-Multi Tile	SepX & SepY.
Models-Slab	Width & Gap.
Models-Dual-Tile ¹ -Position	Zoom.
Models-Dual-Tile ¹ -Scale	X & Y.
Models-Dual-Tile ¹ -Fade	Fade.
Models-Dual-Tile ² -Position	Zoom.
Models-Dual-Tile ² -Scale	X & Y.
Models-Dual-Tile ² -Fade	Fade.
Transform-Main-Position	Zoom. (=Transform-Advanced-Main-Position Zoom.)
Transform-Advanced-Input-Size	SizeX & SizeY.
Transform-Advanced-Pre-Position	Zoom.
Transform-Advanced-Output	Persp.
Effects-Crop	Edge Positions & Soft.
Effects-Border-Size	Edge Positions & Soft.
Effects-Multigrab	FreezeT & LiveT.

Appendix 2: Variable Controls Not Sequenced In "Curve" Mode - *continued*

Effects-Lights-Lights	Width & Fade.
Effects-Keyers-DVE Keyer-Mix	Transp.*
Effects-Keyers-DVE Chrm-Colour	Luma & Hue.*
Effects-Keyers-DVE Chrm-Aperture	Key, Chroma & C Suppr.*
Effects-Keyers-DVE Chrm-K Levels	Foreground & Background.*
Effects-Keyers-DVE Masks-Wipe	Mix, Wipe & Soft.*
Effects-Keyers-DVE Masks-Border	Width.*
Effects-Keyers-DVE Masks-Position	Aspect.*
Effects-Keyers-DSK Keyer	Transp.*
Effects-Keyers-DSK Chrm-Colour	Luma & Hue.*
Effects-Keyers-DSK Chrm-Aperture	Key, Chroma & C Suppr.*
Effects-Keyers-DSK Chrm-K Levels	Foreground & Background.*
Effects-Keyers-DSK Crop	Edge Positions.*
Effects-Solarise	Level & Soft.
Effects-Posterise	Level & Soft.
Effects-Mosaic	X, Y & XY.
Effects-L and G-White	Lift & Gain.
Effects-L and G-Blue	Lift & Gain.
Effects-L and G-Red	Lift & Gain.
Sources-Pattern-Control	Grad.*
Wipes-Wipe	Mix (<i>standard system only</i>), Wipe & Soft.*
Wipes-Wipe (<i>option system</i>) Wipes-Border (<i>standard system</i>)	Width.*
Wipes-Position	Aspect.*
Trail-Basic-Position	StrbT.
Trail-Basic-Sparkle	Rate & Decay.
Trail-Shadow-Control	Mix.
Trail-Blur	Blur & StrbT.
Trail-Advanced-Mode	StrbT.
Trail-Advanced-Trail-Video	Decay, Delay & Mix.
Trail-Advanced-Trail-Key	Decay, Delay & Mix.
Trail-Advanced-Sparkle-Video	Rate & Delay.
Trail-Advanced-Sparkle-Key	Rate & Delay.
Trail-Advanced-Output	DVE & Trail.
Fade to BLACK T-Bar control*	

* = If sequenced. See Appendix 1.

APPENDIX 3: GVG-SAVE FILENAME CONVENTIONS

This appendix gives details of the naming scheme used for saving EDITOR-SWITCHER (G VG-100) information in the GVG-SAVE folder. Note that the files themselves are normal **Magic DaVE** files and can be loaded and saved manually if required, although this shouldn't be necessary. The following information is therefore included here merely for completeness.

