

# Advanced techniques for Chroma Keying

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Before you understand chroma keying, it's important to know what a **key** is.

*Keying means electronically cutting out portions of a television picture and filling them in with another image.* This is an important concept to understand, as the common misperception is that you are simply overlaying, or superimposing, the words on your picture. The basic purpose of all this is to add titles to a base (background) picture.

Some other terms used regarding keying.

## **Downstream key. DSK**

*Techie Term:* This refers to the manipulation of a signal at the line-out (downstream) stage. With this feature, you can insert (key) a title or other graphics over the signal as it leaves the switcher. This is done to keep the other switcher buses available for other switching and effects functions.  
*In English:* It's the top layer on your video. You do all your cuts, mixes, and switcher effects on a "bottom layer," then put a graphic key over it.

## **Clip.**

*In English:* This is the key level control. Essentially, it controls how much of your title or picture that is cut in (keyed) appears over the background picture. Adjusting the clip can make your title transparent and fuzzy or sharp and clear.

## **Gain.**

*Techie Term:* whether it's audio or video, gain refers to the amplification of a signal.  
*In English:* it controls how soft (transparent) your video looks.

Clip and gain work together to get realistic layering of edges around the foreground (subject).

## **Chroma key**

*Techie Term:* is a special effect that uses color (chroma) for keying. Basically, the chroma key process uses a specific color, usually green or blue, for the background over which the keying occurs. The green/blue becomes transparent during the keying and lets the picture of a second source (anything on the program bus) show through, without interfering with the foreground image.

*In English:* We place a subject in front of a green wall, then electronically swap everything green with some different video.

Why green? Green (and blue) are used because it's the color most opposite to skin colors, providing the least distortion, and most people don't wear obnoxious green clothing. Because we chroma key out green, it's important that your talent not wear anything green – or that clothing will key through as well.

### **Setting up the Switcher**

For most studio productions, the *program bus* and the *preview bus* are used, with cuts and mixes done between the two. When chroma keying, the *program bus* and the *key bus* is used. The following buttons need to be on:

1. KEY - right above the WIPE button by the T-bar
  2. CHROMA KEY – in the "effects keyer" section
  3. CAM 3 on the key bus
  4. YOUR BACKGROUND VIDEO - selected on the program bus
  5. CUT or AUTO TRANS – turns the key bus on, causing the chroma key effect
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1. Right above the MIX and WIPE buttons are two buttons called BKGD and KEY. These buttons select which bus (preview bus or key bus) will be used with your program bus. With BKGD, you transition with the program and preview busses – this is how you've been normally doing a show. With KEY, you transition with the program and key busses – this is how you use Toaster graphics/CG for a show, and how you chroma key.

3. Our switcher can only handle the chroma keying of one camera (requiring Component aka RGB output), so we have it wired up to work with Camera 1. Put camera 1 on the key bus; when the camera is keyed over the program bus, the green on camera 1 disappears, leaving the program bus visible.
4. Whatever is chosen on the program bus will appear behind the subject. So it can be another camera, a TBC if you have video tape, even the Toaster – for graphics or switching multiple sources and using the Toaster transitions.
5. You can cut, mix, and wipe your camera 1 source on and off.

### Techniques for lighting

The most important aspect of lighting a chroma key set is having *even background illumination*. Your background (the green wall) must be bright and evenly lit. If it's too dark, or it has hot spots (bright parts of light), the keying will look discolored or will break up.

Place and light your subject about ten feet in front of the green wall. This prevents green reflections from the wall hitting the back of your talent, making it harder to get clean edges. It also stops light on your talent from inadvertently hitting the wall, causing hot spots.

*My talent glows green (and they're not Martians)*. There are a few things you can do to get a clean key – a subject properly cut into the background.

1. **Adjust the clip level.** This will reduce that frayed green edge around your subject.
2. **Put an orange gel over the backlight.** This is the opposite color of green and will help offset the green reflections from the wall.
3. **Move your talent farther from the wall if necessary.**
4. **Reduce the light on your subjects.**
5. **Adjust the camera iris.**
6. **White balance.** You will have to readjust your levels afterwards.

### Other notes

**Chroma key hue.** Although blue and green are predominately used for chroma keying, any color could work. The chroma key hue button selects the color to be keyed out.

**Beware the zoom.** Zooms look especially weird when chroma keying. The reason? The background isn't changing perspective with your subject. As you zoom, the subject gets closer (larger) or farther (smaller), but the background always stays the same size.

**MST3K.** Mystery Science Theater 3000 uses chroma keying for their movie-heckling scenes. Their movie screen is just a big green wall; they're actually watching the film on hidden monitors. And how do they create that black outline effect? With one of the easiest techniques a switcher can do: Their camera has a shot of the three cast members and chairs. They chroma key over the green screen (cutting out the shape of the cast and chairs) but instead of filling it in with the camera, they choose black on the key bus. This creates the silhouette effect.

**Light kits.** For more precise light control and cleaner keying, try using a light kit and lighting umbrellas.