Curves

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Curves

The Color page is the heart of DaVinci Resolve. Within the Color page are all of the controls available for manipulating color and contrast, reducing noise, creating limited secondary color corrections, building image effects of different kinds, adjusting clip geometry, and making many other corrective and stylistic adjustments.

Introduction to Using Curves

The Curves palette, selectable via one of the toolbar buttons above the Center Palette panel of the Color page, has six modes that provide different curve-based methods of manipulating the color and contrast of an image. Each curve lets you adjust a customizable region of the image based either on image tonality (zones of lightness or darkness), hue (specific colors), or saturation (intensity of color). All curves can be adjusted using either the pointer, or knobs on the DaVinci control panel.

> **TIP:** All curves in DaVinci Resolve can be used to affect the overall image, or limited to affect only a specific portion of the image as a part of a secondary operation using Qualifiers, Windows, Imported Mattes, or any combination of the three.

Adjusting Curves Using the Mouse

All Color curves in Resolve use the following controls for basic on-screen adjustment using the pointer, controlled either with your mouse, pen, or other input device of choice.

**Methods of adjusting curves using the on-screen interface:**

- To add a control point: Click anywhere on or around a curve. A control point is added at the position of the mouse where you clicked, and the curve is altered, if necessary, to match the new control point's position.
- To add a control point without altering the curve: Hold the Shift key down, and click anywhere on or around a curve. A control point is added at the horizontal position of the pointer where you clicked, but the curve is not altered.
- To snap a control point to the neutral diagonal of the curve: (Custom curve only) Hold the Option key down while dragging any control point on the curve. A diagonal line appears indicating the neutral state of the image, and the control point will snap to it. When you release the Option key, the diagonal guide line disappears.
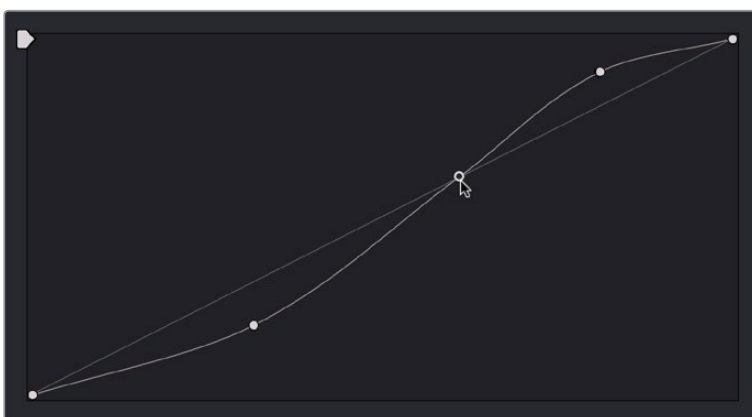
Snapping a curve's control point back to its
neutral position by holding down the Option key

- To remove a control point: Right-click any control point to make it disappear.
- To reset a single color channel curve to a completely neutral setting: Click the reset button to the right of that color channel's intensity slider.
- To reset all color channel curves: Click the Reset Custom Curve button at the upper right-hand corner of the Curves palette.

By default, a control point influences the portion of each curve that falls between its neighboring two control points.
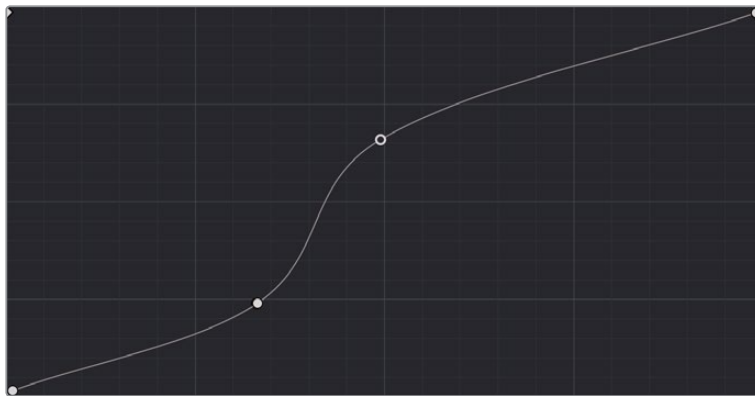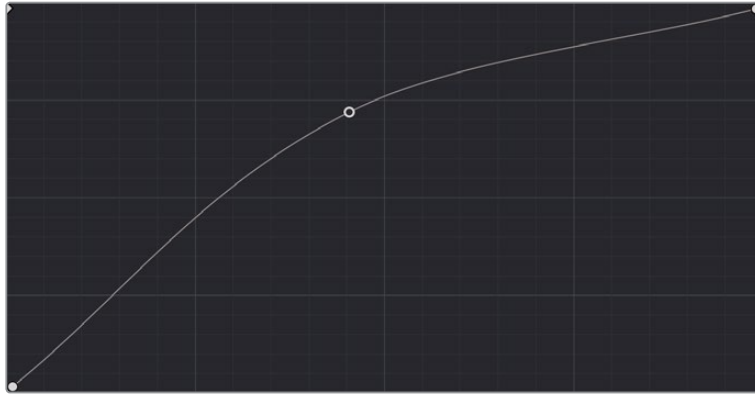
Control point adjustments affect the entire portion of a curve between adjacent control points.

In the screenshot to the left, you can see that the control point at the position of the pointer is affecting the larger part of the curve that falls between the lower left-hand control point (which is there by default), and a user-created control point placed up within the highlights of the curve.

In the screenshot to the right, an additional control point to the left of the one being adjusted limits the area of the curve that is adjusted. By careful placement of additional control points, you can make extremely targeted adjustments to images using the Custom curves.

This example highlights the importance of using control points to "lock off" portions of a curve at a neutral or nearly neutral position to prevent changes to specific portions of an image, even while using other control points to make changes.

> **NOTE:** The HSL curves also have an optional adjustment mode using Bezier curves that will be covered in those sections.