- An E-MEM is saved as a DMEM with the name "E-MEM--x", where x is the number of the E-MEM in hexadecimal, i.e. "0" to "9" for E-MEMs 0 to 9, and "A" to "F" for E-MEMs 10 to 15.
- Also saved is the current sequence cache, with the name "E-CACHEx", where x is the number of the E-MEM in hexadecimal (see above).
- If any sequences in the current sequence cache are not already saved in **Magic DaVE**'s filing system, then they are saved with the name "E-SEQxy", where x is the number of the E-MEM in hexadecimal (see above), and yy is the number of the cache slot which the sequence is in minus one, also in hexadecimal, i.e. "00" to "09" for slots 1 to 10, "0A" to "0F" for slots 11 to 16, and "10" to "17" for slots 17 to 24.

APPENDIX 4: LIST OF WIPE PATTERNS

This appendix lists all the available wipe patterns. The controls and adjustments which are available for each pattern are indicated by a tick in the appropriate column. The numbering scheme is SMPTE compatible.

There are two separate wipe pattern charts within the appendix:

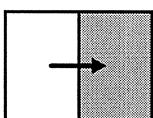
- The first chart shows the basic set of 40 wipe patterns which are available on the standard machine. These patterns are also used in option card machines for generating the DVE Masks available under the **Effects-Keyers-DVE Masks** menu.
- The second chart shows the full set of 100 patterns which are available on machines that are fitted with the option card. The first 40 of these are largely the same as those on the standard machine, but seven of them are different in order to increase the level of SMPTE compatibility. The original seven that were present in the standard machine are available elsewhere within the 100 patterns. Where the same pattern is in two different places in the two charts, the number for the other chart is shown in italics after the pattern name.

The right-hand column in this chart is slightly different to the rest. As usual it indicates whether the **Aspect: Normal / Alt** control has any effect, but it also indicates whether **Aspect: Normal** produces a **Screen** or a **Square** wipe by default (see the **Wipe Controls - Position Sub-Menu** description on page 111).

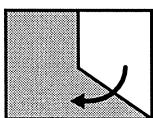
In the case of the matrix wipes (wipes 68 to 99) a **Screen** wipe produces a matrix of 12 x 9 blocks, whereas a **Square** wipe produces a matrix of 8 x 8 blocks.

Finally there is a single page which lists the wipe patterns that are in different places on the standard and option card systems and where they are found.

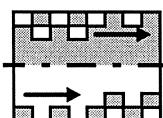
The arrows in the diagrams indicate the normal forward direction of the transition, also the transition progresses in the direction which makes the white area grow bigger. For example, the following wipe diagram represents a vertical line wipe which progresses from left to right.



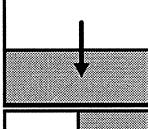
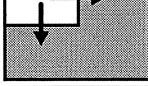
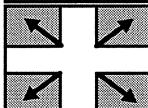
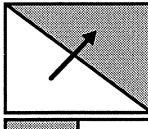
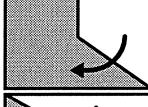
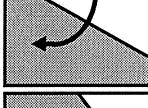
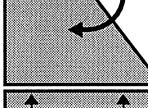
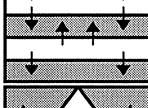
In clock wipes the moving edge (or edges) is indicated by a curved arrow. In this example the vertical edge remains still, while the other edge rotates about the centre of the screen:



The action of some wipe patterns changes during the transition. In these cases the two stages of the transition are shown separated by a thick broken line. For example, in this wipe alternate rectangles are wiped on to form a checkerboard, then the remaining rectangles are wiped off:



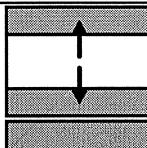
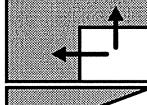
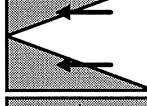
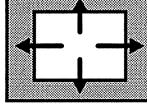
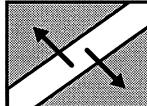
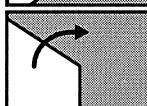
Appendix 4: List Of Wipe Patterns - *continued*

