Chapter 5   Tools

5. *SilverFast* Tools

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Tools for Brilliant Images

SilverFast has all the tools to generate brilliant images from your scanner or from raw data (*SilverFast DC... and SilverFast HDR...*). Make yourself familiar with the best way to get brilliant results from your scans. Use the *ScanPilot* in the beginning to help you with the right sequence.

When using the auto-adjust make sure you select the appropriate Image Type to adjust the operation to your specific image.

Also check that your settings for highlights and shadows (under "Options..." > "Automatic") are in accordance with your printing requirements.

It is also advised to read the chapter about optimum scan resolution in the addendum.

Tools palette, overview

SilverFast´s powerful image adjustment tools can be accessed through the tool. Study the usage of these tools well in order to obtain optimal results with *SilverFast*.

1. Image auto-adjust   *4. Gradation*   *6. Selective colour correction*   *8. Expert dialogue*

Reduce window

7. Zoom   *3. Histogram*   *5. Colour balance, global colour correction*   *2. Pipette setting highlight, midtone and shadow*
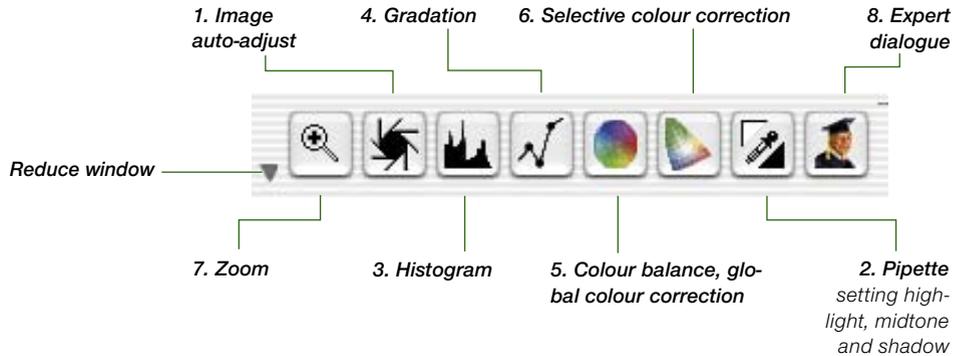
Tool 1: Image Auto-Adjust (Auto-Gradation)

(Mac: ⌘+2, PC: CONTROL+ALT+2)
By means of the auto-gradation, the highlight / shadow points are automatically optimised. Colour cast removal is automatically applied (or not applied, depending on the scanner model and image type selected).

Tool 2: Setting Highlight, Midtone, Shadow

Sets the brightest and darkest point and midtone on the image manually.

Tool 3: Histogram

(Mac: ⌘+3, PC: CONTROL+ALT+3)
With the histogram tool, the highlight / shadow points are controlled and optimised.

Tool 4: Gradation

(Mac: ⌘+4, PC: CONTROL+ALT+4)
In the gradation dialogue, the tonal values are influenced through RGB- or CMY-curves. Here the gradation curves can be controlled by sliders, numerical input or curve manipulation. You can choose between RGB and CMY representation.

Tool 5: Colour Balance (Global Colour Correction)

(Mac: ⌘+5, PC: CONTROL+ALT+5)
With global colour correction, the colour balance can be changed for all tonal values including quarter-, half-, and three quarter tones.

Tool 6: Selective Colour Correction

(Mac: ⌘+6, PC: CONTROL+ALT+6)
With this very powerful tool, single colours can be changed without influencing the overall colours.

Tool 7: Image Zoom

With the image zoom (magnifying glass), you can zoom into any part of the image.

Tool 8: Expert Dialogue

(Mac: ⌘+8, PC: CONTROL+ALT+8)
All parameters that influence the image are shown by number and can be changed. You can switch between RGB to CMY display.

ScanPilot* / ImagePilot*
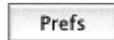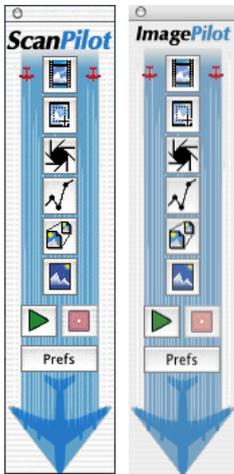
The *ScanPilot* / *ImagePilot* is an efficient tool that helps the novice with the subjects of "Scanning" and "Optimization" acting as a kind of road-map in order to reach successful and brilliant results. It is an instruction to use the available tools (automatic or manual) in the correct order.

It is easy to use and delivers good quality results:

• Click the first, uppermost icon and press the green launch button after that.

• *SilverFast* now works its way along the column of the tools pallette partially automatic.

• Some tools require additional input fields and *SilverFast* will halt and open the respective dialogues in order for the user to enter his own parameters.The primary stop will, for example, be done while adjusting the gradation.

• Regardless of whether changes have been made within the tools-dialogue or not, hit the „OK" button or press the „Enter" key in order to close the window.

• The *ScanPilot* / *ImagePilot* may be halted at any time by clicking the red "Stop" button and then allow moving on to the regular tools in *SilverFast's* main dialogue.

Preferences

By pressing the "Prefs" button you can expand the tools-list used by the *ScanPilot*/*ImagePilot*. Click on the check boxes beside the tool buttons. The *ScanPilot* / *ImagePilot* will show you at which point you use these tools best. The detailed description of the tools can be found in this manual.

In the preferences dialogue window you define whether the *ScanPilot* / *ImagePilot* will supply concise help texts beside the tools during its operation.
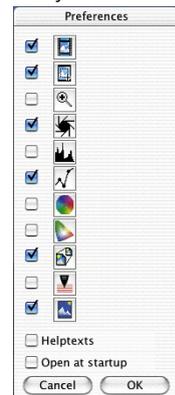
* Difference between ScanPilot and ImagePilot
There are no differences! The „ScanPilot" is available in SilverFastAi..., and the „ImagePilot" in SilverFastDC... and -HDR...

5 • Tools

SilverFast® Manual

If you would like to use the *ScanPilot* / ImagePilot** permanently, click the check box "Open on Start-up". The *ScanPilot*/ ImagePilot** will then open at every *SilverFast* start up (this is the default setting of the *ScanPilot* / ImagePilot**).
Click the icon with an image of an aeroplane in the vertical tools palette, located left of the preview window, once you are finished using it.

Help Texts in *ScanPilot* / ImagePilot**

Brief help texts beside the tool buttons of the *ScanPilot*/ImagePilot** inform you about what to do next!
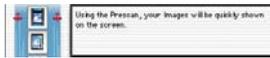
During the task "Frame position" you will be asked, "Which part you do want to scan?" Click and hold with your mouse on one corner of the frame and drag it to the size you want.
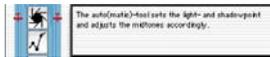
After that the image Auto-Adjust will be automatically applied and the next dialogue window will come up (here gradation).

   Attention!
Please note that some dialogues that have been opened using the ScanPilot* / ImagePilot* are only partially available!
This, for example, is the case when using the gradation dialogue and merely serves security purposes. In the example, only the slider that is moveable is the one for the mid-tones. In order to obtain satisfactory results while using the other sliders, a certain level of expertise is necessary. In any case, the ScanPilot* / ImagePilot* can be closed and the full accessibility to all other sliders and parameters is given.

With the completion of the last step, the scan frame will be scanned into the imaging application.

All running processes can be halted at any time, in order to allow manual intervention with the help of the tools in *SilverFast's* main dialogue.
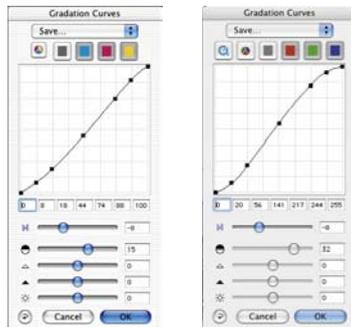
Comparison of the different gradation dialogues
Left: The appearance of the dialogue when opened using the ScanPilot* / ImagePilot*
Right: The appearance of the dialogue when opened from the main menue.

The Concept of Optimising Images

When optimising scanned images, using the tools in the correct order significantly influences the results that can be obtained and leads to the optimal output quality.
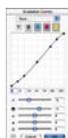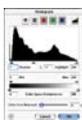
1.   Basic Choice of White / Black Point and Colour Correction

The black / white points and colour correction can be set manually or by using the auto-adjust function.

2.   Optimising Gradation

If necessary, further individual optimising of the image with gradation curves (midtone and contrast) is possible.

3.+4. Global Colour and / or Selective Colour Correction

If necessary, individual colours can be corrected by using selective colour correction, or the total colour characteristics can be corrected by using global colour correction. It is also possible to use an ICC scanner profile for applying colour correction.

5.   Size Adjustment and Scaling

Scale the image and scan frames individually in height and width.

6.   Retouching

Removal of dust and scratches by means of *SilverFast SRD* and/or the clone tool.

7.   Applying Filters:
Sharpening (Unsharp Masking) / Descreening / *GANE*

Choose, according to type of image and scaling, the optimum setting for Unsharp-Masking or descreening and *GANE*.

8.   Output RGB, LAB or CMYK

Select "Scan RGB" – "LAB" or "Plug&Play CMYK". Select the appropriate separation profile (in case you scan CMYK) for your type of printing.

9.   Scan

1		Image Auto-adjust Defining highlight / shadow
2		Adjusting gradation curves
3		Global colour correction
4		Selective colour correction
5		Retouching *SilverFastSRD / Clone tool*
6		Size adjustments
7		Filters: Unsharp masking descreening / *GANE*
8		Output profile
9		Output scan
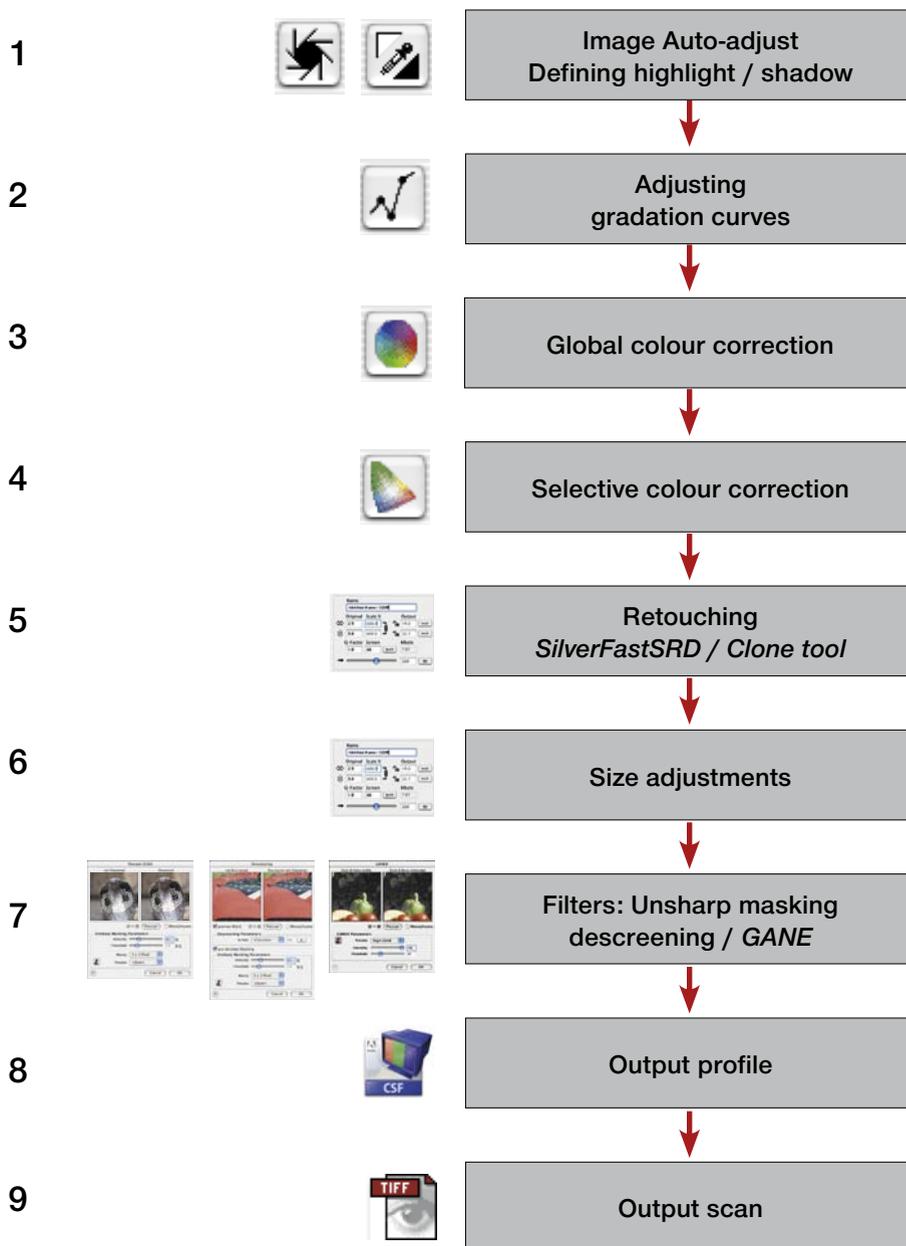
5.1 Image Auto-Adjust (Auto-Gradation)

The auto-adjust is a convenient tool for achieving a quick image optimisation. This function investigates the end points of the image data; i.e. it looks for the brightest and darkest points of the image in the current frame and sets highlight and shadow points respectively. Also the distribution in the half- and three-quarter tone is checked and depending on this distribution a gradation curve (linear or logarithmic) is generated for correction.

In *SilverFast* the the image auto-adjust button can have the following states:

Grey   Standard setting with most scanners. Clicking the auto-adjust button triggers the image automatic and corrects existing colour casts. Colour casts will be eliminated in highlights and shadows.

Coloured   Standard setting with few scanners, which already have a fairly neutral image rendering with the factory settings. Also with active IT8 calibration (optional). Clicking the auto-adjust triggers the image automatic and keeps any existing colour casts.

Coloured + "C" The small "C" within the coloured auto-adjust button indicates that a ColorSync workflow (Windows: ICM workflow) is active within *SilverFast*. It will become active when input calibration has been switched to ColorSync (ICM) and an ICC profile (Windows: ICM-profile) has been allocated in the colour management settings (under "Option") in *SilverFast*.

The following example shows the image before and after usage of the auto-adjust and the corresponding histograms.

The image appears a little flat because no correct highlight detail is present in the image. The reason is: Within the image there is no value for white – merely 10 % grey.
The histogram shows that the first pixels in white begin between 9 and 13 %.
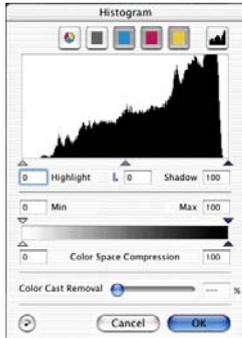

Histogram
without auto-adjust
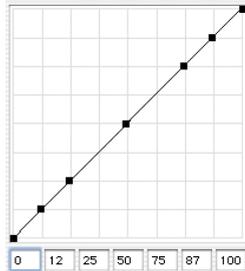
Gradation
without auto-adjust

A moment after pressing the auto-adjust button, we realise, how the image has gained in brilliance. In general, a strong difference between the parts of the image within the scan frame and the parts outside this frame can be seen. The effect of the automation is also shown by the change of colour of the neighbouring buttons for the histogram and the gradation dialogue.

In the histogram we can observe that the little black triangle marker shows that the highlight is now at 13%. This means, that every point which has had a value of 13% in the previous image, now has become the colour white (2-3%). Simultaneously we can observe that the red colour cast has vanished from the brighter areas. The auto-gradation has eliminated the colour cast.
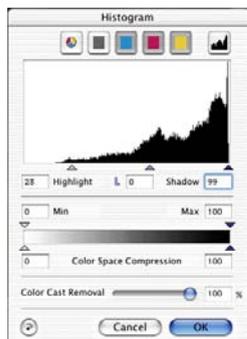
Histogram with auto-adjust

The gradation curve on the left shows that the auto gradation has made the image slightly brighter in the midtone.

