



Keyframing in the Color Page

31

Keyframing in the Color Page

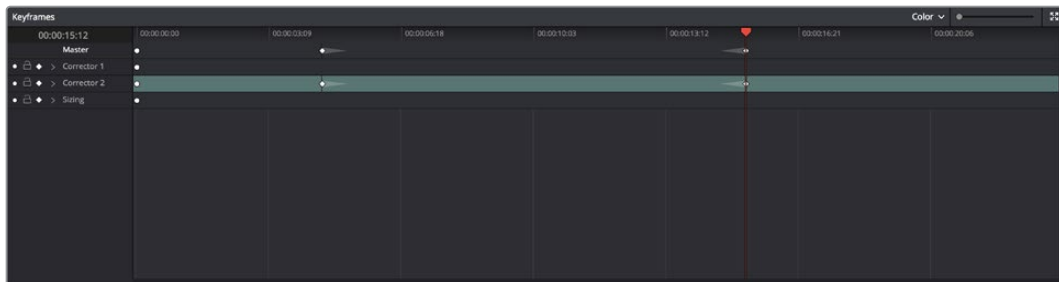
The Color page has a dedicated Keyframe Editor, found at the right of the palette area, that you can use to animate grading changes from one frame to another. Because grading is a fundamentally different task than editing, the Color page Keyframe Editor operates somewhat differently from the Cure Editor in the Edit page.

This chapter has the following topics:

Introduction to Keyframing	885
The Keyframe Editor Interface	886
All/Color/Sizing	887
Keyframing Methods	888
Dynamic Keyframes (Dynamics)	888
Static Keyframes (Marks)	889
Mixing and Converting Dynamic and Static Keyframes	890
Using Specific Keyframing Tracks	891
The Corrector Keyframing Tracks	892
The Sizing Keyframing Tracks	892
The Ext Matte Node's Freeform Isolation Track	893
Automatic Keyframing	893
Modifying Keyframes	893
Navigating Among Keyframes	893
Moving Keyframes	894
Changing Keyframe Values	894
Changing Dynamic Attributes	895
Deleting Keyframes	896
Copying Keyframes	896
Keyframes and Saved Stills	897
Adding EDL Marks	897

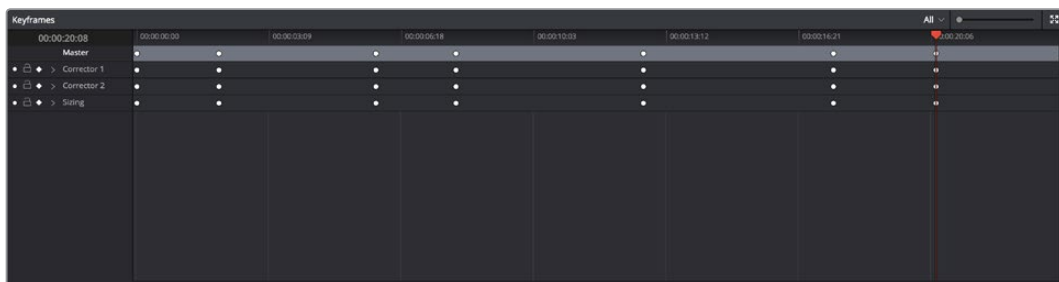
Introduction to Keyframing

Whether it's referred to as keyframing, dynamics, or marks, DaVinci Resolve provides an interface for automatically interpolating color adjustment parameters in various ways from one setting to another. For example, if you have a clip with varying exposure settings, you can animate a series of contrast adjustments using Dynamic keyframes to make the changes in exposure less distracting.



The Keyframe Editor with dynamic keyframes animating the parameters of Node 2

In another example, suppose you're grading a documentary, and an archival clip that's edited in the middle of the Timeline actually consists of six different shots from a program in the eighties. If you're in a hurry, you can insert Static keyframes (marks) at the cut points of each of these shots, creating one-frame transitions between different sets of adjustments, which allows you to create individual adjustments for each shot.



