



Control Panel

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DaVinci Resolve Control Panels

There are three DaVinci Resolve Control Panel options available and each are designed to meet modern workflow ergonomics and ease of use so colorists can quickly and accurately construct both simple and complex creative grades with minimal fatigue.

This chapter provides details of the each of the panel functions and should be read in conjunction the previous grading chapters to get the best from your panel.

The DaVinci Resolve Micro Control Panel is ideal for edit suites that need a professional grading panel for occasional grades or quick adjustments to shots. You will also find it on set where its small size, portability and low power needs are ideal for those on the move.



DaVinci Resolve Micro Control Panel

For many facilities the DaVinci Resolve Mini Control Panel is an elegant, compact yet powerful full featured grading panel. The direct selection palette keys, soft knobs and menus offer considerably more flexibility than the Micro panel and a better grading experience as a result.



DaVinci Resolve Mini Control Panel

For the ultimate grading panel to make an impact on your clients and give you the speed for long and complex grading sessions the DaVinci Resolve Advanced Control Panels features dozens of keys and menu driven soft knobs so grading operations are just a keystroke or two away. With high resolution liquid crystal displays (LCD) and backlit hard keys to accommodate a darkened grading environment. The color and intensity of the keys and the LCD panel brightness are user programmable, so each colorist can set up his/her personal panel configuration.



DaVinci Resolve Advanced Control Panels

DaVinci Resolve Micro Control Panel

The Micro control panel features a row of direct control knobs at the top of the panel, three trackballs with rings for color grading and to the right, transport and commonly used keys to speed up your grading session. Above the trackballs are reset buttons and also mode selection buttons for Log, Offset and the Viewer selector. When selecting the Viewer mode the full display will switch to the Cinema Viewer which is ideal for playback and review of clips. The Log and Offset selections are described below.

Trackballs

The three trackballs, from left to right, are in the traditional DaVinci format of Lift, Gamma, and Gain when Resolve is set for Primary grading. This is the default mode for the panels but you can quickly toggle to Log mode using the LOG key just above the center trackball. When in Log grading the trackballs control the Lowlights, Mid-tones, and Highlights.

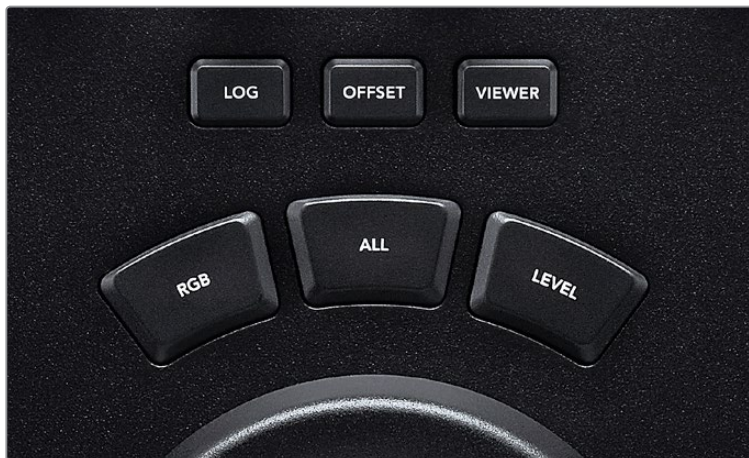
You can also select the OFFSET button whether in PRIMARY or LOG modes. This is a toggle operation and when selected the left hand side ring surrounding the trackball controls the color temperature of the image, the center trackball ring the color tint and the right hand side trackball controls the image offset balance and master exposure with the ring.

By rotating the trackball the colorist can alter the balance between the red, green and blue levels of the image. Using the vectorscope as a rough guide, moving the trackball towards the three thirty clock position adds more blue while reducing the red and green.

The control ring surrounding these trackballs provides a master amplitude control of the associated trackball.

Above the three trackballs you will see three buttons for resetting the grade:

- **RGB:** This key only resets the RGB balance to default detent.
- **All:** Select All to reset both RGB and level.
- **Level:** Select the Level key to reset the level while maintaining RGB differential.



Log, Offset, Viewer and Trackball reset buttons

Control Knobs

The top of the panel features 12 high resolution endless turn optical encoder control knobs with detent resets. These are spaced in groups of three for fast operation in dark suites. From left to right the knobs control;

- **Y Lift:** This black level adjustment primarily influences the darker areas. The mid tone and to a lesser amount the brighter areas of an image will also change.
- **Y Gamma:** Use the gamma knob for primarily midtone contrast changes with some influence on the darker and brighter sections.
- **Y Gain:** The Y gain control will influence the brighter parts of the image at a greater extent to the mid and darker portions.
- **Contrast:** This one parameter lets you increase or reduce the distance between the darkest and lightest values of an image, raising or lowering image contrast. The effect is similar to using the Lift and Gain master controls to make simultaneous opposing adjustments.
- **Pivot:** Changes the center of tonality about which dark and bright parts of the image are stretched or narrowed during a contrast adjustment.
- **Midtone Detail:** When this parameter is raised, the contrast of regions of the image with high edge detail is raised to increase the perception of image sharpness, sometimes referred to as definition. When lowered to a negative value, regions of the image with low amounts of detail are softened while areas of high-detail are left alone.

- **Color Boost:** Lets you naturalistically raise the saturation of regions of low saturation, sometimes referred to as a vibrance operation. Can be used also to lower the saturation of regions of low saturation.
- **Shadow:** Lets you selectively lighten or darken shadow detail. Raising this value retrieves shadow detail while leaving the midtones alone. 0 is unity.
- **Highlight:** Makes it easy to selectively retrieve blown-out highlight detail in high-dynamic range media by lowering this parameter, and achieves a smooth blend between the retrieved highlights and the unadjusted mid tones for a naturalistic result.
- **Saturation:** Increases or decreases overall image saturation. At higher values, colors appear more intense, while at lower values, color intensity diminishes until, at 0, all color is gone, leaving you with a grayscale image.
- **Hue Rotation:** Rotates all hues of the image around the full perimeter of the color wheel. The default setting of 50 shows the original distribution of hues.
- **Luminance Mix:** Lets you control the balance between YRGB contrast adjustments you've made using the Master Wheels or ganged Custom curves, and Y-only adjustments to contrast made using the Y channel Lift/Gamma/Gain controls of the Primaries palette or the ungang Luma curve.

Additional detail can be found in the color page basics chapter and each of these operations can be seen on the Primary palette of the user interface.

Control Buttons

On the right hand side of the trackballs there are three groups of control buttons.

