

# Chapter 44: Automation

Pro Tools features dynamic automation of mixing controls on each of the track types. You can write automation moves and view them in real time during playback of your session. You can also edit automation data with the same techniques you use to edit audio and MIDI data.

## Automation Accuracy with Control Surfaces

**Control Surfaces** D-Control, D-Command, Pro-Control, C|24, Control|24, and Command|8 control surfaces (as well as the 003 and Digi 002 integrated audio and MIDI interfaces with control surfaces for Pro Tools) support the automation features in Pro Tools. Pro Tools control surfaces provide 10-bit resolution, or 1,024 steps of fader resolution. Pro Tools interpolates this input to 24-bit resolution on playback, resulting in extremely accurate and smooth fader automation.

 *For details on using control surfaces to create mix automation, see your control surface guide.*

**EUCON** Avid control surfaces using EUCON provide 12-bit resolution fader and knob control.

**MIDI Control Surfaces** Most MIDI control surfaces have 7-bit resolution, or 128 steps. Pro Tools interpolates this input to 24-bit resolution on playback, resulting in accurate and smooth fader automation.

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## Automation Overview

Pro Tools provides many options for recording, replacing, and editing automation data.

The basic steps for automation recording are:

- Enable the automation type that you want to record (volume, pan, mute, send level, send pan, send mute, or plug-in automation).
- Put the appropriate tracks in an automation writing mode (Write, Touch, or Latch, or a Trim mode).
- If you are automating a plug-in, enable the individual plug-in controls to be automated.
- Automation Safe any plug-ins, outputs, or sends that have existing automation data that you want to protect from being overwritten.
- Begin playback to begin automation recording, and adjust controls as needed. Pro Tools remembers all moves performed on enabled controls.

To edit automation once it has been recorded, you can:

- Repeat the above steps to write new automation over the previous data.
- Graphically edit the automation data in the Edit window.
- Cut, copy, paste, or delete automation data (certain restrictions apply).

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## Automation Playlists

Each Pro Tools track contains a single automation playlist for each automatable parameter.

On audio tracks, these parameters include:

- Volume
- Volume Trim (Pro Tools HD and Pro Tools with Complete Production Toolkit only)
- Pan
- Mute
- Send Level
- Send Level Trim (Pro Tools HD and Pro Tools with Complete Production Toolkit only)
- Send Pan
- Send Mute
- Plug-In controls

On Auxiliary Input tracks, these parameters include:

- Volume
- Volume Trim (Pro Tools HD and Pro Tools with Complete Production Toolkit only)
- Mute
- Pan

On Master Faders, these parameters include:

- Volume
- Volume Trim (Pro Tools HD and Pro Tools with Complete Production Toolkit only)
- On MIDI tracks, these parameters include:
  - MIDI Volume
  - MIDI Pan
  - MIDI Mute

On Instrument tracks, these parameters include:

- Volume (audio)
- Volume Trim (audio) (Pro Tools HD and Pro Tools with Complete Production Toolkit only)
- Mute (audio)
- Pan (audio)

On VCA Master tracks (Pro Tools HD and Pro Tools with Complete Production Toolkit only), these parameters include:

- Volume
- Volume Trim
- Mute

You can display and edit each of these automatable playlists individually from Pro Tools, even during playback.

In addition, on MIDI and Instrument tracks you can display and edit other continuous MIDI controller data (such as mod wheel, breath controller, foot controller, or sustain) in a similar manner. For more information on editing MIDI data, see “Continuous Controller Events” on page 694.

## Automation Playlists with Audio and MIDI Clips

Pro Tools handles audio clips and their automation playlists differently from MIDI clips and their automation playlists.

### Audio Tracks

On audio tracks, automation data resides on a separate playlist from audio data and clips. Each edit playlist on an audio track shares the same automation data.