Custom Curves

DaVinci's Custom curves provide smooth adjustment of each clip's Y, R, G, and B channels. The Custom curve mode of the Curves palette is divided into two areas, the Curve Editor to the left, and the Curve controls to the right. The editor contains the actual Curve controls you use to adjust the image. The controls at the right let you choose which curves you're adjusting, and adjust their intensity.
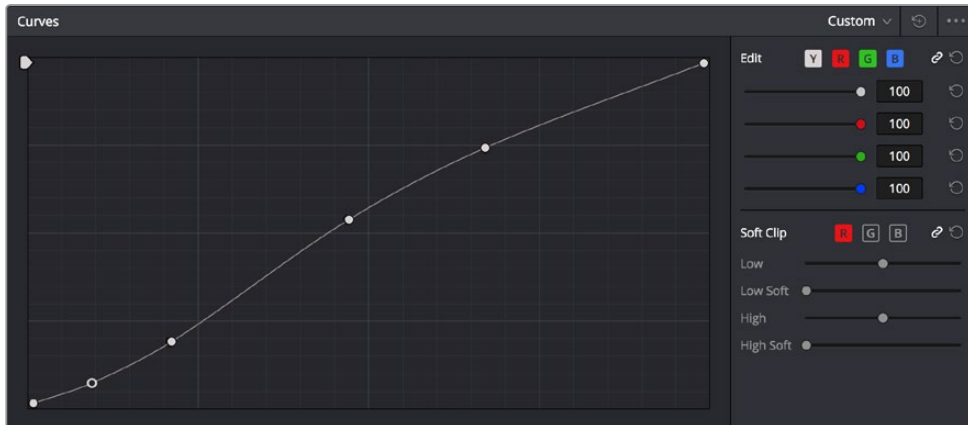
The Custom curves seen used to create a gentle "S" curve adjustment with four additional control points added; the middle point is selected

The Custom curves are useful for making more tonally specific, channel-by-channel adjustments to an image than can be accomplished using the Color Balance controls. They're also useful for making strange and wonderful stylistic adjustments through unusual alterations to different combinations of color channels.

Although the ganged Custom curves appear to be a single curve control, starting in version 12 the Custom curve editor is presented as a series of overlaid curves, and the YRGB curves all appear within a single editor. The default, neutral position of the Custom curves is a diagonal line that runs from the lower-left black point of the image through the upper-right white point.
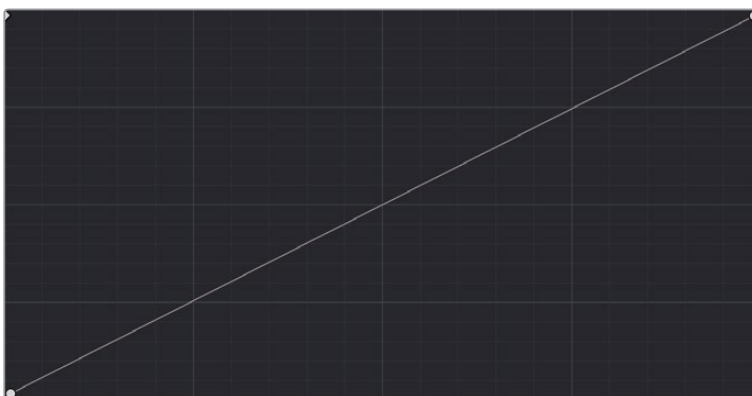
The neutral diagonal position of the curve at which no adjustment is made

The horizontal axis represents the range of image tonality in the original image, from black (at the left) to white (at the right), while the vertical axis represents the range of alteration you can make. By adding control points to the surface of the curve and raising or lowering it at different regions, you are actually remapping the original horizontal "input" value of a color channel to an "output" value of your choosing.

Additional controls appear to the right of the curve editor itself. A top row of buttons let you select the curve corresponding to an individual color channel for isolated adjustment, while a vertical stack of four sliders let you adjust the intensity of each color channel's curve.

The channel-editing buttons and curve intensity sliders appear to the right of the curve editor

Editing the Top and Bottom Control Points of Curves

You can also edit curves using the default two control points that the curve control starts out with in the Curve Editor. The Black Point control (at the lower-left) and the White Point control (at the upper-right) let you expand and compress the video signal similarly to using the Lift and Gain Master Wheel controls in the Color Wheels palette.
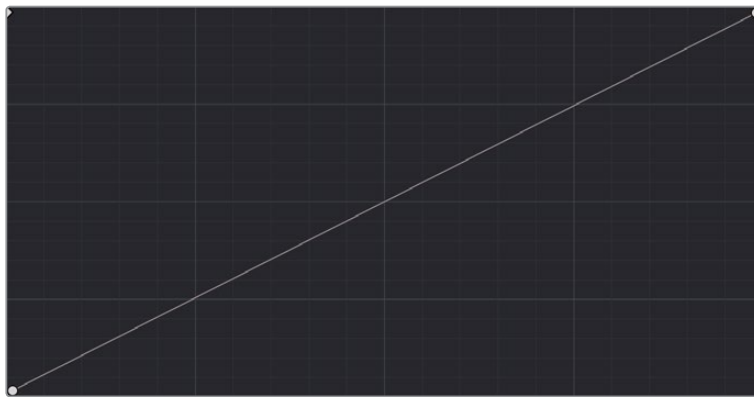
The Curve control at its original state
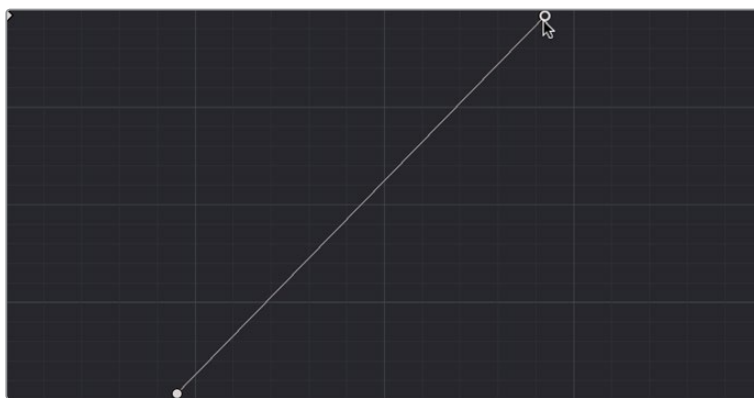
The Black and White Point controls dragged to the right and left to expand the signal

You can use the Black and White point controls in the following ways:

- **Using the Black Point control:** Dragging this control up makes a lift adjustment to raise the black point of the signal. Dragging this control to the right makes a lift adjustment to lower the black point of the signal.
- **Using the White Point control:** Dragging this control down makes a gain adjustment to lower the white point of the signal. Dragging this control to the left makes a gain adjustment to raise the white point of the signal.

