

# Power Retouche Retouching Suite

## How to master white balance and remove color cast with our Photoshop plugin

Extremely versatile white balance and color cast filter. You can set any filter color imaginable and any special behavior on the light. Either select the equivalents of Wratten filters or use gray charts such as WhiBal or Macbeth to correct exposure and white balance. You can target correction to any range of brightness values and thus correct local color cast. The plugin has three auto modes. Many more options...



■ Power Retouche Photoshop plug-ins are also for Paint Shop Pro, Corel Draw, Illustrator, Fireworks and other graphic software or photo software for photo editing, retouching and restoration (Mac & Win) see [list](#)

### White Balance Corrector Plugin - Tutorial

#### Benefits of the plugin

- Correct color cast in photos due to unfortunate lighting conditions.
- Manually apply digital equivalents of Kodak-Wratten 78AA to 85B+.
- Auto mode scans the photo and sets the correction filter for any light source
- Adjust the filter color exactly.
- Target the correction to any range of lights, mid tones or shadows.

The white balance filter plugin works with these image modes (Windows and Mac)...  
8 & 16 bit / channel: RGB, CMYK.

#### white balance filter controls

This is the white balance plug-ins control panel (Mac). Click image to enlarge. The controlpanel and preview area can be changed by dragging the sides.

1. Automatic (three different modes)
2. Filter color (incl. Kodak-Wratten standards)
3. Color picker
4. Brightness range
5. Several standard gray charts



#### Example -

#### Automatic correction of colorcast



The white balance plugin is useful for global or targeted white balance corrections.

You get full control over the filter color as well as exposure and much more...

### An example of auto-correction (Auto - Lights)



## What is White Balance and Color Cast?

Photos look brownish when taken with a regular daylight film in artificial light or in candlelight. Often you have mixed daylight and incandescent light and just want to adjust the tone. Or maybe the outdoors light is extreme and needs correction - for example you might have a heavy blue-tone in a scene with a bright blue sky.

The worst scenario is when you have to photograph in a mixture of fluorescent light and tungsten without any daylight. The example to the right is one such instance and shows the characteristic strong green cast. It was filtered with the Auto - Lights method.



Photographers place a blue filter before the lens when taking photos with a daylight film in artificial light. Typically KB12 (Wratten 80B), but sometimes it needs to be more blue, like if you take pictures at candlelight, where you will need KB20 (Wratten 78AA). The White-Balance plugin can correct any discoloration from colored or toned light. It has presets for standard filters KB20 - KR 20 (Wratten 78AA - 85B+). In addition you can adjust the color of these preset filters and create even stronger filters if need be.

Auto modes calibrates any filter color for white balance correction. This is ideal for the notoriously difficult combinations of fluorescent lights with other light sources. There are three auto modes designed to handle various colorcast situations. Auto - lights is the most useful one.

It is also customary to photograph a chart of reference color patches along with your picture. Power Retouche White Balance Corrector incorporates the most important such charts (Kodak, Gretag Macbeth, WhiBal).

## Methods

The White Balance Corrector offers ten methods for white balance correction. You choose between them from the menu.

Three auto modes designed to suit three typical colorcast problems.

One method for applying digital equivalents of standard Wratten filters. Also for creating any filter color you may fancy.

One method for picking the color of some brightly lit colored object in the picture and setting a correction filter from that. Useful if your brightest objects have a strong color.

Five methods for picking grays from different color rendition charts that photographers typically photograph into their images.



## Common Controls: Exposure & Retouch Levels

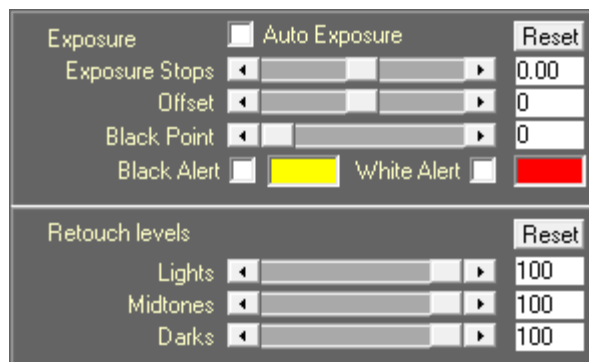
All methods have these two control groups in common.

Exposure Stops is calibrated from a Fuji chart of standards and uses the same algorithm as exposure correction in our BW Studio plugin. Please consult the page about this filter to see the Fuji chart and comparisons with the filters results. You will find they are identical.

Auto Exposure will make the plug-in do automatic exposure correction. You can still use the other sliders to adjust the image.