The top group includes

- **Grab Still:** At any time when you are grading, selecting the Grab Still key will automatically grab a full resolution frame from the Timeline and attach the node graph metadata for later display and use.
- **Undo:** Undo is one of the favorite keys of colorists. Try any grade, and if you don't like it, simply Undo. There are multiple steps of undo available within the page.
- **Redo:** Sometimes you hit Undo once too many times. Redo will put back into effect the last item you undid. As with Undo, there are multiple levels of Redo.
- **Play Still:** Using Play Still, DaVinci Resolve will automatically display a wipe on the Viewer between the current scene and the current still. You can use your mouse on the viewer to move the wipe position. Selecting Play Still a second time will toggle this mode off.
- **Prev Mem:** Each clip, by default, has a memory of its grade, sizing, etc. which is saved in reference to the source timecode. If you are grading a clip and move from it to another clip, the grade is saved automatically in a memory for that clip. If you come back to the clip and make a change to the grade, then decide you don't like the change, select Prev Mem to return to the previous grade status you found when selecting the clip.
- **Reset:** This key resets the grades and clears the keyframes for the current node.
- **Loop:** You may wish to repeat a review of a grade of a clip, or a selection of clips on the Timeline; this Loop toggle key selects or deselects the Loop operation.
- **Bypass:** This toggle selects the node graph bypass mode.
- **Disable:** This toggle enables or disables the current node.



Control Buttons

The middle group of buttons include:

- **Prev Node:** Within the Node Editor on the Color page you are likely to have a number of nodes. These are numbered based on the order that you added them. DaVinci Resolve node graphs are completely user configurable, so you can add nodes anywhere and in any order you like. Thus, the Previous Node key will select the node one lower in numerical order.
- **Next Node:** Similar to the Previous Node key, this selects the node adjacent to the current node, in this case the next higher numerical position.
- **Prev Frame:** To step the viewer one frame in reverse along the Timeline.
- **Next Frame:** A single frame step forward for each key press.
- **Prev Clip:** Selects the first frame of the previous clip.
- **Next Clip:** Selects the first frame of the next clip.

The bottom group includes the timeline transport buttons for reverse play, stop and play.

- **Left Arrow:** Select this key to play the clip/timeline in reverse.
- **Stop:** You guessed it. This stops the playback.
- **Right Arrow:** The forward key will play the clip/timeline forward.

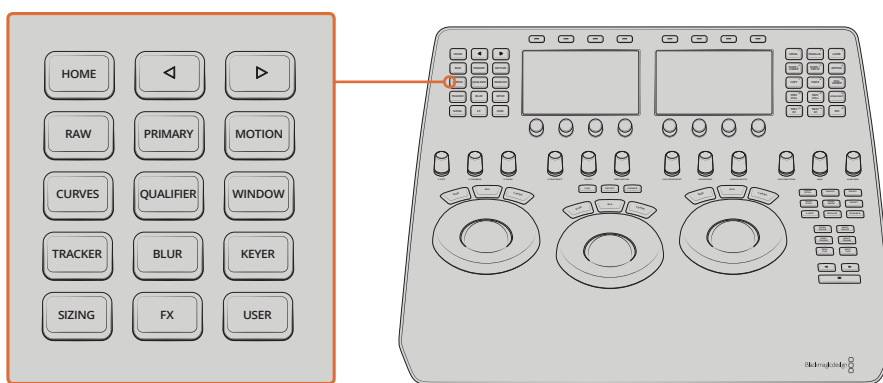
DaVinci Resolve Mini Control Panel

The Mini control panel has an identical feature set and controls as the Micro panel for the lower trackball deck. In addition the panel has an upper sloped desk with dual high resolution LCD displays with four soft knobs and keys that are menu driven. There are also two banks of control buttons, on the left hand side for palette selection and on the right hand side for commonly used operations.

Please refer to the Micro Panel details above for the lower deck features.

Palette Selection Buttons

On the left hand side of the top deck you will find 15 palette selection buttons. To quickly select the main palette toolsets in DaVinci Resolve simply select the appropriate button and the menus on the LDC screens will update to the correct display.



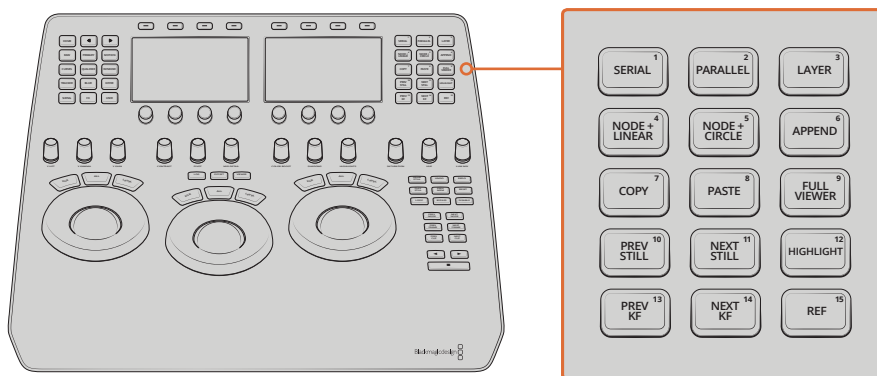
Palette selection buttons

- **Home:** This key is used for the initial setup of the panel and also selects the top most menu. Additional palettes in DaVinci Resolve without their own direct access button will be available here in future releases.
- **Left Arrow:** A number of menus have multiple pages as indicated by the small dots in the centre of the LCD displays. The left arrow will move the menu display left.
- **Right Arrow:** The right arrow moves the menu display right.
- **Raw:** This palette contains groups of parameters that correspond to every camera raw media format that's supported by DaVinci Resolve.
- **Primary:** The first grade for every clip will be likely be a primary. This is where you balance the clip and correct for offsets in the black and white balance. Selecting Primary switches DaVinci Resolve from other grading modes and automatically selects the Primary menus for the LCD displays.
- **Vectors:** When you select and isolate a particular color, and change that color, you are making a secondary correction. The Vectors key updates the menus to provide all the Secondary controls, including the hue selection and control.
- **Sizing:** The input and output image resizing engines are controlled using the menu selected by Sizing.
- **Windows:** The Windows key opens the menus for Circular, Linear, Polygon, PowerCurve and Gradient windows that can be used as a matte or mask for primary and secondary grades.

- **Motion:** The Motion Effects palette (only available in the Studio version) contains two sets of controls for applying optical-flow-calculated effects to clips in your program. These include enhanced Spatial and Temporal noise reduction, and motion-estimated artificial motion blur.
- **Curves:** The Curves palette 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).
- **Qualifier:** When you select and isolate a particular color, and change that color, you are making a secondary correction. The qualifier key updates the menus to provide all the Secondary controls, including the 3D, HSL, RGB, or Luma key, with which to isolate the correction you need.
- **Window:** Power Windows are another way of making secondary correction, being essentially shapes you can use to isolate regions of the image. Different controls let you use oval, rectangular, polygonal, or custom curved shapes. Because you can isolate regions of the image by drawing, Power Windows produce exceptionally clean results, with edges that can be precisely positioned and feathered to achieve a variety of effects.
- **Tracker:** The Tracker palette has three modes, available from the Palette menu. In Window mode, the tracking controls let you match the motion of a window to that of a moving feature in the frame. In Stabilizer mode, the same underlying technology is used to smooth or stabilize the motion within the entire frame, while in FX mode a point tracker can be used to animate ResolveFX or OFX plugins with positioning controls
- **Blur:** With the Blur palette controls you can apply an exceptionally high-quality Gaussian blur, or another equally high-quality sharpening operation to your image.
- **Keyer:** Each color correction node's key input and key output makes it possible to route key channel data from one node to another so you can apply isolated corrections. These key levels are controlled in the Keyer palette.
- **Sizing:** DaVinci Resolve has a powerful tool set for making geometric transforms, using advanced algorithms for optical-quality sizing operations and they are found in this palette.
- **Fx:** Control of the Resolve FX plugins from this palette will be available here in future releases.
- **User:** User configured menus will be available here in future releases.