Please note, that the artificial intelligence inside *SilverFast* evaluates images on the basis of what is inside the scan frame selection. You can change the effect of the auto-adjust by making the selection smaller or larger.
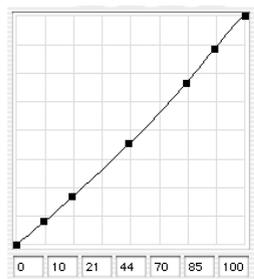
Gradation with auto-adjust

5.1 • Image auto-adjust   *SilverFast*® Manual

Auto-Adjust and Colour Cast Removal
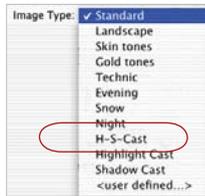
By pressing the aperture-button, the active scan frame will undergo a highlight-shadow optimisation with colour cast removal. In the following three histograms, it is easy to see the influence on the cyan, magenta and yellow channels.
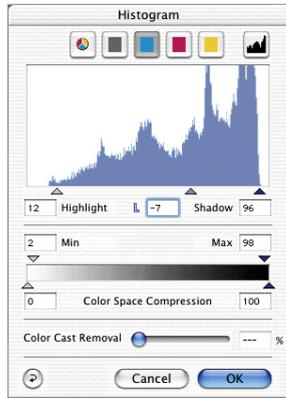
Cyan, highlights set to 9%
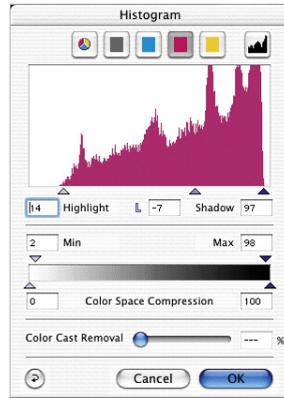
Magenta, highlights set to14%
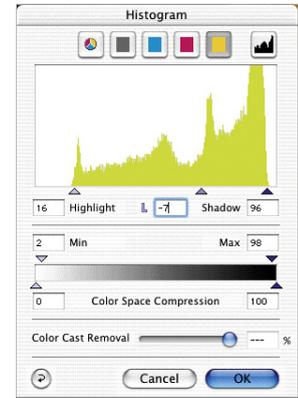
Yellow, highlights set to16%

By setting the highlight for cyan to 9%, magenta to 14% and 16% for yellow, the colour cast has been removed.

Original with a cyan cast

Cyan cast removed with auto-adjust

Auto-Adjust and Colour Cast Preservation

Auto-adjust reset
In order to reset the auto-adjust tool, press the "Alt" key and click on the aperture (auto-adjust tool) icon.

If your image contains sunset colours, a kind of reddish cast, you probably would like to keep this characteristic in the image. In order to prevent the automatic colour cast removal from eliminating this, keep the "Shift" key pressed down and click the aperture button. The highlight-shadow points will be optimised, the colour effect will remain untouched in the image. The highlight-shadow triangles of the above histograms will look like this:
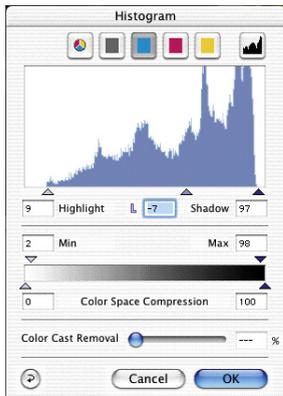
Cyan, highlights set to 9%
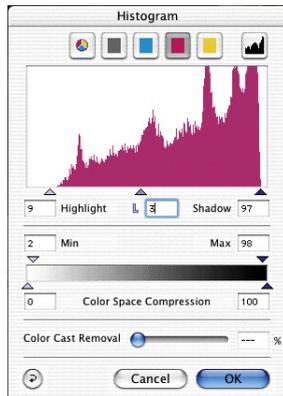
Magenta, highlights set to 9%
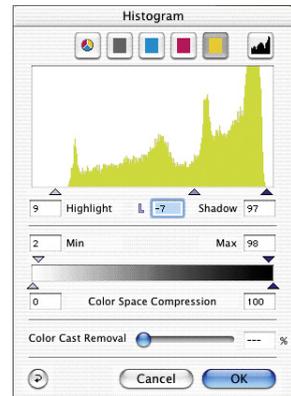
Yellow, highlights set to 9%

The values for highlight and shadow points are 9% in the highlights and 97% in the shadows. This way, the colour cast is completely retained in the image.

Original not optimised

*Optimised with colour cast removal suppressed*

Auto-Adjust and Threshold
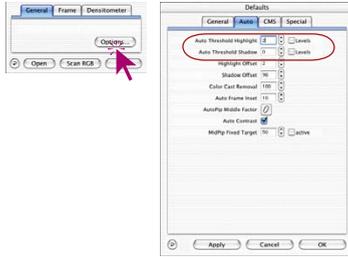
Under "Options..." / "Auto" a threshold can be determined for the auto-adjust. This threshold controls the sensitivity of the auto-adjust. If the auto-adjust is set to small values, it will react to few pixels. If the threshold is set to very larger values, it will skip more pixels at the end points in the histogram. This is made clear by the following two examples:
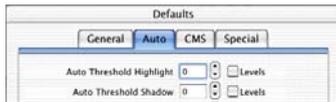
1. Automatic Threshold on "0"

The auto-adjust is set to greatest sensitivity. If the threshold is set to "0", the highlight / shadow points are set on individual pixels. This could, however, lead to undesired results in some images, since these first pixels could represent insignificant image information not visible to the eye. For this reason, the threshold should be set to values between 2 and 10.
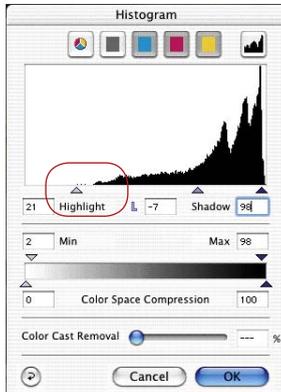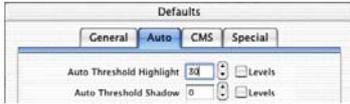
2. Automatic Threshold on "30"

The other extreme of the auto-adjust threshold is the value "30". It can be clearly seen in the histogram that the highlight triangle points at the value "33". Therefore, some of the highlight details will be lost. Depending on whether more or less pixels with a bright tonal value are present, the auto-adjust with this extreme threshold of "30" will disregard more pixels.
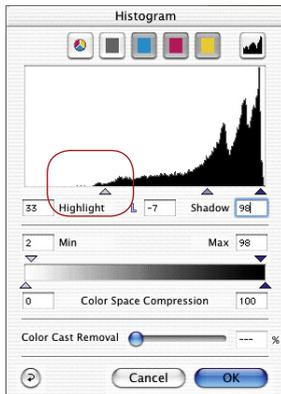
"Auto Threshold Highlight"
and "Auto Threshold Shadow"
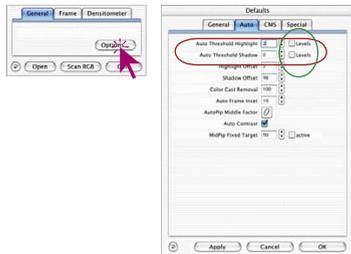
"Auto Threshold Highlight" and "Auto Threshold Shadow" are adjustable within a range from 0 to 100 steps and can be varied in the "Options..." / "Auto" dialogue. These adjustments influence the function of the Image auto-adjust and become visible in the histogram dialogue.

At using the Image auto-adjust the triangles for highlight and shadow are placed automatically in the histogram as set in these defaults.

Highlight triangle   *Shadow triangle*   *Highlight triangle*
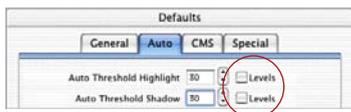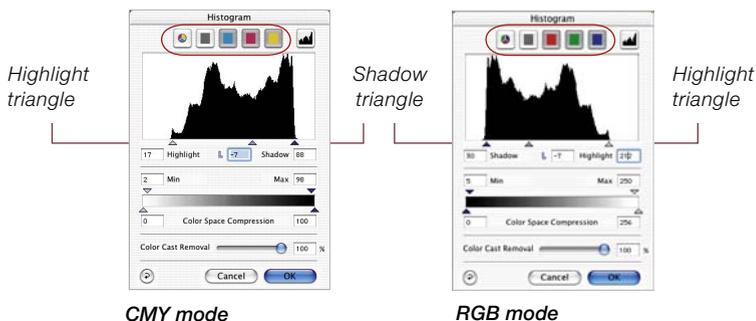
CMY mode   **RGB mode**

Remember: The histogram window depicts the whole range of greyscale - in 8 bit RGB mode from step 0 to step 255 (right hand) and in 8 bit CMY mode from 0% to 100% (left hand).

If one or both boxes "Levels" are marked the factors "Auto threshold highlight / shadow" are treated as real RGB steps and not as relative factors that correspond to the total quantity of pixel. Working with the CMY mode it is the same.

Example

The adjustments should be used with motifs of flat bright or dark background. It is also worth using it for scanning texts and graphics on coloured grounding (see following example).
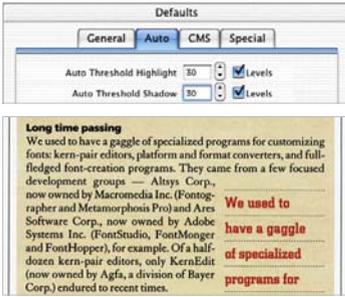
Using "Levels" emphasises the text from the background clearly.

An alteration factor of "50" effects a defined skip of the position of highlight and shadow triangle within the histogram. Starting from the first columns near the margins of the histogram, 50 RGB steps are skipped. Hence each alteration in steps is an "absolute" movement of the triangles.

Using the CMY mode (see picture below) 50 RGB steps are skipped too.

The example shows that highlight and shadow triangle are shifted identically (red arrows are of equal length).
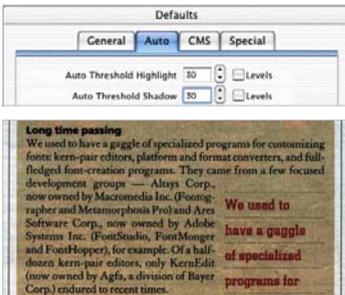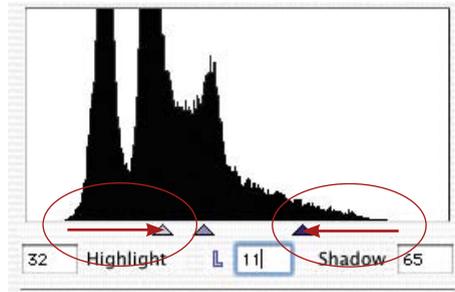
Without "Levels" background looks too dark.

If the boxes "Levels" are not marked the adjustment will just effect a "relative" change of the triangle position. The alteration factor is then related to the quantity of pixels within the edge areas of the histogram.

If the marginal columns are high and contains a big amount of pixels the alteration factor of "50" effects a relatively small movement of the triangle (short red arrow for highlights), compared to a long shift for only some few pixels (long red arrow for shadows).
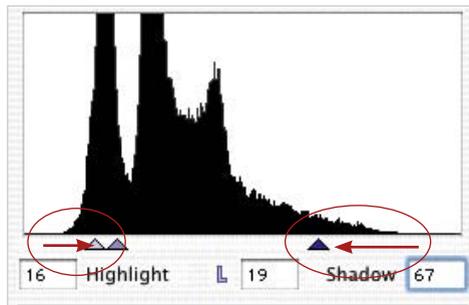
5.2 Highlight / Shadow Tool

Highlight / Shadow with Offset "0"
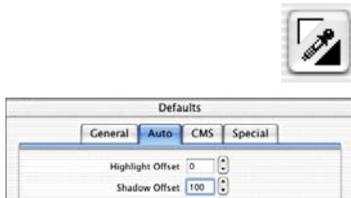
With the highlight / shadow tool, the brightest and darkest point of the image can be specified manually. For this tool, a highlight offset and a shadow offset can be chosen in the "Options..." / "Auto" dialogue. If the highlight offset value is set to 0 and the shadow offset to 100, the highlight will be brought to 0% and the shadow to 100%. The following example shows the usage with the densitometer readings.

Setting Highlight

To set the highlight, click on the top left corner (the mouse pointer will turn into a white triangle) and find the brightest point on which you want to set the highlight. While moving the triangle over the image, the densitometer displays the values. Now click on the brightest point. The densitometer will display "0" in the output display for CMY.

C	27	→	21
M	19	→	14
Y	20	→	15

| C	27	→	0
M	19	→	0
Y	20	→	0
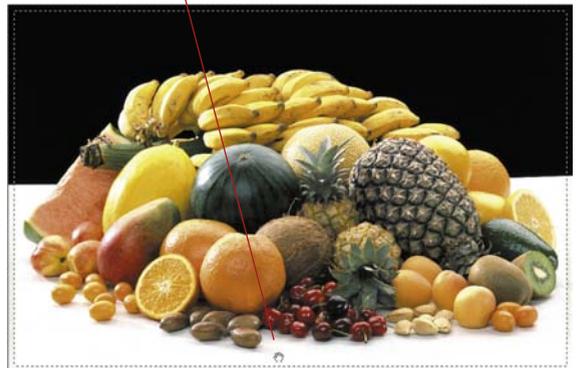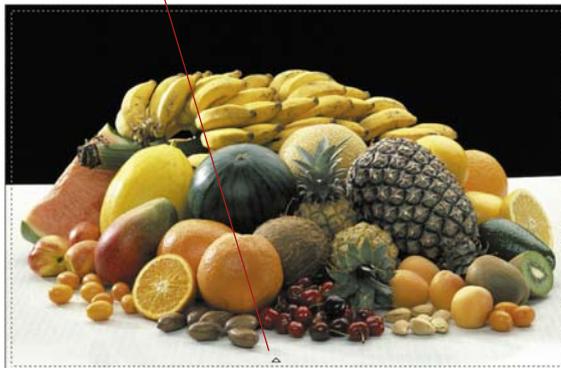
The brightness of the image immediately changes at this point. Accordingly all other shades of the image will be influenced.

Setting Shadow

To set the shadow (the darkest point), click onto the down right corner of the highlight-shadow tool, the black triangle will appear. Search for the darkest point on the image by observing the densitometer reading, then click on the image in the prescan.

C	99	→	96
M	99	→	96
Y	99	→	98

C	99	→	100
M	99	→	100
Y	99	→	100
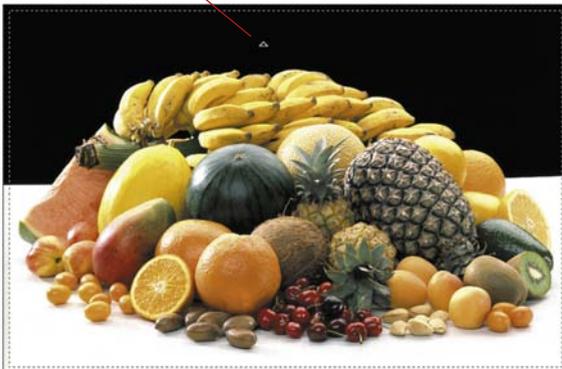
Note how the CMY values on the right side of the densitometer are set to 100%. Now the highlight and shadow values for this image are set.

⚠ *Please note that in printing, the highlight shadow values should not be set to "0" or "100" percent, because, in printing, white should have a printing dot between 3-10% and black between 90-98%. On the next pages you will see this more clearly.*

Highlight / Shadow Reset

Macintosh

To reset the highlight / shadow values, press the "Alt" key, and click on the pipette of the highlight / shadow tool.

Windows

Press "Alt" key and click on the pipette icon in the tools palette.

Setting Midtone

In order to define a midtone (neutral point) click on the pipette like icon of the highlight / shadow tool – the cursor becomes a grey rectangle. Move the tip of the rectangle over the colour you want to be neutral grey and watch the densitometer (select CMY reading).

C	40	→	27
M	39	→	25
Y	30	→	18
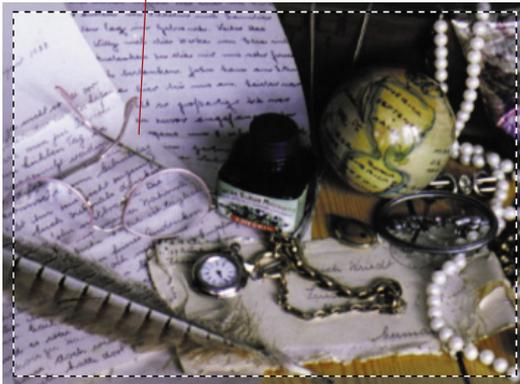
C	40	→	23
M	39	→	23
Y	30	→	22

The densitometer reading before might be C27 / M25 / Y18. Now click onto the desired spot in the prescan and you will see how the CMY colours become the averaged value of C23 / M23 / Y22 – the colour tint has become neutral.

MidPip4 • Multiple Neutralising Pipette

MidPip 4 (Advanced Colour Cast Removal) allows removal of colour casts comfortably, which e.g. result from a mixed light situation.

MidPip4

In order to achieve this, you can set up to four neutral points in your preview window. The neutral values of any such point can be directly edited in a special dialogue.

To activate the *MidPip4* you click onto the pipette (in the tool bar) and then onto the desired image detail in the preview window. The neutral points set will be marked with a numbered cross.