Offset and Black Point. Offset simply makes the entire image brighter or darker. Black Point pulls the darks towards black. They are a nice couple as you can use offset to set the images white point and then stretch the darks to set the black point. Alternatively you can use offset to reach black and then use the exposure control to reach near white.

Use the Alerts as an aid to set exposure/offset and black point, or as a help to avoid overexposing the image. Areas in the image that reach or clip pure white will be colored in the preview. Likewise, areas that reach or clip pure black will be colored. You can change the colors of the masks by clicking in the colored rectangles.



Exposure

Auto Exposure

Offset

Black Point

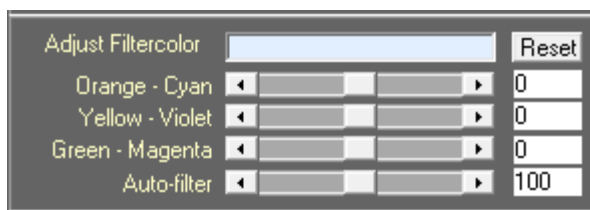
Alerts

Retouch Levels

Lights, mid tones, darks. This determines the strength of the filter in the three different brightness levels. This means you can apply a filter, for example, full strength to the mid tones, less strength to the lights and still less in the darks.

## Adjust Filtercolor

All methods, except the ones for picking grays on color rendition charts, allow you to adjust or change the filter color. Instead of the common RGB controls (red, green, blue) we decided to implement three more useful sliders: Orange - Cyan, Yellow - Violet and Green - Magenta. In addition there is a slider to control the intensity of the auto filter, calculated by the plug-in.



The Orange - Cyan slider is calibrated to match standard filters for correction of incandescent light or daylight.

The Yellow - Violet slider is calibrated so that the violet range matches filters for common mixtures of halogen or tungsten and fluorescent light.

The Green - Magenta slider is calibrated so that the magenta range matches filters for common fluorescent lights (this is actually very difficult, because fluorescent light comes in numerous varieties).

The long colored rectangle shows the current filter color.

Click the long colored rectangle to get a standard color picker you can select a filter color from or to get more options to adjust the filter color. Not all colors that can be picked will fall within the range of possible filters, so the plugin may in some cases change the picked color to the closest possible filter color.

## Adjust Filtercolor - Correction Filters (Wratten)

If you select the method Correction Filters - Wratten, then you will be presented with an extra slider to pick digital equivalents of common Wratten correction filters for daylight and incandescent light.

The slider uses the European B&W nomenclature so that -3 is equal to filter KB3, +12 equal to KR12, etc. Below the slider is stated the equivalent Wratten filters. The displayed filter color (in the rectangle) may appear paler than the physical glass or gelatin filter does to the eye.



The equivalent Wratten range is as follows...

Remember you can use the Orange - Cyan, Yellow-Violet and Green-Magenta sliders to create any filter color. If you use these sliders, the mentioned Wratten filter will still be the same and will be added to the adjustments. The Orange - Cyan slider is calibrated to match correction filters for incandescent light and daylight correction. This means you can substitute the Wratten filters with it, or make your wratten filters much stronger than the presets.

KB	KR
1.5 = 82A	1.5 = 81A
3 = 82C	3 = 81C
6 = 80D	6 = 81EF
9 = 80C	9 = 85C
12 = 80B	12 = 85B
15=80A	
20 = 78AA	

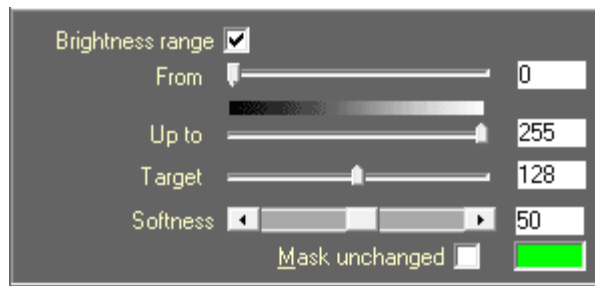
The following list will give you a hint about what filters to use:

Clear blue sky = 11000K. KR9.  
 Average Summer Shade = 8000K. KR6.  
 Clouded sky = 7000. KR3.  
 Sun 50 dgrs. = 6000K. KR 1.5.  
 Sun 30 dgrs. (daylight film) = 5500K. No filter required.  
 Hazy = 4700K. KB3.  
 Moon light = 4250K. KB6.  
 200 watt incadescent = 2980K. KB15.  
 100 watt incadescent = 2900K. KB18.  
 75 watt incadescent = 2820K. KB20.

## Brightness range in Correction Filters Method

With the Correction Filters - Wratten method you get the option to target the filtering to a specific brightness range. You can already do this somewhat with the Retouch Levels, but now you get added control.