HDR Grading Using Curves

When using various grading controls in the Color page to grade wide-latitude images for HDR output, you may find it useful to enable the HDR Mode of the node you're working on by right-clicking that node in the Node Editor and choosing HDR Mode from the contextual menu (only available in Resolve Studio).
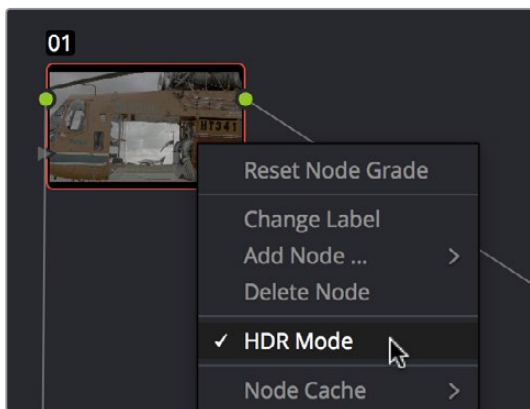
Using a node's contextual menu to put that node into HDR mode

This setting adapts that node's controls to work within an expanded HDR range. Practically speaking, this makes it easier to work with wide-latitude signals using controls that operate by letting you make adjustments at different tonal ranges such as Lift/Gamma/Gain, Custom Curves, Soft Clip, etcetera.

Enabling Editable Splines in the Custom Curves

When the Curve palette is in Custom mode, you can choose Editable Splines from the option menu to expose Bezier spline handles on any selected control point, which let you make more precise curve adjustments whenever necessary.


Custom Curve with editable splines enabled

> **NOTE:** Beware of making curve adjustments that are too sharp, or with control points that are too close together, as they can introduce unwanted contouring within the image, causing flattening or solarization in parts of the image that you may not want.

Adding Default Anchors to the Custom Curves

You can also choose Default Anchors from the option menu of the Curve palette in Custom mode to place three additional control points on the curve, dividing the curve into five segments that affect the shadows, low midtones, medium midtones, high midtones, and highlights of the image.
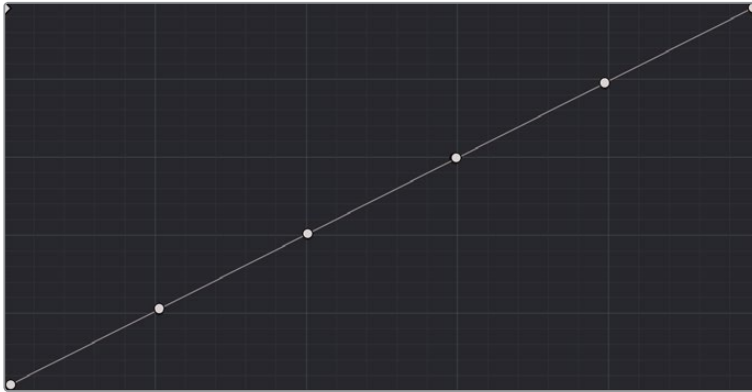
Custom curve with Default Anchors exposed

Ganging and Unganging Custom Curves

By default, the Custom curves are ganged, so that curve adjustments affect a clip's YRGB channels all together, resulting in an adjustment to image contrast that's similar to using the Master Wheels in the Color Wheels palette, or the ring controls of the DaVinci control panel. When making this type of adjustment, increasing contrast also increases image saturation, while reducing contrast also reduces image saturation. Since curves can be manipulated with greater specificity than the three Master Wheels, you can make much finer contrast adjustments using the YRGB curves than when using the Master Wheels only.

Turning ganging off lets you use the full power of Custom curves to alter the image. Unlike the Color Balance controls, each of which adjust all three color channels simultaneously, the Curve controls let you adjust each channel individually when Gang Custom Curves is turned off.

To disable Custom curve ganging:

- Click the Curve Edit button that corresponds to the curve channel you want to edit. Clicking any Curve Edit button highlights that curve to make it easy for editing when curves overlap one another. Once one or more curves is offset from the others, you can freely edit any curve by dragging its control points.


Custom Curve Edit buttons are to the left,
the Gang button is to the right

To re-enable Custom curve ganging:

- Click the Gang button to the right of the Curve Edit buttons.

Editing color channels via individual curve adjustments lets you make smooth color-channel specific corrections, or you can make radically individual adjustments to create a wide number of creative effects.
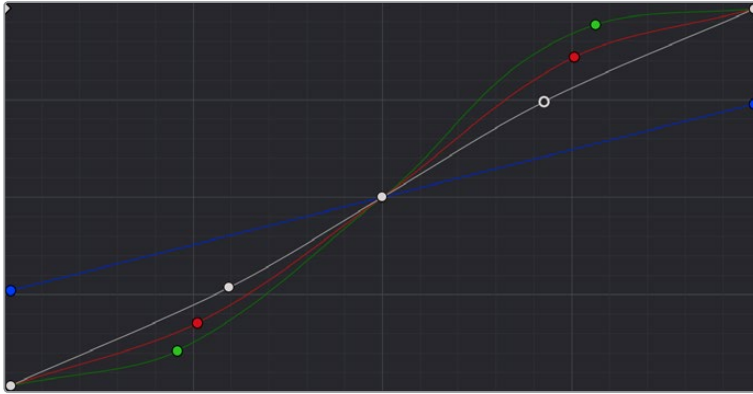
Turning off curve ganging lets you independently adjust each curve

TIP: When curve ganging is disabled, the Luma curve allows you to adjust the Y channel by itself, which is similar to using the Y-only Lift/Gamma/Gain knobs of the DaVinci control panel. When making this type of adjustment, increasing luma contrast results in a perceptual decrease of image saturation.

Copying Custom Curves From One Color Channel to Another

Even if you've unganged the Custom curves, you can still mirror one curve's adjustments to another by copying it using the "Copy to Red/Green/Blue" commands in the Curve palette's option menu.