If you want to set several neutral points at once, click onto the pipette and hold the "Option" key while setting up to four neutral points. The pipette will remain as a cursor until you either click the pipette again or you have set the fourth neutral point! In the example below 3 neutral points have been set.

ALT +

Editing the *MipPip*

In order to fine tune a neutral point, double-click onto the pipette tool and the *MidPip* dialogue window will appear. The value fields show the "before-after"-RGB- or CMY values of all neutral points. They are fully editable. *SilverFast* version 6 offers the possibility of the most sophisticated colour cast corrections!
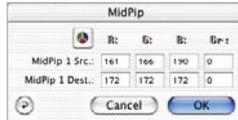
CMY < > RGB Switch
Conversion of values measured from RGB to CMY and vice versa

The first line "*MidPip* # Src." represents the RGB or CMY source values. The second line "*MidPip* # Dest."represents the RGB or CMY destination values. The latter will normally show the same values for the three colour channels, since the midtone selector pulls the chosen midtone to neutral.

Now the user can change these target values and instead can retain a certain colour tone as a result of the midtone correction. If the user alters the first line or the source values, then the midtone correction effect will have different original colours in the picture details.

Adjusting Neutral Values to a Determined Density
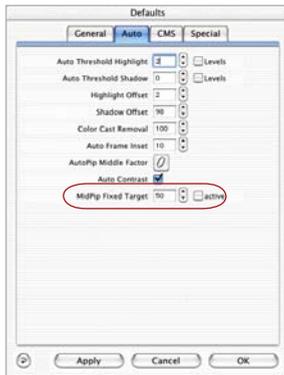
An additional development of the midtone selector tool appears in the "Auto" tab of the "Options..." dialogue.

If the "active" check box next to "*Midpip Fixed Target*" is chosen, the following clicks of the midtone selector will lead to more neutral mid tones, whose target value is not dynamically determined to retain the brightness of the clicked picture detail. Instead, a determined target value is used here. It can be any CMY value, if preset as per default, it has a value of 50% (RGB 128).

Deleting Neutral Points

In order to delete neutral points, click onto the midtone pipette, hold the „Alt"-key depressed and click onto the neutral point you wish to delete.

Alert Messages

An alert message will always appear when the tonal values of the desired point are too distant from the destination value and fall outside a reasonable correction range.

Further indications of limiting errors are: If the third or fourth neutral point does not exhibit the desired results and casts are not neutralized, you have obviously hit the limits of the correctable range.

Highlight and Shadow Offset

You may have noticed that where the highlight is set to 0% , the highlight details got lost, that is to say, there are no fine details visible any more.

In order to prevent this from happening, *SilverFast* enables to change highlight and shadow offset in the "Options..." / "Auto" dialogue. Here you can enter values between 0 and 10% for the highlight and 90 to 100% for the shadows.

For the highlight offset a setting of 6 means that 5-6% remains within the highlight. This means that where you place your highlight point, 5-6% of the halftone dots remain. Likewise in the shadows, the density must be set at less than 100%.

In the following example, this is shown more clearly: the details in the highlight are preserved.
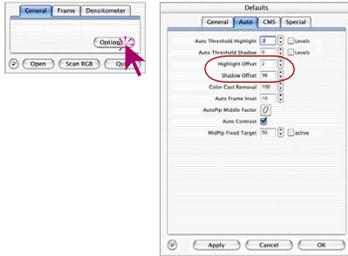
Preserving a Colour Cast with the Highlight / Shadow Tool

You probably have noticed that colour cast removal is related to the highlight / shadow setting. If you desire to preserve the colour cast, press the "Shift" key while setting highlights or shadows, and the colour cast will not be removed.

Preserving Specular Highlights

Specular highlights are reflections of light on sparkling surfaces, like glass, jewellery, etc. Specular highlights shouldn't have printable dots, so that the image maintains brilliancy.
In order to keep those specular highlights, under "Option">"Auto" set "Highlight Offset" to "0" or fix a densitometer point within these specular highlights and move the highlight end points in the histogram until you get the desired results.

Specular highlights

Displaying Brightest and Darkest Point of an Image

Since it is important to know where the brightest and darkest points of an image are, we have implemented a display of these points.

Displaying Brightest Point

To display the brightest point, move the mouse cursor over the white patch of the display-brightest-darkest point button and click the mouse. A red circle with an "Cross" displays the brightest point. Additionally, all pixels with the same brightness are displayed in negative form.

Displaying brightest point:

Macintosh
Press "Command" key and "Shift" key

Windows
Press "Crtl" and "Shift" key

Brightest point

Displaying Darkest Point

To display the darkest point, move the mouse cursor over the black patch of the display-brightest-darkest point button and click the mouse or press the following combination: "Command" key and "Ctrl" key on Macintosh (make sure that you press the "Command" key first!) PC: press only "Ctrl" key.

A red circle with an "cross" marks the darkest point.

In Combination with Highlight / Shadow Tool

The above mentioned displays can also be shown while using the highlight / shadow tool, with the advantage that the highlights and shadows can be set accordingly. Simply use the above mentioned keys.


Displaying Darkest Point:

Macintosh
Press "Command" key and "Ctrl" key

Windows
Press "Crtl" key

Darkest Point

5.3 The Histogram

The histogram in *SilverFast* is a powerful tool with which you can examine image data in order to optimise them manually.
We already used the histogram with the auto-adjust for control purposes.

Greyscale channel

CMY channels

CMY-RGB selector

Histogram switch: standard mode, three-part parallel, staggered three-part

Histogram

Midtone value

Midtone triangle

Highlight triangle

Shadow triangle

Highlight tone value — 17 Highlight L -7 Shadow 88 — *Shadow tone value*

Minimum tone value — 2 Min Max 98 — *Maximum tone value*

Highlight compression value — 0 Color Space Compression 100 — *Shadow compression value*

Switch between linear (N) and logarithmic (L)

Color Cast Removal 100 % — *Percentage of colour cast removal*

Cancel OK

Slider for colour cast removal

Histogram-Dialogue in *SilverFast...SE* versions

The dialogue is simplified in all *SilverFast...SE* versions and is recommended for novice users.
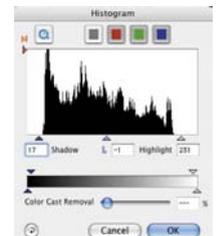
By setting the highlight / shadow points in the histogram, the available tonal values are expanded to occupy the entire greyscale of 256 values. The image becomes significantly more brilliant. In *SilverFast*, a variety of methods can be used to manually optimise the histogram.

a. By Observation of Image Display

While moving an end-point in the histogram, the image will be updated in the scan frame in realtime, showing the effect of the adjustment immediately.

b. By Observing the Densitometer Readings

While moving an end point in the histogram, you can immediately observe the changed values in the densitometer readings. By pressing the "Shift" key and clicking on a part of the image with the hand-symbol on the scan frame, the densitometer will be fixed at this point until you click again while pressing the "Shift" key. Now you can control exactly what changes on certain parts of the image occur when moving the triangle points on the histogram.

For further info check out the chapter "Multiple densitometer (Multiple FixPip)".

Three-Part Histogram
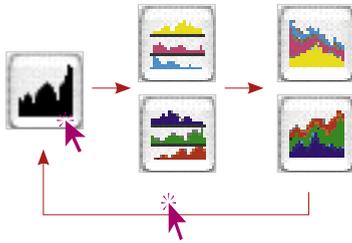
The histogram of the presentation of each individual colour channel (R, G or B, or C, M or Y) can be switched to the parallel presentation of all three-colour channels (R, G and B, or C, M and Y) in all *SilverFast Ai* plug-ins, starting with version 5. A feature which greatly simplifies working with the histogram and make it clearer.

Switching is done by clicking an icon in the upper right portion of the histogram dialogue. An additional click on the icon will switch to the next indicator mode. The indicator modes are as follows:

1. Standard Mode
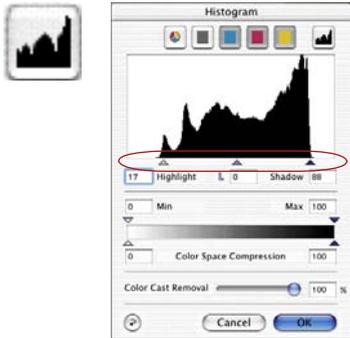
Only one colour channel is shown in the dialogue window in this mode. By means of the icons above the graphic, you can choose between total presentation and individual channels. Setting lights, depths and middles can be done by click-dragging the small triangles below the graphic.

2. Three-Part Parallel Presentation
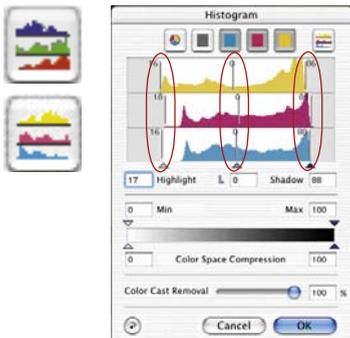
All three-colour channels are each shown as a single graphic in this mode.

Dragging the numbered vertical lines in the individual diagrams will set the lights, depths and midtones. The numbers at the lines indicate the amount of shading that will be used for light, midtone and depth.

In addition, you can switch between total presentation and the presentation of the individual channels by using the icons above the graphic.

---
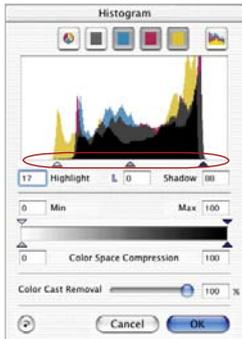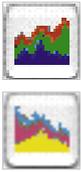
3. A Staggered Three-Part Presentation

All three colour channels are displayed, one after the other, in a graphic, together with the total curve. Setting lights, depths and middles is done by click-dragging the small triangles below the graphic.

Histogram Channel Selection

To choose a single colour channel in the histogram, for example the cyan channel, click on the appropriate button. To manipulate two channels simultaneously, hold down the "Shift" key and click an a second channel button. To activate all three channels, click on the grey button.
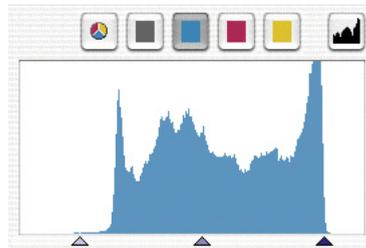
Histogram in standard mode,
only cyan is selected
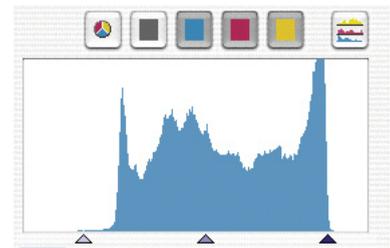
Histogram in three-part mode,
only cyan is selected

Histogram in standard mode,
cyan and yellow are selected
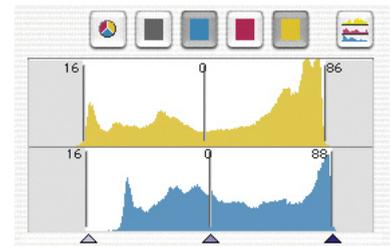
Histogram in three-part mode,
cyan and yellow are selected

Automatic Colour Cast Removal

The procedure for removing colour casts from scanned artwork has been greatly improved since the *SilverFast* version 5.
Now the user can not only remove a possible colour cast automatically, but also determine the degree of colour cast reduction by means of a slider. The changes will appear in the large preview of *SilverFast* in realtime.
Of course, the automatic function can be deactivated or activated as desired by using keyboard shortcuts and the degree of the automatic colour cast adjustment can generally be limited to desired optimum values (see "Options..." \ "Auto" \ "Colour Cast Removal").

The automatic function for colour cast removal can be activated or deactivated by presetting, depending on the scanner and its qualities.
If the icon for "auto-adjust" is "normal", meaning it has a grey background, *SilverFast* will remove an existing colour cast by clicking on the icon.

The result can be seen in the histogram as follows:
The sliders for highlight, midtone and shadow areas are off-set, indicating different values and the amount of colour cast removal is shown in the indicator panel as a percentage.
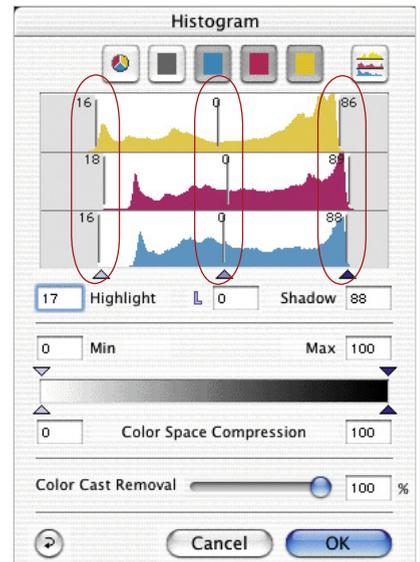
If the icon for "auto-adjust" is coloured, *SilverFast* will retain an existing colour cast and it will **not** be removed by clicking on the icon.

The result can be seen in the histogram as follows: The sliders for highlight, midtone and shadow areas are all vertically in line, indicating identical values and the amount of colour cast removal is shown in the indicator panel as a line with no value.
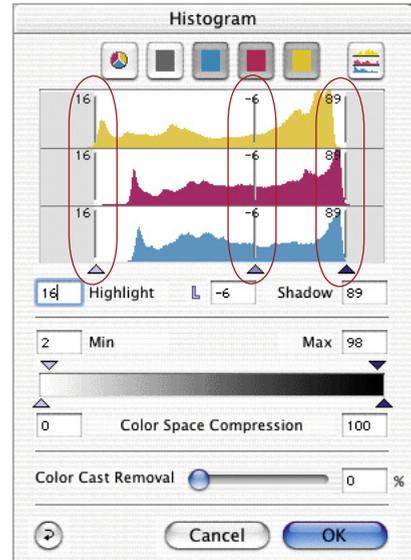
Using the Slider for Manual Colour Cast Removal

By using the slider you can determine how much of an existing colour cast you would like to remove. By moving the slider with your mouse you can see the resulting changes in realtime in the preview, as well as in the individual diagrams of the histogram dialogues. A value of "zero" for colour cast removal means that the colour cast will be retained. A value of "100" means that the colour cast will be completely removed.

If you would like to remove a colour cast by manually dragging the slider to an individual histogram, the automatic function is of course eliminated. The indicator panel for the colour cast removal is then crossed out.
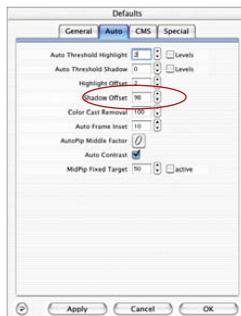
You can change the presetting of optimal values for automatic colour cast removal in the dialogue "Options..." / "Auto" / "Colour Cast Removal".

Optimising a Histogram Manually

In the left image at the bottom of this page, we have fixed the densitometer on the white area (which should become a neutral white). The values displayed show that a slight touch of red (C11-M17-Y16) is present. We now want to eliminate the reddish cast and generate a neutral white of a value of 5-5-5 and start with the cyan channel first.
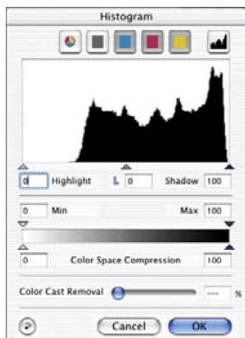
Histogramm not opti-

C	18	→	11
M	25	→	17
Y	24	→	16

a. Optimising the Cyan Channel in the Histogram

Click on the cyan button. Now we move the highlight triangle in the cyan channel towards the beginning of the first cyan pixel until the densitometer reads the value "5". Notice that we had to move the triangle slightly to the left of the first pixels. Had we moved the triangle exactly onto the first pixels, the densitometer would have read a value of "0" for cyan.
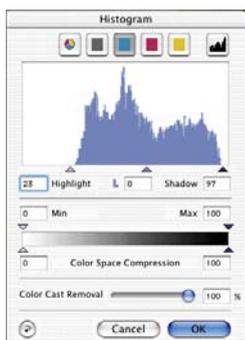
Histogram optimised (cyan only)

C	18	→	5
M	25	→	25
Y	24	→	24
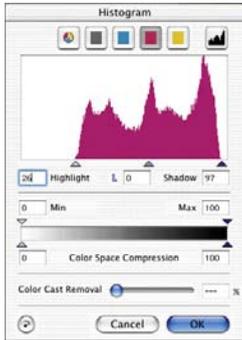
b. Optimising the Magenta Channel in the Histogram

Click on the magenta button. As above, we now define the magenta channel. By moving the triangle we also realise the value of "5" for the magenta display in the densitometer.