Anything darker than the From slider, will not be changed. Anything brighter than the Up To slider will likewise remain unchanged. As an aid to setting the sliders, you can activate the Mask Unchanged mask; this will apply a color to the unchanged areas (in the preview only).



If the slider Softness is set to 0, then hues within the chosen range will be changed equally, and as the Softness slider rises, the effect will fade out from the target value towards the extremes, thus softly integrating the effect in the whole.

### Color Picker Method

With this method the slider Auto-filter % is disabled. The long rectangle at the top still displays the filter color.

If the brightest lit object in your photo is not white, but, say, a vivid yellow, then you will want to be able to pick that vivid yellow and tell the plugin what color it ought to be. The long Change to rectangle at the bottom displays the color, you want the pick to be.



When you pick a color, the pick will be displayed in the small rectangle to the right. Click the button Copy to set the long rectangle to the same color. When you do this, and if you have the "Adjust filter color" sliders to 0, then you will notice the displayed filter color will be white. The plugin automatically calculates the exact filter that will change the pick to the desired color and displays the filter color in the top long rectangle.

To set the color of either of the long rectangles, click in it and you will be presented with a standard color picker where you have numerous options for adjusting the color.

Bear in mind that what the plugin does is calculate a correction-filter color, not an exposure correction, so you can't change the filtering by changing a darker hue of the same color. But selecting a stronger (more saturated) "Change to" color will have a stronger effect. A color is usually less saturated if you make it darker, so the plugin will typically understand a darker selection as a less strong filter.



Original photo with strong green cast.



Color picker method

1. Pick a color, The plugin will first automatically try to correct it to a neutral color.
2. If you are not satisfied with this, click the long rectangle to open the color picker. Then select what the color should be. The filter then calculates the difference and sets this as the correction filter.
3. If you are not happy with this, either use the above three adjust filtercolor sliders, or click in the long rectangle to get a colorpicker. Either click in the upper or lower long rectangle.
4. If you want to copy the picked color to the long "change to" rectangle, then click the copy button. After this click the "change to" rectangle and it will have the picked color as default. This can be an aid in choosing the "change to" color.

## Gray chart Methods

All the gray-chart methods have the options for Large Picks and for adjusting Exposure of the specific brightness range represented by the gray patch picked.

Large Picks changes the picker from picking the value of a single pixel to a large group of pixels. Using large picks helps picking the hue of the object, rather than some random noise or a film grain.



Exposure will change the exposure of areas in the photo that have the specific brightness range of the relevant patch. For example you can change the exposure of the middle gray areas from 50% to anywhere within 30 to 70%.

Reset will reset all exposure sliders to 0.

You do not have to pick all for the plugin to work. It calibrates the correction on the basis of your selections.

In order to find out if you need a pick or not, and select the best picks, you can turn the used picks on and off by removing the tick.

## What are the correct values of the graychart patches?

Manufacturers of color rendition charts often state the L-value (brightness) of their patches, but such measurements are made under ideal situations with no scattered light interfering. In any real photo-situation, the scattered light in the studio, or out-doors, will cause the patches, especially the black, to appear brighter than it's formal L-value. The deviation between the L-value and the actual observed value does not vary much with various lighting conditions suitable for photographing. Therefore we could make the plugin take the deviation into account and calibrate the filter to the photographed patch, rather than the technically measured L-value of the patch. For example Gretag Macbeth insist their black patch is true black and should be set to RGB = (0,0,0) in your photos, but you will find that this is never true - in fact only true if you place the patch a shadow part of the picture, which would be quite useless. If you find the filter does not set the brightness of the patch correctly, you can change it with the Exposure sliders.

The various brands vary in the kind of black their black-patch has, and they have adopted various strategies for various reasons. Of the patches we have implemented, WhiBal offers the darkest black patch and it is almost a true black when photographed; this is because it has a silky semi gloss surface which absorbs much light. Gretag Macbeth offers a mat black, but the very matness causes it to reflect scattered light off its surface, making it appear off-black when photographed. Our plugin takes the factors of the various black patches into account.

If you need a true black patch (rarely, but it can be useful when photographing paintings of off-black material), then it must be inside a black box or tube to remove light and reflections (the opening of which of course points towards the camera) and also semi-glossy and made of a transparent material because the higher refractive index will make the patch absorb light, that would otherwise be reflected off the surface. Glass painted with lamp black oil paint on the rear side placed at the bottom of a black tube will do well. The tube should be twice as long as it is wide and about 5 cm wide. Point it towards the camera and you'll have a true black reference point.

## Using Graycards or Whitecards

The Gray Pick methods are made so that you do not have to pick all available patches. You can pick just a gray or a white patch. You could also just pick a black, but that will not produce a good filtering of the light.