### MIDI and Instrument Tracks

On MIDI tracks and Instrument tracks, all controller automation data except for MIDI Mute data, or audio mute (Instrument tracks only), is stored in the MIDI clip that contains it. Each edit playlist on the track is separate, and represents a distinct performance, complete with controller automation.

 *MIDI Mute data is independent of the MIDI data in a MIDI clip. This lets you mute playback of individual MIDI or Instrument tracks in Pro Tools without altering the controller data.*

## Trim Automation Playlists (Pro Tools HD and Pro Tools with Complete Production Toolkit Only)

Separate Trim automation playlists are available for Volume trim and Send Level trim. Volume trim is available on all track types except MIDI tracks. Send Level trim is available on audio tracks only.

Each Trim automation playlist shows the position of the Trim fader with yellow breakpoint automation that can be edited. For more information on Trim playlists, see “Trim Mode” on page 1024 and “Viewing Automation” on page 1028.

## Multiple Edit Playlists and Audio Track Automation

All edit playlists on a single audio track share the same automation data. When you record or edit automation data in an audio track, the automation data is stored in the track’s corresponding automation playlist so it can be edited with, or independently from, its associated audio clips.

 *MIDI continuous controller data always follows clip editing, with the exception of mute. See “MIDI and Instrument Tracks” on page 1021 for more information.*

- ◆ When you copy or cut audio data from a track while it is in Waveform view, the underlying automation data is cut or copied with it.
- ◆ If you paste audio data from other locations or tracks into an edit playlist, you may change the underlying automation data on the track.
- ◆ When you trim clips using Edit > Trim, the underlying automation data remains unchanged.

 *For more information, see “Editing Automation” on page 1047.*

## Duplicating Tracks for Playlist Editing

The Duplicate Track command provides a convenient way to make a working copy of a track to experiment with routing, plug-ins, and automation. This protects the original track and its automation data from being edited or overwritten.

 *For more information on duplicating tracks command, see “Duplicating Tracks” on page 229.*

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## Automation Modes

Automation modes control how a track's automation data is written and played back. Each track provides an Automation Mode selector for selecting the track's Automation mode.

### Off Mode

Off mode turns off automation for all automatable parameters:

- Volume
- Pan
- Mute
- Send volume, pan, and mute
- Plug-In controls
- MIDI volume, pan, and mute

In Off mode, automation data for these parameters is ignored during playback. All other MIDI controller data is sent.

Automation can be switched from Off to another Automation mode during playback or record.

### Read Mode

Read mode plays any automation that was previously written for a track.

### Write Mode

Write mode writes automation from the time playback starts to the time it stops, erasing any previously written automation for the duration of the automation pass.

AutoMatch can be applied to a Write automation pass. See “AutoMatch Time” on page 1027.

### “After Write Pass, Switch To” Option

You can set Pro Tools to automatically change to Touch mode or Latch mode, or remain in Write mode after the completion of an automation pass in Write mode.

**To set the Automation mode after a Write pass:**

- 1 Choose Setup > Preferences and click Mixing.
- 2 Under Automation, select an After Write Pass, Switch To option (Touch, Latch, or No Change).
- 3 Click OK to close the Preferences window.

### Touch Mode

Touch mode writes automation only while a fader or switch is touched or clicked with the mouse.

When the fader is released, the writing of automation stops and the fader returns to any previously automated position, at a rate determined by the AutoMatch and Touch Timeout settings. See “Automation Preferences” on page 1026.

In Touch mode, certain control surfaces start writing automation as soon as you touch them. These include touch-sensitive fader controllers, such as D-Control, D-Command, ProControl, C|24, 003, Digi 002, or Command|8.

With other control surfaces in Touch mode, writing of automation does not begin until the fader hits the *pass-through point*, or the previously automated position. Once you reach the pass-through point with the fader, or a non-touch sensitive rotary control, writing of automation begins and continues until you stop moving the fader.

## Latch Mode

Latch mode works in the same way as Touch mode, writing automation only if you touch or move a control. However, unlike Touch, writing of automation continues until you stop playback or “punch out” of the automation pass by changing the Automation mode to Read or Touch.