Round static keyframes added to all parameters, enabling individual adjustment of shots merged together within a single clip

In both cases, you use the Keyframe Editor to create a series of keyframes with which to change parameters from one value to another. In this section, you'll learn how to work with the Keyframe Editor to set up these kinds of animated changes.

The Keyframe Editor Interface

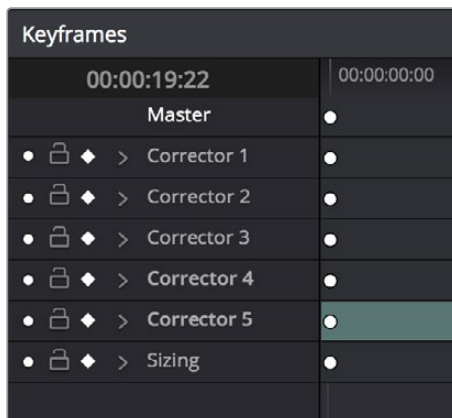
The Keyframe Editor has all the controls necessary to create and modify keyframes for the currently selected clip. If necessary, you can even make it wider in a single screen layout by clicking its expand button (at the top right of the Keyframe Editor), or use the Color page's Dual Screen layout to place the keyframe editor on a second screen, for even more room.



The Node Editor shown in wide mode, pushing all other palettes to the left

The Keyframe Editor consists of the following components:

- **The Timeline Ruler:** Mirrors the record timecode of the currently selected clip; dragging within the Timeline Ruler moves the playhead, and a timecode display to the left shows the current frame.
- **The Keyframe Track Header:** Each node in the current grade has a corresponding keyframe track, and the header contains controls you can use to manage the keyframing.



The Keyframe Track Header

- **Track Disclosure Triangle:** Exposes individually keyframable groups of parameters underneath the main keyframe track.
- **Enable/Disable Button:** A round orange button lets you enable or disable that track's corresponding node.
- **Lock Button:** Lets you prevent any changes from being made to that track's corresponding node.
- **Auto-Keyframe Button:** Turn this button on to automatically create a Dynamic keyframe every time you adjust any parameter within that node.
- **Keyframe Tracks:** To the right of the track header, the keyframe tracks are where you create and edit the keyframes that animate parameter changes. A topmost "master keyframe track" shows every keyframe applied on every keyframe track in the Keyframe Editor, even keyframes applied to a keyframing track hidden inside a track with a closed disclosure triangle.

- **Keyframes:** Each keyframe appears as a small diamond for a Dynamic keyframe or as a circle for a Static keyframe. Dynamic keyframes are associated with dissolves while Static keyframes (marks) act instantly. Grades are linked to the preceding keyframe, which may be a default one on the first frame of the master clip. Keyframes can be selected by clicking on them, or moved by dragging them to another position in the keyframe track.
- **Sizing track:** The Pan, Tilt, Zoom, Rotate, and Convergence (in Stereo 3D projects) parameter have an entirely separate track for creating animated pan and scan adjustments.
- **Track Selection Bar:** A colored bar shows the currently selected scope of keyframing: all tracks at once, just the current correction node, or the Sizing settings. This will be covered in more detail later in this chapter.

Ordinarily, the Keyframe Editor takes up the rightmost bottom third of the Color page. However, you can make it wider to have more room to work if you have a scene requiring complex keyframing.

To expand and collapse the Keyframe Editor:

- Click the Expand/Collapse button at the lower left-hand corner of the Keyframe Editor.
- The Keyframe Editor widens or narrows accordingly.

To zoom into and out of the Keyframe Tracks:

- Use the Zoom slider to zoom into or out of the Keyframe Editor.
- Right-click any keyframe track and choose Maximum Zoom to zoom all the way in.
- Right-click any keyframe track and choose Reset Zoom to fit the entire clip into the available width of the Keyframe Editor.