Quick Selection Buttons

On the right hand side of the top deck you will find 15 quick selection buttons. These are for very commonly used selections that a colorist might use many time for each clip.



Quick selection buttons

- **Serial:** The most common node to use on the node graph is a Serial node. A Serial node is a full-featured color correction processor offering primaries, secondaries, windows, tracking, image stabilization, sharpening and blur, matte blur, etc. Serial nodes are added one after the other in a cascade mode, similar to adding one layer of correction on top of the last. All grades in a preceding node(s) will impact the source image and therefore the grades in following nodes.
- **Parallel:** Unlike adding a Serial node, adding a Parallel node first actually adds two nodes. One behaves like a Serial node with full color correction capabilities. The second is a Parallel Mixer node. This mixer accepts the image from the original Serial node and from the new Serial node and the output is a mix of these two. If the current node is one of the Serial nodes immediately preceding the Parallel Mixer node and you select Add Parallel again, another input to the mixer will be created as will another preceding Serial node. In each case, the input to these Serial nodes will be common, effectively making them in parallel to each other. The key advantage is that the source image is available to many nodes, whereas in a straight Serial node graph, each time you restrict a color in a node the following nodes have little ability or limited range to use that color.
- **Layer:** The Layer node is similar to the Parallel node in that it accepts the image inputs from more than one node. The key difference to a Parallel node is that the mixing of the inputs in a Layer node is prioritized towards the latest additions to the input list. For example, select Add Layer and DaVinci Resolve will add a node in parallel to the current node and link the output of the current and the newly made Parallel node to the two inputs of the Layer Mixer node. The previous current node will have the lowest priority in the mix, and the newly made Parallel node the highest priority. Add one more Layer node, a third input node will be created with a higher mix priority than the first two nodes.
- **Node + Linear:** Adds a Serial node after the current node on the node graph and simultaneously add a Linear Power Window, thus reducing the number of keystrokes.
- **Node + Circle:** Adds a node after the current node on the node graph and simultaneously adds a Circular Power Window.
- **Append:** Often when navigating around the Node editor and making correction trims, the colorist decides he/she needs an additional node for more correction. Using the Append Node key will always add a Serial node to the very end of the node graph, regardless of which node in the graph is the current node.
- **Copy:** Used to copy a selected nodes grade to another node.
- **Paste:** Use this key to complete the copy/paste of node grade.
- **Full Viewer:** The Full Viewer display shows an enlarged viewer and this includes transport controls at the bottom, timecodes and the selections for reference still modes, split screens, highlight modes.
- **Prev Still:** If you have a still selected the Previous Still key will select the one preceding.
- **Next Still:** The next still is selected if this key is used.
- **Highlight:** When in the Qualifier menus making secondary qualifiers, it's common to select the Highlight key to show a high contrast separation of the qualified color and all other parts of the image. Toggle this key to turn off.
- **Prev KF:** This key steps backward one keyframe on the Clip/Track Timeline display.
- **Next KF:** For keyframe steps forward on the Clip/Track Timeline display.
- **Ref:** This toggle key will change the reference wipe mode between Gallery, Timeline and Offline sources.

DaVinci Resolve Advanced Control Panel

There are three panels in the Advanced Control Panel set. The center Trackball panel is where the majority of controls and feedback for the colorist are found and it includes a slide-out keyboard.

On either side of the Trackball panel are two interchangeable panels, the position of which is determined by operator preference. The T-bar panel, shown above on the left, has a T-bar Mix/Wipe control and a number of menu and function keys. The Transport panel, shown above on the right, has the Timeline Transport controls and a Jog/Shuttle control as well as a numerical keypad and associated function keys.

All panels have soft keys and variable control knobs within the LCD panel, which provide an accurate visual reference to the control without the risk of parallax errors.

A key feature of the panel design is real-time feedback, provided to the colorist via the full color LCD panels where you can see, at a glance, the relative settings of the controls and a highlight of the last control touched. For example, if a control is out of its default reset, the panels show this with a selectable color highlight.

Menus, Soft Keys and Soft Knob Controls

The soft menu structure is designed to offer simultaneous control over multiple functions and a fast, logical and efficient way to move between the menus. These soft menus, the soft keys, and the operation of these in conjunction with the variable knobs are covered in the preceding chapters of this manual as their state changes depending on the operation being performed.

You will find the LCD on each of the panels has a two-line title description of the menu's main function and there are two lines of text above each pot or switch describing the control. The T-bar and Transport panels also have a "more" key to the bottom right of the LCD which will select a second layer of menus.

The T-bar and Transport panels have quite independent controls compared to the Trackball panel. For example, the T-bar panel's default menu is for Windows adjustment while the default menu for the Transport panel is Sizing. This allows users to control windows or sizing at any time, regardless of the Trackball panel mode and eliminates the need to change the work surface to adjust window position or input sizing.

While the menus change with the UI, the hard keys, trackballs, T-bar and shuttle control remain relatively constant, so the majority of this chapter describes groups and individual key functions. At the end of this chapter are details on copying forward, scrolling and rippling changes using the Advanced Control Panel.

Shift Key Convention

Before describing the hard key operation, it is important to understand two keys on the left and right panels. These shift keys, Shift Up and Shift Down, provide access to potentially two more functions on each of the next key selected.

For example, on the T-bar panel, next to the Shift Up key is the Base Mem key. The term 'Base Mem' is a legacy DaVinci colorist description to revert to the default memory, so there is no grade or sizing on that node. (There is an exception discussed later in this chapter.)

If you select Shift Up and then 'Base Mem', the "All" operation is to "Base Mem All" or reset the current color correction of every node in the node graph for the current clip, leaving the nodes in place. To "Reset" the selected node graph or "Reset Grades and Nodes," first select Shift Down, then Base Mem.

To permit a fast and single-handed operation, this function does not require you to hold the Shift Up or Shift Down key while selecting the second key; just select them sequentially, first the Shift key, then the function.

Trackball Panel

The center panel has the traditional four trackballs, each with a surrounding control ring and no end stop in either direction. Three variable knob controls are on each side of the panel, three keys above the trackballs, three below the leftmost and rightmost trackballs. On the LCD panel, three LCD displays, each with eight knob controls and four keys. The LCD screens are menu driven and thus the knobs, soft keys and the display itself depends on the application's current operation. The center panel also offers a slide-out keyboard for naming files, stills and nodes, as well as for a number of other operations.