Curve Intensity Sliders

Four Curve Intensity sliders to the right of the Curve Editor, one for each channel, let you mix between the current curve's effect on the clip, and the original state of the image before you altered the curve. The default Intensity of 100 results in that curve exerting its full effect on the image, while an intensity of 0 results in that curve having no effect on the image. The Intensity sliders provide an easy way to "split the difference" between a curve adjustment and the previous state of the image.
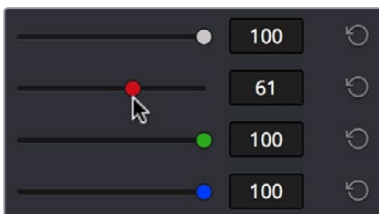
Lowering the Curve Mix slider reduces the effect of that curve's adjustment on the image.

YSFX Sliders

Each of the Custom curves (Y', R, G, and B) has a vertical YSFX slider at the upper left-hand corner of the Curve Editor that lets you invert any or all color channels by any amount you want, to create different types of stylized effects.
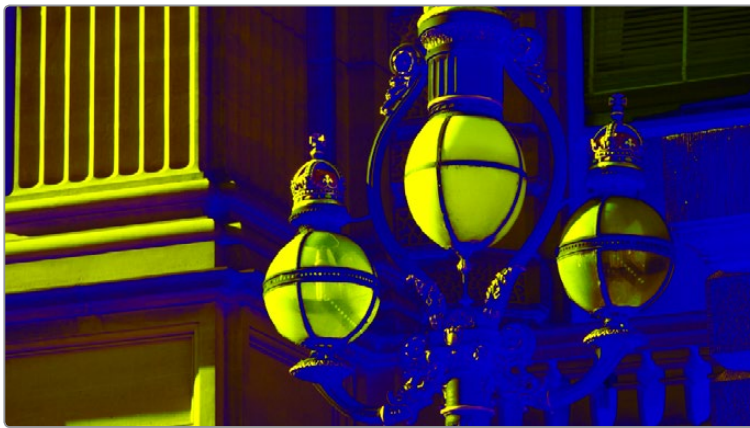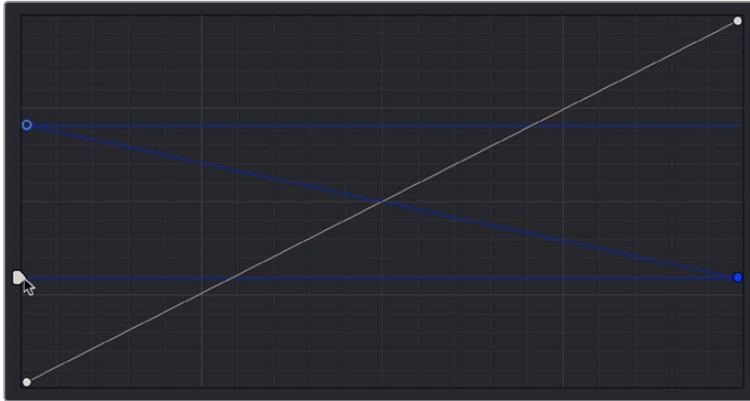

Image with the Luma channel modified using the vertical YSFX slider

As with all other adjustments in the Color page, YSFX may be combined with Power Windows or HSL qualification to limit channel inversions to specific portions of the image for creative purposes.

Adjusting Custom Curves with the DaVinci Control Panel

The controls that correspond to the Custom curves on the DaVinci control panel are available by default when you first open Resolve (the rotary knobs on the Center panel will be labeled PRIMARIES). If these buttons are not visible, you need to switch to the Primaries controls using the soft keys.

To open the Primary Curve controls of the DaVinci Resolve control panel:
- Press the PRIMARIES soft key on the Center panel.
- If the Center panel is currently in CURVES mode, then press the MAIN soft key on the Center panel.

The rotary knobs on the Center panel update to show the CHANNEL OFFSET/CUSTOM CURVES and YSFX controls.

To make curve adjustments:

- Adjust the 0% LUM, 20% LUM, 40% LUM, 60% LUM, 80% LUM, or 100% LUM rotary knobs.

By default, all adjustments you make using these controls are ganged across all four YRGB curve controls. However, if you turn Custom curve ganging off, then these controls only affect the Luminance curve.

These controls correspond to the following default control point positions on the Curve controls.0
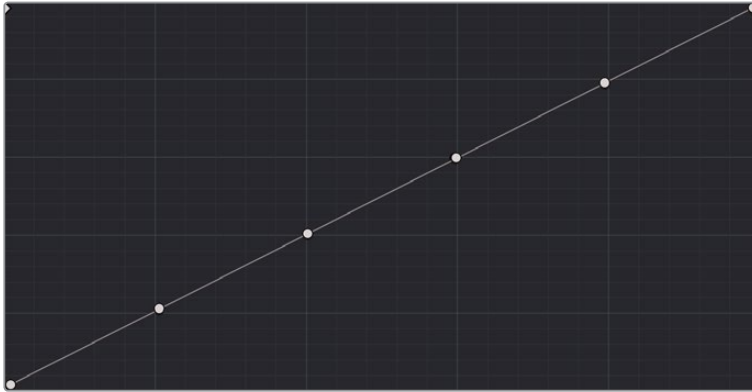
Each rotary curve control on the DaVinci control panel corresponds to one of these six default control point positions.

You also have the option of using the fourth trackball from the left to adjust individual control points on curves to any position you like. This works for all curves in DaVinci Resolve that have control panel mappings.

Methods of selecting and adjusting individual control points using the master trackball of the Center panel:

- To select a control point to adjust: Spin the fourth ring control to the left or right to select the next control point in that direction (it takes about half of a turn to select another control point).
- Selected control points are highlighted in cyan.
- To move a selected control point: Adjust the fourth trackball to move the control point up, down, left, or right. Selected control points are constrained between whichever control points are to the left and right.

Another set of rotary knobs let you adjust Curve Mix and YSFX parameters.

**To adjust the Curve Intensity sliders:**

- Adjust the LUM CURVE, RED CURVE, GREEN CURVE, or BLUE CURVE rotary knobs.

To make YSFX adjustments:

- Adjust the LUM YSFX, RED YSFX, GREEN YSFX, or BLUE YSFX rotary knobs.