All/Color/Sizing

Perhaps the most important control for keyframing, the Keyframe Timeline mode, lets you switch the scope of what tracks get keyframed when you use the Start Dynamic or Add Static Keyframe commands, either from the keyboard or via the buttons of your control panel. This command alternates among three modes:

- **All:** The default mode. Adds keyframes to every track in the Keyframe Editor, keyframing every parameter in every node all at once, including the Sizing settings. In this mode, an orange bar appears highlighting the topmost “master keyframe track.”
- **Color:** Only adds keyframes to the node currently selected in the Node Editor. In this mode, a green bar appears highlighting the keyframe track corresponding to the node currently selected.
- **Sizing:** Only adds keyframes to the Sizing track, which is useful when you’re keyframing “pan and scan” style transforms. In this mode, a blue bar appears highlighting the Sizing track.
- **EXT MATTE:** Only appears if there’s an External Matte node in the node tree. Lets you keyframe External Matte-specific parameters in the Key palette.

Even though All is the default setting, it may be to your advantage to switch to the Color or Sizing keyframing modes to avoid creating a lot of unnecessary keyframes. Even though keyframing everything all at once is a fast way to work, the extra keyframes may slow you down when you later need to make adjustments to nodes that didn’t need to be keyframed in the first place.

To change the keyframing mode, do one of the following:

- Choose an option from the Keyframe Mode pop-up at the top right of the Keyframe Editor.
- Choose an option from the Mark > Keyframe Timeline Mode submenu.
- Press the ALL/COLOR/Sizing button on the Transport panel of the DaVinci control panel repeatedly until you've chosen the mode you need.

TIP: This control has one other function. Choosing a mode also affects what is copied when you use the various grade management tools in DaVinci Resolve. For example, if you choose Color, then you can copy a clip's color grade without copying its sizing. If you choose Sizing, then you can copy the sizing without copying the color grade. For more information, see "Copying Grades" in Chapter 28, "The Gallery and Grade Management."

Keyframing Methods

There are two different types of keyframes used by DaVinci Resolve to create automated changes. Each type of keyframe interpolates parameters differently.

Dynamic Keyframes (Dynamics)

Dynamic keyframes are the most conventional type of keyframe you'll use, and are the type of keyframe used for creating animated changes from one state to another. For example, if you need a grade to become brighter over time to compensate for a change in lighting conditions, you'll use Dynamic keyframes.

Nearly every parameter and control in the Color page can be keyframed, but it's important to understand that the Interface controls do not animate to match whatever dynamically keyframed changes are taking place. Instead, visible Interface controls that correspond to keyframed changes will jump from their initial position at one keyframe to their final position when the playhead reaches the next keyframe.

This can be most confusing with Curves, which can be interpolated using Dynamic keyframes just like any other control or parameter. Just keep in mind that the actual settings are animating, even though the controls are not.

To animate a node using Dynamic keyframes:

- 1 Move the playhead in the Keyframe Editor's Timeline ruler to the frame where you want to begin a change.
- 2 Do one of the following to place a Dynamic keyframe at that frame:
 - Choose Mark > Add Keyframe (Command-[]).
 - Press the START DYNAMIC button on either the T-bar or Transport panels of the DaVinci control panel.
 - Turn on the Auto Keyframe button for the track you want to animate in the Keyframe Editor.

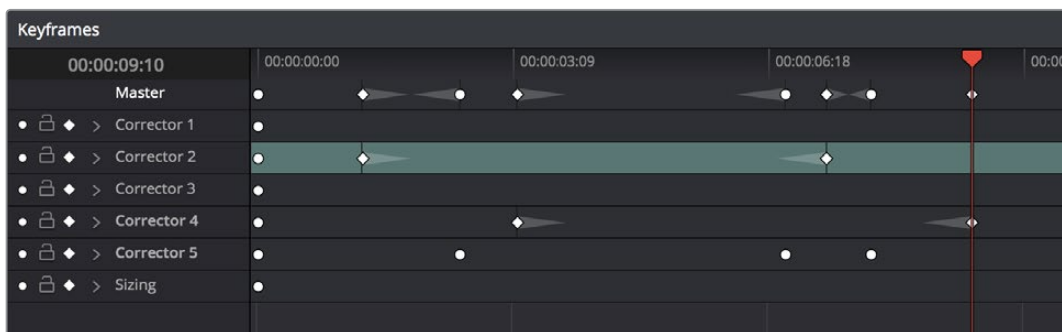
Dynamic keyframes are diamond-shaped.