The Trackball panel includes a slide-out keyboard

The three trackballs, from left to right, are in the traditional DaVinci format of Lift, Gamma, and Gain when Resolve is set for Primary grading; when in Log grading they are Lowlights, Mid-tones, and Highlights.

By rotating the trackball the colorist can alter the balance between the red, green and blue levels of the image. Using the vectorscope as a rough guide, moving the trackball towards the three thirty clock position adds more blue while reducing the red and green.

The control ring surrounding these trackballs provides a master amplitude control of the associated trackball.

Above the three leftmost trackballs you will see three buttons for resetting the grade:

- **RGB:** This key only resets the RGB balance to default detent.
- **All:** Select All to reset both RGB and level.
- **Level:** Select the Level key to reset the level while maintaining RGB differential.

The rightmost (fourth) trackball has a number of modes. It operates similar to a mouse for moving the on-screen cursors, Color curve control point position, Power Windows position and can also act as a primary grade Offset control.

Under the leftmost and rightmost trackballs there are three unmarked buttons.

On the left hand side of the panel, the right most of the three unlabelled buttons below the trackball toggles the right hand side (fourth) trackball in and out of offset adjust mode.

The keys under the right-hand side trackball provide left, center, and right mouse buttons.

Above the rightmost trackball, the three keys have two modes.

When used in conjunction with the shift down button, the three buttons above the trackball function as resets, as per the buttons above the other trackballs.

- **Shift Down Adjust Window:** Only resets the RGB balance to default detent.
- **Shift Down Modes:** To reset both RGB and level.
- **Shift Down Cursor:** To reset the level while maintaining RGB differential.

In their normal operation they select:

- **Adjust Window:** Selection turns on the Viewer Shape cursors for the current node and allows the trackball to position the current window.
- **Modes:** This key allows access to a number of menus and acts as an on/off toggle.
- **Display (Shift Up Cursor):** This shift function changes the cursor views on the main monitor. The user can select the cursor display, including: Windows, Off, On the UI but not the main SDI monitor, or displayed on both.
- **Cursor:** The Cursor is used for the color picker when in Curves and Vector/Secondary modes. This key also controls the Window display.

On the left side of the panel are three luminance knobs. From top to bottom they are Luminance Gain, Gamma and Lift.

On the right side there are three more controls, from top to bottom: Saturation, Hue (has the effect of hue rotation), and Luminance Mix.

T-bar Panel

The T-bar panel, typically located on the left for a right-handed colorist, has an LCD display with four variable controls and nine soft keys. The lower section of the panel houses the T-bar and six groups of hard keys. Each group and their keys are described below.

Mode Control Group

The Mode Control group provides navigation to a number of the GUI pages and a few commonly used functions.

- **Config:** This key opens the Project Setting window where you will set up DaVinci Resolve for each project. Select again to close the window without saving.
- **Browse:** Select Browse to call the Media page where you can review files on attached storage and review the Media Pool.
- **VSR (Shift Down Browse):** This selection is reserved for future use.
- **Conform:** Selects the Lightbox display on the Color page.
- **Shift Up Conform:** Toggles the display of the Lightbox on the SDI output.
- **Deck (Shift Up Revival):** The Deck key selects the Capture mode for importing a batch list from an EDL.
- **Revival:** This key opens the Revival Dirt and Dust-busting window.
- **Scene (Shift Down Revival):** To select the Scene Cut Detection window, select the Shift Down key followed by the Revival key.
- **Current ~ Viewer:** This key toggles between the color page and the Enhanced Viewer page.
- **Object Track Mode:** This key selects the Tracking menus.

- **Clip/Track/Unmix:** This is a toggle key between the Clip/Timeline modes of the node graph and the Unmix mode.
- **User (Shift Up Cache Mode):** This will mark a clip for render cache of the clip output.
- **Cache:** This key is a toggle function to turn the render cache on or off.
- **Editor:** Selects the Edit page where you can edit the Timeline, import AAF, EDL or XMLs and apply speed changes, Composite and Dissolve/Wipe effects, etc.
- **Proxy On/Off:** This key toggles the proxy mode on and off.
- **Auto Color:** This is a popular key. Using this key, DaVinci Resolve will automatically make a basic primary color correction to balance the blacks and whites of your image.
- **Page Up (Shift Up Gallery):** In larger projects you may have a number of gallery albums holding stills. This key will change the Gallery page to the next higher album on the list.
- **Gallery:** Used to select the Gallery UI page where you can manage, import and export your stills.
- **Page Down (Shift Down Gallery):** The inverse of the Shift Up Gallery function, this selects the Gallery album one lower than the current.
- **A/C Mode:** This toggle key will display the clips in the Timeline in the order of the EDL (the record order, often referred to as C Mode), or the ascending order of the source clip timecode, called A Mode.
- **Handles Mode:** This selection exposes the handles of the selected clip to allow tracking and grading outside the I/O selections of the current edit.

Timeline Management Group

When grading clips, colorists often try different looks. This group of keys offers a quick way to navigate through these versions and to split and join clips on the Timeline.

- **Split (Shift Up Undo):** This key will split the clip at the position of the cursor on the Timeline.
- **Undo:** Undo is one of the favorite keys of colorists. Try any grade, and if you don't like it, simply Undo. There are multiple steps of undo available within the page.
- **Join (Shift Up Redo):** The reverse of split. Place the Timeline cursor at the junction of two clips that have sequential timecode and select Join to make just one clip.
- **Redo:** Sometimes you hit Undo once too many times. Redo will put back into effect the last item you undid. As with Undo, there are multiple levels of Redo.
- **Restore Point:** This selection is reserved for future use.
- **Save:** Remember this key; it's your friend. Save often, and also consider the autosave options found in Project Settings.
- **Add Version:** When you make a grade on any clip, DaVinci Resolve stores the parameters for that clip. If you want to try different grades, don't lose your good grades, just use the Add Version feature. This key will make a second, third, or more version of the grade for that clip.
- **Default Version:** If you have multiple versions of grades for a clip, this key is used to select the Default version, regardless of which version is currently displayed.
- **Previous Version:** This will select the grade one version lower in order. For example, if you are on version three, select Previous Version to get to version two. Once the Default version is reached, selecting Previous Version again will select the highest version.
- **Next Version:** Use this key to select the next higher version of the grade. Once the top version is reached, selecting Next Version again will select the Default Keyframing Group.

Keyframing Group

On the bottom right of the Color page is the Keyframe timeline for the current clip. The Keyframing group of keys is used in association with the Keyframe timeline and controls the selection of marks for the start and end of dynamic transitions of the grade.

- **Start Dynamic:** Use Start Dynamic to select the first keyframe in a transition. The transition may be a grade change, resizing, the addition of a matte, or any number of 100 variables, all of which are associated with the node graph and the Clip or Track timeline.
- **Ripple Value:** If you have a grade or effect, or just an adjustment, and you would like to ripple this effect over another effect or over a large number of other clips, use Ripple Value.
- **Delete:** This key deletes the selected keyframe.
- **Lift Mark:** If you place a keyframe in the wrong spot, put your cursor on the keyframe and use Lift Mark to remove it.
- **Trim:** This key is used with the numerical keypad to trim a keyframe's position.
- **Mark:** Like the Start Dynamic key, Mark is a major key. It places a Static keyframe on the Keyframe timeline.
- **Scene (Shift Down Mark):** This selection opens the Scene Cut Detector.