Soft Clip

The Soft Clip controls consist of four sliders underneath the Curve controls of the Custom curves, and give you an interface for adjusting highlight and shadow soft clipping either overall, with Ganging enabled, or on a per-channel basis. The Soft Clip controls are intended to provide clip-by-clip adjustment, as opposed to the Generate Soft Clip LUT settings, which let you set one soft-clipping setting for the entire program. For more information on the Soft Clip LUT setting, see Chapter 3, "Project Settings and Preferences."
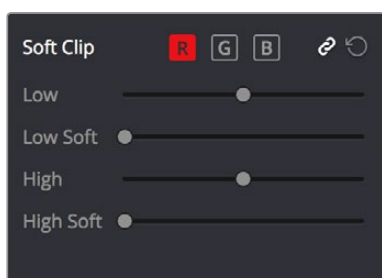
High and Low Soft Clip controls
within the Curves palette

Soft clipping lets you apply a "knee" to any clipping that occurs at the upper or lower extremes of the image, and can be used to quickly ease off any unpleasantly harsh loss of detail that occurs as a result of blowing out the highlights or crushing the shadows too aggressively.

In the following example, the screenshot at top has had the highlights deliberately blown out by excessively boosting the highlight contrast. As you can see, the edges of the clipped area lack detail. The screenshot at bottom shows the same image with soft clipping increased for all three color channels. The result retrieves detail, compressing the highlights to bring the tops of each color channel back within the allowable range.
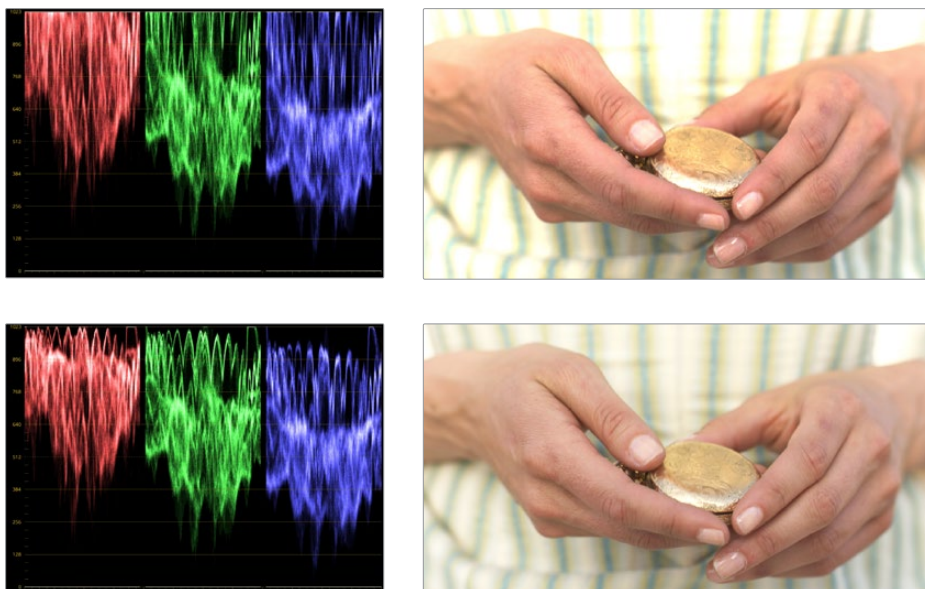
Using High Soft Clip to pull highlight details into the viewable range

Ganging and Unganging Soft Clip Controls

Soft clipping can be simultaneously applied to all three color channels by enabling the Ganging control (on by default), or you can disable Soft Clip ganging to individually adjust each channel. For example, using soft clipping on individual channels can be useful for legalizing RGB out-of-gamut errors for channels that over or undershoot your QC standards.

To disable Soft Clip ganging and edit soft clipping for individual color channels:

- Click the channel control button corresponding to the color channel you want to edit, and then drag the sliders to create the desired adjustment.

To re-enable Soft Clip ganging:

- Click the Ganging control to the right of the Soft Clip channel controls.

> **TIP:** Applying too much soft clipping to individual color channels may add an unwanted color tint to the corresponding highlights or shadows of an image. To avoid this, use the soft clipping parameters with ganging enabled to clip all three color channels equally.

Soft Clip Controls

Whether all channels are ganged or not, soft clipping is controlled via two sliders and two additional parameters for each color channel.

High

The High Clipping Point slider lets you adjust the maximum signal level above which the signal is clipped. Any pixels above the clipping level are made equal to the clipping level.
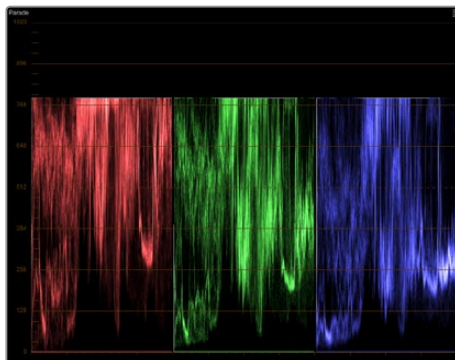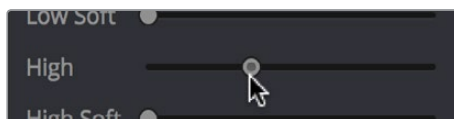
(Top) Selecting and adjusting the high clip,
(Bottom) RGB Parade displays the clipped image

The High Clipping Point defaults to a digital level of 1023 relative to the DaVinci Resolve internal video scopes. Dragging this slider to the left causes the highlights of the image to clip at a lower level, resulting in lower, dimmer maximum levels.