Pattern - Standard	Position	Rotation	Aspect: Variable	Aspect: Screen / Square	
	0 Vertical	✓	✓	✓	
	1 Corner box top left			✓	✓
	2 Vee top			✓	✓
	3 Cross (24)	✓	✓	✓	✓
	4 Diagonal bottom left	✓	✓	✓	✓
	5 Clock 12:00	✓	✓		
	6 Corner-clock top left				
	7 Edge-clock top				
	8 Double vertical split	✓	✓	✓	✓
	9 Double edge-clock top				

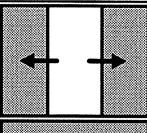
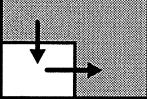
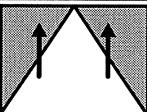
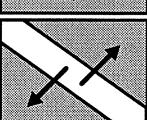
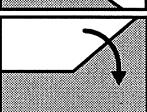
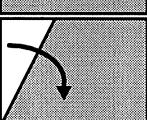
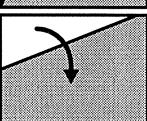
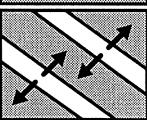
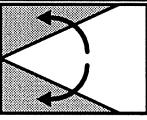
Appendix 4: List Of Wipe Patterns - *continued*

Pattern - Standard	Position	Rotation	Aspect: Variable	Aspect: Screen / Square
	✓	✓	✓	
			✓	✓
			✓	✓
	✓	✓	✓	✓
	✓	✓	✓	✓
	✓	✓		
	✓	✓	✓	✓

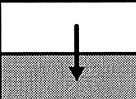
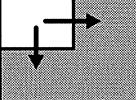
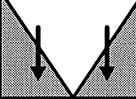
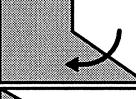
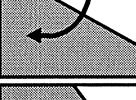
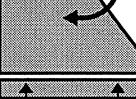
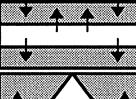
Appendix 4: List Of Wipe Patterns - *continued*

Pattern - Standard	Position	Rotation	Aspect: Variable	Aspect: Screen / Square
	✓	✓	✓	✓
20 Vertical split				
			✓	✓
21 Corner box bottom right				
			✓	✓
22 Vee right				
	✓	✓	✓	✓
23 Box				
	✓	✓	✓	✓
24 Diagonal split top left (41)				
	✓	✓		
25 Clock 6:00 (44)				
				
26 Corner-clock bottom right				
				
27 Edge-clock bottom				
	✓	✓	✓	✓
28 Double diagonal split top left				
				
29 Double edge-clock bottom				

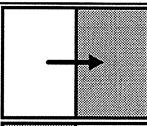
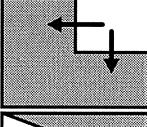
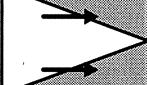
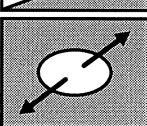
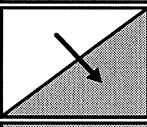
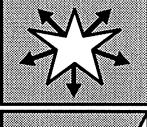
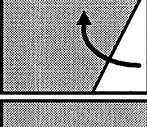
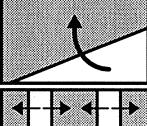
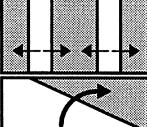
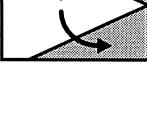
Appendix 4: List Of Wipe Patterns - *continued*

Pattern - Standard	Position	Rotation	Aspect: Variable	Aspect: Screen / Square
	✓	✓	✓	✓
30 Horizontal split				
			✓	✓
31 Corner box bottom left				
			✓	✓
32 Vee bottom				
	✓	✓	✓	✓
33 Diamond				
	✓	✓	✓	✓
34 Diagonal split bottom left (42)				
	✓	✓		
35 Clock 9:00 (45)				
				