Memory Access Group

DaVinci Resolve has a number of hot keys, called Mems, where you can store a grade for quick reference. In fact, every time you make a grade for a clip, a memory of the grade is kept. While you could save a still for each clip, having thousands of stills to scroll through would take time, so there are 26 quick and easy memory locations to store a grade, called A-Z Mems.

Every clip has its own metadata for the grade that is stored by DaVinci Resolve as a memory. There are a number of keys available to select or revert to these stored metadata memories, or to clear the metadata to revert to a base grade or no grade state.

- **All (Shift Up Base Mem):** This is used to reset the current color correction of every node in the node graph for the current clip, leaving the nodes in place.
- **Base Mem:** Used to reset the grade of the current node.
- **Reset (Shift Down Base Mem):** Used to reset the grades of the current clip.

Please note that there is an exception to the rule to clear the Base Mem. It is possible, in fact very helpful sometimes, to have a clip preset that is not cleared when you select Base Mem. For example, when a film is over scanned and the frame edges are shown as well as the image. Instead of making an input resize adjustment for every clip to remove the framing, a preset resize can be made and stored, with a label, and this preset is not deleted when using Base Mem.

- **Preview Mem:** To preview one of the Memory grades on any clip, select the clip on the Timeline, select Preview Mem and then the Memory letter. This key is a toggle so if you do not like the grade on the memory for that clip, select Preview Mem again and the grade will revert to the original.
- **Original Mem:** Each clip by default has a memory of its grade and sizing, etc. If you are grading a clip and move from it to another clip, the grade for the first clip is saved automatically in a memory for that clip. If you come back to that clip and make a change to the grade, then decide you don't like the change, select Original Mem to return to the grade status you found originally.
- **Scroll:** When you select Scroll you can navigate up and down the Timeline to find and select a clip and its grade to recall to the current clip.

- **View (Shift Up Current):** The Color page has two display modes. The normal mode includes the viewer, stills and node graph on the top of the page. Selecting View toggles to the alternate page with a wide Node Graph view and stills but no viewer. Select View again to toggle back to the normal mode.
- **Crnt:** Select Current before selecting a Mem key (A, B, C to Z) and the current grade on the active timeline clip will be stored in the memory selected.
- **Shift Up:** The Shift Up key permits the operator to select the upper secondary function of keys on the control panel. This operation does not require you to hold the Shift Up key, just select it prior to the second key.
- **Shift Down:** The Shift Down key permits the operator to select the lower secondary function of keys on the control panel. This operation does not require you to hold the Shift Down key, just select it prior to the second key.
- **Macro:** This key displays the Split Screen controls on the T-bar panel LCD display.
- **Memory Keys:** The A, B, C to Z keys, selected directly or with the appropriate Shift Up or Shift Down preselection will recall the grade stored in this memory and will apply it automatically to the clip that is active on the Timeline.

Menu Navigation and Node Control Group

DaVinci Resolve is a nodal-based color enhancement system. Grades are not stored in layers, but in nodes. In operation they can appear to be in layers if you select the Serial nodes, but greater grading flexibility is available by using the Parallel and Layer nodes.

This group also gives you quick access to the main menus to control primaries, secondaries (known here as Vectors), image sizing and Windows. It also offers a quick way to add and manage nodes.



All three panels have LCD panels which display the menus

- **Primary:** The first grade for every clip will be likely be a primary. This is where you balance the clip and correct for offsets in the black and white balance. Selecting Primary switches DaVinci Resolve from other grading modes and automatically selects the Primary and Custom Curve menus for the LCD displays.
- **Vectors:** When you select and isolate a particular color, and change that color, you are making a secondary correction. The Vectors key updates the menus to provide all the Secondary controls, including the hue selection and control.
- **Sizing:** The input and output image resizing engines are controlled using the menus selected by Sizing.
- **Windows:** The Windows key opens the menus for Circular, Linear, Polygon, PowerCurve and Gradient windows that can be used as a matte or mask for primary and secondary grades.
- **Outside Node:** Selecting the Outside Node key will add another node after the current node and automatically link both image and key paths. If the original node has a grade within the matte shape the new Outside node would control the grade in the inverse (i.e., outside the matte).

- **Add Matte:** By selecting this key the Matte node will be displayed on the node graph for the selected node and the default matte selected.
- **Disable Current:** This key is a toggle key and it disables or enables the grade on the current node.
- **Delete Current:** To delete the current node. Remember to use Undo if you had the wrong node selected.
- **Bypass (Shift Up Disable Current):** This toggle selects the bypass mode.
- **Enable/Disable All (Shift Down Disable Current):** This toggle enables or disables all nodes.
- **Node + CPW:** Adding a Serial node is a one button selection, Add Serial, however to also add a window requires a number of extra key selections. The Node + CPW key adds a node after the current node on the node graph and simultaneously adds a Circular Power Window, thus reducing the number of keystrokes.
- **Node + LPW:** As above, adds a Serial node after the current node with a Linear Power Window.
- **Node + PPW:** A Polygon Power Window is also selected when adding a Serial node.
- **Node + PCW:** This key, like the others above, adds a Serial node after the current node, but also sets up the PowerCurve Window to permit the marking of freeform shape points and Bezier spline curves on the viewer to construct a freeform window.
- **Add Serial:** The most common node to use on the node graph is a Serial node. A Serial node is a full-featured color correction processor offering primaries, secondaries, windows, tracking, image stabilization, sharpening and blur, matte blur, etc. Serial nodes are added one after the other in a cascade mode, similar to adding one layer of correction on top of the last. All grades in a preceding node(s) will impact the source image and therefore the grades in following nodes.
- **Shift Down Add Serial (Add Serial Before):** This adds a serial node before the current node.
- **Add Parallel:** Unlike adding a Serial node, adding a Parallel node first actually adds two nodes. One behaves like a Serial node with full color correction capabilities. The second is a Parallel Mixer node. This mixer accepts the image from the original Serial node and from the new Serial node and the output is a mix of these two. If the current node is one of the Serial nodes immediately preceding the Parallel Mixer node and you select Add Parallel again, another input to the mixer will be created as will another preceding Serial node. In each case, the input to these Serial nodes will be common, effectively making them in parallel to each other. The key advantage is that the source image is available to many nodes, whereas in a straight Serial node graph, each time you restrict a color in a node the following nodes have little ability or limited range to use that color.
- **Add Layer:** The Layer node is similar to the Parallel node in that it accepts the image inputs from more than one node. The key difference to a Parallel node is that the mixing of the inputs in a Layer node is prioritized towards the latest additions to the input list. For example, select Add Layer and DaVinci Resolve will add a node in parallel to the current node and link the output of the current and the newly made Parallel node to the two inputs of the Layer Mixer node. The previous current node will have the lowest priority in the mix, and the newly made Parallel node the highest priority. Add one more Layer node, a third input node will be created with a higher mix priority than the first two nodes.
- **Append Node:** Often when navigating around the Node editor and making correction trims, the colorist decides he/she needs an additional node for more correction. Using the Append Node key will always add a Serial node to the very end of the node graph, regardless of which node in the graph is the current node.