AutoMatch can be applied to a Latch automation pass. See “AutoMatch Time” on page 1027.

Latch mode is particularly useful for automating Pan controls and plug-ins on non-touch sensitive rotary controls, since it does not time out and revert to its previous position when you release a control.

 See also “Writing Automation to the Start, End, or All of a Track or Selection” on page 1058.

## AutoJoin with Latch Mode (Pro Tools HD and Pro Tools with Complete Production Toolkit Only)

Pro Tools provides two different methods to resume writing automation on controls that were active at the point where the transport stopped:

**AutoJoin** Lets you automatically resume writing automation in Latch mode.

**Join** Lets you manually resume writing automation in Latch mode. Join is available only with supported control surfaces.

### To enable AutoJoin from Pro Tools:

- 1 Choose Window > Automation.
- 2 Click the AutoJoin button.

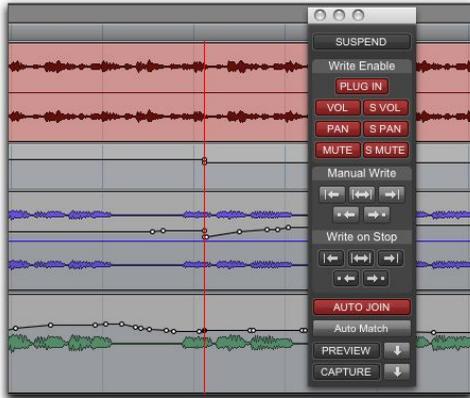


*AutoJoin Enable button in the Automation window*

 See your control surface guide for details on using Join and AutoJoin with a control surface.

## AutoJoin Indicator

After a Latch automation pass with AutoJoin enabled, the AutoJoin indicator appears in the Pro Tools Edit window.



AutoJoin indicator in the Edit window

The AutoJoin indicator is a vertical line that signifies the point where the last automation pass was stopped, and the point where the “join” will automatically occur on all tracks that were writing during that previous pass. When automation writing is resumed from this point, the line disappears.

**⚠** *To use Join or AutoJoin to resume writing on controls that were writing when the transport stopped, restart the transport before the AutoJoin indicator.*

## Touch/Latch Mode

(Pro Tools HD and Pro Tools with Complete Production Toolkit Only)

Touch/Latch Automation mode places a track’s Volume control in Touch mode and all other automatable controls in Latch mode.

In Touch/Latch mode, the Volume control follows Touch behavior, writing automation when touched and returning to previously written levels when released.

All other controls follow Latch behavior, writing automation when touched and continuing until playback stops, or until you punch out of writing automation.



Selecting Touch/Latch mode

## Trim Mode

(Pro Tools HD and Pro Tools with Complete Production Toolkit Only)

Pro Tools HD can adjust (or *trim*) existing track volume and send level automation data in real time. Pan, mute and plug-in automation cannot be trimmed in this manner. Trim mode works in combination with the other Automation modes (Read, Touch, Latch, Touch/Latch, and Write) and is useful when you want to preserve all of your volume automation moves, but need to make levels a bit louder or softer to balance a mix. For more information, see “Trim Automation Modes” on page 1025.

When writing automation in Trim mode, fader moves write *relative* rather than *absolute* values. The existing automation data is changed by the amount of increase or decrease (or the *delta* value) indicated by the faders.

When Trim mode is enabled, non-trimmable controls behave in the same manner as in the standard Automation modes, with the exception of Write/Trim mode, where non-trimmable controls operate as in Touch mode.

## Trim Automation Modes

When a track is in a Trim automation mode (except for Trim Off) its main Volume faders and all Send level faders are displayed in yellow. When trimming, a track's Volume indicator or Send Level indicator shows the delta value being written rather than the absolute value.