C	18	→	5
M	25	→	5
Y	24	→	18

c. Optimising the Yellow Channel in the Histogram

Click on the yellow button. Here, too, we move the triangle until the densitometer shows a value of "5". We now can see that within the image a beautiful, neutral white has developed, as shown on page before.

C	18	→	5
M	25	→	5
Y	24	→	5

5.3 • Histogram

SilverFast® Manual
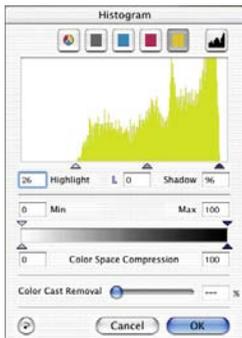
Compression of Colour Space in Histogram

In order to adjust the colour space to certain output- or printing requirements, you can compress the colour space in the histogram dialogue.

This does not mean that the source- or scanner-colour space is cut-off, but that the existing tonal values of the scanner are evenly distributed to the compressed scale of the new destination- or output-colour space.

shadow point set

highlight set

Minimum highlights

Maximum shadows
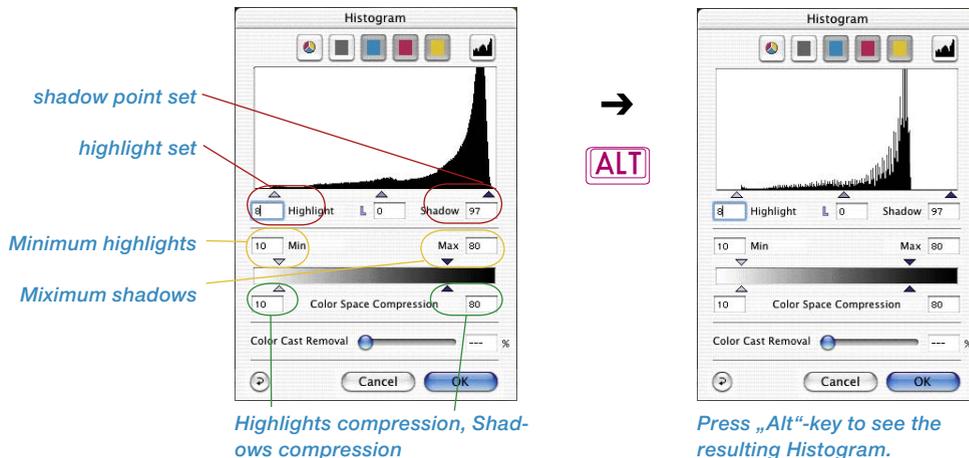
Highlights compression, Shadows compression

Press „Alt"-key to see the resulting Histogram.

The *SilverFast* histogram is controlled by five significant values:

• the absolute 0% value ("specular highlight"),

• white point set ("highlights"),

• midtone value ("midtone"),

• shadow point set ("shadows") and

• absolute 100% value ("max black").

Movable triangles controlling the compression are intelligently connected. This assures, values for "highlights-" or "shadows compression" never to become smaller than values for "Min" and "Max".

Movable Triangles and Value Fields „Min" and „Max"

"Min"-, "Max"- movable triangles' position represent the values for highlights and shadows in the histogram.

The range between highlight and shadow points set will be projected to "Min" and "Max" values for the final scan and should the situation arise be compressed.
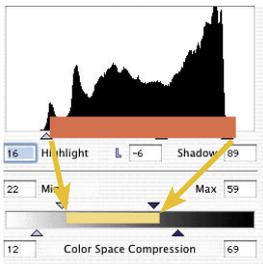
Movable Triangles and Value Fields "Colour Space Compression"

Colour Space Compression triangles' position represent the absolute values "0%" and "100%" in the histogram.

For the final scan the whole range of the histogram will be projected into the colour space range marked by the two triangles and will be compressed accordingly.
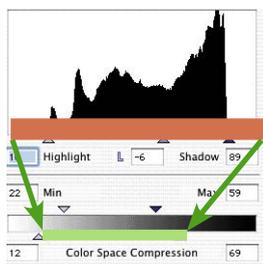
Final Result

The visible tonal range in the histogram, occurring before the white point (0 to 9%) and after the black point (88 to 100%) will become 12 to 22%, resp. 59 to 69% after the colour space compression.

Tonal values between white and black point (9 to 88%) will be projected to Min- and Max-values (22% to 59%).
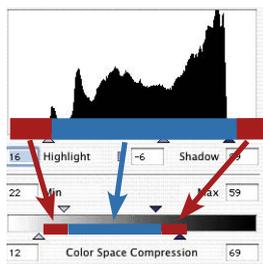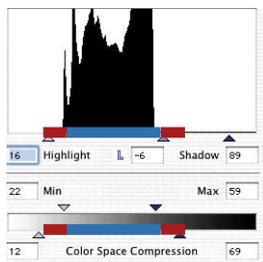
Pressing the "Alt" key will simulate the final scan histogram already here.
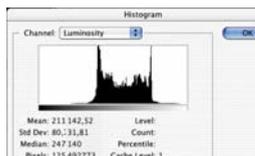
Resulting histogram in Photoshop

Example for Colour Space Compression

After doing a prescan height and shadow point are manually set with the highlight-shadow triangles in the histogram.
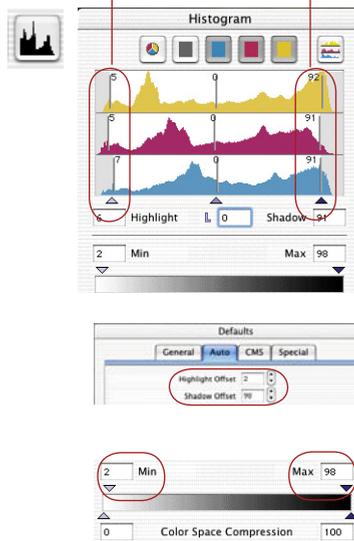
The Position of the highlight and shadow point becomes obvious with position of the outer movable triangles.

These are somewhat inset from the edges of the complete tonal range , here at 5% and. 93%.

Highlights and shadows still have detail information visible and are clearly distinct from the specular highlight (0%) and the very black (100%) ab.

According to the general settings for Min and Max values under OPTION / panel „Auto" / menu „Highlights at %" and „Shadows at %" have been set, the complete tonal range can be compressed for the output.

Values for Min and Max can also be changed for the actual scan frame directly in the histogram dialogue. Both movable triangles „Min" and „Max" are serving this purpose.

The example has a min value for highlights set to 2% and a Maxi value for shadows set to 98%.
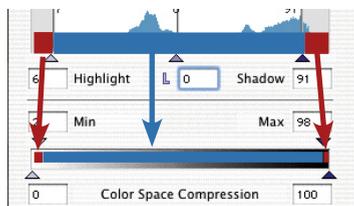
Visible tonal values in the histogram, occurring before the high-lights (0 to 5%) and after the shadows (93 to 100%), will become 0 to 2%, and. 98 to 100% with the compression.

Tonal values between white- and black point (5 to 93%) will be projected in between Min- and Max-values (2% to 98%)


Compressing Colour Space via Histogram

You can see a few examples of colour space compression with the help of the histogram in *SilverFast*:
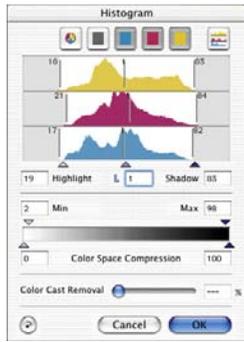
*Colour space without compression*
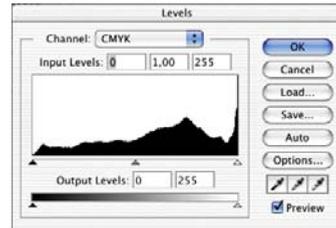
Compression to 3-40%
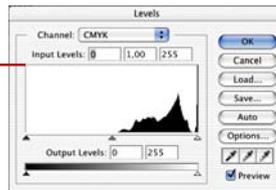
*Resulting histogram
(3-40%) in Photoshop*
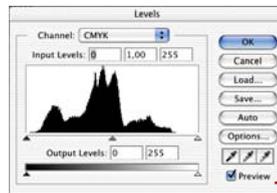
*Resulting histogram
(54-94%) in Photoshop*

Compression to 54-94%

Multiple Densitometer (Fixed Pipette, *MidPip4*)

Up to four densitometer measurement points are available in any *SilverFast* plug-in (*MidPip4*).

The measuring values of these pipette measuring points will no longer be shown in the densitometer window, but in their own window. The windows will attempt to adapt to the number of measuring points, meaning they will change their size, depending on the number of fixed points and the selected colour types (RGB, CMYK, grey etc.).

The colour types can be adjusted for each pipette independently of each other.

If all fixed points have been deleted, the window will close automatically. If the window is closed, all fixed points will automatically be deleted.

A fixed point can be created by pressing the mouse key on preview and holding down the "Shift" key as before. If the mouse hits on an existing fixed point, the point will be deleted. If the mouse hits on an existing fixed point and the mouse is moved, the fixed point will be shifted.
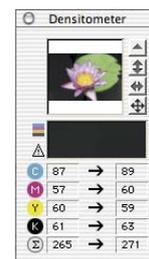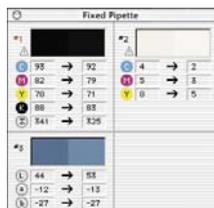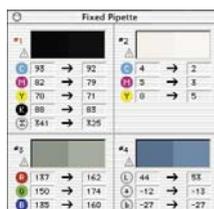
Displaying the Densitometer Measure Points with the Histogram and Gradations Dialogues

The measurement values of the active densitometer point are displayed as a coloured, vertical line within the open histogram dialogue. They are represented as coloured points on the gradation curve in the respective dialogue.

The activation of an inactive densitometer point is done by simply clicking onto it (here Point #2). The respective values are immediately taken into the dialogues.
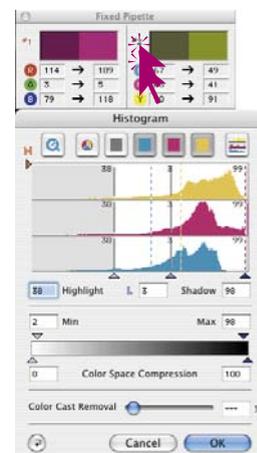
## Transfer of the Brightest/Darkest Point to the Multiple Densitometer

By clicking the white or black area in the icon for "darkest/lightest point" while holding down the "Shift" key, the reading found by *SilverFast* will be transferred to the window "fixed pipette". Good control of corner values can thus be assured.
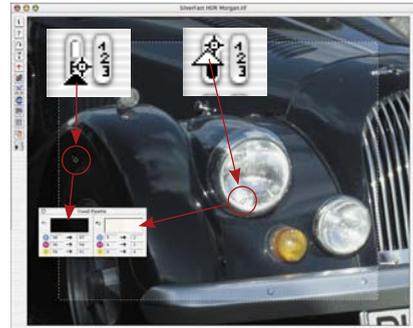
Selecting the Colour Space in the Densitometer

Hold down the "Ctrl" key and click into any of the measuring value cells of the densitometer. A pop-up window opens and by selecting another colour space the measured values in the densitometer will be converted to the values of the selected colour space. The following colour spaces are available: RGB, CMYK, Lab, CMY, HSL, K and LCH.

Now as before you can select the desired colour spaces by clicking the value display.
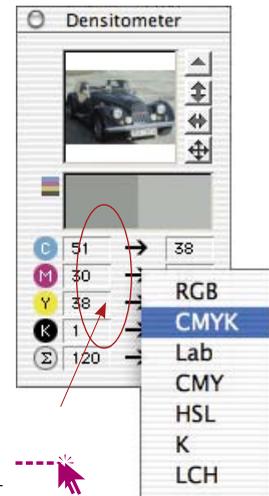
5.4 Gradation Dialogue

Gradation Curves

Gradation refers to the relationship between input and output. The tonal values of an image are optimised in such a way that the adjustment of highlight / shadow points and gradation give the best possible result. Inexperienced users will often try to optimise the image by means of brightness and contrast control, thus leading to significant deterioration of the image. The correct way of image optimisation can be achieved as follows:

1. Setting highlight and shadow
2. Optimising gradation
3. Selective colour correction
4. Size adjustments
5. Sharpening (unsharp mask)

If you regulate by contrast or brightness control, the danger exists that the highlight will "burn out" and the shadow will "burn in".

Overview

Save / load gradation curves

CMY-RGB-selector

Colour channel selector

Gradation point

Gradation Curves

Save...

Magenta

Gelb (Yellow)

Cyan

Gradation curves

Input fields

| 0 | 6 | 16 | 44 | 74 | 89 | 100 |

Selector
linear (N) / loga-
rithm (L)

L   -5   *Midtones*

25   *Contrast*

△   0   *Highlight*

▲   0   *Shadow*

☼   0   *Brightness*

Cancel   OK
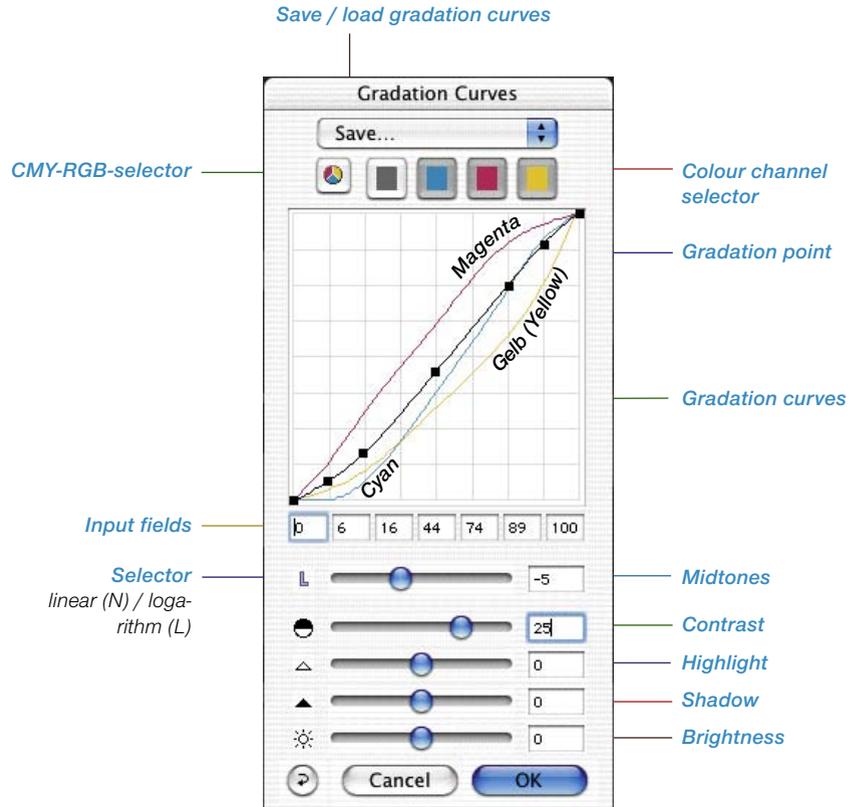
Gradation Dialogue in *SilverFast...SE* versions

The dialogue is simplified in all *SilvertFast...SE* versions and is recommended for novice users.
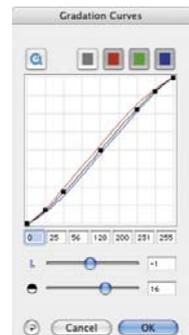
Adjusting Gradation Curves

Gradation curves can be changed in four ways:

Midtones
Contrast
Highlights
Shadows
Brightness

		-5
		25
		0
		0
		0
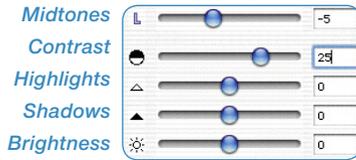
a. By Using the Sliders

By using the sliders, the gradation curves can be conveniently altered. The input fields relating to the curve points and those relating to the slider position are updated accordingly. The slider position can also be changed by entering values into the input fields right of the slider.
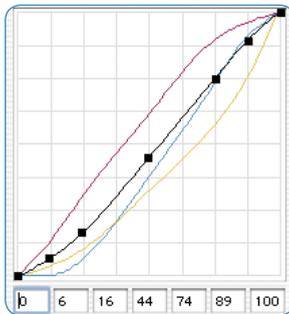
b. By Moving the Curve Points

The curve points of a gradation curve can be moved by the mouse. Here, the values in the input fields below the curve points are automatically updated.

| 0 | 6 | 16 | 44 | 74 | 89 | 100 |

c. By entering Values into the Input Fields

The curve points can be moved accordingly by changing the values in the five input fields.