- 3 If necessary, adjust your clip at this first position of your animated change. If you're using Auto Keyframe, then you have to make an adjustment for a keyframe to be created.
- 4 Now, move the playhead to the frame that is at the second position of the animated change you're making, and create another Dynamic keyframe if you're creating keyframes manually, or make another adjustment if Auto Keyframe is on.
- 5 After you've created this second keyframe, make whatever adjustments are necessary to the clip to create the final look you need.

At this point, playing from the first keyframe to the second keyframe should show a smoothly animated change from the first adjustment to the second. When you're finished, make sure you turn Auto Keyframe off if it was enabled.

Static Keyframes (Marks)

Static keyframes, or marks, are keyframes that are used to create abrupt, one frame changes from one state to another. They're typically used to mark edit points separating one shot from another when multiple shots appear within a single clip. However, Static keyframes are also useful in any situation where you need a sudden change from one setting to another, such as when creating a lightning effect.



Static keyframes are round

To automate a node using Static keyframes:

- 1 Find the frame at which you want the abrupt change to take place, and place a keyframe at that frame by doing one of the following:
 - Choose Mark > Make Static Keyframe (Command-]).
 - Press the MARK button on either the T-bar or Transport panels of the DaVinci control panel.

Static keyframes (marks) are round.

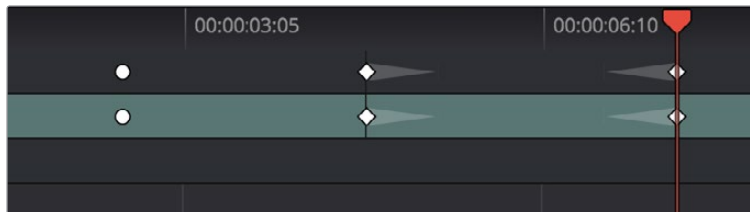
- 2 Move the playhead to any frame before the keyframe to make changes to the entire segment of the clip leading up to the keyframe, or move the playhead to any frame after the keyframe to make changes to the entire segment of the clip appearing after the keyframe. The playhead does not need to be on top of the keyframe, but if it is, you'll be adjusting the second portion of the clip.

NOTE: If you're using Static keyframes to automate grading changes between multiple shots appearing within a single clip, keep in mind that you can't add nodes from one keyframe to the next as you would if you had split the clip in the Edit page.

Mixing and Converting Dynamic and Static Keyframes

Typically, if you're creating multiple animated changes within a clip, you'll want to use all Dynamic keyframes. Similarly, if you're creating a series of abrupt changes, you'll use all Static keyframes. However, you can mix Dynamic and Static keyframes together, so long as you keep in mind the following rules:

If you add a Dynamic keyframe to the right of a Static keyframe: There will be no interpolation from the Static keyframe to the Dynamic keyframe. However, if you add a Static keyframe to the right of a Dynamic keyframe, there will be interpolation.



No dynamic interpolation following the static keyframe

If you accidentally create the wrong kind of keyframe, it's easy to convert it into the type of keyframe you need.

To change one kind of keyframe into another:

- 1 Click the keyframe you want to convert to select it.
- 2 Right-click the selected keyframe, and choose either Change to Dynamic Keyframe or Change to Static Keyframe.

