TASCAM
TEAC Professional Division

DM-24

Digital Mixing Console
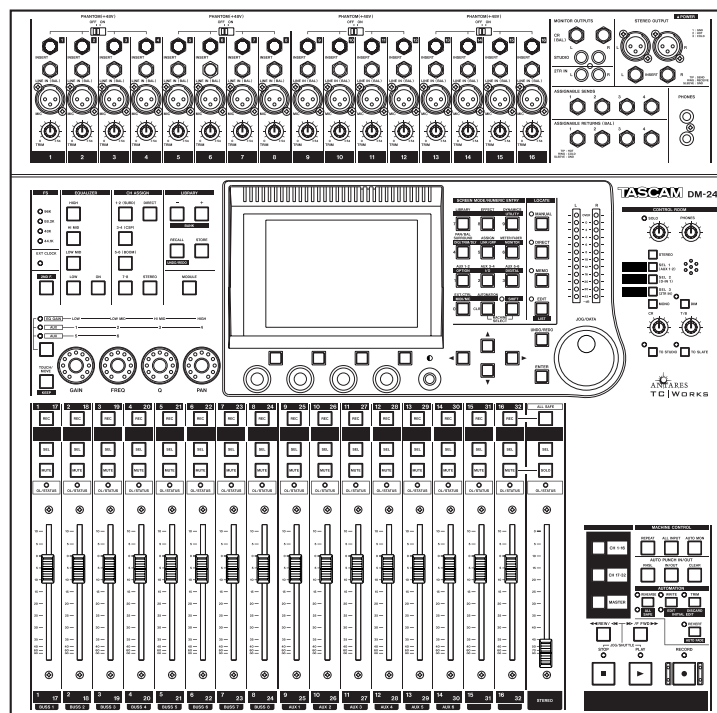
Table of Contents

1 – Introduction

The DM-24 is capable of writing and reading mix moves as well as editing and refining mix moves during replay, all synchronized to time code. No external computer is necessary, as all control of the automation is made from the DM-24ís control surface.

Automated mixes are stored internally on the DM-24 and can be off-loaded via a System Exclusive (SysEx) MIDI dump to anything capable of storing such data, such as a MIDI sequencer or MIDI data filer.

Here are a few reasons to use mixer automation:

- Tedious moves, (such as mutes), that occur at the same place in the program each time can be written to the automation system for playback. This allows you to focus on the creative aspect of listening and mixing, instead of the mechanical aspect of pressing the mute keys at the right time, every time.
- Mix moves can be refined to your satisfaction then the automation system will read those moves back every time in exactly the same way.
- A mix can be recalled at a later time for further refinement.

The DM-24's automation system was designed to be intuitive, using the mixer's familiar control surface and a minimum number of keystrokes, to stay out of the way of the creative process of mixing.

Using This Manual

The following type conventions are used in this manual:

BOLD CAPS for physical keys on the mixerís control surface (Automation keys are color coded purple.)

LIGHT CAPS or Light First Letter Caps for on-screen controls in the display

First Letter Caps for names of operational modes and functions

Automated Controls

The following mixer controls of the DM-24 can be automated:

- Fader levels
- Mutes
- Panning (including surround panning)
- EQ settings:
- Gain, Frequency, Q, EQ On/Off switching
- Individual EQ band TYPE switching between High/Low Pass Filter, Peaking & Shelving
- Auxiliary send levels and Pre/Post switching
- Auxiliary master send levels
- Buss master levels
- GATE settings:
- THRESHold
- RANGE
- HYSTeresis
- ATTACK
- HOLD
- DECAY
- COMPressor settings:
- THRESHold
- RATIO
- ATTACK
- RELEASE
- Library recall

The following mixer controls of the DM-24 **cannot** be automated:

- DIGI-TRIM
- Individual EQ band On/Off switching
- Effect settings
- Buss assignments
- **MIC TRIM**
- Control Room monitor switching
- LCD navigation
- Transport control
- Fader layer switching
- Global mixer setup parameters

Moves for different mixer controls do not have to be automated in the same pass. Just as in multi-track recording, it is possible to concentrate on one specific control at a time, building up the automated mix over a number of passes. The DM-24's automation system allows this to occur by intelligently switching automation modes transparently on a per control basis.

This work done by the DM-24 automation system provides a high degree of flexibility while not requiring constant attention from you. Of course, the DM-24's automatic mode switching may be over-ridden at any time for "power user" operation.

The automation is synchronized to external time code. This could be Linear Time Code (LTC or commonly referred to as SMPTE/EBU) or MIDI Time Code (MTC).

The event resolution for mix moves on the DM-24 is one event per quarter time code frame. At a time code rate of 30 frames per second, non-drop, this equates to about 5 milliseconds per event.

A Note on Touch-Sensitive Faders

When using the touch-sensitivity of the faders in automation, you should always use your fingers to touch the faders. If you use a pencil or ruler, etc., or even your fingernails to touch them, the fader will not register as having been touched.

Setup

There are two possible sources of time code to which the DM-24's automation can lock. Both are equal in functionality and accuracy. Your choice will depend on what you have available in your situation. The choices are:

LTC

There is an RCA jack (TIME CODE on the back of the DM-24 which accepts Linear Time Code (SMPTE/EBU).

To use LTC with the automation system, go to the SYNC/TC tab in the OPTION display, and then select TC IN as shown below:
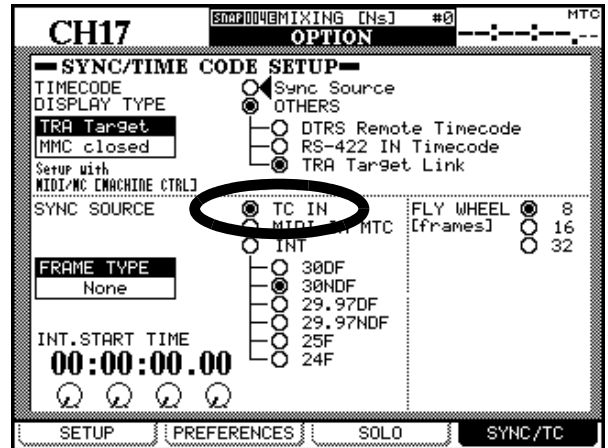
Figure 1 – OPTION / SYNC/TC display showing LTC choice

MTC

This refers to MIDI Time Code being received at the DM-24's MIDI Input. The source of MTC could be a Digital Audio Workstation (DAW), hardware recorder that does not support LTC, or any other source of MTC.

To use MTC with the automation, go to the SYNC/TC tab in the OPTION display then select MIDI IN MTC as shown below.

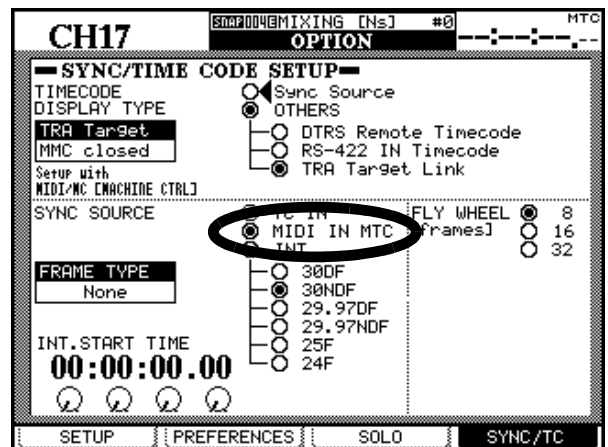**Figure 2 – OPTION / SYNC/TC display showing MTC choice**

While the DM-24 automation system is extremely powerful, it is also very easy to use. This Quick Start covers much of what you need to know to run the system. The rest of the manual provides details on the concepts of the system and how to use it to its fullest potential.

Starting out with the time code

1   Connect a LTC or MTC (time code) source to the Time Code or MIDI input on the rear panel of the DM-24. Choose the appropriate
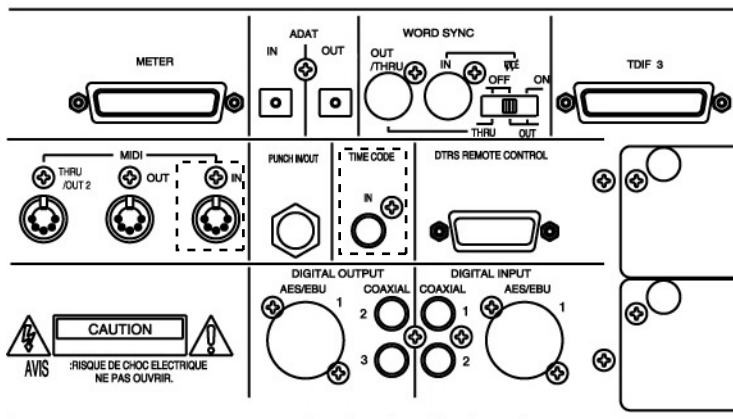
setting in the OPTION – SYNC/TC **display. Be sure your recorder is set to output the correct type of time code.**
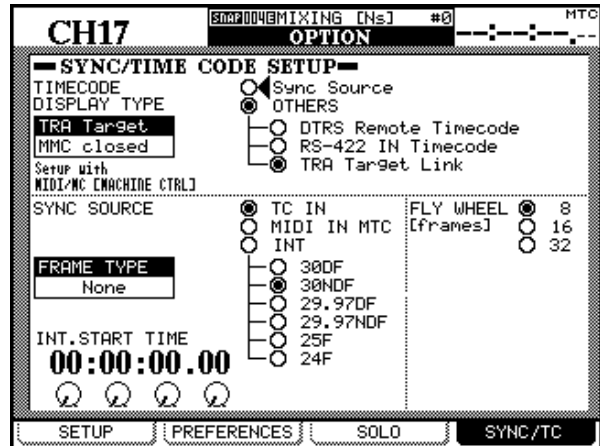
Access the automation screens

2   Press the AUTOMATION key to access the automation screens on the display. If you do not see the AUTO MAIN **display, press the**

AUTOMATION key repeatedly until you see AUTO MAIN**.**
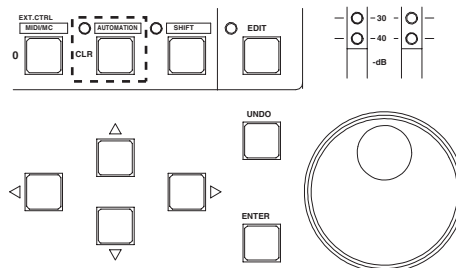
Turn on the automation

3   Move the cursor to the onscreen AUTOMATION ENGINE **button and press the ENTER key to**

turn on the automation system:.
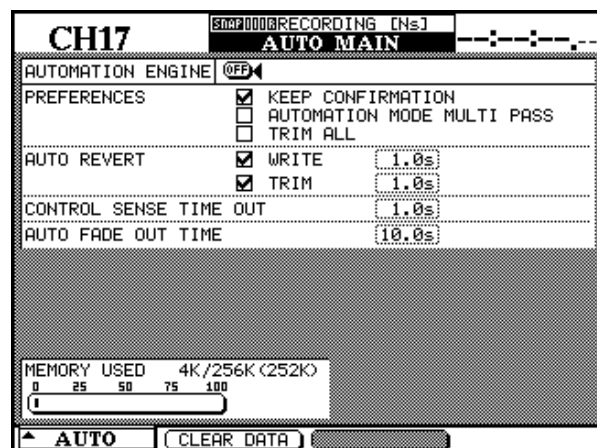
Make the initial settings

4 **Operate your recorder and navigate the DM-24 as you normally would during a mix. The DM-24's automation system stores control settings as you change them.**

NOTE

You are not writing mix moves yet!

Store the current settings

5 **Store the current mix data using the** AUTO FILES **display.**

Press the AUTOMATION key until the AUTO FILES **screen is shown on the display.**

Press the STORE **soft key (the second).**

Use the cursor keys, the data wheel and the ENTER key to name your mix.

See the main manual section on libraries for further details of naming and editing library entries.

See "AUTO FILES" on page 14 of this manual for further details of this screen.