✓ Curve_5591
Job JohnLtd.
Mag+5 Cy-10
PhotoShop-Import...
SilverFast-Import...
Delete...
Save...
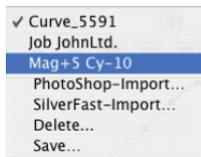
d. By loading Saved Gradation Curves

You can load previously saved gradation curves out of the list and these will take effect immediately.

Saving a Gradation Curve

Enter the gradation curve dialogue and get the pull down menu "Save"; the dialogue to the left will open and ask for the name of this curve.
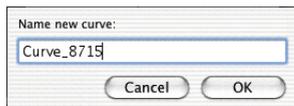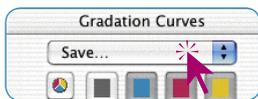
Deleting a Gradation Curve

In order to delete a gradation curve from the list, click on "Delete" and select the curves you want to delete from the list. You can also select more than one curve. Clicking the "Delete" button will delete all curves selected.
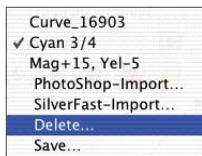
Gradation Curve Channels

To choose a single gradation curve channel, for example magenta, click on the appropriate button. To manipulate two channels simultaneously, hold down the "Shift" key and click on a second channel button. To activate all three channels, click on the grey button.
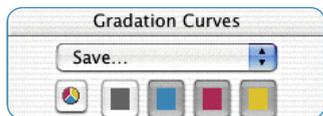
Cyan - Magenta - Yellow
(Red - Green - Blue)

Deactivating Gradation Curve Points

To change gradation curves without the limiting influence of nearby existing curve points, You can deactivate any of the existing curve points.
The following example shows the effect of a curve correction without (left) and with (right) deactivated curve points.

The limiting influence from the neighbouring curve points is obvious.
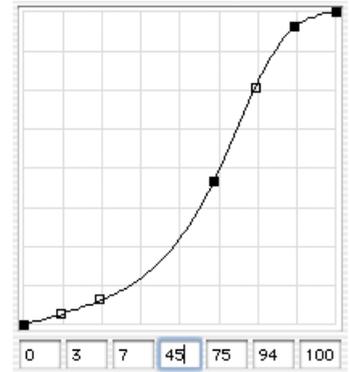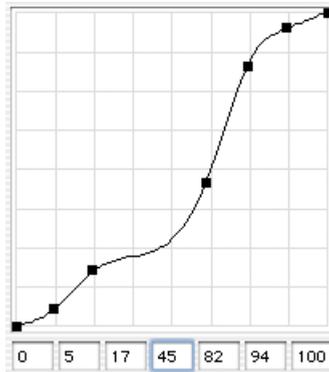
Deactivated curve points

In order to deactivate a curve point, press the "Alt" key and click on the desired curve point – it changes into a black outline.
In order to reactivate a curve point, press the "Alt" key once again and click on the desired curve point – it becomes black again.

Resetting Deactivated Curve Points

In order to reset all deactivated curve points just click on the "Reset" button in the gradations dialogue.

Control of the curve points:

Point activation/deactivation
Mac+Win: while holding down the "Alt" key, clicking on a curve point makes it active (filled in black) or passive (empty).

Moving the point vertically
Mac: click-dragging while holding the "Ctrl" key down keeps the X coordinates constant.
Moving is only possible in the Y direction.
*Windows: click-dragging while holding down the "Alt" key will keep the coordinates constant.*
Moving is only possible in the Y direction.

Hottrack in a vertical direction
While holding down the "Command" and "Ctrl" key ("Strg" + "Alt" for Windows), the Hottrack shift will take place for one point only in a vertical direction.

Hottrack Gradation

Starting with version 5 of all *SilverFast* plug-ins, there are improved control possibilities of the curve points in the gradation dialogue. If the "Command" key ("Strg" key for Windows) is pressed while dragging the curve points (track points) in the gradation dialogue, the chosen curve point will automatically become active and all other curve points (except 0% and 100%) will become passive. After dragging, the original condition of the active and passive points will return to their prior settings.
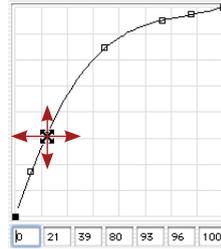

Upon pressing the "Ctrl" key, ("Alt" key for Windows), the clicked curve point can only be shifted in a vertical direction.
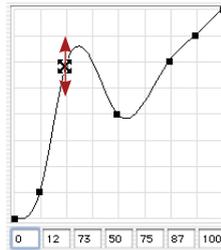
## Marking the Condition of Gradation Points (On/Off)

Starting with version 5 of all *SilverFast* plug-ins, the last entered command of the individual tracking points of the gradation curve will be saved up to the next change. The condition of the active (filled in black) or passive (empty) tracking points will remain and is also available after restart.

Extended Gradation Curves
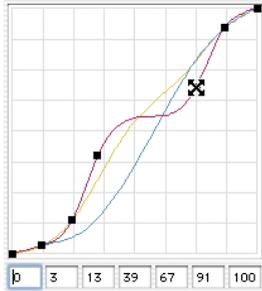
Extended gradation curves allow the generation of complex curves. The gradation curve points can freely be moved both horizontally and vertically. Even the most complex gradation curves can be generated in this way.

| 0 | 3 | 13 | 39 | 67 | 91 | 100 |

Loading Photoshop Gradation Curves
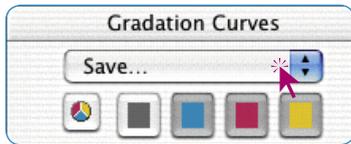
Gradation curves, which were generated by Photoshop, can be loaded by means of the import-function within the pop-up on top of the channel selector.
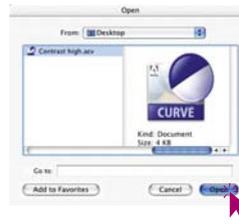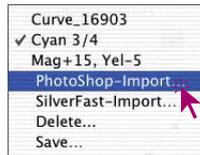
Selecting Gradation Curves

Gradation curves can be loaded from an existing selection. More curves can be added later.

Linear and Logarithmic Midtone

The midtone slider is the most important slider to achieve the correct over all brightness. For normal images correction of the midtones is sufficient to get the correct tonal balance.

If however an image has a lot of shades in the three quarter tone, it might be necessary to use a different curve to influence the three quarter tone range.

In order to influence the three quarter tone range, click on the "N" (normal) at the very left of the midtone slider – the "N" turns into an "L" (logarithmic) and the gradation curve changes to brighten up the three quarter tones.
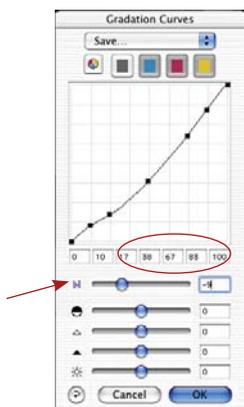
Normal midtone curve

With normal midtone gradation
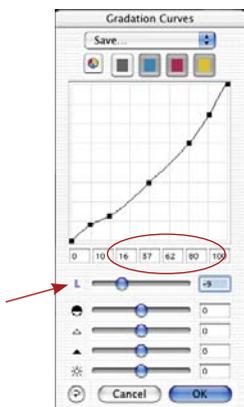
Logarithmic midtone curve

With logarithmic midtone gradation

5.4 • Gradation curves

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5.5 Global Colour Correction Dialogue (Colour Balance)
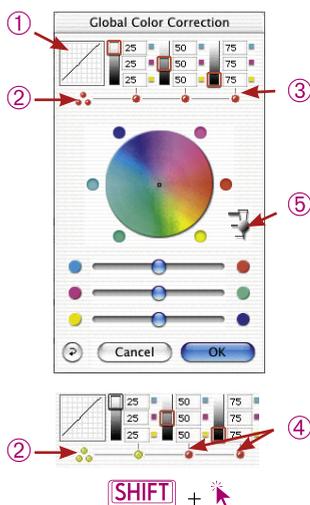
All *SilverFast* versions have a very intuitive global colour correction.

The actual gradation curve ① will be overlaid in the top of the dialogue window. It will now be easy to determine exactly what is happening in the gradation curve during global correction.

One mouse click will determine if the total tonal value area will be corrected globally or only in portions, i.e., only the highlights, the midtone selector tones or the shadow areas. For the total tone value region, click on the three yellow/red batched points ② (below the miniature gradation curve); for a portion, click on one of the single red/yellow points ③④ (below the value indicators). Desired portions can be combined by holding down the "Shift" key and clicking once ④. A red point below the value indicators and a red frame on the respective greyscale will indicate that this tonal value region has just been activated and can be changed.

In addition, a three-step slider ⑤ has been included, which will allow adjustment for the degree of change. The bottom step allows small changes. The upper step will produce more intense changes.

The other operations of global correction have remained the same: the use of the slider, or click-dragging within the colour circle.

*SilverFast...SE Versions
The dialogue is simplified in all Silver-FastSE versions and is recommended for novice users.
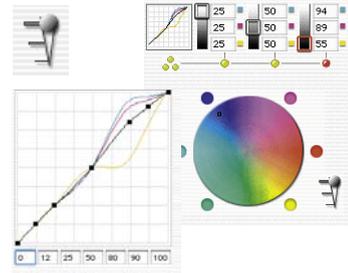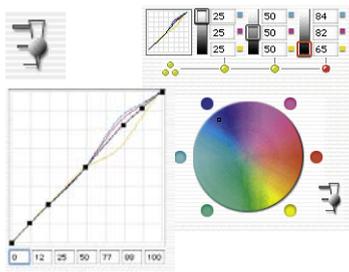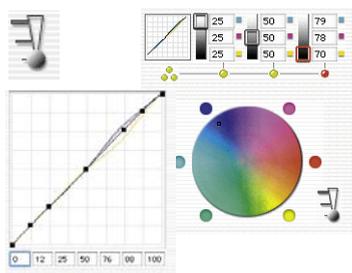

Example for the effect of the slider
Each time one correction was undertaken in the shadow area. In order to make it clearer, the central image point in the colour circle was completely moved from the middle to the outside into the blue. The window of the gradation curve shows the change according to the corresponding "step" of the slider.

Colour Balance

The colour balance is edited in the global correction dialogue. We assume here that a colour cast has already been neutralised by the highlight / shadow tools, and should merely be modified in a few tonal ranges. This is a gradation curve change.

Colour balance is used to correct the all over impression of the image. It has to be presumed that highlight and shadows are already neutral and that it is intended to slightly shift the colour balance in the midtone or 3/4 tone. For this purpose the "global correction dialogue" was designed.

Range Selection for:
All   25%   50%   75%
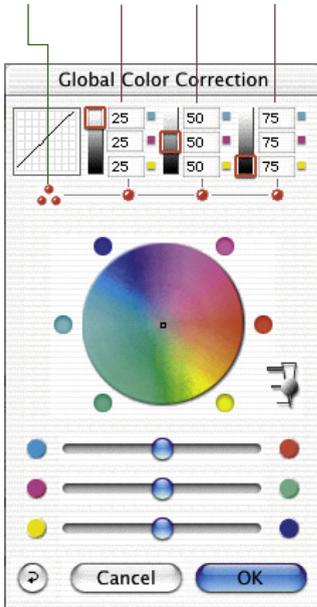
Global correction unchanged
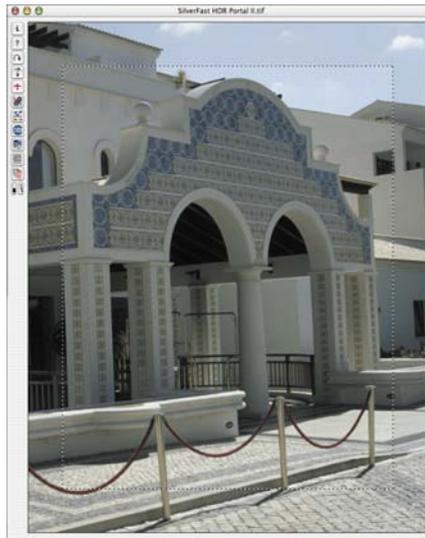
Preview unchanged
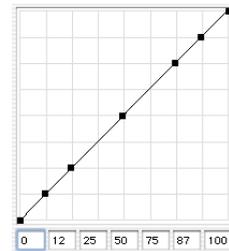
Gradation curve unchanged

Resetting Colour Balance

The movement of the gradation curves can only be reset in the gradation curve dialogue by clicking the "Reset" button. Then all values in the global correction dialogue are also reset to their default values.

Changing Colour Balance

The colour balance is changed by moving the hand, clicking on one of the six coloured circles or by using the sliders. The movement is effective only for the selected correction range.
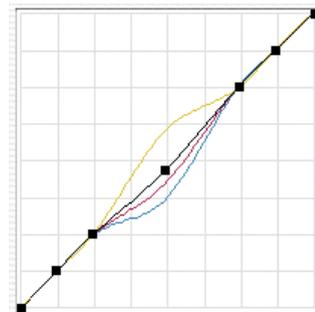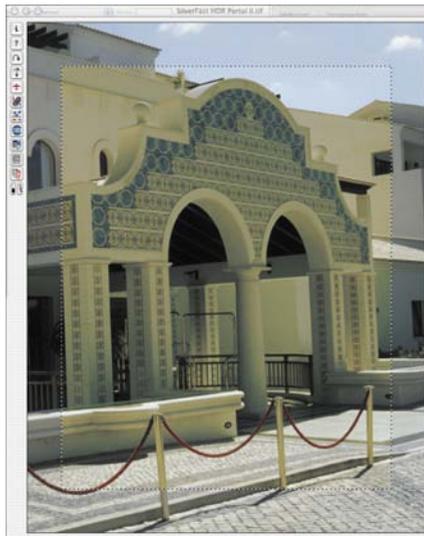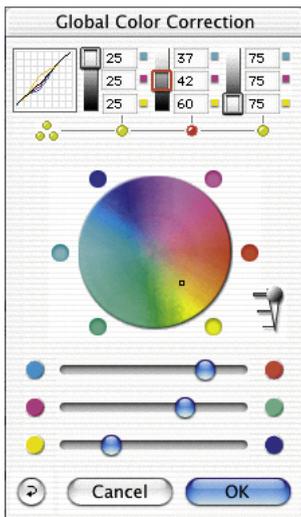

Global correction
all elements, except highlights and shadows.
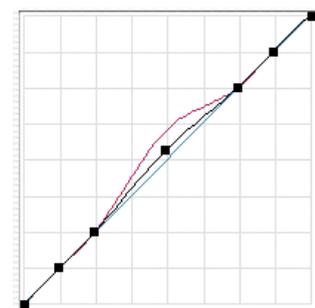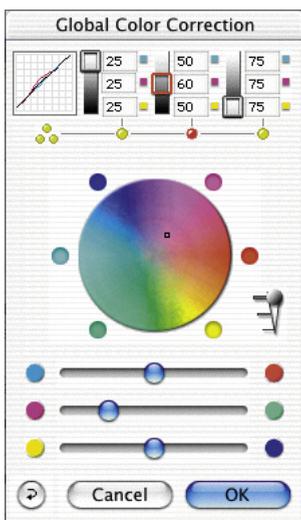
*Global correction*
*25% to 75% has been changed to magenta.*

5.6 Selective Colour Correction

Colour in Colour Correction

Selective colour correction was developed for high-end scanners, and consists of a changing colours within a colour. The colours red, green, blue, cyan, magenta and yellow as well as the 6 colours in between are corrected. The contaminating colour can be reduced and the current colour can be increased. The cast colour of red is cyan, of green is magenta, of blue is yellow.

The type of selective colour correction that is used in *SilverFast* can be called a sector correction, as it is correcting colours within a band of 60° or 30° angle – depending on which matrix is being used (read about further explanation of the colour model in the addendum).

*SilverFast...SE Versions
The dialogue is simplified in all SilvertFast...SE versions and is recommended for novice users.

The 6 colour sectors while using the "Colour Matrix 6"
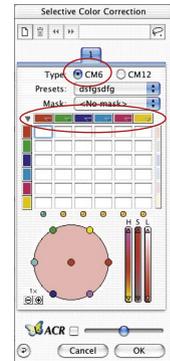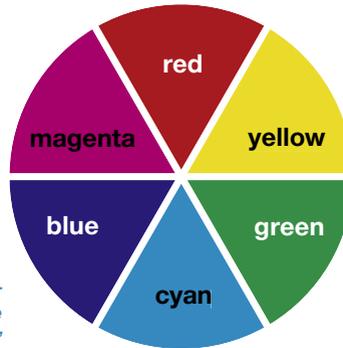
The 12 colour sectors while using the "Colour Matrix 12"
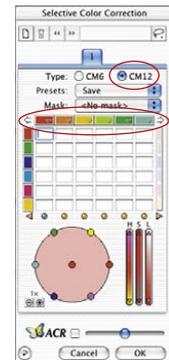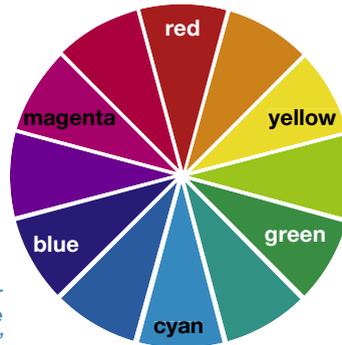
Overview

Activation of Selective Colour Correction

Button for opening dialogue window

Grey background indicating Colour correction is active

Administration of Layers

Add new layer

Delete active layer

Move layer in front of previous

Move layer behind following

Creating Masks

Changing mask tools: Click button and hold mouse depressed, when pop-up comes up change to tool desired.