36 Corner-clock bottom left				
				
37 Edge-clock left				
	✓	✓	✓	✓
38 Double diagonal split bottom left				
				
39 Double edge-clock left				

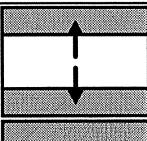
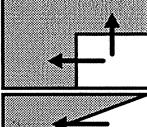
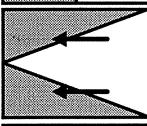
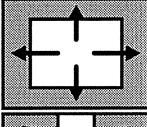
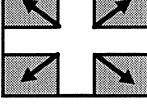
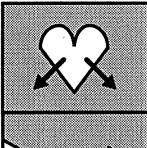
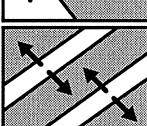
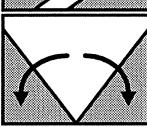
Appendix 4: List Of Wipe Patterns - *continued*

Pattern - Option	Position	Rotation	Aspect: Variable	Aspect: Normal / Alt
	0 Vertical			
	1 Corner box top left			✓ Screen
	2 Vee top			✓ Screen
	3 Circle	✓	✓	✓ Square
	4 Diagonal bottom left			✓ Screen
	5 Clock 12:00			
	6 Corner-clock top left			
	7 Edge-clock top			
	8 Double vertical split	✓	✓	
	9 Double edge-clock top			

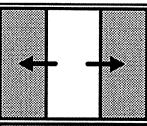
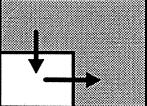
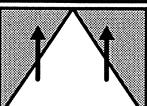
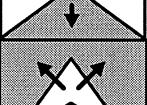
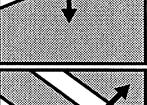
Appendix 4: List Of Wipe Patterns - *continued*

Pattern - Option	Position	Rotation	Aspect: Variable	Aspect: Normal / Alt
				
10 Horizontal				
				✓ Screen
11 Corner box top right				
				✓ Screen
12 Vee left				
	✓	✓		✓ Square
13 Ellipse				
				✓ Screen
14 Diagonal top left				
	✓	✓	✓	✓ Square
15 Five pointed star				
				
16 Corner-clock top right				
				
17 Edge-clock right				
	✓	✓		✓ Screen
18 Double horizontal split				
				
19 Double edge-clock right				

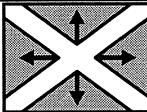
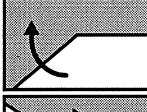
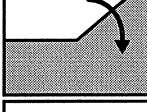
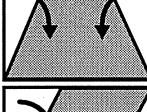
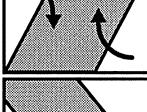
Appendix 4: List Of Wipe Patterns - *continued*

Pattern - Option	Position	Rotation	Aspect: Variable	Aspect: Normal / Alt
 20 Vertical split	✓	✓		
 21 Corner box bottom right				✓ Screen
 22 Vee right				✓ Screen
 23 Box	✓	✓	✓	✓ Screen
 24 Four way cross (03)	✓	✓	✓	✓ Screen
 25 Heart	✓			✓
 26 Corner-clock bottom right				
 27 Edge-clock bottom				
 28 Double diagonal split top left	✓	✓		✓ Screen
 29 Double edge-clock bottom				

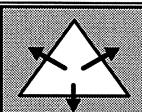
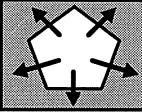
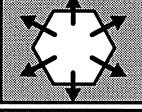
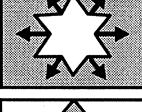
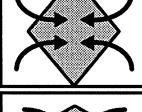
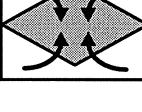
Appendix 4: List Of Wipe Patterns - continued