Press the STORE **soft key again.**
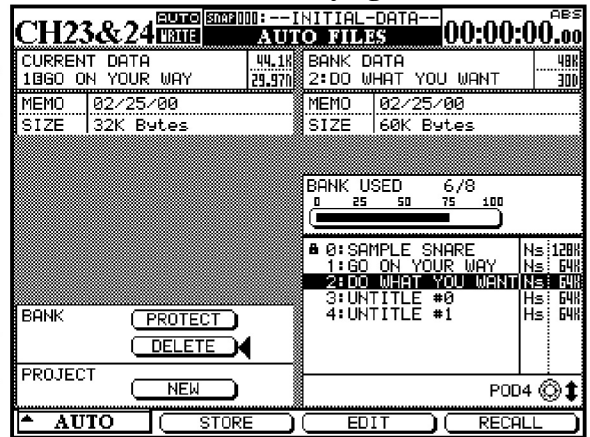
## Write some fader moves

6 **Once you have the mix basically set up, write some fader moves:**
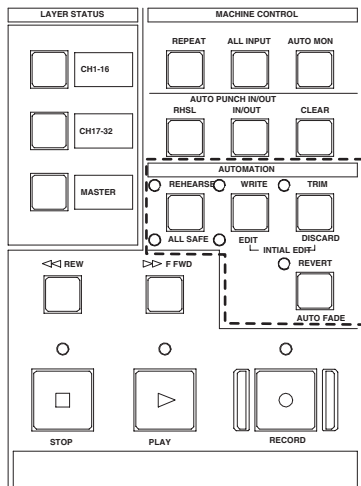
With time code running, press the WRITE key.

Touch a fader with your finger and move it up or down.

Release the fader when your mix move is complete. When you release the fader, it automatically returns to its previous setting.

Rewind the recorder and play the section again. The DM-24 plays back the moves you just wrote.

You can press the WRITE key, and touch the faders to write new mix moves at will.

Write some mute moves

7 **Now write some Mutes (also called Switch Events):**

With time code running, press the WRITE key.

Press some MUTE keys to change the mute settings to on or off.

Rewind the recorder and play the sections again. The DM-24 will play back the Switch Events you just wrote to the MUTE keys (in other words, the MUTE indicators and status will change in sync with the incoming time code.

Write some Aux send moves

8 Write Auxiliary Send moves using the touch-sensitive faders:

To place the Auxiliary Sends 1 & 2 under fader control, press **AUX 1-2** and choose Auxiliary Send 1 by pressing the first soft key under the display.

With time code running, press the **WRITE** key.

Touch a fader and move it up or down to write a mix move for Auxiliary Send 1 for that channel.

Release the fader when your mix move is complete. When you release the fader, it automatically returns to its previous setting.

Writing POD moves

9 Write a POD Control move (EQ or Aux Send):

With time code running, press the **WRITE** key.

Select the appropriate screen on the display, and turn the desired POD control to write the mix move.

After the POD movement has stopped for one second, the control will automatically return to its setting before being moved.

NOTE

You may want to disable AUTO REVERT *or adjust the* CONTROL SENSE TIMEOUT *using the* AUTO MAIN *screen, when automating POD controls. See "Auto Revert Choices:" on page 28*

Trimming existing mix moves

10 This allows you to trim an existing mix move (that is, to adjust the overall level of the move). For example, the move you wrote in step #6 is good but the move itself need to be louder.

With time code running, press the **TRIM** key.

At the desired time, touch the fader to be trimmed with your finger and raise it. You will hear the previous moves with the addition of the amount of trim you're adding.

Release the fader when you are finished trimming. The fader returns to reading previous, untrimmed mix moves.

Finishing up

11 Remember to store your mix (as described in in "AUTO FILES" on page 14 and "Mix File Management" on page 36). Also, remember to store any effect settings that were used in your mix into the libraries.

Happy mixing!

Modes

Before going further, a brief description of automation modes and functions will be helpful. More detailed explanations of how these modes operate, along with how automatic mode switching is carried out, will be included in the Operations section of this manual. ("Operation" on page 16).

Auto

This is the default mode for all controls when the automation system is enabled. The intelligent mode switching that occurs is done within Auto mode.

When a control is in Auto mode and time code is received, the control enters *write ready* if the **WRITE** LED is lit, or *trim ready* if the **TRIM** LED is lit. The control reads previous data, if any, until moved, then enters the appropriate state (writing or trimming).

If neither of these two global LED indicators is lit, the status of the control depends on whether any mix data has been written to it. If mix data already exists, the control enters write rehearsal when time code is received (any movement of the control will be heard but not written). If no mix data exists, it enters static ready (any control movement will update its Static data).

It is possible for a single control, or group of controls, to drop into and out of writing or trimming in one pass. It is further possible to switch between Write and Trim modes on the fly; even adjusting the Revert Time during a mix pass will be recognized by the automation system. The only exception is Write to End, which must be completed by stopping the time code.

> **NOTE**
>
> *Generally, a control that has dynamic mix moves written is said to be in Dynamic mode. A control that has no dynamic mix moves written is said to be in Static mode.*

Write

Think of this as "record-ready" on a multi-track recorder. When Write is enabled, all controls that are in Auto mode will normally read existing mix moves.

As soon as you adjust a control, while Write mode is enabled, that control will begin writing new mix moves, overwriting any pre-existing data.

Trim

During a mix there may be sections where there are good mix moves on a control but the overall level of that control needs to be raised or lowered while preserving the existing moves.

Trim mode is used to make such relative offsets to existing mix moves for the duration of the Trim operation. The diagram below will help you to understand this concept.
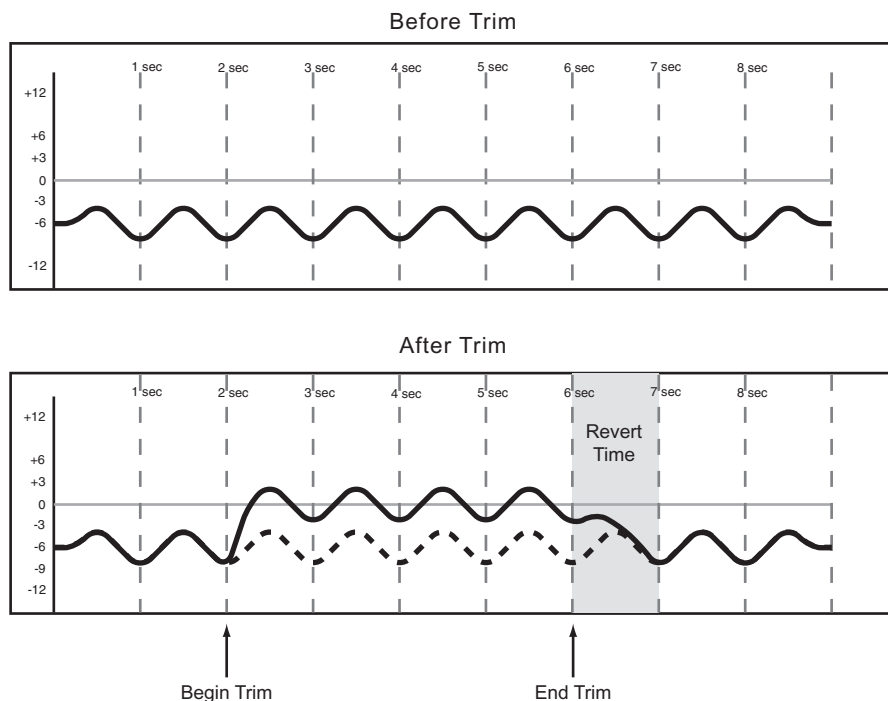

Figure 3 – Illustration of Trim mode behavior.

In the example shown above, a fader is raised at the "Begin Trim" point and released at the "End Trim" point. The upward movement of the fader would be added to the existing data. When a Trim is performed, the audio passing through the control includes the Trim move in real time.

Static

During the course of an automated mix some controls will require movement (*Dynamic automation*), and some controls will stay in one place with their settings stored in the mix file (*Static automation*).

Any control in Static mode will automatically update its setting in the mix file whenever that control is moved.

NOTE

The control's movement will not be recorded as dynamic automation as long as Write mode is not enabled

Safe

Any control in Safe mode will only read existing static or dynamic automation. Moving a control in Safe mode will not write any automation data nor affect the audio passing through that control. It is possible to place all mixer controls in Safe mode by holding the **2ND F.** key while pressing **ALL SAFE**.

Off

This mode removes a control from the automation system completely. A control that is Off cannot record or playback mix moves. However, moving a control that is Off will affect the audio passing through that control. The setting of a control that is Off will not be stored in the mix file.

Rehearse

Rehearse is a special status that works with Write, Trim and Static modes. Rehearse allows you to practice or experiment with mix moves without recording them.

Displays

The three automation display screens on the DM-24 described below are used for the following purposes:

- Enabling/disabling the automation system
- Setting operational preferences
- Setting the master Auto Fade Out time
- Displaying used/available memory
- Over-riding the automation system's automatic mode switching
- Copy/paste of configuration between channels
- Mix file management

In all automation displays, the cursor is moved by using the cursor keys, located to the lower right of the display.

Check boxes are enabled/disabled by moving the cursor to the check box then pressing the **ENTER** key. Time values are entered by moving the cursor to the desired box, changing the value with the **JOG/DATA** dial then pressing the **ENTER** key. Time values flash until confirmed with the **ENTER** key.

To access the automation displays, press the **AUTOMATION** key. Repeatedly pressing the **AUTOMATION** key toggles between the displays.

While viewing these, it is also possible to select a different automation display by pressing the leftmost soft key under the display, then using the leftmost POD to select a display, and then pressing the leftmost soft key again to view the selected display.

AUTO MAIN
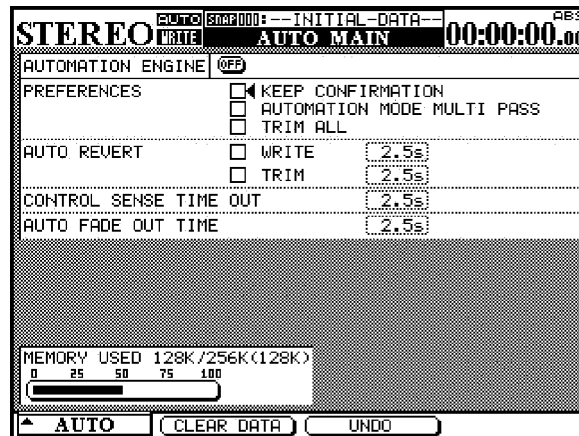
AUTOMATION ENGINE This on-screen button enables/disables the DM-24's automation system.

When enabled, AUTO is displayed in the upper left of the display with the currently selected channel, in all mixer displays.

No automation data will be recorded or played back when the automation system is disabled.

When the DM-24 is powered on, the automation system will be disabled, even if it was enabled when powered off.

KEEP CONFIRMATION When enabled, a pop-up box will ask for confirmation before performing a Keep operation. A Keep operation saves a copy of the current mix into the first memory bank, pushing

older mixes to the next highest memory bank. If all memory banks are filled, a Keep operation will delete the oldest mix. All mixes saved using Keep will be numerically sequenced with highest numbers being the latest mixes.

The default value of this check box is on (keep confirmation is enabled).

NOTE

This is not implemented in Version 1.xx software.

AUTOMATION MODE MULTI PASS Normally, the mixer exits Write or Trim mode when it is no longer receiving time code.

When this check box is enabled, the mixer remains in Write or Time mode until the mode is manually dis-

abled. This allows you to perform mix moves at will without having to manually enable Write or Trim on every pass.

TRIM ALL When enabled, a Trim operation will be applied to all mix moves from the beginning of a mix to its end, regardless of the transport's position within the program. This allows you to change the overall level of a control and maintain all mix moves pre-existing on that control while listening to the program at any time code location.

NOTE

This is not implemented in Version 1.xx software.

AUTO REVERT When Auto Revert is enabled, a control smoothly matches back to its previous setting when you release it. When Auto Revert is disabled, you must manually punch out of automation recording by pressing the **REVERT** key, or by stopping the incoming time code—the control will then smoothly match back to its previous setting.

There are independent check boxes to enable Auto Revert for Write and Trim modes.

NOTE

It is possible to enable or disable Auto Revert during a mix pass. The new setting is applied to mix moves only. The following describes an example:

With the **WRITE** *indicator lit, and* AUTO REVERT – WRITE *disabled, move the faders. Now enable* AUTO REVERT – WRITE*, and move a different set of faders. These will revert automatically, but the first set will continue to write until you press* **REVERT***.*

REVERT TIMES To the right of the Auto Revert check boxes are fields to enter Revert Times. The Revert Time is the amount of time (in seconds) it takes for a control to smoothly match back to its previous setting. There are fields to set an independent Revert Time for Write and Trim modes. These fields can be set from 0.5 seconds to 10 seconds in 0.5 second increments.

The ∞s setting in the Revert Time fields enables Write/Trim To End mode, which applies a Write or Trim operation from the point where automation recording began, all the way to the end of the mix.

In the case of Write mode, this overwrites any existing mix data from the point where automation recording began, all the way to the end of the mix.