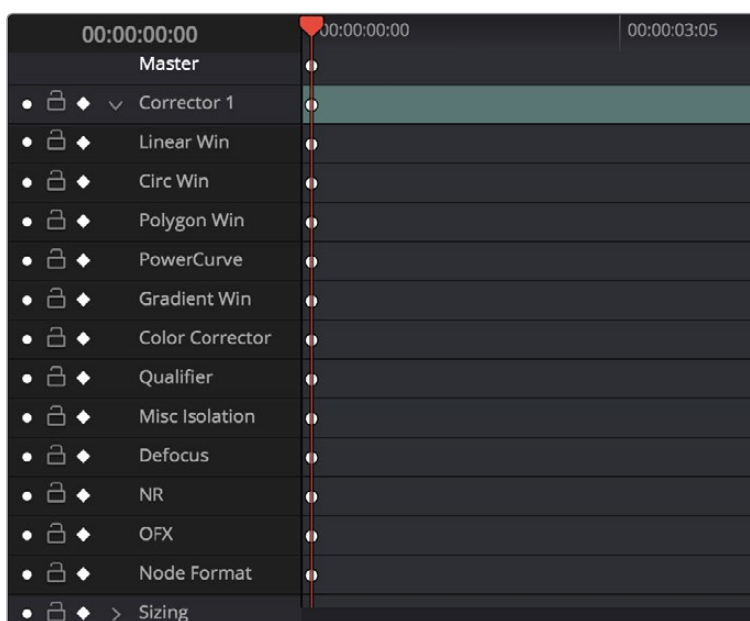
Try Creating Keyframed Changes in a Separate Node

One tip to keep in mind is that you don't have to create keyframed changes within the same nodes you're using to create other adjustments. If you want to create some automated changes without altering the nodes you've already adjusted, you can simply create a new node in which to make your keyframed changes. That way, if you don't like the result, or you somehow find yourself hopelessly tangled up in a needlessly complicated set of keyframes, it's easy to reset either just the keyframes or the entire node without affecting the rest of your grade.

Using Specific Keyframing Tracks

If you're simply using the Color mode of the All/Color/Sizing command to do keyframing, then you'll be adding keyframes to every parameter of the currently selected node whenever you apply a single keyframe. However, often that's overkill in situations where you only need to keyframe a single setting or group of settings.

For example, you may find that you need to keyframe a color adjustment in order to change the color temperature and brightness when the camera pans across a window, but you don't want to keyframe the Windows palette controls because you want to adjust them independently. This can be done by opening a Corrector track to expose the keyframing tracks within.



Individual keyframing tracks within a Color Corrector node

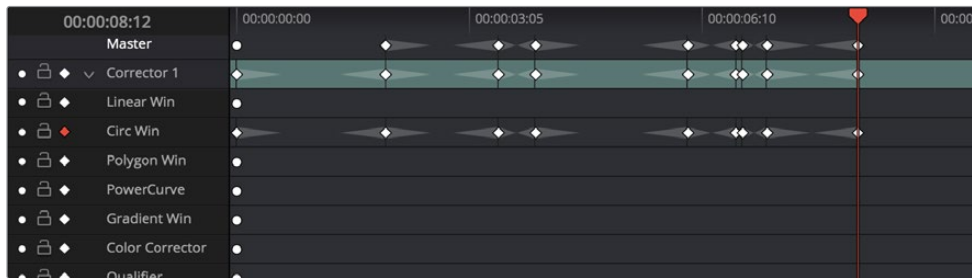
Keyframing tracks let you keyframe different sets of similarly functioning parameters separately from one another. For example, there's one keyframing track for all the color adjustment parameters, and another keyframing track governing the parameters found within the Qualifier palette.

To reveal a node's keyframing tracks:

- Click the disclosure triangle next to the number of the node you're keyframing.