Pattern - Option	Position	Rotation	Aspect: Variable	Aspect: Normal / Alt
 30 Horizontal split	✓	✓		✓ Screen
 31 Corner box bottom left				✓ Screen
 32 Vee bottom				✓ Screen
 33 Diamond	✓	✓	✓	✓ Screen
 34 Double vee				✓ Screen
 35 Arrow up	✓	✓	✓	✓ Square
 36 Corner-clock bottom left				
 37 Edge-clock left				
 38 Double diagonal split bottom left	✓	✓		✓ Screen
 39 Double edge-clock left				

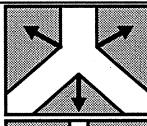
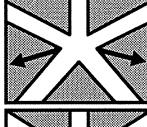
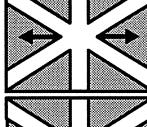
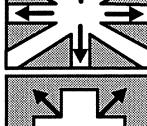
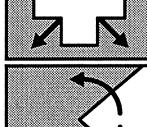
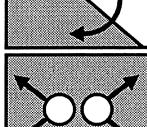
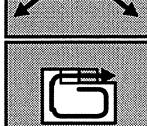
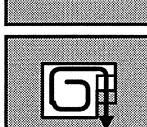
Appendix 4: List Of Wipe Patterns - *continued*

Pattern - Option	Position	Rotation	Aspect: Variable	Aspect: Normal / Alt
 40 Four way diagonal cross (13)	✓	✓	✓	✓ Screen
 41 Diagonal split top left (24)	✓	✓		✓ Screen
 42 Diagonal split bottom left (34)	✓	✓		✓ Screen
 43 Clock 3:00 (15)				
 44 Clock 6:00 (25)				
 45 Clock 9:00 (35)				
 46 Double clock 12:00				
 47 Double corner-clock bottom				
 48 Double corner-clock top & bottom				
 49 Double edge-clock top & bottom				

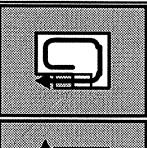
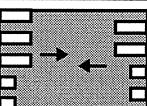
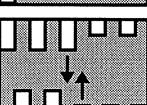
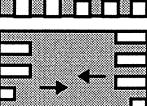
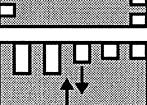
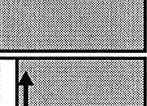
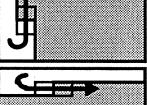
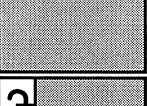
Appendix 4: List Of Wipe Patterns - *continued*

Pattern - Option	Position	Rotation	Aspect: Variable	Aspect: Normal / Alt
	50 Triangle	✓	✓	✓ Square
	51 Pentagon	✓	✓	✓ Square
	52 Hexagon	✓	✓	✓ Square
	53 Heptagon	✓	✓	✓ Square
	54 Octagon	✓	✓	✓ Square
	55 Three pointed star	✓	✓	✓ Square
	56 Four pointed star	✓	✓	✓ Square
	57 Six pointed star	✓	✓	✓ Square
	58 Quad edge-clock top & bottom			
	59 Quad edge-clock left & right			

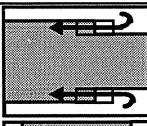
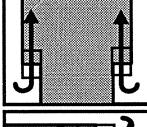
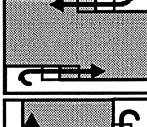
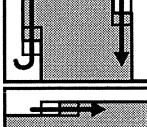
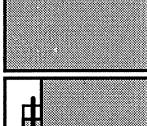
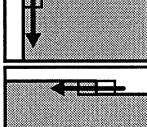
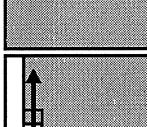
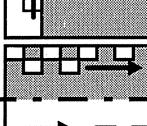
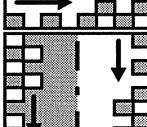
Appendix 4: List Of Wipe Patterns - *continued*