Brush

Polygon

Lasso

Sector-Presets (triangles ▬)
Loading and saving settings only for the relevant sector

Indicator-Triangles (◁ ▷)
Green: Left / right there are other active sectors
Red: Left / right there are no other sectors active.

Colour Space Zoom
Increases / decreases the magnitude of change enabling bigger / finer corrections.

Selective Color Correction

Type: ○ CM6 ● CM12
Presets: Save
Mask: <No mask>

ACR

Cancel   OK

OK
Apply settings and close dialogue

Reset / Reset all
Reset Settings. By pressing the "Alt" key, all parameters are reset.

Cancel
Close dialogue and don't apply settings.
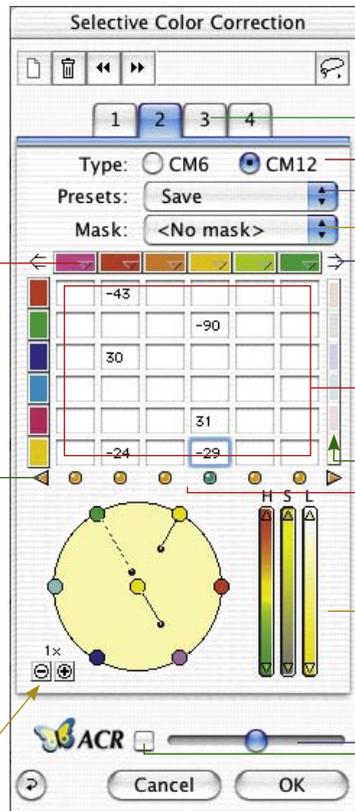
Layers
Single Layer panels

Type CM6 or CM12
Switch between 6-colours or 12-colours

Presets
Save or load settings

Mask
Save or load Masks

Overview Colour Sectors (arrows ⇦⇨)
Only with CM12 available! Showing other channels which are further right or left.

Colour Matrix
Colour table for all Colour sectors

Changing all Colours
When active, all colours of the selected sectors can be made brighter or darker by dragging with the mouse from the inside or outside of the colour wheel.

Active-Switch / Indicator (● ●)
Green: Sector is active
Red: Sector is not active

HSL Controls
Change by holding the small triangle at the top or button of the control depressed

ACR control

Switch ACR- On / Off

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Objective of Selective Colour Correction

The object of the selective colour correction is to reduce the contaminating colour and enhance the primary colour, as much as necessary. In the upper row, all colours that are to be corrected are displayed horizontally. The colours which are displayed vertically are those colours with which the upper colours are to be corrected.
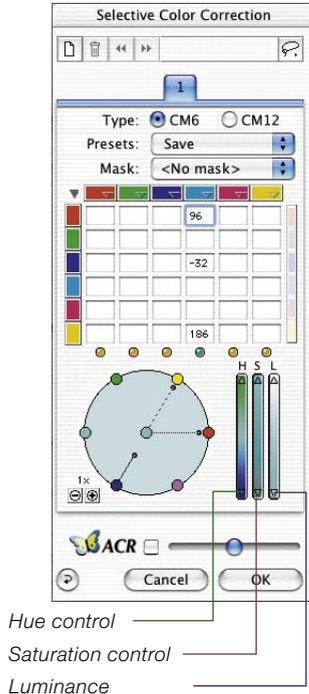
1. Colour matrix

In the upper row of the colour matrix, you will find the RGBCMY colours that can be corrected aligned horizontally - these can also be corrected by the vertically aligned colours. For example, the magenta part of the red can be increased by entering +10 in the respective field.

2. HSL controls

These controls change the hue (H), the saturation (S) and the luminance (L).

3. Colour circle

By means of the colour circle, colours can be altered by adding or subtracting colours.

Hue control
Saturation control
Luminance

Selecting the Correction Colour

Often it is difficult to tell if a colour tone is red or magenta, blue or cyan. Simply click on the colour in the prescan window, and *SilverFast* shows the type of colour that is to be corrected, in the middle of the colour circle. The colour sector recognized will be the colour in the centre of the colour wheel. At the same time the corresponding column in the colour matrix will become active.
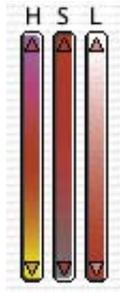
HSL Correction by Sliders

Hue (H): click on the small triangle located at the end of the Hue pillar until you reach the desired correction (Keep the "Shift" key pressed down in order to increase the correction speed).

**Saturation (S)**: Comfortable adjustment of saturation.

Luminance (L): Comfortable adjustment of luminance.

Correcting an Image Selectively

We will use an example to show how to selectively correct colour. Go by the following steps to correct the green colour of the blouse and sari selectively:

1. Click on the "Selective colour correction" icon in the *SilverFast* tool bar. The dialogue on the left appears.
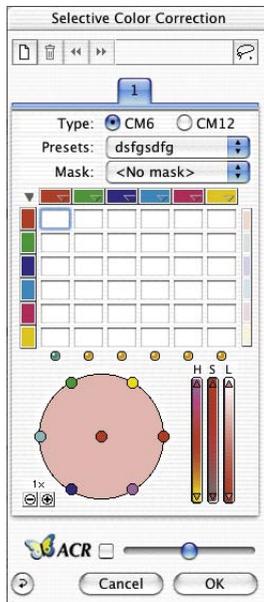
Green colour to be corrected
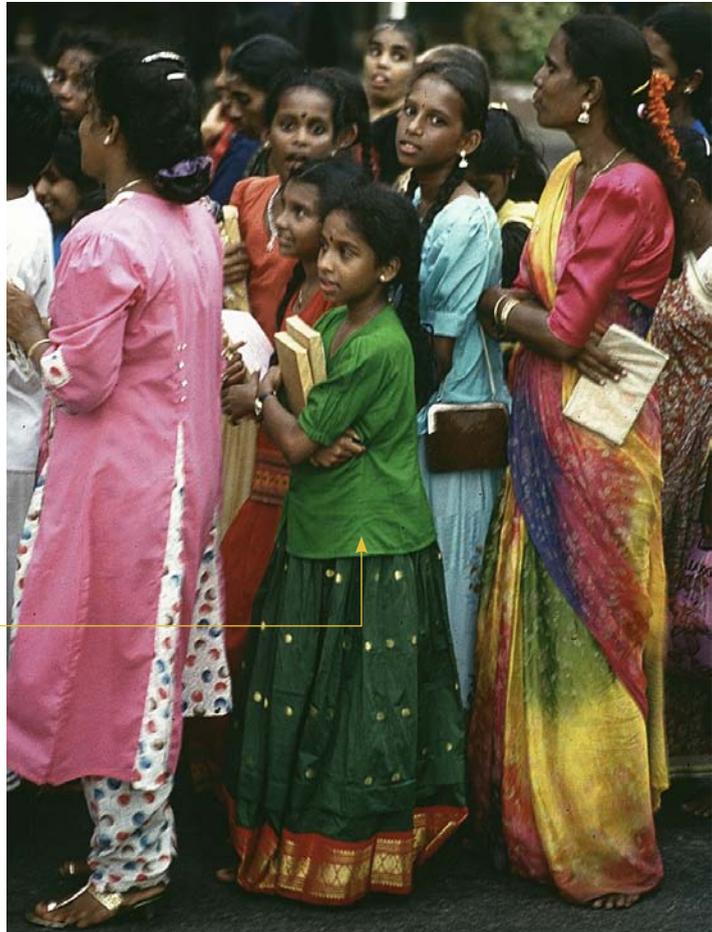
2. Click onto the green blouse of the woman in the centre. The colour circle and the HSL correction change to green.

3. Now move the cursor over green on the on the outer colour circle (the cursor turns into a hand cursor with a minus sign inside).

4. Press the mouse and drag towards the centre of the colour circle (a line is pulled out of the green spot and the green becomes weaker within the blouse and sari).
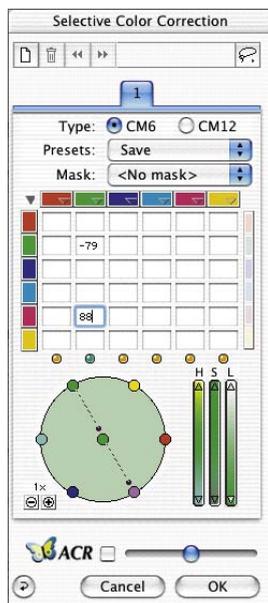
Green colour changed to blue.
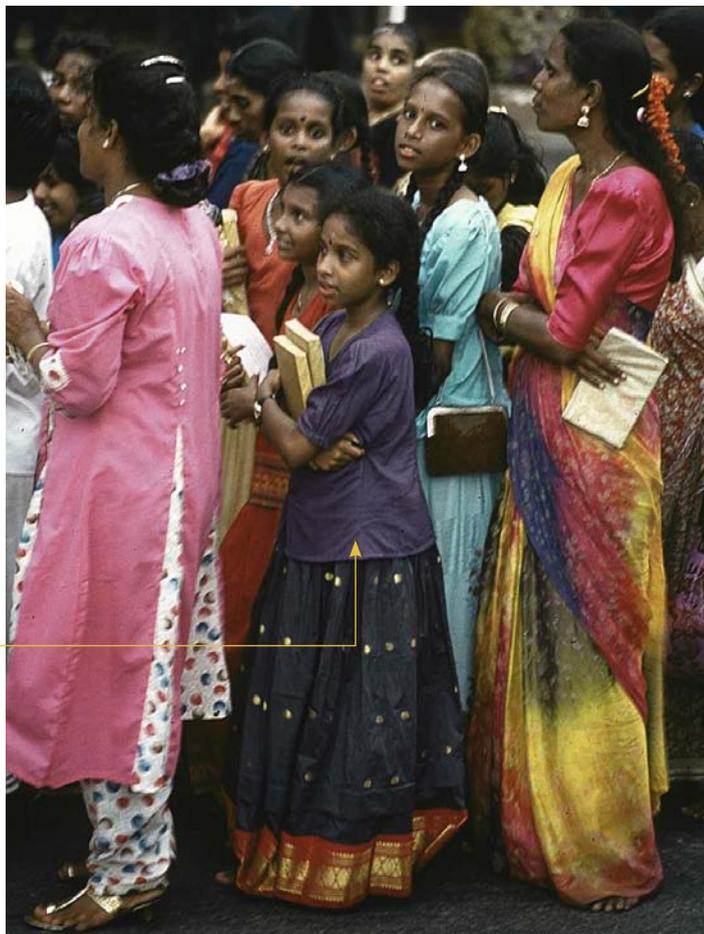
5. Move the cursor over the green spot in the centre of the colour circle and press and drag towards the Magenta spot on the outer circle (the blouse and sari colour now changes to blue).
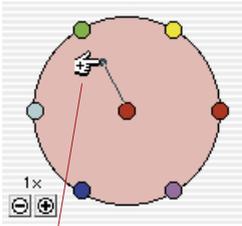
Plus correction (adding colour)
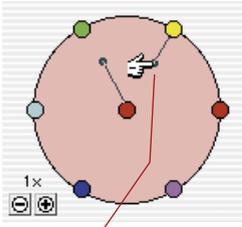
Minus correction (subtracting)

Colour Circle

In order to add one colour into another, move to the centre of the circle (the hand cursor symbol shows a "plus" sign) and drag it towards the colour that you wish to add (a line with a bullet is pulled out). In the case shown, the primary colour (red) is enhanced by adding red, so the red colour will become stronger More than one colour can be added to the chosen colour in the centre of the circle.

In order to subtract colour, move the cursor over a colour on the circuit of the circle (a "minus" sign appears on the hand cursor symbol). The colour chosen will now be subtracted from the colour to be corrected (in the middle). In the example shown, red is subtracted from red, so the red colour will become weaker.

The correction lines in the circle can be scaled by the small "plus/minus" buttons bottom left of the colour circle.

Selecting Colours

By pressing the "shift" key and simultaneously clicking on the LEDs or into the prescan, you can add another colour to the existing selection.
This way you can select and work with three or more neighbouring colours. This is especially useful when using the HSL controls while increasing the saturation of the selected colours.
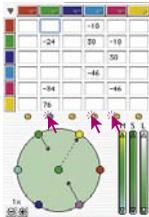
Selecting all colours with keyboard shortcut "Command + A" possible (PC: "Strg + A").
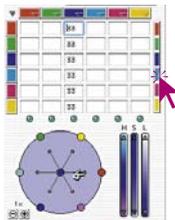
Right of the matrix you have a vertical colour bar, which can be used to couple all colours for subtracting or adding colours. This is only relevant when using the colour wheel for corrections. If for instance you would try to add yellow to red (with coupling activated) by dragging from the centre to the outside of the colour wheel, all colours will be added to red instead, making the red much darker.

Colour Correction Presets

Any desired number of presets can be saved in the selective colour correction under each of the six correction colours red, green, blue, cyan, magenta and yellow, and re-loaded later. Also, a combination of these presets can be saved accordingly (see next page).
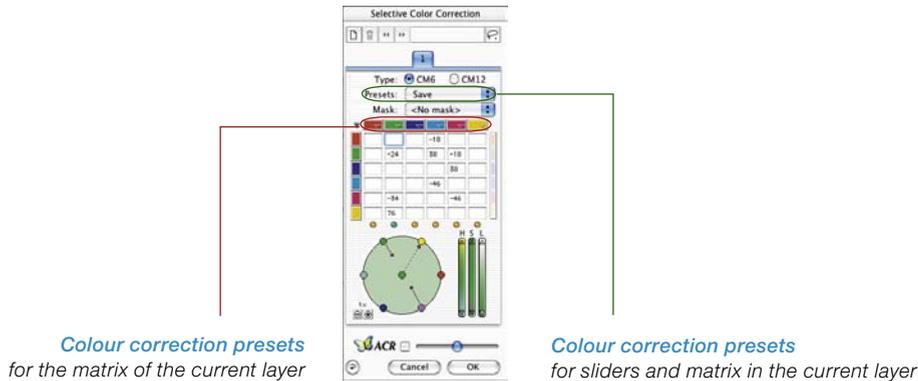
*Colour correction presets
for the matrix of the current layer*

*Colour correction presets
for sliders and matrix in the current layer*

Presets for the Colour Matrix

The small triangles indicate the presets in the colour matrix. For each single colour, several corrections can be made.
In order to delete a preset from the list, keep the "Alt" key (PC: "Shift" key) pressed down while dragging the mouse over it. Release the mouse button and the preset is removed.

Presets for Controls and Matrix Combinations

Using the button "Save" in the dialogue window you can save correction combinations of matrix presets and slider positions under the pull-down menu for the active layer.
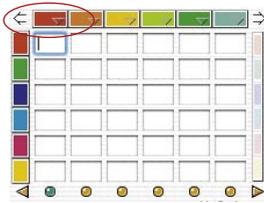
Working with Colour Correction Presets

Open the selective colour correction dialogue and click onto the preset symbol in "RED".

You will see a pull down menu with red presets. Choose a correction and release the mouse button.
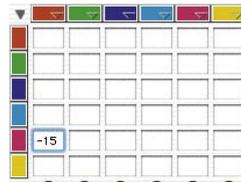
The respective values will now be entered into the colour matrix automatically.

By the same method, each of the six correction colours can be loaded.

In order to delete a preset from the list, keep the "Alt" key (PC: "Shift" key) pressed while dragging the mouse over it. Release the mouse button and the preset is removed.

Joining Presets for a Complete Correction

Any desired presets can be combined to a complete correction and saved under a specific name.

By means of the import function, saved parameters from other *SilverFast* products may be loaded and applied to the current version.

The presets are loaded from the "prefs" folder of the *SilverFast* source version out of the file "SFApp".