To keyframe an individual keyframing track manually:

- 1 Make whatever adjustments you need to the currently selected node, and click its disclosure triangle to reveal its keyframing tracks.
- 2 Move the playhead in the Keyframe Editor to where you want to add the first keyframe, then right-click within the keyframing track you want to animate, and choose Add Static Keyframe or Add Dynamic Keyframe (this example shows a Dynamic keyframe).
A keyframe appears at the position of the playhead in that keyframing track.
- 3 Move the playhead in the Keyframe Editor to where you want to add the next keyframe, then right-click within the keyframing track and again choose either Add Static Keyframe or Add Dynamic Keyframe (this example shows a Dynamic keyframe).



Keyframing just the Circular Power Window using its individual keyframe track

Now, you can make whatever changes you need to the controls governed by the keyframing track you keyframed, in order to create the necessary animated effect.

TIP: You can also animate individual keyframing tracks using automatic keyframing, explained in more detail later in this chapter.

The Corrector Keyframing Tracks

All of the parameters governing the adjustment of color and contrast controls, as well as various effects, Power Windows, and other adjustments are sorted into various sub-tracks within the Corrector track.

- **Linear Win:** Controls parameters corresponding to the Linear Window.
- **Circ Win:** Controls parameters corresponding to the Circular Window.
- **Polygon Win:** Controls parameters corresponding to the Polygon Window.
- **PowerCurve:** Controls parameters corresponding to the PowerCurve Window.
- **Gradient Win:** Controls parameters corresponding to the Gradient Window.
- **Color Corrector:** Controls all parameters found in the Camera Raw, Color Wheels, Primary Controls, RGB Mixer, and Curves palettes.
- **Qualifier:** Controls all parameters in the Qualifier palette.
- **Misc Isolation:** TBD.
- **Defocus:** Controls all parameters in the Blur and Key palettes.
- **NR:** Controls the Spatial and Temporal Noise Reduction and Motion Blur parameters found in the Motion Effects palette.
- **OFX:** Controls all parameters of whichever OFX plugin is applied to the current node.
- **Node Format:** Controls all parameters of the node sizing mode of the Sizing palette for the current node.

The Sizing Keyframing Tracks

The Sizing keyframing tracks govern sizing transforms and stereoscopic adjustments separately from the color controls.

- **Input Sizing:** Controls the Input Sizing parameters found within the Sizing palette.
- **Convergence:** Controls the Convergence parameter in the Stereo 3D palette.
- **Float Window:** Controls the Left, Right, Top, and Bottom Position/Rotate/Softness Floating Windows parameters.
- **Auto Align:** Controls the Pitch and Yaw parameters in the Stereo 3D palette.

TIP: Output Sizing can only be keyframed when you choose Track mode in the Node Editor.

The Ext Matte Node's Freeform Isolation Track

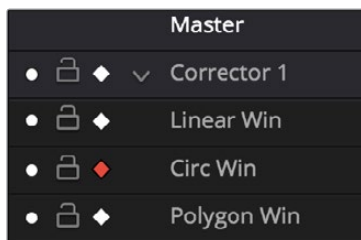
If your node tree has an External Matte, the EXT MATTE node exposes a Freeform Isolation track in the Keyframe Editor. This is useful for time offsets or Sizing repositioning of the Ext Matte image.

Automatic Keyframing

Every track in the Keyframe Editor has an Auto-Keyframing button that can be turned on or off. When auto-keyframing is enabled for a particular track, every change made to a parameter or control associated with that keyframe track automatically generates a keyframe.

Used with a keyframing track, auto-keyframing makes it simple to set up animated changes to specific adjustments within a node. This is a lot easier than manually placing keyframes one by one.

On the other hand, turning on auto-keyframing for the Corrector track correspondingly enables auto-keyframing for every keyframing track belonging to that node. In this case, keyframes will automatically be placed on whatever keyframing track corresponds to the parameters or controls you adjust.



Auto-keyframing selected for Circular Window on Node 1

When auto-keyframing is disabled, changes you make alter existing keyframes. How this alteration works depends on the location of the playhead, and the type of keyframes in the Keyframe Editor. For more information, see the next section.