At the default position, no clipping occurs and image data that you push above 1023 on the internal scopes is preserved and passed through the image processing pipeline to subsequent nodes. For example, in the following two screenshots, the highlights in the screenshot at top are blown out raising the gain dramatically in Node 1. In the screenshot at bottom, a subsequent adjustment in Node 2 lowers the gain and retrieves all the previously clipped values.
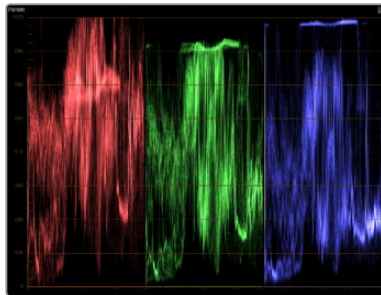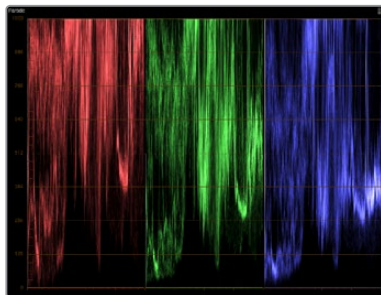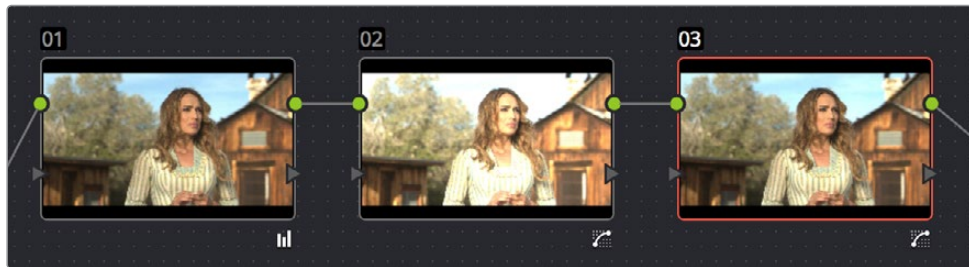
Middle—the image is clipped using the Gain control in Node 2; Bottom—image data that was clipped in Node 1 is retrieved in Node 3 by lowering the Gain control. This illustrates the preservation of deliberately clipped data.

However, if at any point in a node tree you drag the High Clip slider to the left, even by a single digit, all image data above the new clipping threshold is discarded from that node forward. In the following example, the High Clip slider in Node 2 is lowered. The result is that all clipped image data is discarded. As a result, when Node 3 lowers the gain, there is no image detail left to retrieve, and all three channels exhibit flattening.
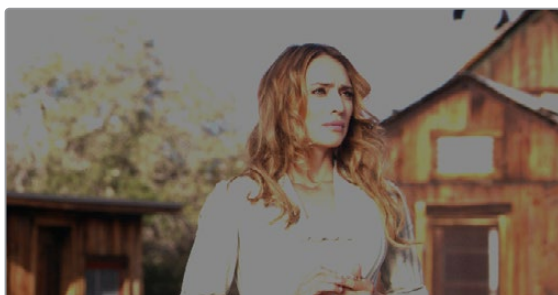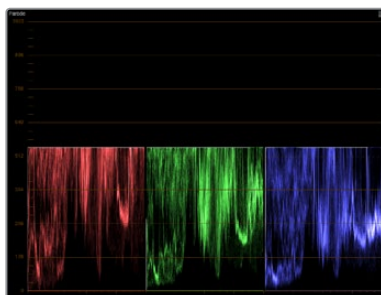
Lowering the High Clip slider in Node 1 forces all image data above the new High Clip threshold to be irretrievably discarded. Clipped data cannot be brought back by subsequent nodes.

High Soft

The High Soft slider sets the threshold, below the clipping point, at which highlights begin to compress before hard clipping. At 0, no soft clipping occurs. As you raise this value, more and more of the clipped highlight values are compressed, rather than clipped, resulting in softer, more pleasant "glowing" highlights.

Important: Image data that was clipped "in camera" is not necessarily retrievable using the Soft Clip controls, although there may be some preserved overhead in the super-white highlights of Y'CbCr-encoded video data.

Low

The Low Soft Clipping Point slider lets you adjust the minimum signal level at which the signal clips. This defaults to a digital level of 0 relative to the DaVinci Resolve internal video scopes. Dragging this slider to the right causes the shadows of the image to clip at a higher level, resulting in lighter minimum levels, and a lower-contrast image with lighter (possibly milky) shadows.

Low Soft

The Low Soft slider sets the threshold, above the minimum clipping point, at which shadows begin to compress before hard clipping. At 0, no soft clipping occurs. As you drag this slider to the right, more and more of the clipped shadow values are compressed, rather than clipped, resulting in a softer, more pleasant rolloff in the shadows.

Using Soft Clipping Controls with the DaVinci Control Panel

The soft clipping controls can also be manipulated using the DaVinci control panel, which provides separate controls for ganged and individual color channels.

To open the soft clipping control on the DaVinci Resolve control panel:
- Press the CLIPS soft key on the Center panel.

To exit the soft clipping controls:
- Press the MAIN soft key on the Center panel.

To make a ganged soft clipping adjustment:
- Adjust the MASTER CLIP or MASTER SOFT rotary knobs of the SCENE WHITE CLIPS or SCENE BLACK CLIPS control groups (there are 4 individual knobs).
- These controls adjust all four corresponding YRGB High Soft, High Clip, Low Soft, or Low Clip parameters simultaneously.

**To adjust soft clipping for individual color channels:**
- Adjust the RED/GREEN/BLUE CLIP or RED/GREEN/BLUE SOFT rotary knobs of the SCENE WHITE CLIPS or SCENE BLACK CLIPS control groups (there are 12 individual knobs).
- Each control adjusts an individual YRGB color channel.

The HSL Curves

Three sets of Hue curves, and one additional Lum vs. Sat curve, let you make different types of curve-based alterations to the image. Whereas the Custom curves let you make adjustments to the color channels of an image based on tonality (for example, boosting the Red channel in the highlights while lowering it in the shadows), the Hue curves let you make adjustments to the hue, saturation, or luma of elements in an image based on their hue.
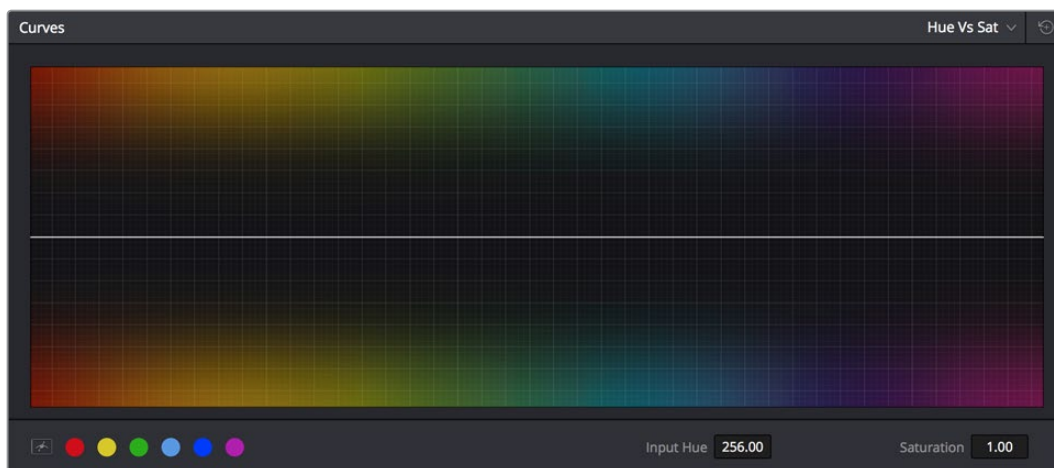
Curves controls including six-vector selection and bezier handle button

For example, you could use the Hue vs. Sat curve to selectively lower the saturation of everything that's blue, while raising the saturation of everything that's red.