Reference Configuration Group

This area of the T-bar panel includes six keys and the fader T-bar. It is primarily used for control of stills display with and without reference wipes. The fader bar controls the mix or wipe position when the appropriate mode is active.

- **Key:** This key adds and Alpha output on the node graph.
- **Circle:** This key is not yet implemented.
- **Wipe:** The Wipe key selects a wipe for reference comparison with the current image.
- **H/V:** This key toggles the wipe between horizontal and vertical.
- **Box:** This key is not yet implemented.
- **Mix:** Select this key to mix in preference to wipe.
- **Still:** The Still key permits comparison of the current clip with the selected still.
- **Memory:** Use this key to compare the current clip with a memory.
- **Highlight:** When in the Qualifier (Vector) menus making secondary qualifiers, it's common to select the Highlight key to show a high contrast separation of the qualified color and all other parts of the image. Toggle this key to turn off. Highlight is used so often it's also on the T-bar panel and, when in Vectors mode, on the Trackball panel.
- **Mode (ShiftDownHighlight):** Used to toggle the Highlight mode from gray to high contrast.
- **Timeline:** Select the Timeline key when you want to compare the current to the Timeline image.
- **Offline:** Select the Offline key when you want to compare the current to the Offline image.
- **Reference On/Off:** This toggle key will turn the reference view on or off. When on, you can see the current clip in comparison to a reference.

Transport Panel

The Transport panel, typically located on the right for a right-handed colorist, has an LCD display with four variable controls and nine soft keys. The lower section of the panel houses the Jog/Shuttle knob and six groups of hard keys. Each group and their keys are described below.

Reference Configuration Group

Located at the top left-hand side of the Transport panel are the Deck and Still selection keys. These are all related to controlling the tape deck and to grabbing and selecting stills. There is also an Undo and Redo key, a Shift Up and a Save key.

- **Split (Shift Up In):** DaVinci Resolve associates grading information based on source timecode so it's important to have each source clip identified as a different clip from the others. The Split key will split one clip into two on the frame selected. Each can therefore have its own grade. This is a quick, accurate and easy way to split a long image sequence into multiple clips.
- **In:** When marking an In point you can use the UI, a keyboard shortcut, or this key.
- **Join (Shift Up Out):** Join is the reverse of the Split key. If you have clips with contiguous timecode, place the playhead on the first frame of a clip and select Join to merge the preceding clip.
- **Out:** The Out key is used to select an Out point on the Timeline or deck.
- **Duration:** To define a duration, first select the time using the numerical keypad (the colon separates the hours, minutes, seconds and frames), and then select Duration.
- **Gang:** This key is not implemented.

- **Undo:** The colorist's friend. DaVinci Resolve has virtually unlimited Undo steps available within the page you are working in.
- **Redo:** If you want to redo a step, use Redo. Ideal when used with Undo to compare two grades quickly.
- **Source (L):** This key is not implemented.
- **Place (Shift Up A (R)):** This key is not implemented.
- **A (R)):** This key is not implemented.
- **F:** This key is not implemented.
- **Place (Shift Up B):** This key is not implemented.
- **B:** This key is not implemented.
- **G:** This key is not implemented.
- **Place (Shift Up C):** This key is not implemented.
- **C:** This key is not implemented..
- **H:** This key is not implemented.
- **D:** This key is not implemented.
- **I:** This key is not implemented.
- **E:** This key is not implemented.
- **J:** This key is not implemented.
- **Shift Up:** Use the Shift Up key as a pre-selector for the keys with an upper option. Select the keys sequentially and do not hold the Shift Up key while selecting the second key.
- **Preroll:** The Preroll key is used in conjunction with the numerical keypad to select a preroll time for tape operations.
- **Cue:** Selecting Cue will force the transport to the preroll position.
- **Previous Still:** If you have a still selected the Previous Still key will select the one preceding.
- **Next Still:** The next still is selected if this key is used.
- **Play Still:** Using Play Still, DaVinci Resolve will automatically display a wipe on the Viewer between the current scene and the current still. You can use the fader T-bar to move the wipe position and in the Reference Wipe menus change the reference image as required by moving or resizing. Selecting Play Still a second time will toggle this mode off.
- **Save:** The most important key on the panel. Besides using the auto-save feature, you can and should consistently save your project with this key. It only takes a few seconds and can save you hours.
- **Grab Still:** At any time when you are grading, selecting the Grab Still key will automatically grab a full resolution frame from the Timeline and attach the node graph metadata for later display and use.

Transport Control Keys Group

Most colorists will use the Transport Control keys every minute of every grade, so they are located for quick and easy access. While not technically within this key group, the Jog/Shuttle knob is directly above these keys.

- **Jog:** Rotate the Jog control to step forward or backward a few frames at a time.
- **Shuttle:** On the outside of the Jog rotary control is the Shuttle knob. This knob has a detent at the null position and is turned clockwise or counter clockwise to shuttle the Transport/ Timeline forward or reverse at the rate selected by the rotation of the Shuttle knob.

- **Loop:** You may wish to repeat a review of a grade of a clip, or a selection of clips on the Timeline; this Loop toggle key selects or deselects the Loop operation.
- **Render:** Once you have finished your grade, the Render key selects the Deliver page used for configuring the render parameters for your project and starting the render.
- **Rec:** (Shift Down Render) This key is not yet implemented.
- **Previous Node:** Within the Node Editor on the Color page you are likely to have a number of nodes. These are numbered based on the order that you added them. DaVinci Resolve node graphs are completely user configurable, so you can add nodes anywhere and in any order you like. Thus, the Previous Node key will select the node one lower in numerical order.
- **Next Node:** Similar to the Previous Node key, this selects the node adjacent to the current node, in this case the next higher numerical position.
- **Highlight:** When in the Qualifier palette making secondary qualifiers, it's common to select the Highlight key to show a high contrast separation of the qualified color and all other parts of the image. Toggle this key to turn on or off. Highlight is used so often it's also on the T-bar panel.
- **Mode:** (Shift Down Highlight) Used to toggle the Highlight mode from gray to high contrast.
- **Shift Down:** This is the preselection key for functions indicated on the lower portion of the second keys legend.
- **First Frame:** Selects the first frame of the current clip.
- **Last Frame:** Selects the last frame of the current clip.
- **Step Reverse:** To step the viewer one frame in reverse along the Timeline.
- **Step Reverse Keyframe:** (Shift Down Step Reverse) This key steps backward one keyframe on the Clip/Track Timeline display.
- **Step Forward:** A single frame step forward for each key press.
- **Step Forward Keyframe:** (Shift Down Step Forward) For keyframe steps forward on the Clip/Track Timeline display.
- **Previous Scene:** Selects the first frame of the previous scene.
- **Next Scene:** Selects the first frame of the next scene.
- **Rewind:** Places the Transport, or Timeline, in rewind.
- **Reverse:** Select this key to play the Clip/Timeline in reverse.
- **Stop:** You guessed it. This stops the current transport operation.
- **Forward:** The Forward key will play the Clip/Timeline forward.
- **Fast Forward:** The inverse of the Rewind key; fast forward shuttles along the Timeline/Transport.