Modifying Keyframes

Once you've started adding keyframes to animate changes to a grade, there are a variety of methods available to navigate and edit these keyframes to further customize these effects. This section covers the different ways you can navigate among, alter, and remove keyframes.

Navigating Among Keyframes

For many operations, it's necessary to move the playhead directly on top of the keyframe you want to modify. While you can always use the transport controls or pointer to move the playhead, there are also commands for jumping to a specific keyframe.

To move the playhead among a series of keyframes, do one of the following:

- Choose Playback > Next Keyframe (the right bracket key) or Playback > Previous Keyframe (the left bracket key).
- On the Transport panel of the DaVinci control panel, press SHIFT then STEP REV to move the playhead to the previous keyframe, or press SHIFT then STEP FWD to move the playhead to the next keyframe.

Moving Keyframes

If you need to change the timing of a series of keyframes, you can move the position of any keyframe, along with whatever values that keyframe contains.

To move a single keyframe using the on-screen interface:

- Use the pointer to drag any keyframe to another location.
- Drag keyframes in a top-level Corrector or Sizing track to simultaneously move all other keyframes on the same frame within that corrector.

To move a single keyframe using the DaVinci control panel LIFT MARK button:

- 1 Move the playhead to the keyframe you want to move. This procedure works for either Dynamic and Static keyframes.
- 2 Press LIFT MARK on either the T-bar or Transport panels.
- 3 Move the playhead to the frame you want to move that playhead to.
- 4 Press MARK on either the T-bar or Transport panels.

To move multiple keyframes at the same time:

- 1 If necessary, open the keyframe track with the keyframes you want to move.
- 2 Hold the Shift key down, and drag a bounding box around the keyframes you want to move. Selected keyframes appear highlighted in red.
- 3 Keeping the Shift key held down, drag anywhere within the keyframe track to move all selected keyframes to the left or right.

Changing Keyframe Values

Unlike many other applications, DaVinci Resolve lets you alter keyframe values when the playhead isn't directly on an existing keyframe. How this works depends on the location of the playhead relative to the keyframes that are in the Keyframe Editor, and what kind of keyframes you're editing.

- **If the playhead is to the left or on the first Dynamic keyframe:** The Dynamic keyframe at or to the right of the playhead updates with the new adjusted values.
- **If the playhead is to the left or on the last Dynamic keyframe:** The Dynamic keyframe at or to the left of the playhead updates with the new adjusted values.
- **If the playhead is between two Dynamic keyframes:** The Dynamic keyframe to the left of the playhead updates with the new adjusted values, but the Dynamic keyframe to the right is unaffected.
- **If the playhead is between two Static keyframes (marks):** Adjustments made between two Static keyframes always affect the keyframe to the left of the playhead. The entire segment of the clip between that keyframe and the next is affected equally.

Changing Dynamic Attributes

By default, the transition from one Dynamic keyframe to the next is linear. However, if you need to alter the acceleration of value interpolation from one Dynamic keyframe to the next, then you can change that keyframe's Dynamic Attributes.

To change a keyframe's Dynamic Attributes:

- 1 Right-click a keyframe in the Keyframe Editor, and choose Change Dynamic Attributes.
- 2 When the Dynamic Attributes window appears, do one or both of the following:
 - Choose a new outgoing acceleration curve using the Start slider, affecting the interpolation occurring to the right of that keyframe.
 - Choose a new incoming acceleration curve using the End slider, affecting the interpolation occurring to the left of that keyframe.

As you choose different acceleration curves, the display to the right shows the resulting curve graph.



Changing the dissolve profile

- 3 When you're happy with the curve, click OK.

By using different Start and End values, you can make animated adjustments “ease in” or “ease out” of a particular keyframe, to create a more gradual or abrupt transition.

TIP: The default dynamic profile start and end of each new keyframe can be set via the Dynamics Profile values in the Color panel of the Project Settings.

Deleting Keyframes

You have the option to delete individual keyframes, or to delete all the keyframes within a particular grade at once.