In the case of Trim mode, this applies the Trim operation from the point automation recording began all the way to the end of the mix.

Here are examples of instances where this would be useful:

- There may be existing mix moves all the way through a song which need to be louder from halfway through the song until the song's end. Using the ∞s setting in the Trim Revert Time field allows you to perform this operation without the need to play the song all the way to the end in order to record the new mix data.

- There may be existing mix moves all the way through a song, however, during the mixing process it is determined that a control should remain at one setting from a point within the song until the song's end. Using the ∞s setting in the Write Revert Time field allows you to perform this operation without the need to play the song all the way to the end in order to record the new mix data.

NOTE

AUTO REVERT WRITE *(or* TRIM*) must be enabled for* Write *(or* Trim*)* To End *to work.*

A Write/Trim To End operation must be completed by stopping the time code. Manually disabling Write or Trim mode while time code is running will not perform a Write To End operation.

If the REVERT TIME *value is changed from the* ∞s *(infinity) setting to a non-infinite value (that is, anything else), and a* Write *(or* Trim*)* To End *is in progress, the controls start reverting immediately.*

CONTROL SENSE TIME OUT The DM-24's faders are touch-sensitive, so the automation system knows when you have touched or released a fader, thus punching into or out of automation record.

The POD controls, control surface keys and rotary encoders are not touch-sensitive. These controls must detect movement in order to begin recording mix moves.

The Control Sense Time Out value allows these controls to punch out of automation record automatically after the specified amount of time has passed without movement of the control. This field can be set from 0.5 seconds to 10 seconds in 0.5 second increments.

NOTE

A useful trick *is to map the Auxiliary Sends to faders for touch-sensitive control:*

Press either the **AUX 1-2***,* **AUX 3-4** *or* **AUX 5-6** *key and use the* AUX LEVEL *selection tabs at the bottom of the screen to select an aux send across all channels*

Use the faders to write your Auxiliary Send mix moves

AUTO FADE OUT TIME This field determines the duration of a linear fade written to the Master Fader when the **AUTO FADE** key is pressed.

This field can be set from 0.5 seconds to 10 seconds in 0.5 second increments.

Since this fade is written directly using the Master Fader, it is not possible to change its time value after an Auto Fade has been performed.

To write an Auto Fade:

1   **Press the WRITE key.**

2   **Hold 2ND F. and press AUTO FADE at the point where you want the fade to begin.**

To erase an Auto Fade it is necessary to overwrite the duration of the fade manually or by using the Write To End function.

NOTE

A useful trick to remember: *A linear fade is often not musically desirable. Typically in these cases you will begin the fade at a faster rate and end the fade at a slower rate. Use the Auto Fade function to perform this:*
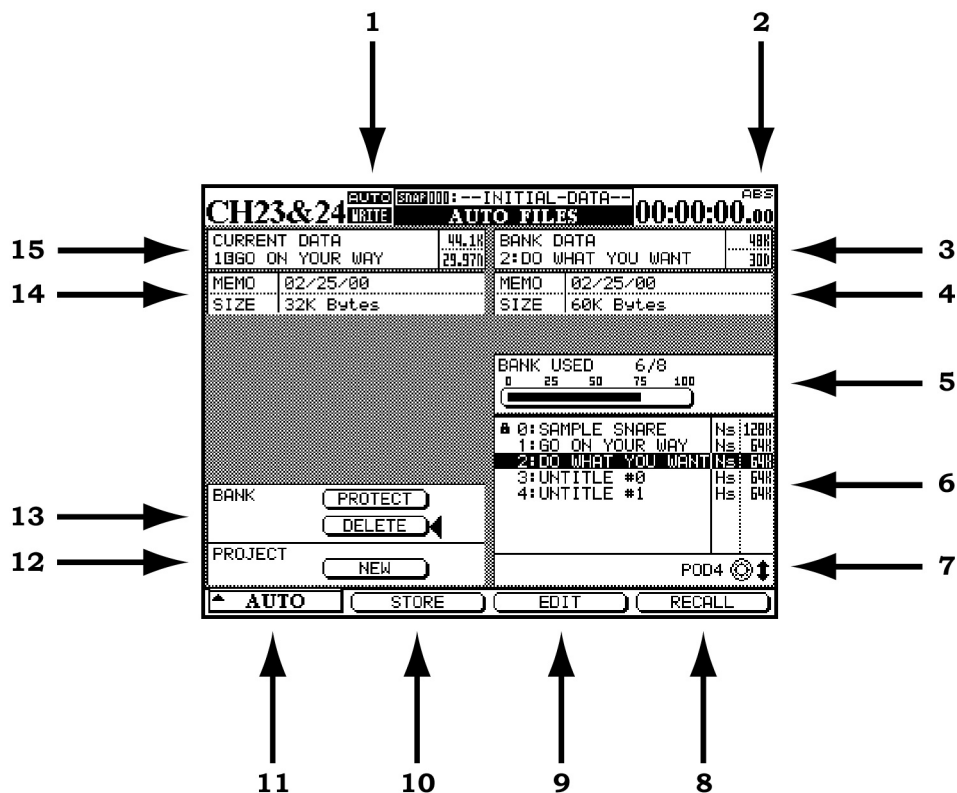
Press **WRITE.**

Hold **2ND F.** *and press* **AUTO FADE** *at the point where you want the fade to begin.*

Continue to hold **2ND F.** *and press* **AUTO FADE** *again to restart the Auto Fade Time from the fader's current position.*

This may be repeated as often as desired to slow down the end of an Auto Fade to a mere crawl.

AUTO FILES

1 The word AUTO appears here in all mixer LCD displays when the automation system is enabled. The word WRITE appears here solid when the mixer is ready to record either Static or Dynamic mix data. The word WRITE flashes when the automation system is actually writing mix data on the selected channel. This could be a Write or Trim operation.

2 This indicates the source of the time code being used by the mixer and the automation system. TC indicates Linear Time Code and MTC indicates MIDI Time Code.

3 Shows the currently selected mix memory bank. The mix shown here will be the mix used for Store, Edit and Recall operations chosen at the bottom of the display.

4 Shows the Memo along with the size of the mix file for the mix shown in #3 above.

5 Shows the amount of bank memory used by the selected mix in its memory bank.

6 Shows a list of available mixes in their memory banks.

7 Use the fourth POD control (the rightmost one) under the display to highlight a stored mix.

8 The soft key under this display button is used to recall the highlighted mix into the current mix memory.

9 The soft key under this display button is used to start the editing of the name of a stored mix.

10 The soft key under this display button is used to store the current mix into a storage bank.

11 The soft key under this display button displays the list of the three automation display screens. Use the leftmost POD to highlight a display and the leftmost soft key or the **ENTER** key to activate the highlighted display.

12 Move the cursor to this LCD button to create a new project.

NOTE

Creating a new project will erase the contents of the current mix memory.

13 DELETE permanently erases the contents of the highlighted mix bank.

NOTE

There is no undo for this operation.

PROTECT locks the contents of the highlighted mix bank so it cannot be accidentally deleted.

14 Any mix memo information along with the size of the **current** mix is displayed here.

15 The title of the **current** mix is displayed here.

See the main manual section on "Libraries" for details of naming library entries, etc.
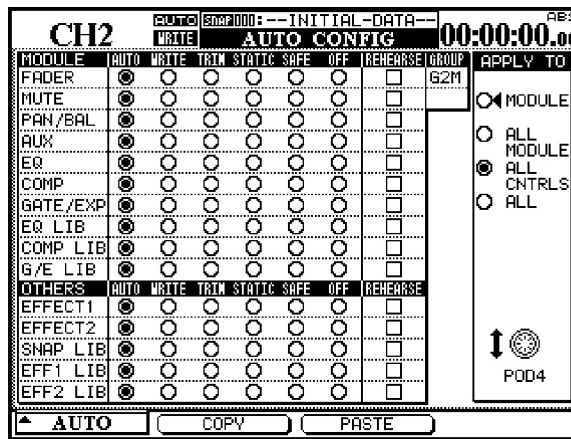
AUTO CONFIG

Figure 4 – *AUTO CONFIG* display where automatic mode switching can be over-ridden.

The grid represented in the AUTO CONFIG display is used to manually over-ride the automation's mode switching. The selected channel is displayed in the upper left of the display. If the displayed channel is part of a group, this is indicated in the upper right of the grid.

The changes made in this grid are applied to channel and controls selected by the APPLY TO buttons at the right of the display. Use the rightmost POD to make this selection. Note that it is not necessary to press **ENTER** to confirm this setting.

When a module or control is set to any mode except Auto using this display, that module or control remains in that mode until it is reset back to Auto.

The settings made in this display are saved as part of the mix data.

MODULE When selected, the changes in this display will only be applied to the specified control on the selected channel.

ALL MODULE When selected, the changes in this display are applied to a single control across all channels. For example, with ALL MODULE selected, enabling SAFE in the FADER row places all mixer faders into Safe mode.

ALL CNTRLS When selected, the changes in this display are applied to all controls on the selected channel. This applies the changes to the libraries.

ALL When selected, the changes in this display are applied to all controls on all channels.

COPY This soft key copies the configuration of the currently-selected channel into a special clipboard where it can then be pasted to another channel.

PASTE This soft key pastes the configuration copied using the COPY soft key to the currently-selected channel. Note that there is no Undo for this operation.

Channel LED Indicators

Each channel has an LED indicator immediately above the fader. When automating a mix, these indicators can be used to show whether a channel is writing, reading or reverting.

Use the OPTION display screen to set the function of these indicators. The default use is as channel overload indicators, as explained in the main manual.

When used as automation indicators, they flash when any control on a channel is writing or reverting. They are lit steadily when all controls on a channel are reading.

The global Revert LED above the **REVERT** key follows the behavior of the channel indicators when they are used for automation.

Operating the DM-24's automation system is designed to be intuitive and transparent to the mixing process, while offering power and flexibility previously unavailable on a mixing console.

The steps below, combined with an understanding of the information on the previous pages, will have you automating your mixes in no time.

Setting Up Your Mix

Action: Enable the automation system in the AUTO MAIN display by moving the cursor to the on-screen AUTOMATION ENGINE button and pressing **ENTER**.

Result: The settings of all mixer controls are stored into the current mix memory. Changing any settings will automatically update those settings in the current mix memory. This is just like mixing on an analog console except the system now knows where every

control is set. The automation system sees these controls as being in Static mode.

Action: Store the mix file in a memory bank (see "AUTO FILES" on page 14).

Result: Until a mix is stored in a memory bank, it only exists in the current mix memory. The current mix memory is erased when the console is powered off, so storing a mix in a memory bank is required for later recall.

Writing Mix Moves

Action: Press the **WRITE** key before or after starting time code so that its indicator lights. With time code running, perform the desired mix move.

Result: With the console in Write mode, any movement of a control while time code is running is written to that control by the automation system.

In the case of the touch-sensitive faders, writing begins when a fader is touched.

In the case of POD controls, writing will begin when the control is moved.

Once dynamic mix moves have been written to a control, the automation system automatically changes that control from Static mode to Dynamic mode, in order to read mix moves. Controls that have not had mix moves written to them remain in Static mode, even if those controls are on the same channel as a control that has had dynamic mix data written to it.

Revert Time

When a control stops recording mix moves, it "reverts" to the setting that existed before recording the mix move. The previously existing setting could be a dynamic mix move or a static control position. The amount of time it takes to make a smooth match from the end of the recorded mix move to the previously existing setting is called the *Revert Time*.

A Revert Time is applied, even when the time code is stopped, past the point where the time code stopped, to ensure a smooth transition between the new mix move and the control's previous setting.

Auto Revert Choices

With AUTO REVERT – WRITE enabled, the automation system stops writing mix moves automatically on a per control basis without the need to end writing manually.

In this case, controls stop writing mix moves at different times, depending on when they were released (faders) or when movement ended (POD controls).

In the case of touch-sensitive faders, reverting begins when the fader is released.

In the case of POD controls, reverting begins when the CONTROL SENSE TIMEOUT has expired without the control being moved. The CONTROL SENSE TIMEOUT allows the POD controls to respond as if they are touch-sensitive (even though they are not).

When a Revert occurs, the control smoothly matches back to its previous value, based on the set value of the Revert Time. The previous control value could be a control's Static position or a control's Dynamic mix moves.