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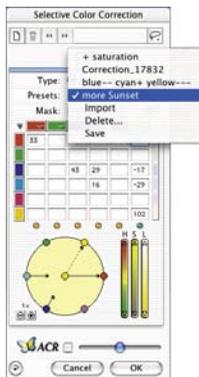
Working with Masks
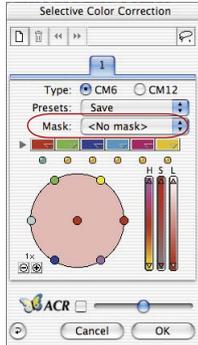
Normally all settings in the selective colour correction will effect the entire image (frame).

If you want to limit the correction to certain areas of the image, you have to apply masking.

The mask can be freely drawn with the mouse inside the preview window.

For assignment and containment of the current selection a "Lasso"-, a "Brush"- and a "Polygon"- tool have been implemented.

After drawing a mask the colour corrections are applied within the activated area. They are only visible if the active area also covers or touches some parts of the scan frame. Lasso- and polygon-tool are applicable in both the 6x and the 12x matrix.
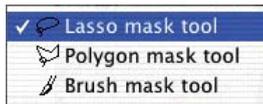
Selecting a Mask Tool

By clicking and holding the mouse over the lasso tool, you will get a pop-up with the other mask tools. Still holding the mouse, you can now change to one of the other mask tools and release the mouse.

The mask menu immediately switches to "New mask / extend mask" icon order to enable immediate drawing.
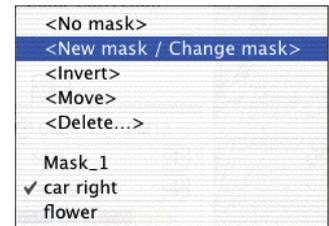
New Mask with Lasso Tool

The active region of the mask has to be drawn in one move while holding down the mouse button. Upon releasing the mouse button, the region of the mask designated in this manner will immediately be furnished with the already programmed selective colour correction, or the correction to be made will immediately be applied to the active surface area.

A "Save" dialogue will appear immediately after the symbol so the mask may be saved.

New Mask with Polygon Tool

The active mask area will be defined by subsequent single mouse clicks. A line is drawn from mouse-click to mouse-click. Completing the geometric area is achieved by clicking the start point of the Polygon again. The region of the mask designated in this manner will immediately be furnished with the already programmed selective colour correction, or the correction to be made will immediately be applied to the active surface area.

A "Save" dialogue will appear immediately after the symbol so the mask may be saved.

New Mask with Brush Tool

The brush tool creates a mask using small lines. Only these small areas will be effected by the selective colour correction.

A "Save" dialogue will appear immediately after the symbol so the mask may be saved.

Hard or Soft Mask Edges

The edges of the drawn masks are variable in their softness. The standard setting for the mask edge is defined as "hard". The crossover at the border is freely definable in its width.

Click on the "Options..." button on the "General" palette. Choose "General" in the popup window "Presets" and continue to the menu "Mask Edge Size".
The standard setting here is "0", which defines a hard mask edge.
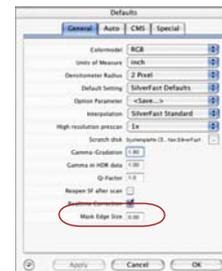
Mask Edge Size = „0.00"

By changing the value and clicking onto the button "Apply", the effect can be monitored in the preview window. The influence, taken by the value typed in, depends on the currently used output resolution.
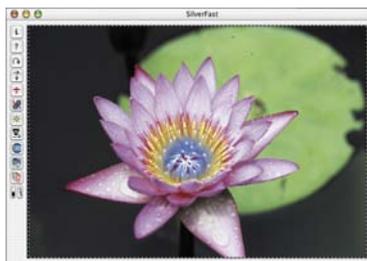
Mask Edge Size = „0.05"

If the result is satisfactory, close the "Options..." dialogue by clicking "OK".
The setting chosen here will then be valid for all mask edges.

5.6
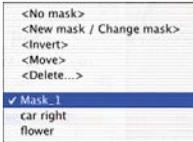
Changing of a Mask

The existent masks may be altered at any time. To do this, simply choose the desired mask in the mask menu.

Adding to Mask: Press "Shift" and draw desired addition. The mouse pointer will display a "plus" symbol.

Subtracting from Mask: Press "Alt" and draw desired subtraction. The mouse pointer will display a "minus" symbol.

Changing a Mask
On layer 3 of the left picture on the left, only the sleeve has a mask "Arm". In the picture on the right the emblem has been added to the previous mask.
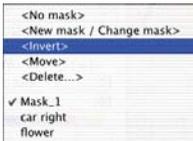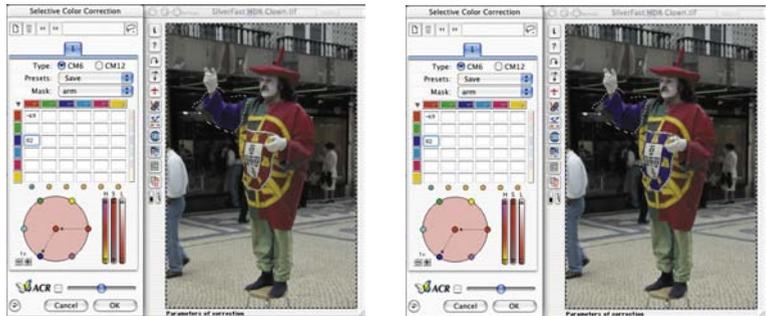
Belated Inversion of a Mask "inverse"

The menu "invert" is a switch. It allows switching between the previously active mask area and the previously inactive area.

Directly new Redraw of an Inverted Mask

Depressing the "Alt" key with any of the mask tools activated will invert the mask function. The mask will become kind of a negative mask. Now encircle the area with the mask tool you do not want get affected by the correction.
This function is similar to the invert mask function from the mask menu.

Changing a Mask

The menu "Masks" shows all previously created masks. Masks can be created and deleted here.

The mask currently active is highlighted by a check mark before the mask name.

Changing from one mask to another is accomplished by clicking onto the masks name.

The dialogue is closed and the preview window will be updated.
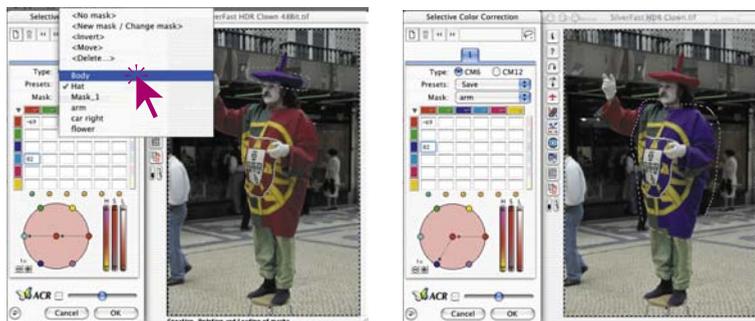
Changing the Position of a Mask "move"

By click-dragging, the active mask area can be shifted as a whole, within the prescan window i
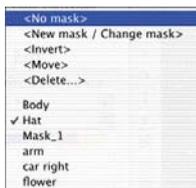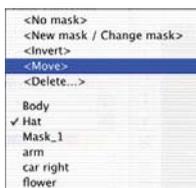
De-activating a Mask "no mask"

By means of the menu entry "no mask", an existing mask for the active layer is de-activated.

The mask will not be deleted.

Displaying an Inactive Mask Area

If the selective colour correction dialogue window was closed with an "OK", the inactive mask area in the prescan window is displayed in dimmed form when pressing "Cmd" + "Alt" keys simultaneously ("Ctrl" + "Alt" for Windows).

The active mask areas are not dimmed.

Mac: ⌘ + ALT
Win: CONTROL + ALT
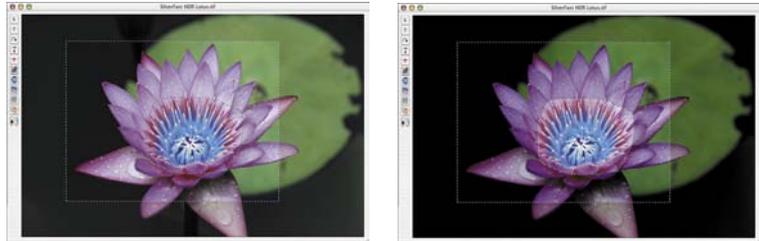
Removing a Mask <delete>

A dialogue window can be opened here where all previously saved masks are shown.

A single mask can be marked by clicking and deleted from the menu. By clicking while holding down the "Shift" key, several masks can be marked and deleted from the menu. By clicking while holding down the "Command," rows of masks can be marked and deleted from the menu.

```
<No mask>
<New mask / Change mask>
<Invert>
<Move>
<Delete...>

  Body
✓ Hat
  Mask_1
  arm
  car right
  flower
```
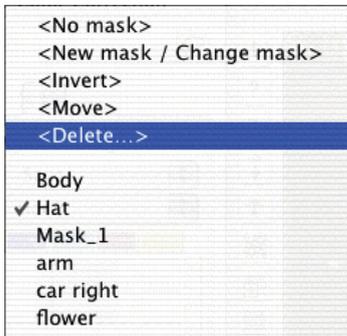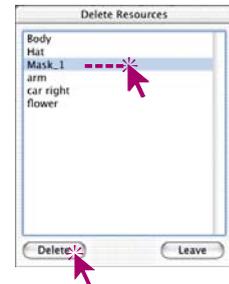
Single Mask

Inverted Mask

Mask with several partial selections

Correction of 12 Colours

The second panel of die selective colour correction dialogue allows the correction of 12 colours. You can now correct half-tints like violet or orange. It can be used instead of the 6 colour matrix.

Because all of the input fields of the colour matrix cannot be shown at once there are two arrows on the top left and right to scroll the matrix horizontally.

If you select a colour which is not visible by clicking on the preview the matrix scrolls automatically.

The arrows on the bottom left and right show that there are selected colours that are not in view which will be corrected.

Selective Colour Correction with Multi Layers and Masks
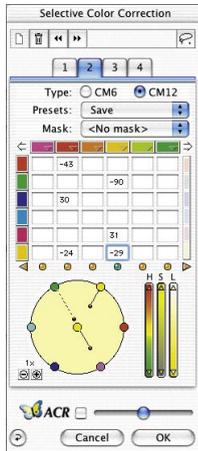
The new selective colour correction in *SilverFast* version 6 or higher now includes up to your layers. Each layer can have its own independent colour correction including masking. For example, four red apples can now each become a different colour. Most complex colour corrections can very comfortably be achieved.

Selective colour correction is one of the most significant functions of colour reproduction. The new selective colour correction increases the correction ability of the user, without making the workflow more complicated. A single click onto the object the user wants to change and *SilverFast* recognises its colour. Using the controls, it is now very easy to change the colour. By adding layers and masking objects, one colour can now be split into different colours.

The special function "Mask Edge Size" under the "General" panel in the "Options..." dialogue, can even define the degree of smooth edges of the masks.

The user can also define the appearance of the selective colour dialogue. The whole colour matrix can be hidden (when not needed) by clicking onto the small triangle left of the colour channel indicators.
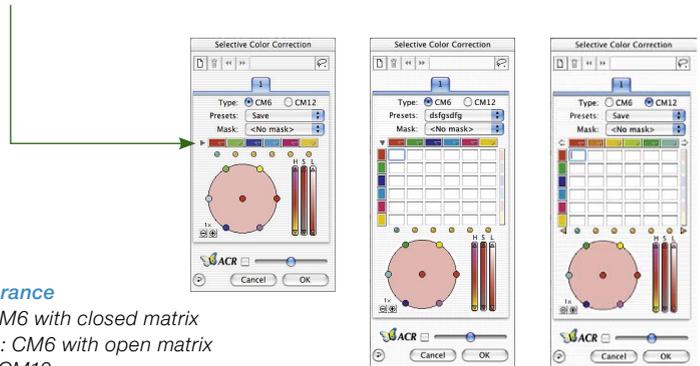
Appearance
Left: CM6 with closed matrix
Middle: CM6 with open matrix
Right: CM12

Creating new Layers

A new layer is created by clicking onto the layer button. Up to four layers can be created. Each new layer will start with default settings but will build upon the underlying layer. In case, as shown in the example below, red is turned into blue on the first layer, the second layer will not show red as red but as blue (since it has been changed in the first layer).
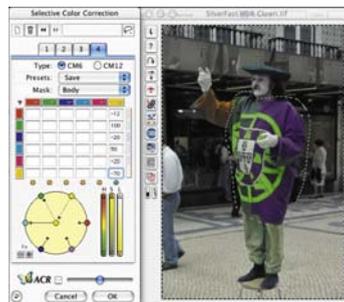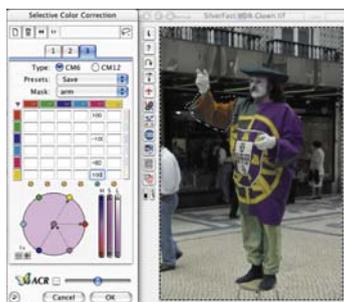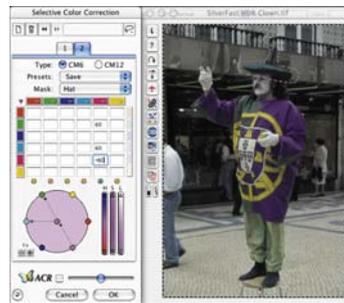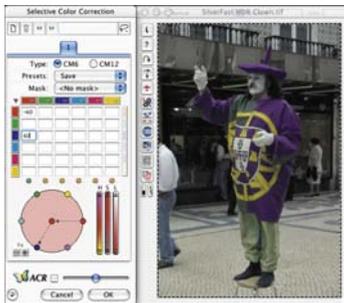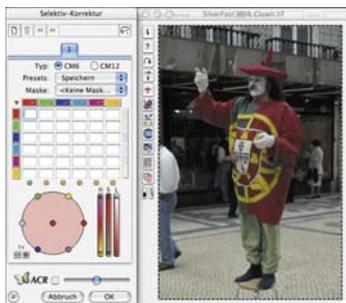
Adding Layers
Starting with the original (top left) layer, up to four layers can be created and colour-corrected. On layers two to four masks have been applied in order to colour-correct single items of the costume.

All settings within one layer are somewhat independent, but always built on the underlying layers with reference to its results. For this reason it is vital to understand the difference of the functions "Moving layers" and "Changing layers".

Changing Layers ("Switching")

By clicking onto the layer number you will switch to the desired layer with all its settings. You will also see the masking that is active on this layer. Masking marquees of other layers will be invisible.

The preview itself such as its colour representation will always stay the same when switching to other layers! The changes that you will see are only those with reference to masking appearing in different locations of the preview.
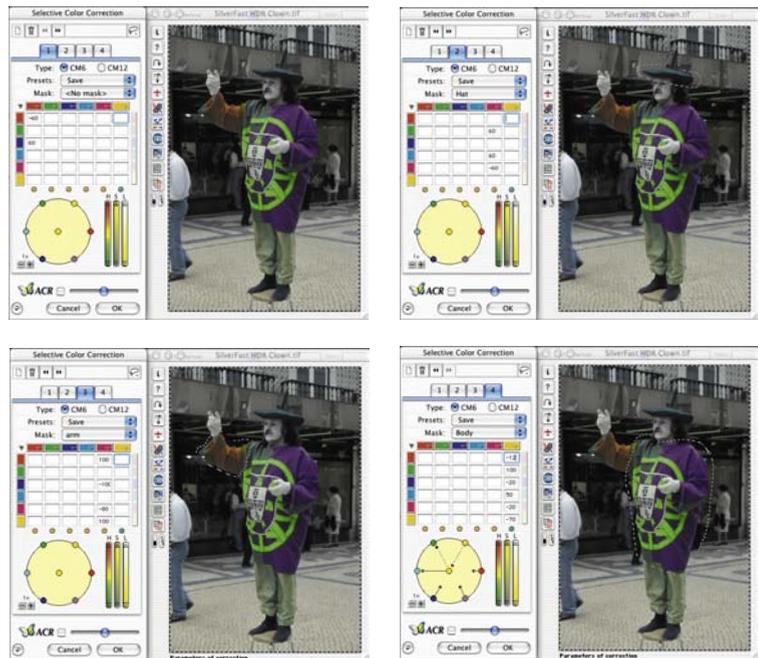
Turning Layers over
Starting with the original layer, all layers will be shown in turn once.

Deleting Layers

Each layer can be deleted by clicking onto the "Delete" button (trash).
One layer will always have to remain. The last remaining layer can not be deleted.

Moving of Layers ("Change order")

By clicking onto the double-arrow buttons the stapling order of the layers will be changed.

If you have e.g. four layers, you can move layer number 4 under layer number 3 by clicking onto the left pointing double-arrows. The layers will swap positions with each other.