Behavior of the Trim Automation modes also depends on the Coalesce Trim Automation preference setting. See “Coalescing Trim Automation” on page 1057.

### Trim Off

Trim Off turns off reading and writing of all automation (main and trim) for a track. All automation moves are ignored during playback. Trim faders are temporarily set to zero when a track is set to Trim Off mode.

Depending on the Coalesce Trim Automation preference setting, changing a track to Trim Off can coalesce Trim automation on that track. See “Coalescing Trim Automation” on page 1057.

Automation can be switched from Trim Off to another Automation mode during playback or record.

### Read Trim

In Read Trim mode, Volume and Send level Trim faders are disengaged from the main automation playlist and follow any existing Trim automation. You can move a Trim fader during playback to audition new trim values, but no automation is written. When the Trim fader is released, it returns to any previously written Trim automation values.

If a track does not contain Trim automation, you can move a Trim fader during playback to audition new trim values, but no automation is written. The Trim fader retains its position until the track is removed from Trim mode, or if you manually coalesce the Trim level.

When this mode is enabled, non-trimmable controls (all controls other than track volume and send level) behave as if they are in regular Read mode—no automation data is written.

### Touch Trim

In Touch Trim mode, Volume and Send level Trim faders are disengaged from the main automation playlist and follow any existing Trim automation. When a Trim fader is touched, writing of Trim automation begins. When the fader is released, writing stops and the fader returns to any previously written Trim automation values.

The rate of the fader's return to previous trim values is determined by the AutoMatch Time specified in the Automation Preferences page. See “AutoMatch Time” on page 1027 for more information.

When this mode is enabled, non-trimmable controls (all controls other than track volume and send level) behave as if they are in regular Touch mode—they follow the previously written automation until touched. When they are touched, their absolute positions are written until the control is released or until playback stops.

## Latch Trim

In Latch Trim mode, Volume and Send level Trim faders are disengaged from the main automation playlist and follow any existing Trim automation. When a Trim fader is touched, writing of Trim automation begins. Writing of Trim automation continues until playback stops, or until you punch out of writing automation.

When this mode is enabled, non-trimmable controls (all controls other than track volume and send level) behave as if they are in regular Latch mode—they follow the previously written automation until touched. When they are touched, their absolute positions are written until playback is stopped.

## Touch/Latch Trim

In Touch/Latch Trim mode, Volume and Send level faders are disengaged from the main automation playlist and follow any existing Trim automation. The main Volume Trim fader follows Touch Trim behavior, and Send level Trim faders follow Latch Trim behavior.

## Write Trim

In Write Trim mode, as soon as playback begins, writing of Trim automation begins for Volume and Send levels, and continues until playback stops, or until you punch out of writing automation.

When Write Trim mode is enabled, non-trimmable controls (all controls other than track volume and send level) are not in Write mode, but behave as if they are in *regular Touch mode* (no automation is written unless a control is touched). This is to prevent the controls from overwriting all of their automation data on every pass in Write Trim mode.

**A** The “After Write Pass, Switch To” preference affects Write Trim mode. After an automation pass in Write/Trim mode, tracks automatically switch to the Trim mode version of the setting specified by this preference.

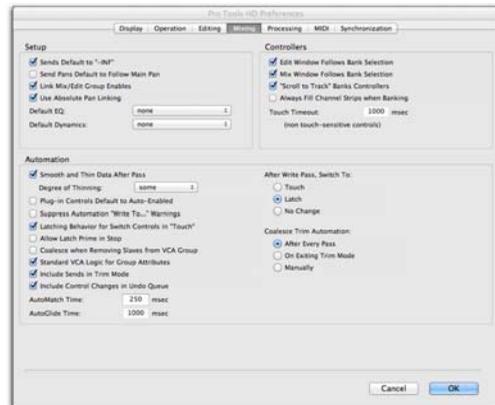
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## Automation Preferences

Pro Tools gives you several options for controlling the writing and playback of automation data.