See the diagrams below to understand how this works:

Existing Static Fader Position

Mix Move
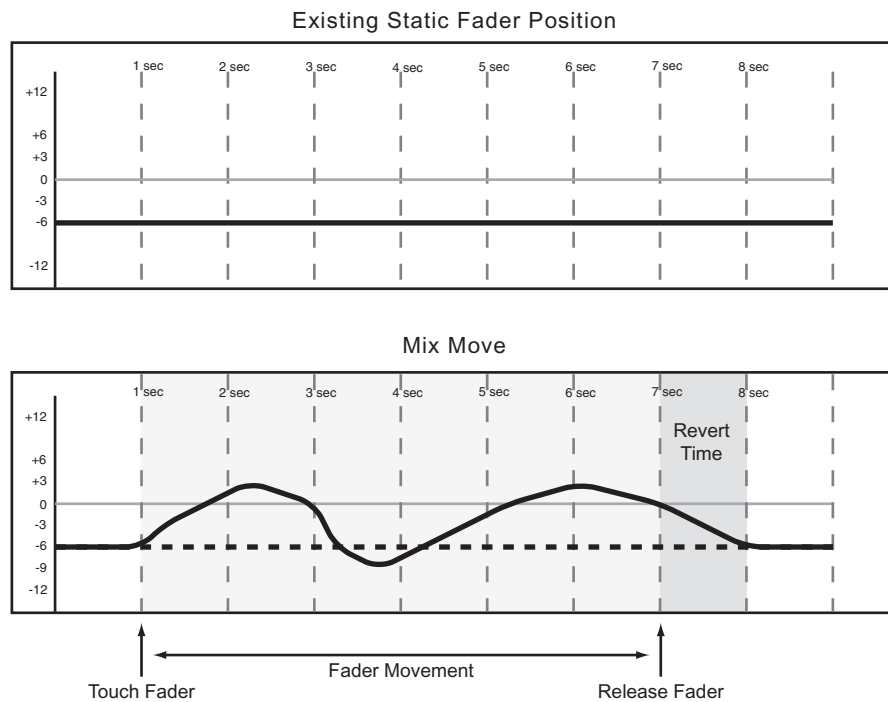
Figure 5 – Writing a fader move over a previous static fader position with Auto Revert enabled

Existing Static POD Position

Mix Move
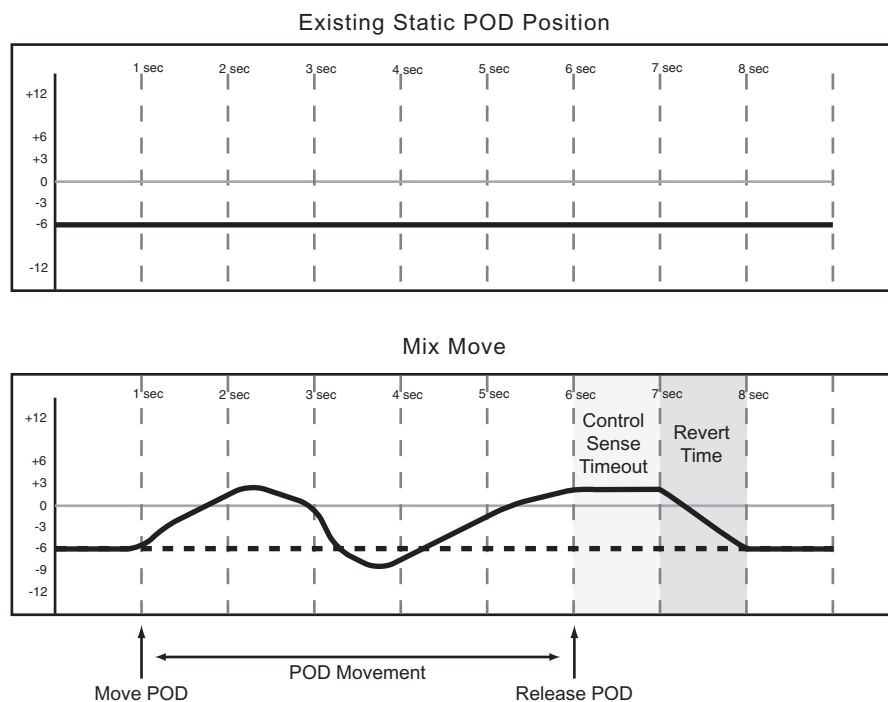
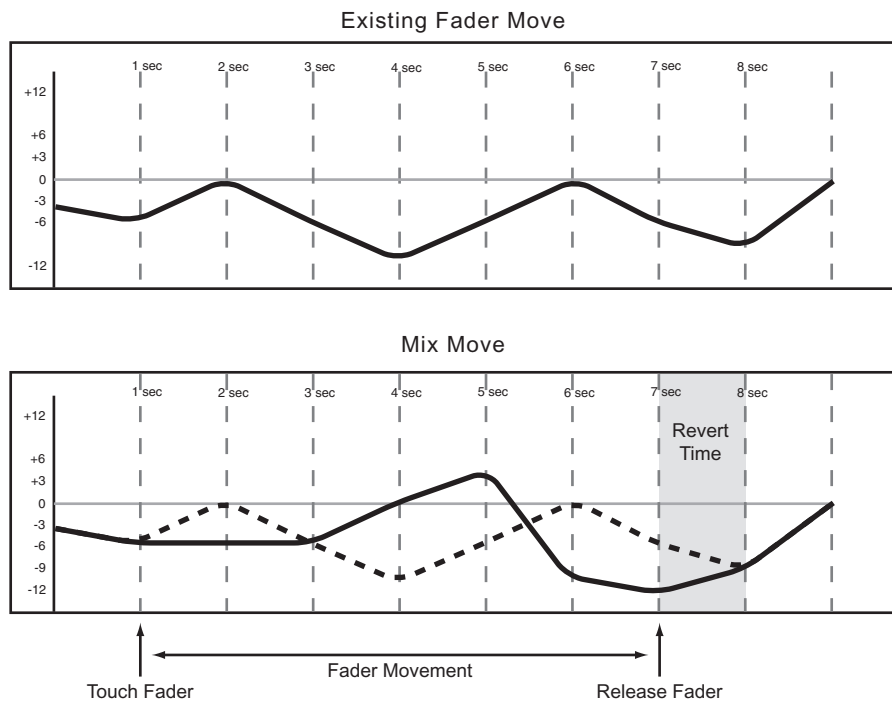**Figure 6 – Writing a POD move over a previous static position with Auto Revert enabled.**

Existing Fader Move

Mix Move

Figure 7 – Writing a new fader move over a previous Dynamic fader move with Auto Revert enabled

Existing POD Move
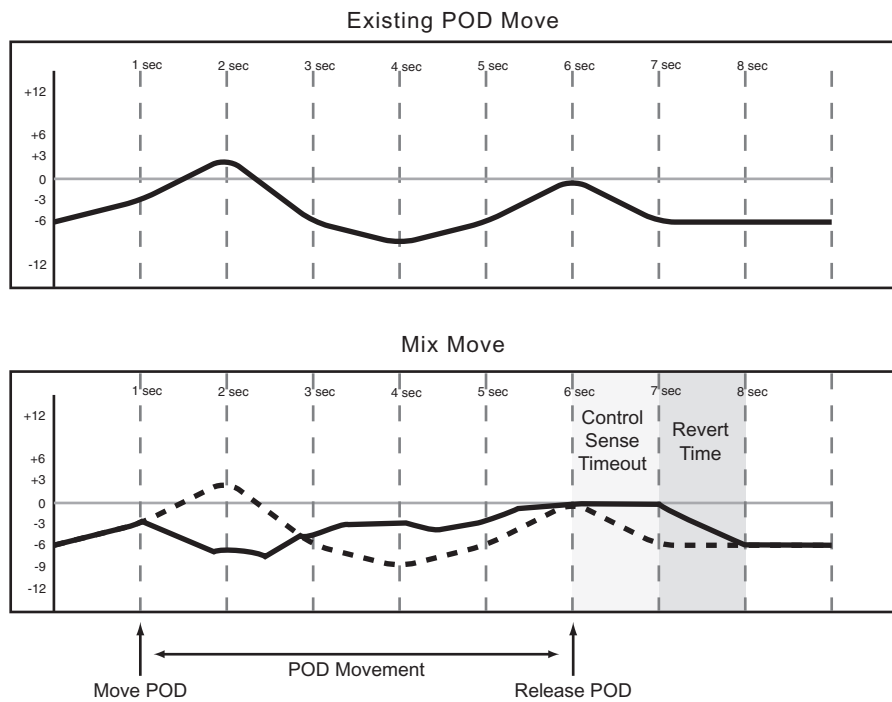
Mix Move

Figure 8 – Writing a new POD move over a previous Dynamic POD move with Auto Revert enabled.

Disabling Auto Revert allows you to manually stop writing mix moves, either by stopping the time code, or by pressing the **REVERT** key. In this case, **all** controls that are writing mix moves will stop writing simultaneously when **REVERT** is pressed or time code stops.

When a Revert is triggered by stopping the time code, the Revert Time is still applied to the control beyond where time code was stopped, for a smooth match from the end of the new mix move to the control's previous setting.

See the diagrams below to see how this works:

Existing Static Fader Position

Mix Move
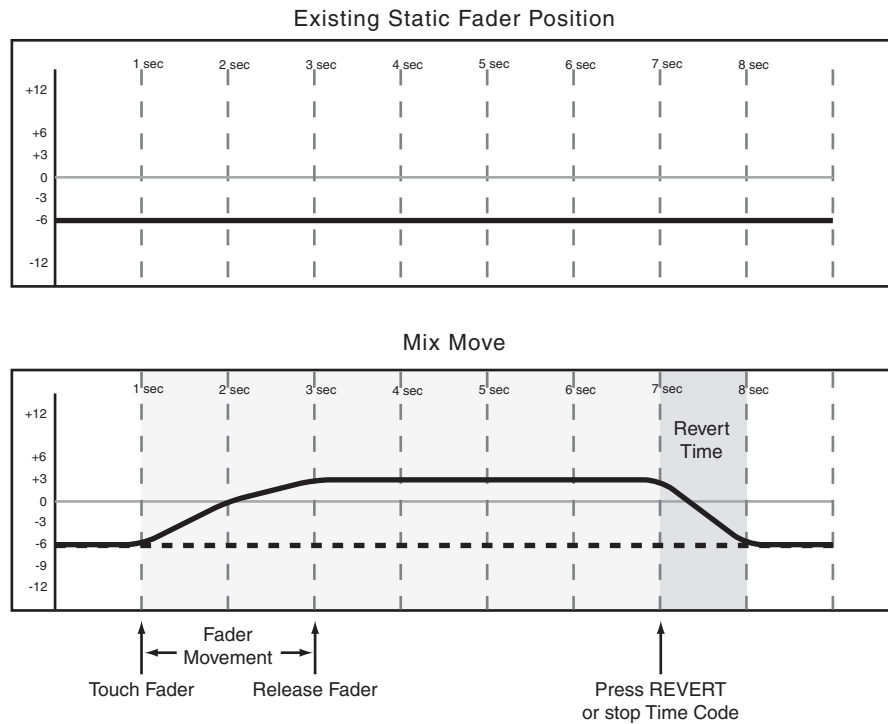
Figure 9 – Writing a new fader move over a previous Static fader position with Auto Revert disabled