We offer two graychart settings. 50% white and 60% white. The standard Kodak graychart is 50%. Strong light and surface reflection may cause it to appear brighter when photographed, in which case 60% may be more appropriate. Also you might often want a slight brightening of mid tones in which case you can use a 50% graychart but select the 60% option.



The Gretag Macbeth graychart has its middle gray set to 60%.

WhiBal: 3 or 4 Greys

Photographed patches are usually brighter

Gray cards

WhiBal correction cards



WhiBal G6 card. This is a single sturdy card with a label attached. The label is a white and a black patch. If you use the WhiBal G6 card use the regular white and black pickers in the plug-in, but of the two grays, use the light grey.



WhiBal originally was a set of four thick plastic cards for white balance correction. It came with a white, a black and two grays. If you use this set of cards, use all four pickers in the plug-in.

Visit the WhiBal homepage [here](#).

Gretag Macbeth Color Rendition Chart (24 patch): 6 Grays

Gretag Macbeth correction chart



Gretag Macbeth Color Rendition Chart is a standard color reference chart used by photographers. PowerRetouche has expanded the charts use for digital photography by implementing white balance correction from the six gray patches. You do not have to pick all six.

Visit the Gretag Macbeth homepage [here](#).

Auto - lights

Auto - Lights

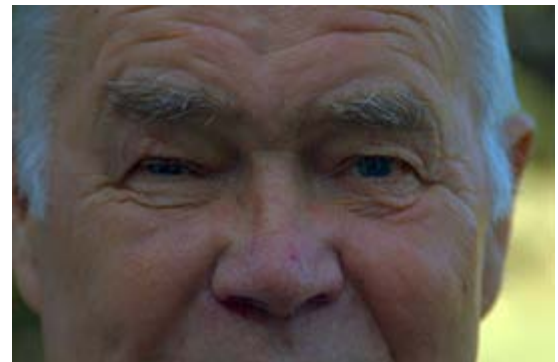
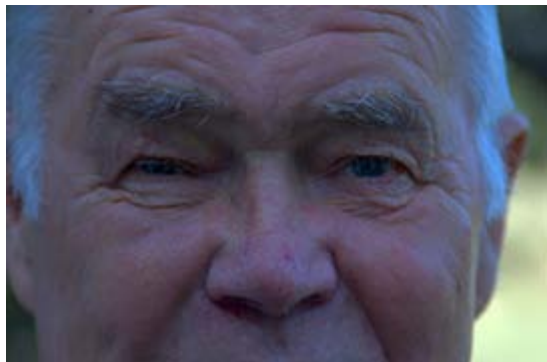
In Auto Lights the plugin scans the photo to determine the color of the light in the photo. It then calibrates a filter color to correct white balance and remove color cast.

Here's an example of pure Auto Lights filtering. The left photo is the original:



Auto - midtones

If your picture is mainly in the midtone range, or the colorcast is most pronounced in the midtones -- like in the example just below -- the Auto - Midtones method will suit you.



The above photo will not be suited for the auto-lights method for another reason, which is important to note: The brightest areas of the photo (the green grass to the right)

does not show any color cast so it will trick the plug-in to adopt a wrong filter. In this photo the face has the color cast we want to remove in the midtones.

We would probably want to correct the exposure also, so this we did in the example to the right (We raised exposure and offset, then deepened the blacks. All within the White Balance plug-in in one go):



Auto - mid tones is particularly suited for correcting portraits where you want some of the color of the light preserved or especially want to preserve the cool reflected lights so typical for skin photographed out-doors. The face being of course in the mid tone range and the filter thus correcting mainly the face more than the reflected lights and strong shadows.



Original - With a heavy blue cast from a clear blue sky.

You can see this because mainly the lights are blue, but we want to preserve the cold/warm contrast of the light/shade, so we won't use auto - light correction.



Auto - mid tones  
Filter adjusted slightly red:  
Yellow 10  
Magenta 10

The remaining blue in the lights accentuates that this is an out-doors photo.

### Auto - Colorcast



Original - This could have been a nice warm picture, but a blue colorcast ruins it.



Auto - Colorcast  
Exposure + 0.99  
Black Point 30



Filter color adjusted  
Yellow 10  
Magenta 10

As you can see from the middle image, Auto - Colorcast correctly removes the colorcast from both the light, mid tones and darks. But the picture still does not have the warm tone appropriate for the occasion, so in the last example we adjusted the filter color.

### Brightness range Example

Target color cast removal

Target the filter progressively to lights and mid tones



Original with a heavy blue color cast



Note the reflections in the lake are toned perfectly