### To display Automation preferences:

- Choose Setup > Preferences and click Mixing.



Mixing Preferences page

 For detailed information on Pro Tools Automation preferences, see “Mixing Preferences” on page 135.

## Send Levels and Trim Mode

(Pro Tools HD and Pro Tools with Complete Production Toolkit Only)

You can set Pro Tools to exclude Send levels from Trim mode, so that only the Main Volume goes into Trim when a track is put into Trim mode. This gives you more flexibility in setting Send levels while in Trim mode.

**To exclude Send levels from Trim mode:**

- 1 Choose Setup > Preferences and click Mixing.
- 2 Under Automation, deselect Include Sends in Trim Mode.

 *Any uncoalesced automation on a Send will still coalesce when the other automation on its track is coalesced, even if “Include Sends in Trim Mode” is deselected.*

- 3 Click OK.

## Smoothing

When you perform automation moves (including Trim moves) with a continuous control, Pro Tools records the move as a series of very small steps, resulting in a staircase pattern with many breakpoints. Smoothing intelligently resolves this staircase pattern into a single, smooth ramp from one breakpoint to the next. (Smoothing does not apply to switched controls such as mutes or plug-in bypasses.) With smoothing enabled, the resulting automation data is often a more accurate representation of actual automation moves.

## Thinning

Thinning automatically reduces the overall number of breakpoints in an automation playlist (including Trim playlists) in order to improve system performance. The amount of thinning applied is determined by the Degree of Thinning setting in the Automation Preferences page. When using high amounts of thinning, the resulting automation may differ noticeably from the original automation moves. Thinning only applies to audio tracks, and does not affect MIDI tracks. For instructions, see “Thinning Automation” on page 1045.

## AutoMatch Time

AutoMatch Time is the amount of time it takes for a fader to return (by ramping up or down) to the level of automation still on the track as the automation pass ends. This time value is set in the Automation Preferences page (see “Automation Preferences” on page 1026).

AutoMatch is automatically applied to all Touch mode passes, and can be applied to Latch or Write passes.

The AutoMatch Time also determines the rate at which delta values written with the Trim will return to 0 dB (delta value of zero).

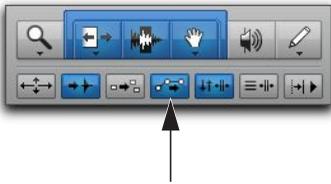
The AutoMatch feature works with continuous controls (such as Volume or Pan) by ramping their values back to previously automated levels. There are some stepped controls (for example, the EQ type in the 1-band EQ plug-in) that provide more than two discrete steps over their operational range. AutoMatch has no effect on these controls.

## Automation Follows Edit Option

When disabled, automation events are not affected by edits to audio or MIDI notes. When enabled, automation events are affected by edits to audio or MIDI notes.

To enable or disable Automation Follows Edit, do one of the following:

- Select or deselect Options > Automation Follows Edit.
- Click the Automation Follows Edit indicator in the Edit window toolbar. The indicator is highlighted when enable and not highlighted when it is disabled.



Automation Follows Edit indicator in the Edit window

## Automation Safe

Outputs, sends, and plug-ins can be placed in Automation Safe mode. In Automation Safe mode, any automation associated with an Output window (such as track or send level, panning, or mute), or plug-in on that track, is protected from being overwritten while automating other items on that track.



Automation Safe enabled send

Automation Safe mode suspends automation recording for the selected track output, send, or plug-in that is enabled. You can also suspend automation recording and playback session-wide from the Automation window. See “Enabling and Suspending Automation” on page 1042.

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## Viewing Automation

Pro Tools creates a separate playlist in the Edit window for each type of automation in a track, including a playlist for each type of Trim automation. This data can be viewed and edited in the same way as audio and MIDI data. You can either change Track Views to show the automation you want, or you can reveal an Automation lane under the track regardless of its Track View.

 You can easily toggle between different Track Views. See “Changing Track Views” on page 233.