Existing Static POD Position

Mix Move
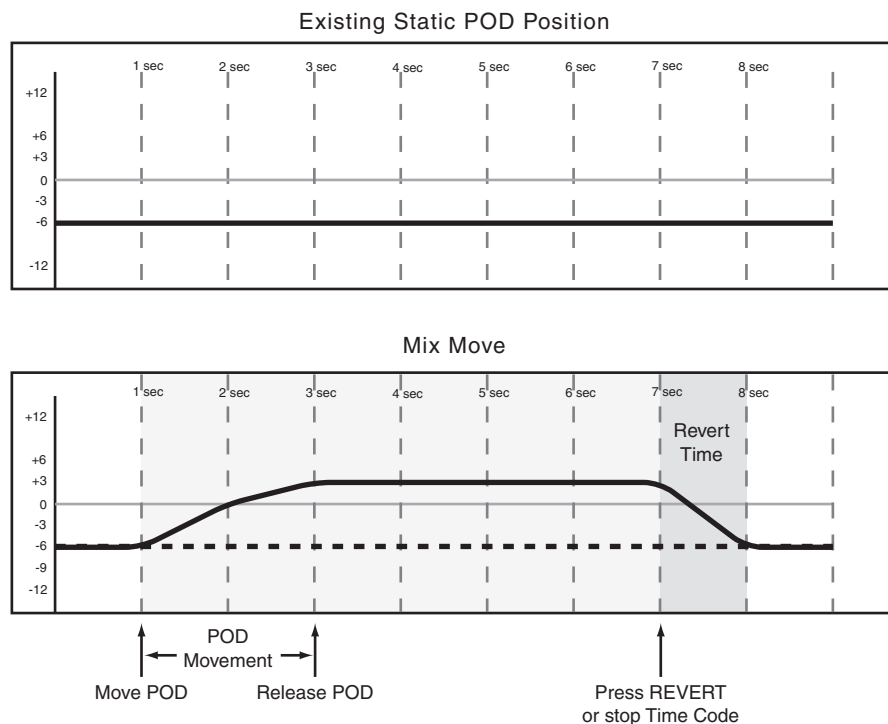
Figure 10 – Writing a new POD move over a previous Static POD position with Auto Revert disabled
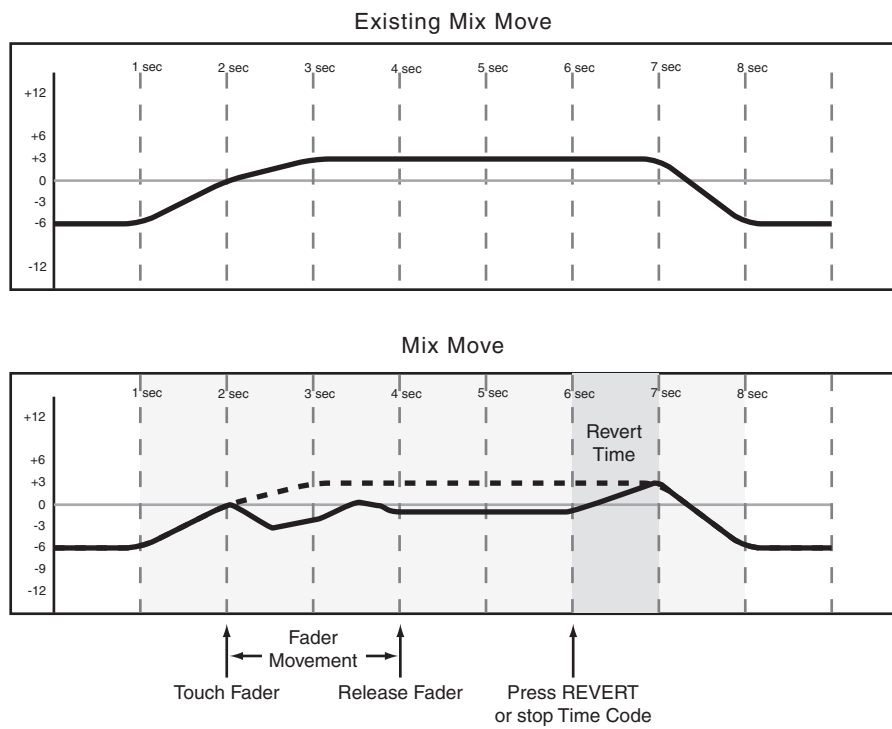
Existing Mix Move

Mix Move

Figure 11 – Writing a new fader move over previous Dynamic fader moves with Auto Revert disabled
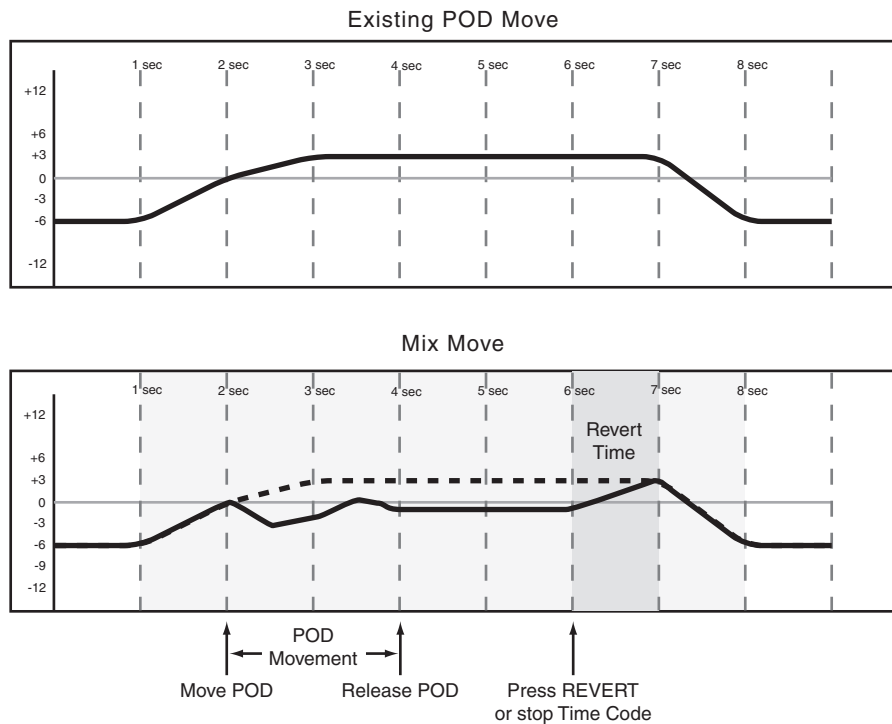
Existing POD Move

Mix Move

Figure 12 – Writing a new POD move over previous Dynamic POD moves with Auto Revert disabled

Write To End:

When the Write Revert Time is set to ∞s, you are essentially telling the automation system to maintain a control's last setting from the point where the automation recording ends, all the way to the end of the program. This is called *Write To End*. In this case, any mix moves existing in the time between the end of automation recording and the end of the program will be erased.

<div style="border:1px solid;">NOTE</div>

A Write/Trim To End operation must be completed by stopping the time code. Manually disabling Write or Trim mode while time code is running will not perform a Write To End operation.

AUTO REVERT must be enabled to use Write To End.

See the diagrams below to understand how this works:

Existing Static Fader Position

Mix Move
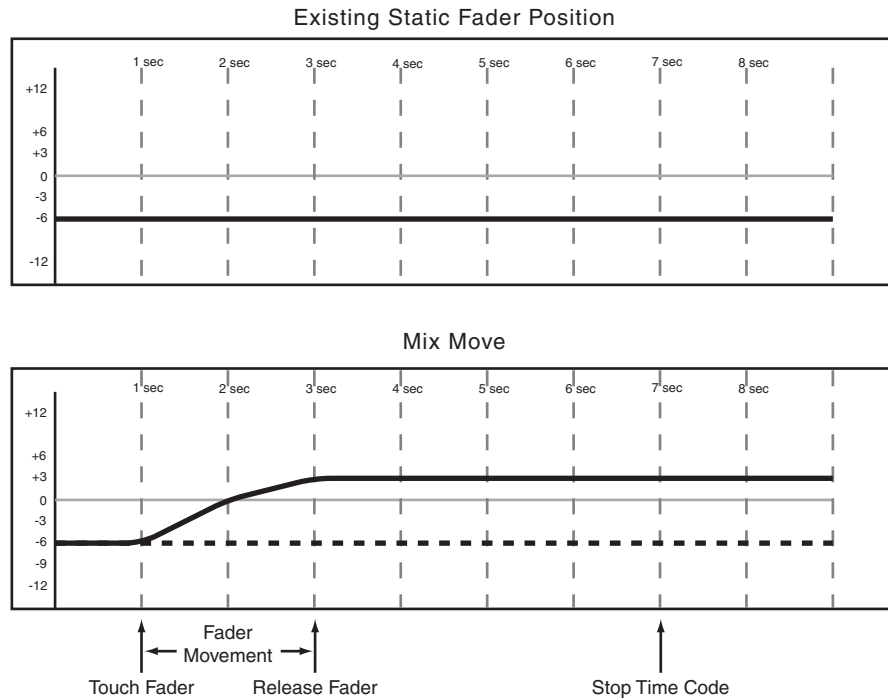
Figure 13 – Write To End over previous Static fader position

Existing Fader Move

Mix Move
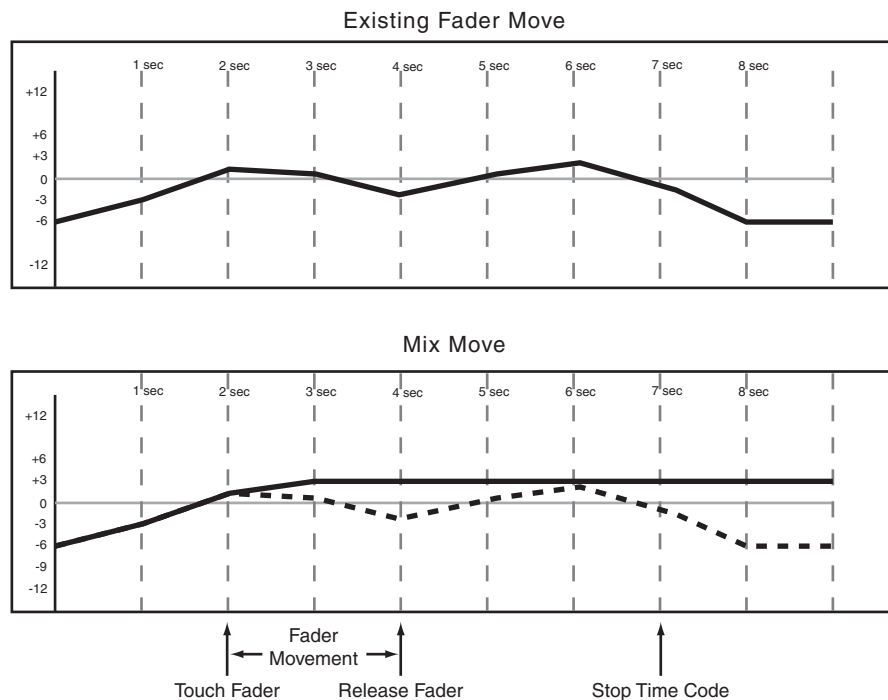
Figure 14 – Write To End over previous Dynamic fader moves.

Existing Static POD Position

Mix Move
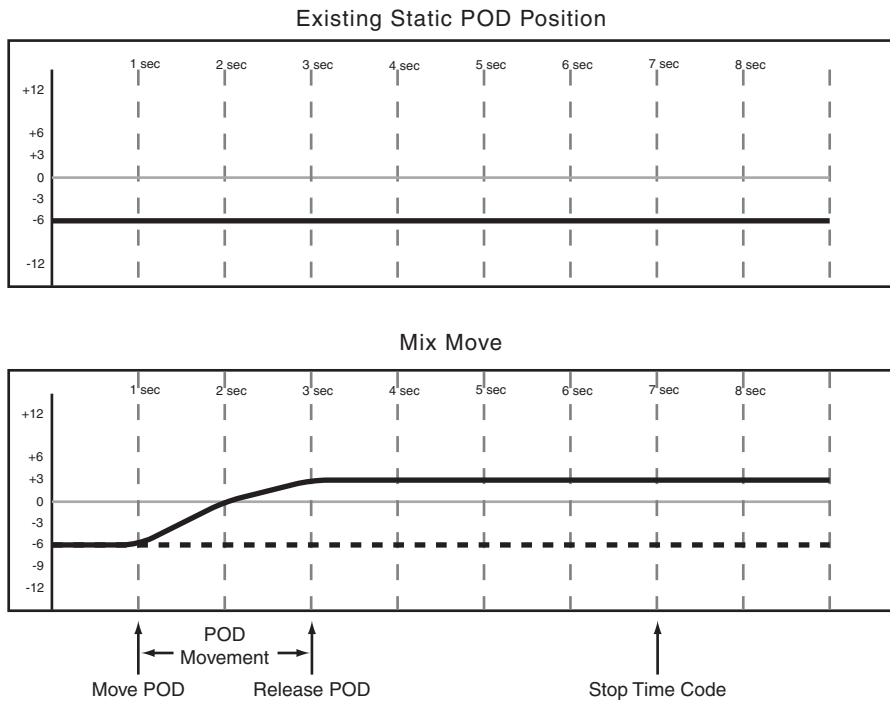
Figure 15 – Write To End over previous Static POD position
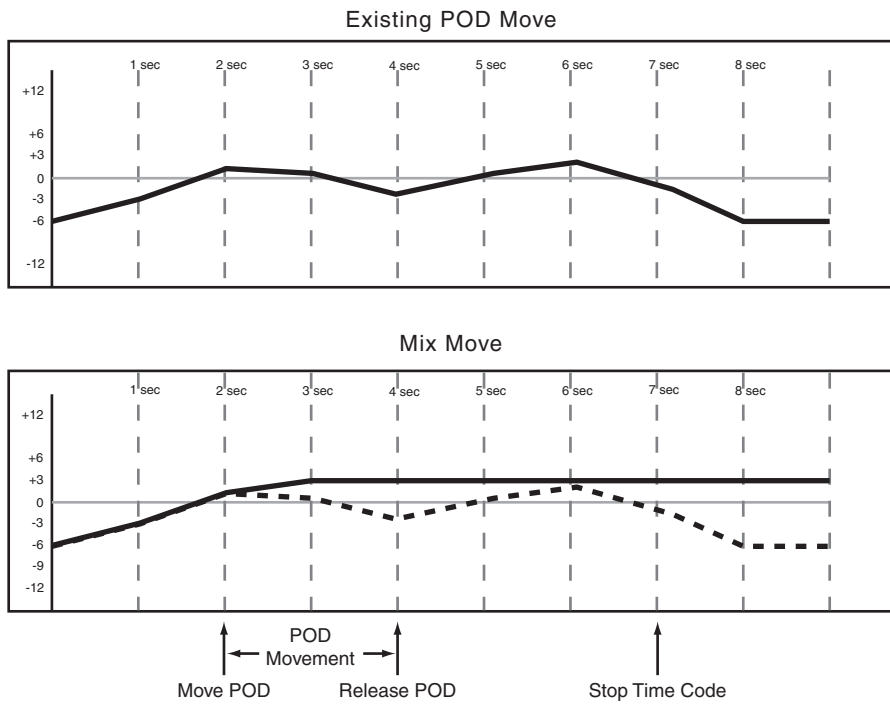
Existing POD Move

Mix Move

Figure 16 – Write To End over previous Dynamic POD moves.