You can use these curves to make adjustments similar to those made using HSL qualification, but with one critical difference. Curve adjustments are mathematically smoother than the matte-limited adjustments of HSL qualifiers, so it can sometimes be easier to make specific alterations that blend smoothly with the rest of the image, without the potential for artifacts at the edges of qualified keys that can sometimes defeat a seamless result.

On the other hand, it is often easier to define more distinct boundaries between separate elements using HSL qualification. Only time and experience will help you determine which tools are best for which situations.
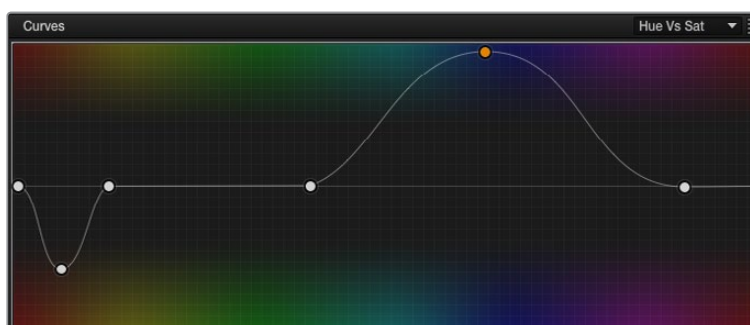
(Top) Original image, (Bottom) the image as altered by the
Hue vs. Sat curve shown in the middle

Unlike the Custom curves, which default to a diagonal position where lower left represents the black point and upper right represents the white point, Hue and Sat curves are flat. In the case of the Hue vs. Hue/Sat/Lum curves, the horizontal range of the curve from left to right represents the overall range of possible hues, from red through green through blue and then cycling back to red.

Because the range of hues cycle smoothly from the left to the right edge, changes that affect the curve near the left boundary of these curves loop smoothly around to the right boundary, and vice versa, such that the left and right sides of the curve always move together (as you can see in the above screenshot).

Important: When using Hue curves, the range of hue that you isolate with control points is always relative to the RGB input connected to that node. That means if you change the hue of a shirt from blue to red using Hue vs. Hue and you then want to raise the same shirt's saturation with the Hue vs. Sat curve within the same node, you need to add control points to the same range of blue for both curves.

Image Sampling for Hue and Sat Curves

There's an additional way to use Hue curves in Resolve. Whenever one of the Hue vs. Hue, Hue vs. Sat, Hue vs. Lum, and Lum vs. Sat curve tabs are open, clicking or clicking and dragging over any range of pixels within the Viewer area samples the hues and/or image tonality of that region of the picture, and automatically places three control points on the currently open curve that correspond to the range of color and contrast you sampled. This also works if you use the cursor from the DaVinci control panel with the fourth trackball to sample a range of color.

Additional Controls in the Hue and Sat Curves

While the Hue vs. Hue, Hue vs. Sat, Hue vs. Lum, and Lum vs. Sat curves can be adjusted similarly to the Custom curves, they have additional controls running underneath the curve graph.

- **Enable Bezier button:** Turning this button on forces a curve to use Bezier control handles, rather than the default DaVinci Resolve Curve Control points, to manipulate each control point on the curve. With Bezier handles enabled, click any control point to reveal its two Bezier handles. Drag either handle to alter the shape of the curve at that control point.

- **Six-Vector Color Patches:** The Hue curves each have six buttons for automatically adding control points to manipulate the red/yellow/green/cyan/blue/magenta ranges of hue. Clicking any of these buttons adds three control points; two to define the outer range of hue to be adjusted, and a middle control point that you use to make the adjustment.

- **Input and Output (Hue Rotate/Saturation/Lum) fields:** These two numeric fields correspond to the horizontal and vertical adjustment values for the currently selected control point. Click any control point on a curve to view or alter these values. The label of the second field depends on the curve that's selected.

The following sections describe each available curve in more detail.

Hue vs. Hue

The Hue vs. Hue curve lets you change any hue to any other hue. In the following example, the image at top is the unadjusted original. The image at bottom has had the magenta jacket shifted to an olive green via a set of three control points.

Changing the hue of the woman's jacket using the Hue vs. Hue curve;
(Top) original image, (Bottom) altered image

One excellent use of the Hue vs. Hue curve is to quickly and subtly alter elements that require only minor adjustments. For example, a sky that appears a bit too cyan can be made into a richer shade of blue with a small adjustment.

Hue vs. Hue is also useful for making more radical changes to elements that might be too noisy to key successfully using the HSL qualifier controls. For example, red autumnal foliage blowing in the wind might result in a chattery matte, but you can use the Hue vs. Hue curve to change reds to greens, without having to worry about aliased matte edges giving your correction away.

Hue vs. Sat

The Hue vs. Sat curve lets you selectively alter the saturation of any hue within the image. This is a terrific tool for creative effect, allowing you to quickly and easily boost the saturation of elements you want to catch the viewer's eye, while reducing the saturation of elements you'd prefer the audience not dwell upon.

This can be extremely useful for legalizing over-saturated overshoots or undershoots during a QC pass. For example, desaturating reds that are off the charts while leaving everything else alone.

Lowering the saturation of the woman's jacket using the Hue vs. Sat curve;
(Top) original image, (Bottom) altered image

The Hue vs. Sat curve can also be a powerful tool for increasing the color contrast of images that seem lackluster and flat. By boosting the saturation of colorful elements that are distinct from the dominant palette of a scene, you can add variety to an otherwise monochromatic image.

Hue vs. Lum

The Hue vs. Lum curve lets you increase or decrease the lightness of elements of specific colors.