To delete individual keyframes, do one of the following:

- Move the playhead on top of the keyframe you want to delete, then choose Mark > Delete Keyframe (Option-J). Every keyframe at the position of the playhead is deleted.
- Using the DaVinci control panel, press DELETE on either the T-bar or Transport panels. Every keyframe at the position of the playhead is deleted.
- Using the pointer, click a keyframe in the Keyframe Editor to select it, then right-click that keyframe and choose Delete Selected Keyframe. Only the selected keyframe is deleted.

To delete every keyframe for the current clip:

- Choose Mark > Delete All Keyframes.

Copying Keyframes

It's possible to copy a set of keyframes from one node to another, either within the current grade, or in another clip entirely. It's also possible to copy an entire grade with keyframes from one clip to another.

To copy a set of keyframes from one node to another:

- 1 Select a node to copy keyframes from, and choose Edit > Copy (Command-C).
- 2 Select another node to paste keyframes to, and choose Edit > Paste (Command-V).

TIP: This procedure also works for tracking data that you want to copy from one node to another, either in the current clip, or another clip altogether.

To copy an entire grade with keyframes from one clip to another:

- 1 Click the thumbnail of the clip you want to copy to in the Thumbnail timeline.
- 2 Right-click the thumbnail of the clip you want to copy from, and choose Add Correction With Keyframes from the contextual menu.

NOTE: When copying a grade with keyframes from one clip to another, the keyframes will automatically be placed at matching frames that correspond to the source timecode of the originating clip. This makes it easy to copy a grade with keyframes to the same clip elsewhere in the Timeline, but it may not provide the desired results if you're applying a grade with keyframes from one clip to a completely different one.

Keyframes and Saved Stills

If you save a still from a clip using keyframes within the grade, by default keyframes are not saved. However, the still and grade that are saved reflect whatever parameter values are contained by the next keyframe to the left of the position of the playhead. For example, if a clip has a dynamically keyframed transition from a saturation of 50 to a saturation of 0, and you place the playhead right in the middle of both keyframes when you save a still, the grade and still that are saved have a saturation of 50.

However, if you right-click the Gallery and turn on Use Timeline Keyframes in the contextual menu, then grades saved within a still are saved with the keyframes, which reference the source timecode of the original clips. This means that if you apply a saved grade with keyframes to a clip, the keyframes will automatically be placed at matching frames that correspond to the source timecode of the original clip. This makes it easy to copy a grade with keyframes to the same clip elsewhere in the Timeline, but it may not provide the desired results if you're applying a grade with keyframes from one clip to a completely different one.

Adding EDL Marks

Just as clip grades are separate from the track grade that can be applied to the entire Timeline, so clip keyframes are separate from track keyframes. Keyframes you apply to the track grade work exactly the same as clip keyframes. However, there is one extra option you have when keyframing the track grade.

If you find yourself wanting to adjust a track grade individually to take into account variations from one clip to the next, you can use the Add EDL Marks on Tracks command to add a Static keyframe (mark) to the Keyframe Editor at the position of every edit point in the entire Timeline.

To add EDL Marks:

- 1 Choose Track from the Node Editor's mode pop-up menu.
- 2 If you want to keyframe a grade, then create whatever grade you need to apply to the entire Timeline. If you want to keyframe Sizing settings, you don't need to do anything else.
- 3 Right-click the Corrector track or the Sizing track in the Keyframe Editor, and choose Add EDL Marks on Tracks.

Marks appear at the frame of every edit point in the Timeline. You may want to widen the Keyframe Editor to make it easier to work with all these keyframes.

After you've added EDL marks, you can delete them if you decide you don't want them any more.

To delete EDL marks:

Right-click the Corrector track in the Keyframe Editor, and choose Delete EDL Marks on Tracks.

If you've added your own keyframes in addition to the EDL marks, then the Delete EDL Marks on Tracks command only eliminates the EDL marks. Your custom marks are left alone.