Writing Switch Events

Switch Events are defined as the switching of any "on/off" controls. Examples of such controls are **MUTE** keys and the **EQ ON** key.

Action: Press the **WRITE** key before or after starting time code and its indicator lights. With time code running, press the desired key or keys to write the switch event at the desired time code location.

Result: This works for muting, EQ On/Off, EQ band type switching, Auxiliary send Pre/Post switching and Library Recall.

Switch events can be written in Write or Trim mode with the same results.

Once a switch event has been written to a control, the automation system automatically changes that control from Static mode to Dynamic mode, in order to read mix moves.

Controls that have not had switch events written remain in Static mode, even if those controls are on the same channel as a control that has had other mix data written to it.

Revert Time

Because switch events are not continuous data like fader moves, there is no need to make a smooth

match to previous data. Changing the Revert Time has no effect on writing switch events.

CONTROL SENSE TIME OUT & Switch Events

The DM-24's faders are touch sensitive, so the automation system knows when you have touched or released a fader, thus punching into or out of automation writing.

The control surface keys are not touch sensitive. These controls write a switch event when pressed,

while Write or Trim mode is enabled. Control Sense Time Out allows these keys to punch out of automation writing automatically, after the specified amount of time has passed without being pressed. This field can be set from 0.5 seconds to 10 seconds in 0.5 second increments.

Auto Revert Choices:

With AUTO REVERT — WRITE/TRIM enabled, the automation system stops recording switch events automatically on a per control basis, without any need to end writing manually. In this case, keys stop recording switch events at different times, depending on when they were last pressed and depending on the value set in CONTROL SENSE TIMEOUT.

In the case of control surface keys, writing ends when the CONTROL SENSE TIMEOUT has expired without a key press. CONTROL SENSE TIMEOUT allows the control surface keys to respond as if they are touch-sensitive, even though they are not.

Writing switch events over a Static switch position simply adds the new switch events. When writing new switch events over previous ones, the DM-24 automation system provides you with a high degree of flexibility over when writing will end.

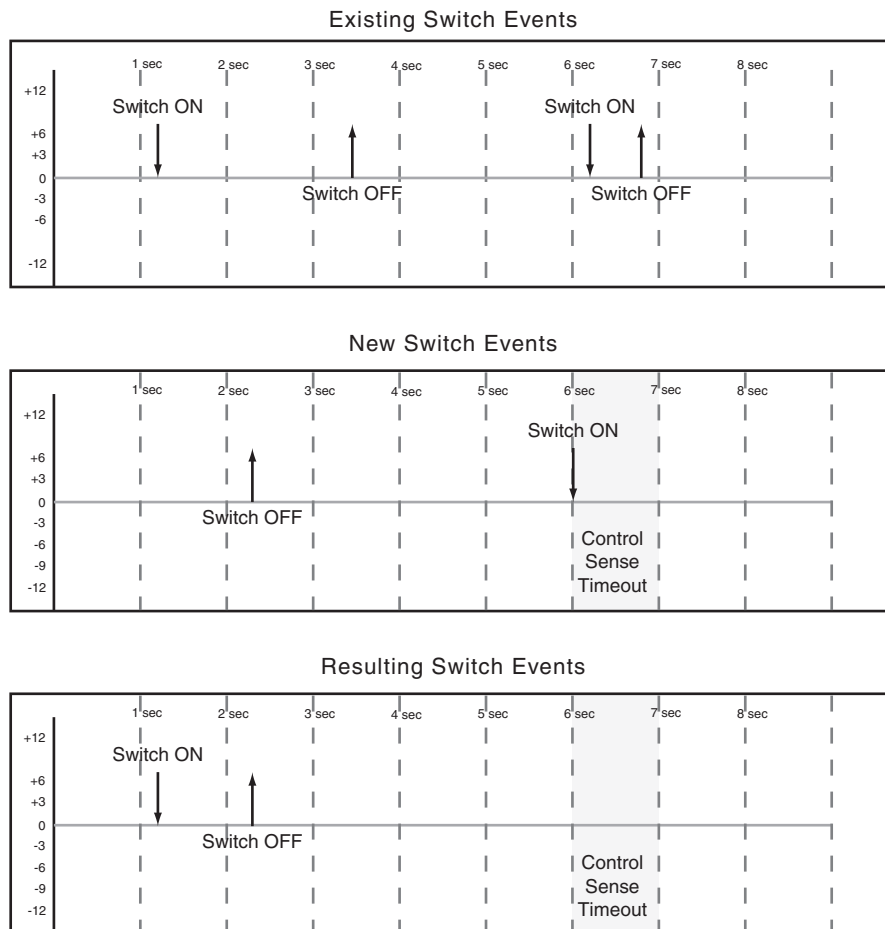See the diagram below to understand this behavior:

Figure 17 – Writing new switch events over previous switch events with Auto Revert enabled.

Disabling Auto Revert allows you to stop writing switch events manually, either by stopping the time code or by pressing the **REVERT** key. In this case, all controls that are writing will stop writing simulta-

neously when **REVERT** is pressed or when time code stops.

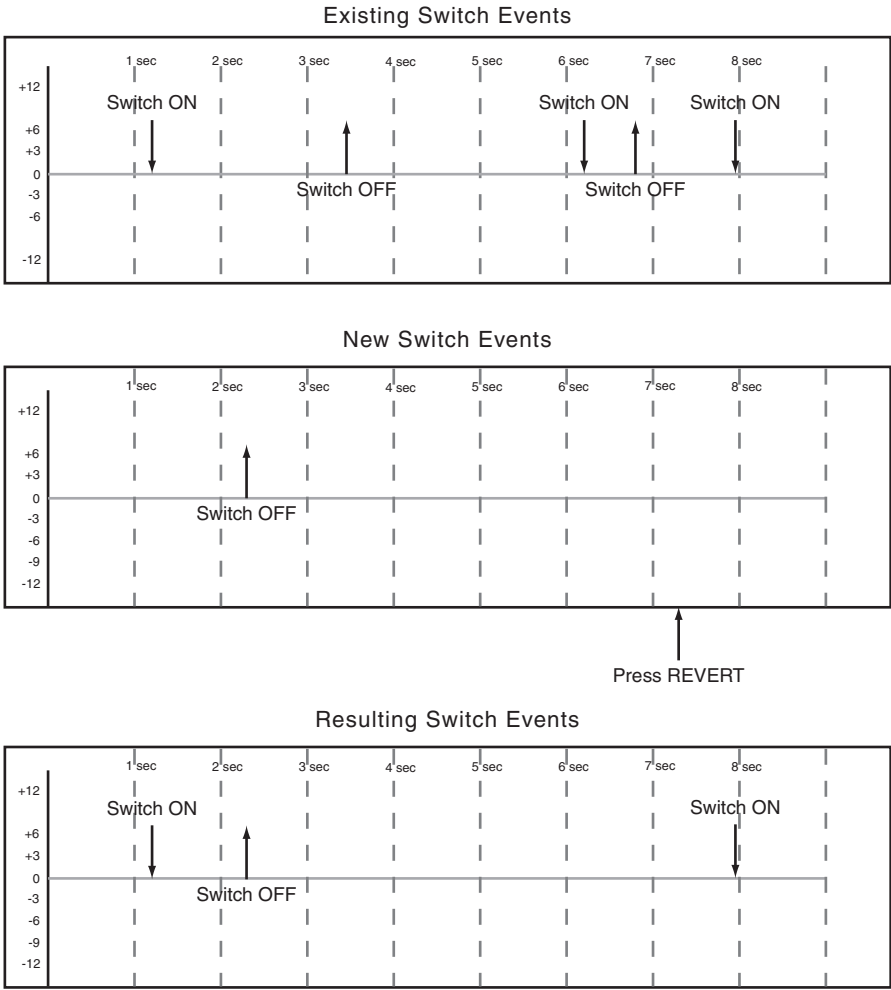See the diagram below to understand this behavior:

Existing Switch Events

New Switch Events

Resulting Switch Events

Figure 18 – Writing new switch events over previous switch events with Auto Revert disabled.

Write To End:

When the Write Revert Time is set to ∞s, you are essentially telling the automation system to maintain that control's last setting from the point when automation recording ends, all the way to the end of the program.

This is called *Write To End*. In this case, any switch events existing in the time between the end of automation recording and the end of the program will be erased.

NOTE

A Write/Trim To End operation must be completed by stopping the time code. Manually disabling Write or Trim mode while time code is running will not perform a Write To End operation.

AUTO REVERT must be enabled to use Write To End.

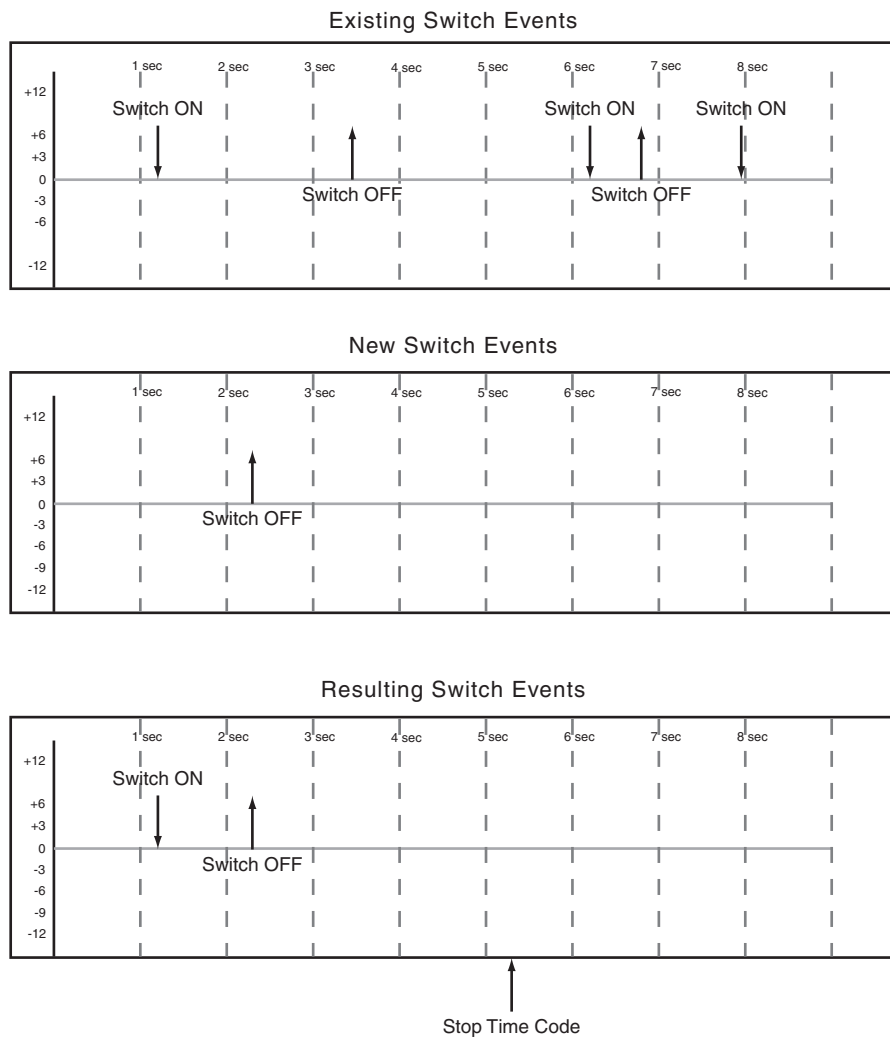See the diagram below to understand this Write to End behavior:

Existing Switch Events

New Switch Events

Resulting Switch Events

Stop Time Code

Figure 19 – Writing a new switch event with Write To End enabled.