Memory Access Keys Group

For fast and direct access to A to Z Memories, or Mems, use this section of the Transport panel. This is an extremely powerful feature. With any clip selected on the Timeline, with a single key press, for example "A," the grading parameters stored in memory A, including the node structure, sizing, etc., will be automatically applied to the current clip.

- **O (Shift Up A):** Selects memory O
- **A:** Selects memory A
- **I (Shift Down A):** Selects Memory I
- **R (Shift Up B):** Selects memory R
- **B:** Selects memory B

- **J (Shift Down B):** Selects Memory J And so forth.
- **All (Shift Up Base Mem):** This function will return all grades for all nodes on the clip to the default grade/settings and will clear dynamic keyframes.

NOTE: There is an exception to the rule. If a Preset Size has been set for the clip, the Base Mem sizing will default to this preset size.

- **Base Mem:** The Base Mem key clears the current node of all its grades and keyframes. Again, with the preset exception noted above.
- **Reset (Shift Down Base Mem Crnt):** This key deletes all nodes in the clip except for the first node and resets the grades to default and clears the keyframes.
- **Preview Mem:** To preview one of the memory grades on any clip, select the clip on the Timeline, select Preview Memory and then the memory. This key is a toggle, so if you do not like the grade on the memory for that clip, select Preview Mem again and the clip's grade will revert to the original.
- **Original Mem:** Each clip, by default, has a memory of its grade, sizing, etc. which is saved in reference to the source timecode. If you are grading a clip and move from it to another clip, the grade is saved automatically in a memory for that clip. If you come back to the clip and make a change to the grade, then decide you don't like the change, select Original Mem to return to the previous grade status you found when selecting the clip.
- **Scroll:** The Scroll key selects a soft menu on the Trackball panel so clips or frames can be scrolled via the rotary control in the soft menu.

Numerical Entry Key Group

On the center right-hand side of the Transport panel is the Numerical Entry key group. Here you will find numbers 0 to 9 and associated keys for entering timecode and clip numbers. You will notice the numbers you type are displayed in a scratchpad area at the bottom of the Keyframe palette.

- **Current:** To store a new grade in any memory, first select the Current key and then the memory of your choice.
- **All Color PTZR:** This key is a toggle that selects the parameters that will be copied when updating a grade. Generally, all aspects of the grade are copied, including the pan, tilt, zoom and rotation sizing transforms, but on occasion you may wish to copy only the grade and not the sizing parameters. In this case, use the All/Color/PTZR to select the mode you need. You can see the Keyframe Timeline toggle between the master or the node selected and the input PTZR parameters.
- **Select Node:** Use this key in conjunction with the numerical keys to select any node on the current node graph. First, select the node number, and then Select Node. The current node will change to the selected node.
- **Backspace:** The Backspace key moves you one item left in the numerical scratch pad display. This permits correction of your numerical entries.
- **0 to 9:** You guessed it. These are the numbers!
- **>, (Comma):** The comma is used just before the frame count if you wish to indicate a drop frame timecode.

- **:** (Colon): When typing in timecode, the convention is to type the hours followed by a colon, then the minutes, a colon, the seconds, a colon, and finally the frames. DaVinci Resolve does not need to have leading numbers entered where they offer no value and the default value is 0, so to type one hour, three minutes, zero seconds and sixteen frames, you do not need to type 01:03:00:16. Simply type 1:3::16 and then press Enter. This speeds timecode entry.
- **Clear**: Will clear the scratchpad number.
- **- (Minus)**: Select the Minus key prior to the number to reduce the number.
- **+ (Plus)**: Select the Plus key prior to a number to increase the number.
- **Take/Enter**: Select the Take/Enter key to accept or enter any input.

Keyframing Group

The Keyframe keys are on the bottom right-hand side of the Transport panel. The functions are replicated on the T-bar panel. On the bottom right of the Color page is the Keyframe timeline for the current clip in the Timeline. The Keyframe group of keys is used in association with the Keyframe timeline and controls the selection of keyframes for the start and end of dynamic transitions of the grade.

Start Dynamic: This key is used to select the first point in a transition, a Dynamic keyframe. The transition may be a grade change, a sizing or reposition, or the addition of a matte or any number of 100 variables, all of which are associated with the Node Editor and the Clip or Track Keyframe timeline.

Ripple Value: If you have a grade or effect, or just an adjustment and you would like to ripple this effect over another effect or a large number of other clips, use Ripple Value.

Delete: This key deletes the keyframe.

Lift Mark: If you place a keyframe in the wrong spot, put your cursor on the keyframe and use Lift Mark to remove it.

Trim: This key is used with the numerical keypad to trim a keyframe position.

Mark: Like the Start Dynamic key, Mark is a major key. It places a Static keyframe on the Clip Timeline.

Scene (Shift Down Mark): This selection is reserved for future use.

Copying Grades Using the Advanced Control Panel

There are a number of methods of copying grades that are exclusive to the Advanced Control Panel.

Copy Forward Keys

The simplest way of copying grades using the control panel is to use the comma and colon keys on the keypad of the Transport panel to copy grades from one or two clips behind the currently selected clip. This is a great way to copy grades in scenes with a shot-reverse-shot structure, where you're cutting between two angles of coverage, each of which uses the same grade.

- To copy a grade from one clip back: Press comma (,)
- To copy a grade from two clips back: Press colon (:)

Scroll

Scroll mode lets you quickly preview the effects of many different grades applied to clips in the Timeline on the currently selected clip, with the option to either accept or reject the previewed grade to which you've "scrolled." This can be useful for checking to see if any of the previous grades you've created in a scene will work for the currently selected clip.