Darkening the woman's jacket using the Hue vs. Lum curve;
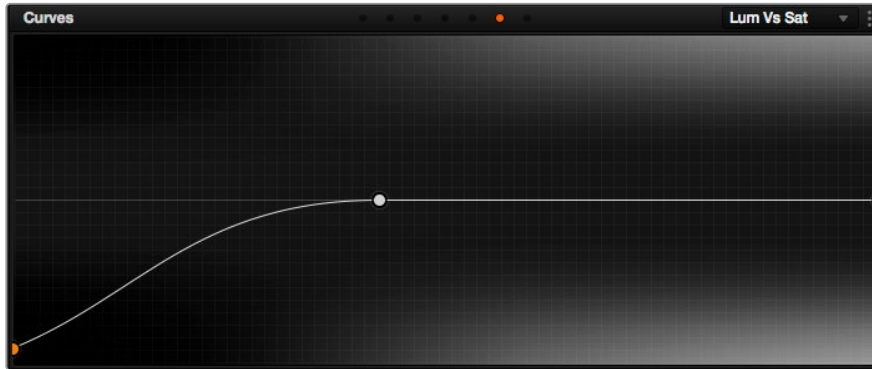(Top) original image, (Bottom) altered image

This is a tricky curve to use with highly compressed footage, as it can quickly reveal artifacts in the image if you aren't careful. However, if you're working with very high-quality footage, this can be a great tool to darken specific hues to add richness and depth, or to lighten colorful elements to which you want to draw attention.

Lum vs. Sat

The Lum vs. Sat curve is similar to the Custom curves in that alterations to the saturation of an image are based on user-definable ranges of image tonality, rather than hue. In the following example, the Lum vs. Sat curve is being used to decrease selectively the saturation of everything falling into the highlights and shadows of the image, while increasing the saturation of everything within the midtones.

In the following example, a vividly saturated treatment results in shadows that seem artificially colorful. Using the Lum vs. Sat curve, it's easy to gradually desaturate everything below a certain range, with a nice smooth falloff.

This is an outstanding curve to use for creative effect, for example, slightly boosting saturation within the midtones while reducing saturation in the shadows to increase the depth of the darkest portions of the image. It's also a great curve to use to solve QC violations. For example, if you have illegal saturation in the highlights of an image, you can use the Lum vs. Sat curve cleanly and smoothly to lower the specific values that are causing problems.

Selective desaturation in the shadows and highlights using the
Lum vs. Sat curve; Top—original image, Bottom—altered image

Sat vs. Sat

The Saturation vs. Saturation curve lets you selectively manipulate image saturation within specific regions defined by the image's original image saturation. Control points added to the left of this curve affect areas of progressively lower saturation, effectively letting you increase or decrease the saturation of lower-saturated features. Control points added to the right affect areas of progressively higher saturation, letting you increase or decrease the most saturated features of an image.

Like all curves, this operation is extremely useful for stylizing the image. You can create custom vibrance operations, where you selectively increase the saturation of low-saturated regions of the image in different ways to give the picture more "pop." It's also an excellent tool for taking care of over-saturated areas of the picture when adhering to conservative QC requirements. You can specifically desaturate only the most over-saturated parts of the picture, without affecting similar hues at lower levels of saturation.

In the following example, you can see that the portion of the image with the highest saturation has been desaturated, while the rest of the image has been left alone.
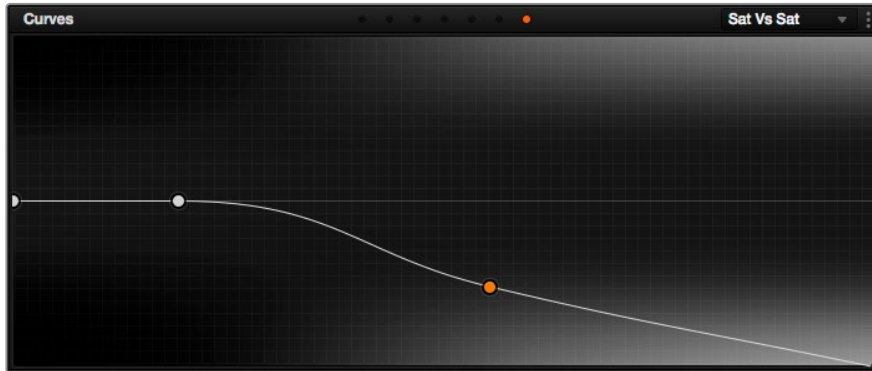
Desaturating only the highest saturated elements in the picture by
lower control points at the right of the Sat vs. Sat curve

Using Hue and Sat Curves with the DaVinci Control Panel

Using these curves with the DaVinci control panel unlocks their speed, letting you make fast,
controlled adjustments to specific elements within each scene.

To open the Hue and Sat curve controls on the DaVinci Resolve control panel:

- Press the CURVES soft key on the Center panel.

To exit the Hue and Sat curve controls:

- Press the MAIN soft key on the Center panel.

To adjust the principle color regions using knobs:

- Adjust one of the 18 knobs in the PRIMARIES CURVE GRADE control groups
  corresponding to the RED/YELLOW/GREEN/CYAN/BLUE/MAGENTA colors paired with
  HUE/SAT/LUM.

To sample a region of a shot to place curve control points:

1   Press the soft key corresponding to the curve you want to adjust (HUE – HUE, HUE – SAT, HUE – LUM, LUM – SAT).

2   Press the CURSOR button (located above the fourth trackball).

3   Use the fourth trackball to move the on-screen cursor to the pixel you want to sample.

4   Press the first of the three buttons underneath the fourth trackball to sample the color at the position of the cursor.

    Three control points appear on the currently selected curve. The outer two control points define region of the curve you're adjusting, and the center control point (selected by default) lets you make the actual adjustment.

5   To hide the cursor when you're finished sampling, press the CURSOR button again.

To select and adjust control points using the fourth trackball of the Center panel:

To select a control point to adjust: Spin the fourth ring control to the right or left to select the next control point in that direction (it takes about half of a turn to select another control point). Selected control points are highlighted in cyan.

To move a selected control point: Adjust the fourth trackball to move the control point up, down, left, or right. Selected control points are constrained between whichever control points are to the left and right.