Trimming Mix Moves

There may be times when a control has existing mix moves that are good, but the overall level of those moves needs to be raised or lowered. In this case, Trim is used to offset existing moves.

Action: Press the **TRIM** key before or after starting time code and its indicator lights. With time code running, perform the desired Trim operation.

Result: With the console in Trim mode, any movement of a control while time code is running per-

forms a Trim operation on that control. The audio passing through the control reflects the previous mix moves, combined with the offset created by the Trim operation.

In the case of the touch-sensitive faders, trimming begins when a fader is touched.

In the case of POD controls, trimming begins when the control is moved.

Revert Time:

When a control stops trimming mix moves it "reverts" to reading any mix data that existed before trimming began. The previously existing data could be a dynamic mix move or a static control position. The amount of time it takes to move smoothly from

the end of the trimmed mix move to the previously existing data is called the *Revert Time*.

A Revert Time is applied, even when the time code is stopped, past the point when the time code stops, to ensure a smooth transition between the trimmed mix move and the control's previous setting.

Auto Revert Choices:

With AUTO REVERT — TRIM enabled, the automation system stops trimming mix moves automatically per control without the need to stop trimming manually. In this case, controls stop trimming mix moves at different times, depending on when they were released (faders) or when movement ended (POD controls).

In the case of the touch-sensitive faders, the revert starts when the fader is released. In the case of POD controls, revert starts when the CONTROL SENSE TIMEOUT has expired without movement of the con-

trol. CONTROL SENSE TIMEOUT allows the POD controls to respond as if they are touch-sensitive even though they are not.

When a Revert occurs, the control smoothly matches back to its previous data based on the amount of Revert Time set. That previous data could be a control's Static position or a control's Dynamic mix moves. See the diagrams below to understand how this works:
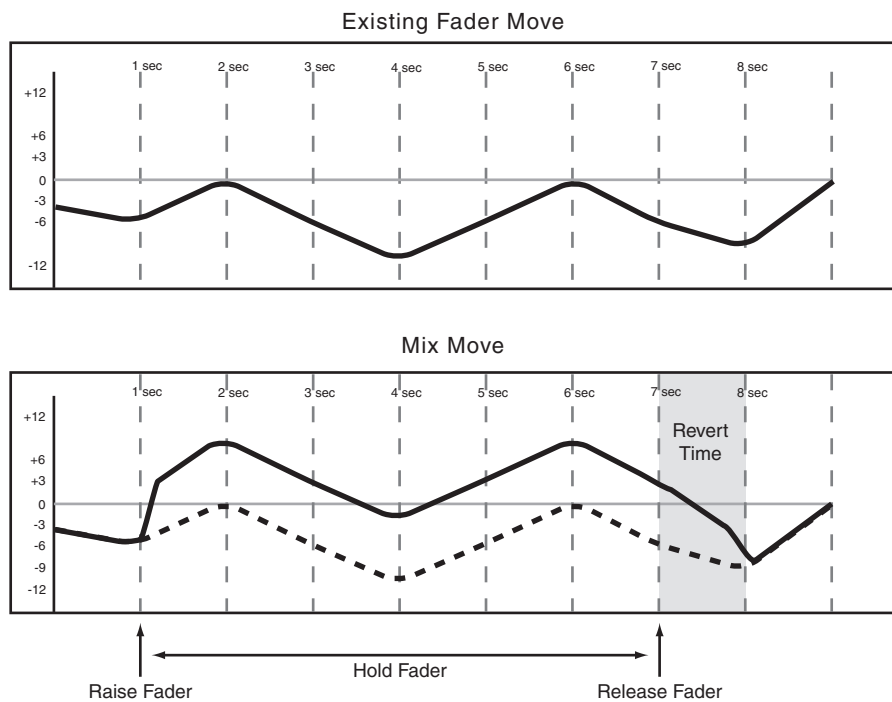
Figure 20 – Trimming fader moves with Auto Revert enabledl
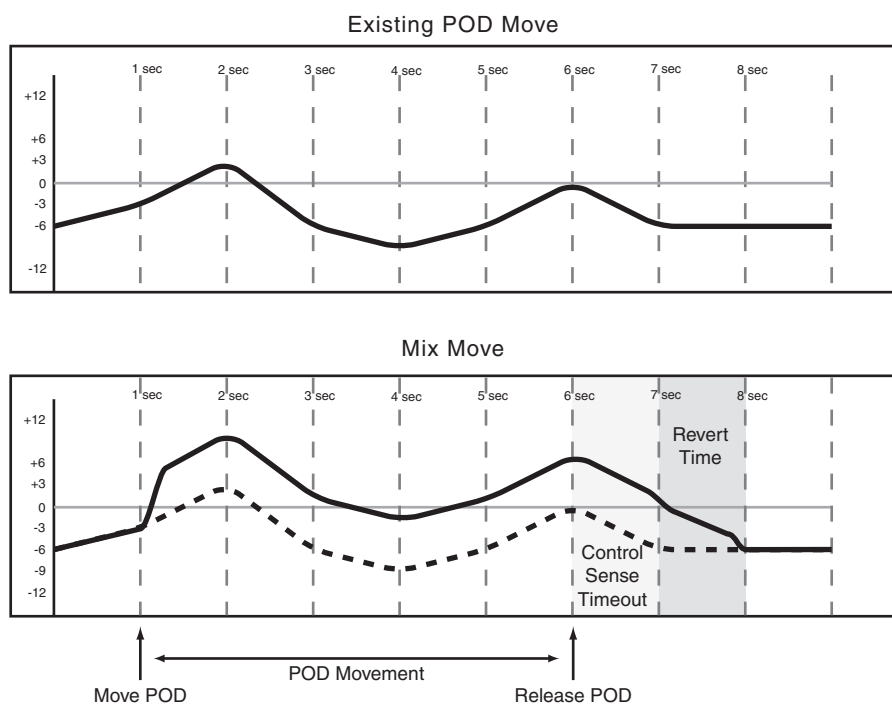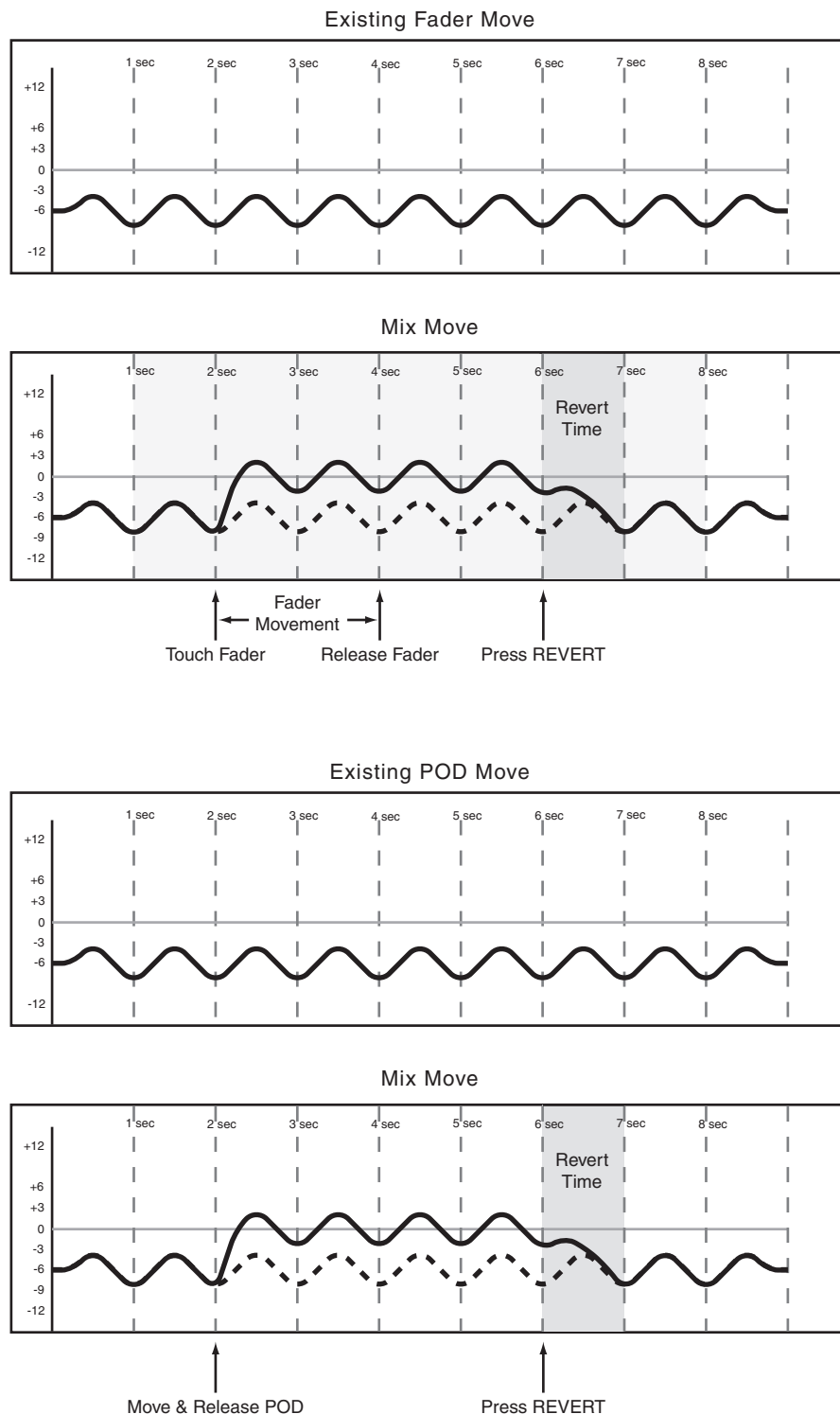
Figure 21 – Trimming POD moves with Auto Revert enabled.

Disabling AUTO REVERT — TRIM allows you to manually stop trimming mix moves by stopping the time code or by pressing the **REVERT** key. In this case, all controls that are trimming mix moves will stop trimming simultaneously when **REVERT** is pressed or time code stops.

Figure 22 – Trimming fader moves with Auto Revert disabled

Existing Fader Move

Mix Move

Touch Fader   Release Fader   Press REVERT

Fader Movement

Revert Time

Existing POD Move

Mix Move

Move & Release POD   Press REVERT

Revert Time

Figure 23 – Trimming POD moves with Auto Revert disabled.

Trim To End

When the Trim Revert Time is set to ∞s, you are essentially telling the automation system to maintain the offset created by the trim operation from the point where trimming ends, all the way to the end of the program.