To use Scroll mode:

- 1 Move the playhead to the clip to which you potentially want to copy a new grade. You can use the PREV SCENE and NEXT SCENE buttons to move quickly.
- 2 Do one of the following to enter Scroll mode:
 - Press SCROLL on the Transport panel.
 - Press MODES, above the fourth trackball on the Center panel, then press the SCROLL MODE soft key.
- 3 Now, do one of the following to preview different grades from other clips:
 - Press the PREVIOUS SCENE and NEXT SCENE soft keys to move from clip to clip in the Timeline, previewing each grade to the current clip.
 - Turn the SCROLL SCENES knob to scroll smoothly along multiple clips in the Timeline.
 - Turn the SCROLL FRAMES knob to scroll along different frames of any clip, previewing the effects of keyframed grades at different points in time.
 - Press the TOGGLE DECK KEYS soft key to use the transport controls on the Transport panel to play through the Timeline, previewing grades as you go.
 - Press a number on the keypad of the Transport panel, and then the SCENE NUMBER soft key, to jump to a clip and preview its grade.
 - As you scroll from clip to clip, a red outline indicates the clip with the grade being previewed, and an orange outline indicates the current clip to which you're previewing each scrolled grade.
- 4 When you're finished, do one of the following to either accept or reject a scrolled grade:
 - Press EXIT AS WAS if none of the grades you scrolled through was suitable. This exits Scroll mode and leaves the clip as it was previously.
 - Press EXIT AS IS if you've found a grade that works for the current clip. This exits Scroll mode and copies the scrolled grade.

When you press the TOGGLE DECK KEYS soft key in Scroll mode, each of the Transport Control buttons on the Transport panel functions as a means of previewing the grades of other clips in the Timeline.

- **STEP FWD:** Move to the next clip and preview its grade.
- **STEP REV:** Move to the previous clip and preview its grade.
- **FWD:** Plays (scrolls) forward at 1 scene per second, previewing each new grade as it appears.
- **REV:** Play (scrolls) the clips in reverse at 1 scene per second, previewing each new grade as it appears.
- **FFWD:** Shuttles (scrolls) forward through the Timeline at 4 scenes per second, previewing each new grade as it appears.
- **RWD:** Shuttles (scrolls) reverse through the Timeline at 4 scenes per second, previewing each new grade as it appears.

Rippling Changes Using the Advanced Control Panel

DaVinci Resolve has a mechanism for rippling specific changes made to one clip to a range of other clips in the Timeline. This is only possible using the controls of the DaVinci Resolve Advanced Control Panel.

The general idea of the ripple function is that you select a clip, make a change, and then ripple that change to a range of other clips. This rippled change can be applied to the same node in each clip, or the change can be added as an appended node within each rippled clip.

The Ripple mode that's used when you press the RIPPLE VALUE button can be changed in the Editing and Ripple panel of the Project Settings. There are four options.

- **Exact values changed:** Changes made to the current clip are rippled to the specified clips using the exact parameters that were changed. For example, if Lift in the current clip is changed to 0.75 of its range, each clip you ripple will have a Master Gain setting of 0.75. Only parameters you adjust are rippled.
- **Percent value changed:** Changes made to the current clip are rippled to the specified clips by the percentage of change you made to the altered parameters. For example, if the current clip has a Lift level of 1.00 and is changed to 0.90 units, then the Lift setting of each clip you ripple will have a relative reduction of 10% relative to its previous value.
- **Unit value changed:** Changes made to the current clip are rippled to the specified clips by the same delta of change, using whichever units make sense for the effected parameter. For example, if the current clip had a Lift of 0.80 and you increased it to 0.90, each rippled scene's master gain level increases by 0.10.
- **All values are copied:** The current clip's grade is rippled to the specified clips in its entirety. No comparison is made with the original clip's parameters, and all memory parameters are rippled.

The following procedure describes in detail how you can use the control panel to ripple a change to a range of other clips. While this procedure may appear complicated, it's just that there are several options. Once you learn the sequence of commands, this process is actually quite fast.

To ripple a change using the Ripple Mode soft key commands:

- 1 (Optional) Press MODES, then press RIPPLE MODES. Four commands appear mapped to the middle soft keys of the Center panel, which can be used later to execute different types of ripple operations.
- 2 Move the playhead to the clip you want to adjust.
- 3 Adjust the current clip that you want to ripple to other clips in the Timeline.
- 4 Define the range of clips you want to ripple to using the number pad on the Transport panel. The following combinations will work:

An absolute range of clips is defined by entering two clip numbers separated by a comma. For example, if you want to ripple the current change to clips 10 through 15, you'd press "10, 15"

To specify every clip from the beginning of the Timeline, use the Minus (-) key. For example, to specify a range of clips from the beginning to clip 20, you'd press "-", 20"

To specify every clip to the end of the timeline, use the Plus (+) key. For example, to specify a range of clips from the clip 50 to the end, you'd press "50, +"

To specify every clip in the whole Timeline, press "-", +"

- 5 (Optional) You can control whether the rippled change is applied in an appended node, or an existing node, in every rippled clip:

If you want to apply the rippled change as a new node that's appended to the end of every rippled clip's grade, press SHIFT DOWN.

Otherwise, the rippled change will be applied to the same node in every rippled clip that you made your adjustment to in the current clip. In other words, if you made a change to Node 2, it would be rippled to Node 2 of all the clips you specified. If one of the rippled clips doesn't have the same number of nodes, you may get an error.

- 6 To execute the ripple, do one of the following:

Press RIPPLE VALUE on the Transport panel to ripple a change using the currently selected Ripple Mode in the Project Settings.

Press one of the Center panel soft keys corresponding to the ripple function you want to perform. There are four soft keys:

- **Static Ripple:** Changes made to the current clip are rippled to the specified clips using the exact parameters that were changed. For example, if Lift in the current clip is changed to 0.75 of its range, each clip you ripple will have a Master Gain setting of 0.75. Only parameters you adjust are rippled. Identical to the "Exact values changed" ripple setting.
- **Relative Ripple:** Changes made to the current clip are rippled to the specified clips by the percentage of change you made to the altered parameters. For example, if the current clip has a Lift level of 1.00 and is changed to 0.90 units, then the Lift setting of each clip you ripple will have a relative reduction of 10% relative to its previous value. Identical to the "Percent value changed" ripple setting.
- **Absolute Ripple:** Changes made to the current clip are rippled to the specified clips by the same delta of change, using whichever units make sense for the affected parameter. For example, if the current clip had a Lift of 0.80 and you increased it to 0.90, each rippled scene's master gain level increases by 0.10. Identical to the "Unit value changed" ripple setting.
- **Forced Ripple:** The current clip's grade is rippled to the specified clips in its entirety, overwriting all previous nodes and parameters in the rippled clips.

The adjustment you made in step 4 is applied to the designated range of clips.

Admittedly, that was a long and detailed procedure, but the actual button sequences are straightforward once you put them together. Here are some examples of button sequences that ripple an adjustment you've just made in different ways:

- **"10, 15" then SHIFT DOWN then RIPPLE VALUE:** Copies the change you've made to the current clip, and applies it as a new node that's appended to the end of clips ten through fifteen.
- **MODES then RIPPLE MODES then "34, 45" then FORCED RIPPLE:** Copies the entire grade of the current clip, using it to overwrite the grade of clips 34 through 45.
- **MODES then RIPPLE MODES then "-", "+" then SHIFT DOWN then RELATIVE RIPPLE:** Copies the change you've made to the current clip as a relative percentage, and applies it as a new node appended to the end of every single clip in the entire Timeline.

WARNING: Once you ripple a change in this manner, there is no going back. Since Undo is a per-clip operation, there is no global undo for changes made to the entire Timeline. Proceed with caution.