Pattern - Option	Position	Rotation	Aspect: Variable	Aspect: Normal / Alt
	60 Three way cross	✓	✓	✓ Screen
	61 Five way cross	✓	✓	✓ Screen
	62 Six way cross	✓	✓	✓ Screen
	63 Seven way cross	✓	✓	✓ Screen
	64 Eight way cross	✓	✓	✓ Screen
	65 Four way closed cross	✓	✓	✓ Square
	66 Double clock 3:00			
	67 Double circle	✓	✓	✓ Square
	68 Spiral top right			
	69 Spiral bottom right			

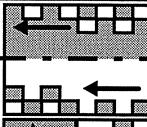
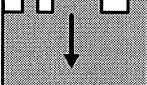
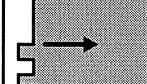
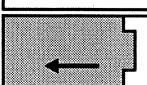
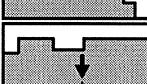
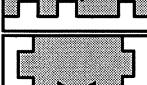
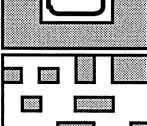
Appendix 4: List Of Wipe Patterns - *continued*

Pattern - Option	Position	Rotation	Aspect: Variable	Aspect: Normal / Alt
 70 Spiral bottom left				✓ Screen
 71 Spiral top left				✓ Screen
 72 Horizontal grating left				✓ Screen
 73 Vertical grating top				✓ Screen
 74 Horizontal grating right				✓ Screen
 75 Vertical grating bottom				✓ Screen
 76 Horizontal zigzag left				✓ Screen
 77 Vertical zigzag top				✓ Screen
 78 Horizontal zigzag right				✓ Screen
 79 Vertical zigzag bottom				✓ Screen

Appendix 4: List Of Wipe Patterns - *continued*

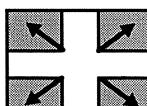
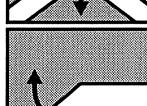
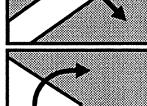
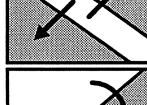
Pattern - Option	Position	Rotation	Aspect: Variable	Aspect: Normal / Alt
	80 Double parallel horizontal zigzag			✓ Screen
	81 Double parallel vertical zigzag			✓ Screen
	82 Double opposed horizontal zigzag			✓ Screen
	83 Double opposed vertical zigzag			✓ Screen
	84 Horizontal fragment left			✓ Screen
	85 Vertical fragment top			✓ Screen
	86 Horizontal fragment right			✓ Screen
	87 Vertical fragment bottom			✓ Screen
	88 Horizontal checkerboard left			✓ Screen
	89 Vertical checkerboard top			✓ Screen

Appendix 4: List Of Wipe Patterns - *continued*

Pattern - Option	Position	Rotation	Aspect: Variable	Aspect: Normal / Alt
 90 Horizontal checkerboard right				✓ Screen
 91 Vertical checkerboard bottom				✓ Screen
 92 Random top				✓ Screen
 93 Random left				✓ Screen
 94 Random bottom				✓ Screen
 95 Random right				✓ Screen
 96 Random top and bottom				✓ Screen
 97 Random left and right				✓ Screen
 98 Random spiral				✓ Screen
 99 Random checkerboard				✓ Screen

Appendix 4: List Of Wipe Patterns - continued

This page shows a summary of the differences between the two sets of wipe patterns.

No.	Pattern - Standard	Pattern - Option
3		Cross
13		Diagonal cross
15		Clock 3:00
24		Diagonal split top left
25		Clock 6:00
34		Diagonal split bottom left
35		Clock 9:00
40	- - -	Diagonal cross
41	- - -	Diagonal split top left
42	- - -	Diagonal split bottom left
43	- - -	Clock 3:00
44	- - -	Clock 6:00
45	- - -	Clock 9:00

SECTION G

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Bold type indicates the main place (if any) that a topic is discussed.
Italic type indicates that the entry is in the **Questions & Answers** section.

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