A Write/Trim To End operation must be completed by stopping the time code. Manually disabling Write or Trim mode while time code is running will not perform a Write To End operation.
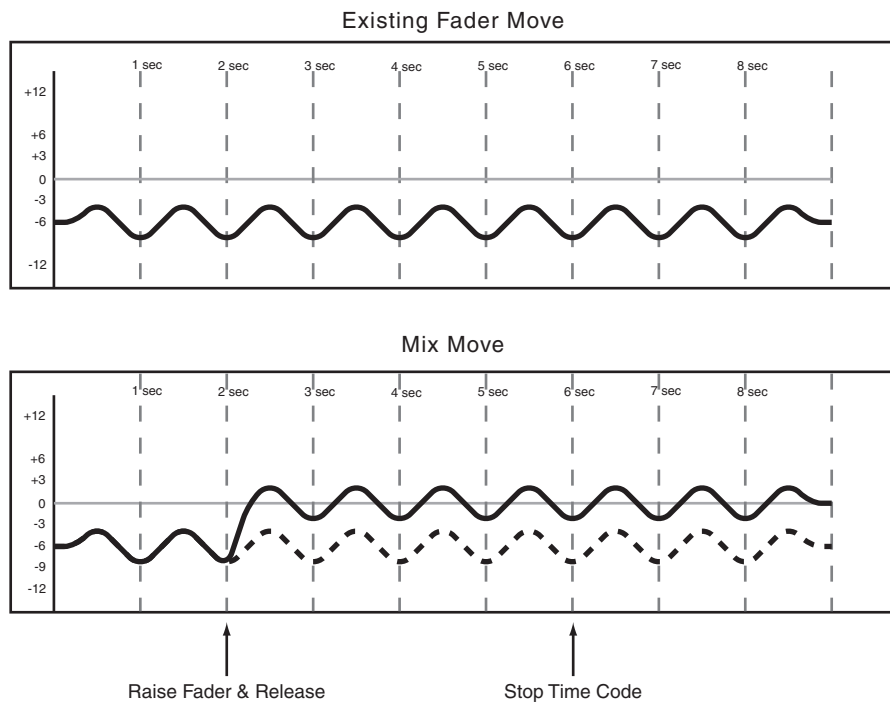
See the diagrams below to understand how this works:

Figure 24 – Trimming fader moves with Trim To End enabled.
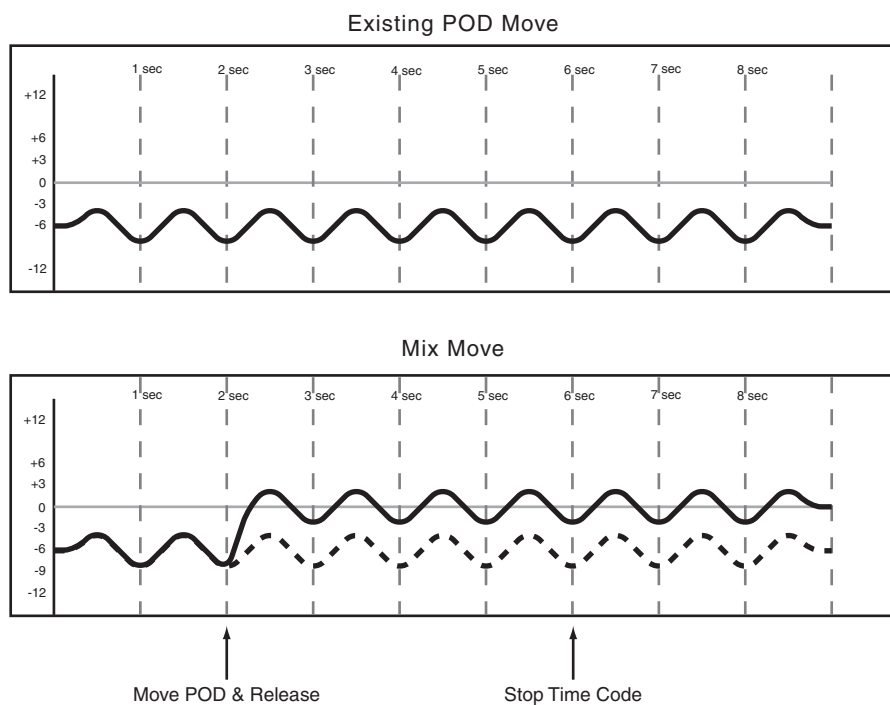
Figure 25 – Trimming POD moves with Trim To End enabled.

NOTE

A mixing trick: *Punch into a mix (This can be done with Trim or Write mode).*

Start the time code.

Move a control to its desired position. You will hear the audio follow the move.

Press the **WRITE** *or* **TRIM** *key to instantly punch that control into automation Write at the new position.*

The result will be the fastest possible move when reading back the mix.
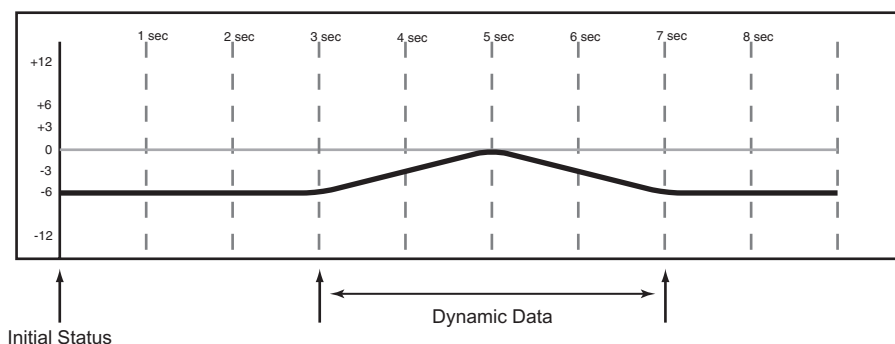
Initial Status

The Initial Status of a control is its value before the first dynamic mix move is present. Until dynamic mix moves are written to a control, there is no difference between the Initial Status of the control and its Static position.

When dynamic mix moves are written to a control, that control is no longer in Static mode. It is in Dynamic mode.

Any change to the mix data on such a control takes into account both the Initial Status of the control and any Dynamic data present.

Editing the Initial Status

Once a control is in Dynamic mode, any new mix moves written to that control will be dynamic mix moves. If it becomes necessary to alter a control's starting point (Initial Status) before the first dynamic move written, Initial Edit is used.

1   **While holding 2ND F., press INITIAL EDIT/ EDIT to enter Initial Edit mode. The automation system will stop reading dynamic data and all controls will snap to their Initial Status positions.**

2   **Adjust any control to change its Initial Status. In the case of switches, pressing a switch while in Initial Edit mode will change its Initial Status to reflect its new setting.**

Hold 2ND F. and press INITIAL EDIT/ DISCARD to return all controls to their unedited Initial Status values while remaining in Initial Edit mode.

Hold 2ND F. and press INITIAL EDIT/EDIT to exit Initial Edit, saving changes. There is no Undo for this operation.

The diagram below illustrates the results of Initial
Status editing:

Before Initial Status Edit

After Initial Status Edit (Decrease)

After Initial Status Edit (Increase)
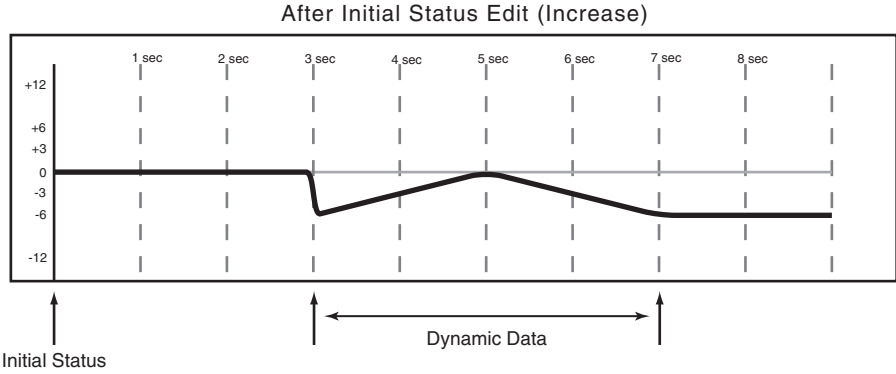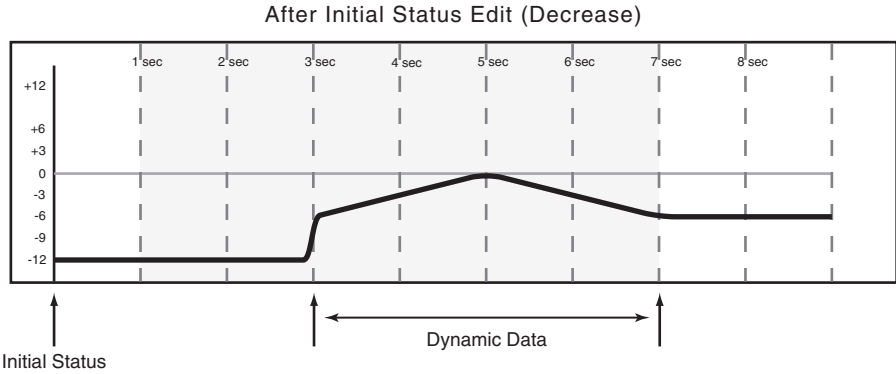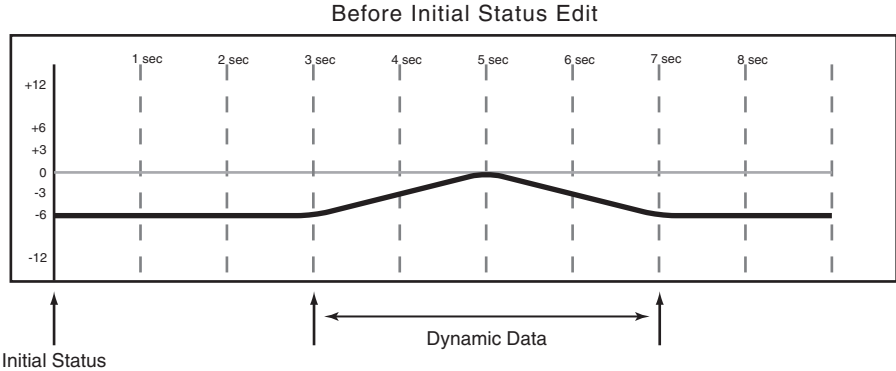
Automating Library Recall

The DM-24 automation system is capable of including library recall events as part of an automated mix. These are treated by the automation system as Switch Events ("Writing Switch Events" on page 23).

All DM-24 libraries support automated recall:

• Snapshot
• EQ
• Comp
• Gate/Expand
• Effect 1
• Effect 2

Because there may be differences between control settings recalled by a library and those being played back by the automation system, below are some important things to keep in mind in order to avoid unexpected behavior.

The basic rule is that a mix event (library recall or dynamic mix move) only has priority until another mix event (library recall or dynamic mix move) is played back.

Writing Library Recall Events Over Existing Static Control Positions

When a library recall event is written by the automation system which affects controls in Static mode, the library recall switch event becomes dynamic mix data. However, the controls themselves remain in Static mode with their Initial Status unaffected. In this case, if a dynamic mix move is written after a library recall, the control will Revert to its Initial Status, not its position after the library recall.

If a library is recalled which affects controls in Static mode without the library recall event being written, the controls will update their static positions as if they had been directly adjusted.

Combining Library Recall With Dynamic Mix Moves

Dynamic mix moves are treated in a way similar to continuous data by the DM-24 automation system. Library recall events are instantaneous snapshots. If a library recall occurs while the automation system is reading dynamic mix moves, the affected controls will snap to the positions recalled by the library then snap to reading previous dynamic mix moves as the time code position crosses the previous data. While this can create some interesting effects when used purposely, it could take you by surprise.

Automating Groups

There are several considerations and possibilities when using the DM-24 automation with grouped controls:

• Creating a group containing controls that do not have existing dynamic automation.

• Creating a group containing controls that have existing dynamic automation.
• Automating the Group Master.
• Automating group slaves.
• Removing slaves from an automated group.
• Automation of hierarchical groups.

Grouping Non-Automated Controls

Create the group normally using the **ST LINK/ GROUPING** display. The group master or slaves within the group may then be automated.

A Group Master may be automated just like any other control. The group slaves follow the group master. Automation data is only written by the Group Master. Any group slave that is removed from a group no longer follows any mix moves written by the Group Master. However, it continues to read its own mix moves.

Any group slave may be individually automated just like any other control. It reads its own moves, which would be offset by the moves of the Group Master.

Grouping Automated Controls

It is possible to create a group containing controls that have existing dynamic automation moves. In this case, the mix moves of the group slaves are maintained while following the overall moves of the Group Master. Essentially, this is using the movements of the group master to trim the moves of the group slaves. It should be noted that this does not actually write Trim data to the group slaves.

Hierarchical Groups

Simply put, hierarchical groups are "groups of groups" and can be very powerful mixing tools. Hierarchical groups have Master Groups and Slave Groups which operate the same way as Master and Slave controls in non-hierarchical groups.

Hierarchical groups are set up in the GROUPING LAYER section of the ST LINK/GROUPING display.

Mix File Management

The DM-24 automation system is capable of storing up to eight mixes of approximately eight thousand events per mix. Some control movements use up more events than others. Pressing a **MUTE** key uses one event, while a complex fader movement uses many.

Mix storage is made up of eight banks labeled 0 through 7. One bank is used for storing a mix of approximately eight thousand events.

The Current Mix memory is capable of holding a mix of approximately thirty-two thousand events. When mixes exceed eight thousand events, they require more banks for storage. For example, a twenty-seven thousand event mix will use up four storage banks. It is possible to store two mixes of approximately thirty-two thousand events each in the DM-24.

The Mix Data

The mix data itself contains Initial Status and Dynamic data for all automated controls. The settings of non-automated controls are not stored. ("Automated Controls" on page 4) In order to store the settings of non-automated controls such as Effect parameters or the DIGI-TRIM values, those settings must be stored in a Library. The mix data and library data may then be archived via a MIDI SysEx dump to a sequencer or other SysEx storage device.

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TEAC Professional Division
DM-24