If the layers have masks, you may get unwanted effects when parts of the masks overlap in the two layers. Since the mask areas will be calculated over all layers, the result can be a totally different colour than expected. Mask areas not overlapping other masks will remain unchanged.
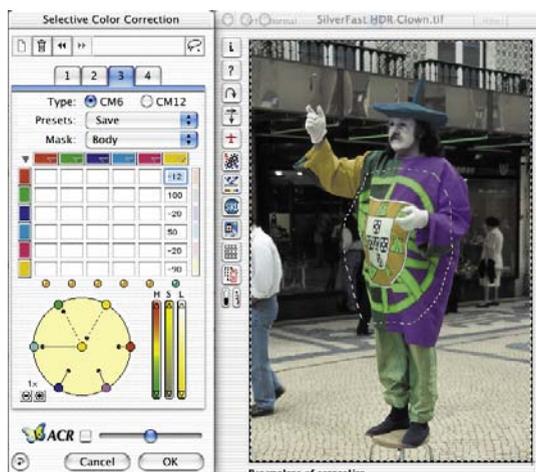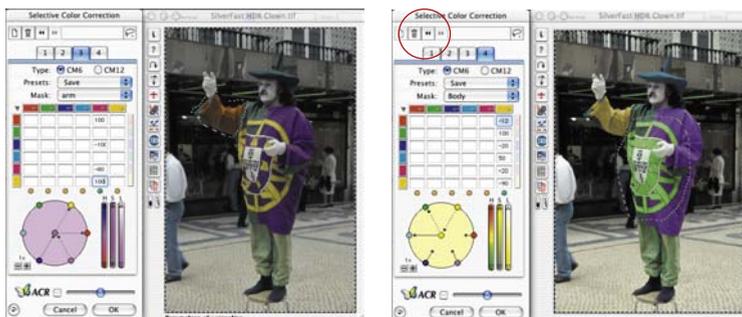
Moving Layers
Here layer 4 will be moved before layer 3. The masks which have been applied to both layers, overlap in the area of the emblem. By moving a layer, the emblem's colours get changed.

SilverFastACR® Adaptive Colour Restoration
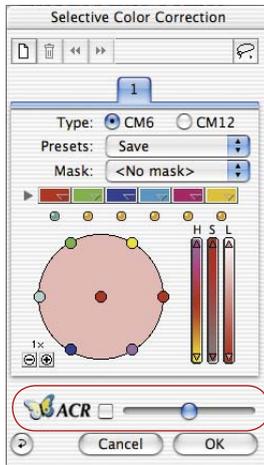
SilverFast ACR (*ACR* = Adaptive Colour Restoration) is part of the selective colour correction dialogue and can be switched on and off via a check mark.

This automatic function enables the user to restore faded out colours or normalise oversaturated colours. Using the slider, colour saturation can be increased or decreased.

ACR can be used in combination with the selective colour correction. All settings can be influenced when the user activates *ACR*. If e.g. more or less saturation is needed, the user only has to adjust the *ACR* slider. The relation between the colours that have previously been corrected in the selective colour correction, will be preserved.

If the dialogue box is closed, an activated *ACR* function is marked by a short "ACR" imprint below the vertical buttons, located to the left of the prescan window.
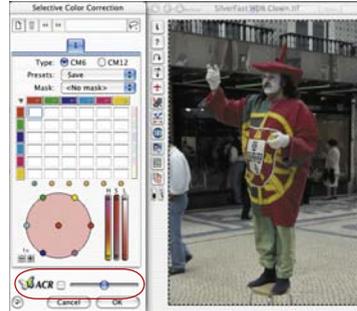
ACR-Slider
In middle position ACR does influence the image very little.
Moved to the left, the image will get desaturated.
Moved to the right, the image will get much more saturated.
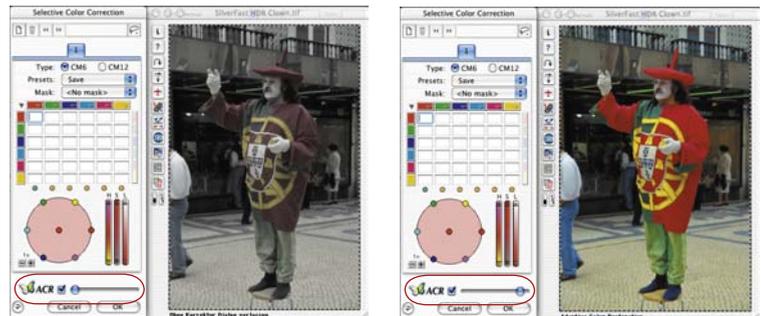
SilverFastSC2G® Selective Colour to Grey Conversion

SC2G (Selective Colour to Grey) is a unique function to control how colours of an image are converted to grey.
By directly controlling the conversion of primary and secondary colours into shades of grey, the user can enhance the distinction between adjacent areas of similar shades of grey.

Daily newspapers and magazines and other periodicals very often have black and white photographs with too little differentiation between the greys. The original colour image might have had good shade rendering, but in the conversion process differentiation between adjacent greys is often lost.

SilverFast's SC2G, can preserve or even enhance the differentiation between the shades by controlling the conversion process for all six colours (red, green, blue, cyan, magenta, yellow).
The user can define which shade of grey to convert a colour to. Since the whole process is interactively monitored (the final result is visible), the user can quickly achieve the desired result.
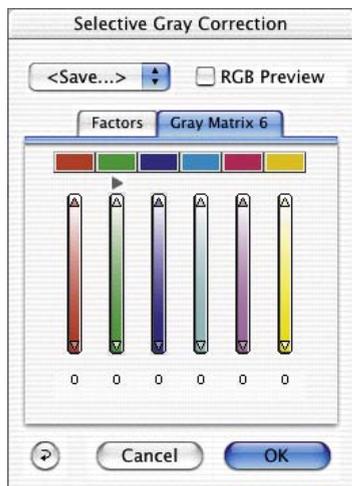
Activating *SC2G*

The first step is switching to grey-mode from colour-mode under "Image Mode". Clicking onto the selective colour correction button will bring up the *SC2G* dialogue.
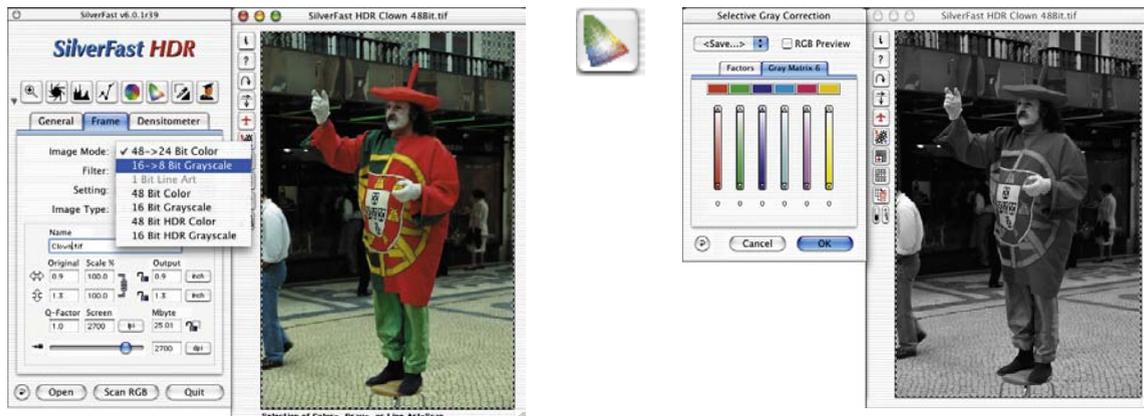
Changing a Colour Image to Grey

Click onto an area where you need to adjust the grey and *SC2G* will recognise which colour this grey is originated from. Above the relevant colour sector you will see a small right pointing triangle indicating that *SC2G* has recognised the original colour.
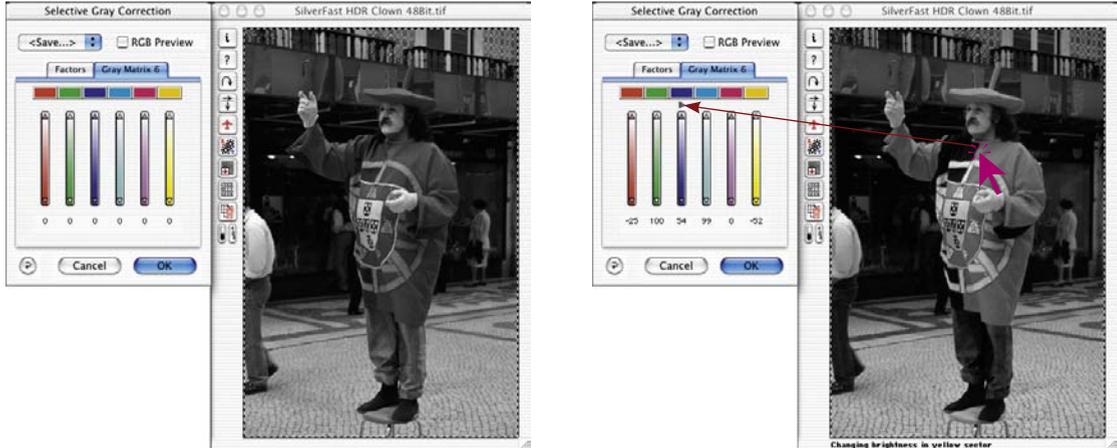

You can now begin your selective grey correction. Clicking and holding the mouse on the small triangle at the top of the control will raise the brightness for the grey selected. The bottom triangle will decrease the grey brightness. You will see the number below the control increasing or decreasing accordingly as well as the image gets updated once you release the mouse.

By clicking onto "RGB Preview" you can cross-check which original colour your are effecting.

### Saving / Loading / Deleting *SC2G* Settings

Settings can be saved and reloaded just like other settings in *SilverFast.*
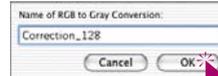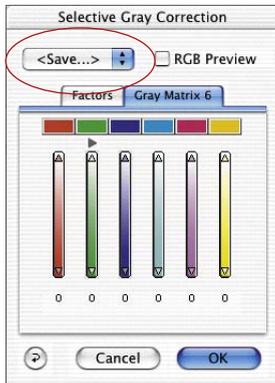
To switch between different *SC2G* settings, you only have to switch from one setting (name) to another.
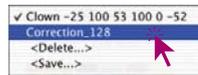
Settings that are not needed any more can easily be deleted.
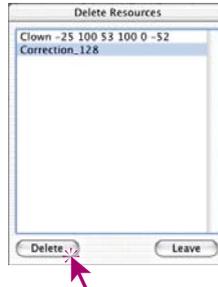
Changing the Conversion Factors

The *SC2G* dialogue has another alternative method for colour to grey conversion named: "Factors". Here you can define, how the original RGB values of an image are converted into shades of grey.

The upper part of the dialogue shows the primary colours with their current percentage relationship. The lower part shows a colour bar with the relation of the three primary colours. The sum of all colours is always 100%. The larger the part of one colour, the brighter the grey shade converted from that colour.

According to the example on the left, the colour brightness from the Red-channel will be used at 30%, that from the Green-channel at 59% and that from the Blue-channel only at 11% for the grey conversion. That means, green colour tones will become brighter than red tones (the increase of brightness with reference to the existing colour brightness). In this example blue colour tones appear to become the darkest with this setting.

With the mouse you can grab the colour border in the colour bar and move the border (red / green and green / blue) accordingly to get the desired result.
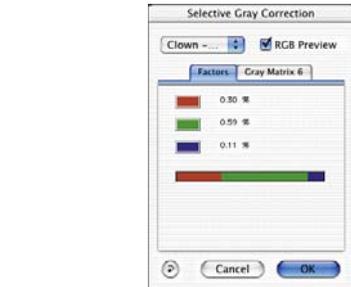
With Standard-Settings the colours of the clown's outfit are converted to nearly similar grey tones. The example clearly shows how significant the image changes with the red (middle image) or green (right image).

5.7 Zooming In Prescan

Refer to Page 95.

From the prescan, you can zoom into any frame. The Zoom will scan the active frame into the free available space of the monitor window. Click on the magnifying glass to initiate the zoom. Corrections can be made at any time on the zoomed frame. In order to return to the original prescan window, click the magnifying glass in the tool bar again.

The Zoom tool will act as a "Toggle-switch".

Aborting Prescan

With "Command" + "Period" (PC: "Ctrl" + "Period") you can abort the prescan at any time. The previously scanned image remains.

High Resolution Prescan

In order to process work more quickly with *SilverFast*, a prescan can be selected besides which has a resolution that is up to eight times greater than actually necessary for a normal prescan.

The high resolution prescan is activated in the "General" palette under the "Options..." dialogue
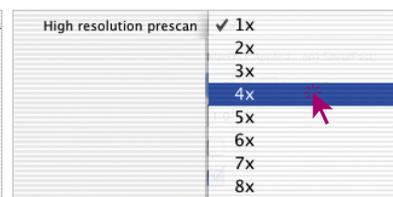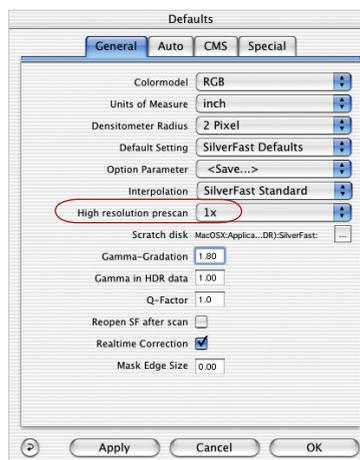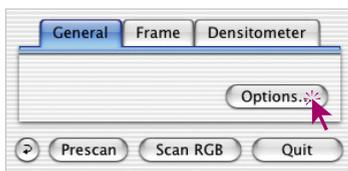
The advantage is that by utilizing a zoom by means of the magnifying glass, *SilverFast* can retrieve data that is already available and immediately show the enlarged preview, without scanning it again. The first prescan will therefore take somewhat longer than normal.

If the selected zoom still lies within the data parameters, the magnifying glass will turn green.

If *SilverFast* has to interpolate the data, (you may already see single pixels in the prescan) the magnifying glass will turn red.
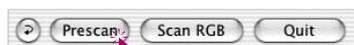
You can still choose a new prescan from your hardware with a click of the prescan button. In this way you can be assured that the most important user interface, the preview, always has optimal resolution.

Zoom and Densitometer

Four densitometer measure point can be fixed on the prescan which are saved in the zoom. To fix a densitometer point, just press the "Shift" key and click the mouse. Do the same to release the densitometer point again (refer Chapter Multiple FixPip, Page 122).

Densitometer measuring point
in prescan

Densitometer Reading and Gradation Curves

After having fixed a densitometer point and activating the zoom, the value of the three colours will be shown as coloured dots directly on the curve. This way it becomes easy for any user to find out where the curve has to be changed to get specific results.
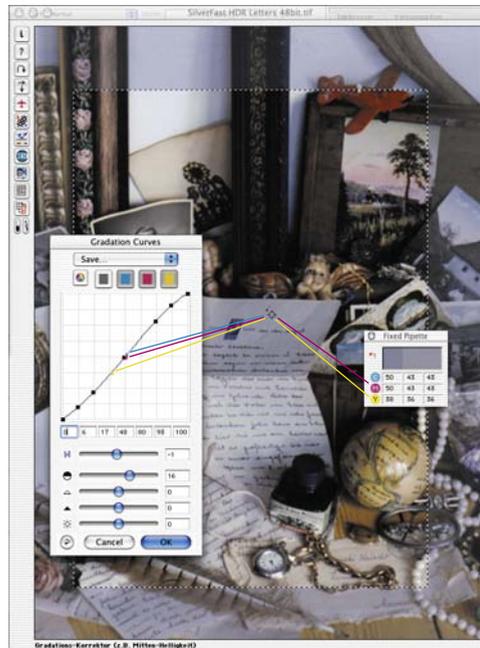
*Densitometer measuring point*
in zoom

For example, if the magenta value for the appropriate densitometer point has to be changed, select the magenta channel with the top buttons and drag the curve point next to the magenta dot on the gradations curve.

5.8 Expert Dialogue

Dialogue for Professionals

In the expert dialogue, all parameters which are set in the scan frame are shown and can be checked and edited. For the experienced user, the quick overview of all major parameters is available. In order to change expert dialogue parameters, simply enter the new values into the editing fields.

CMY/RGB switch

Export parameters as text file

Gradations parameter

Colour space compression

Highlight / Shadow points

Shadows

Midtones

Highlights

Grey channel

Channels CMY or RGB

Reset

SilverFast-SE v6.4.2r5d

*SilverFast...SE Versions
This dialogue is not available in the SE versions.

Equal Parameters for a Row

To equalise parameters for a row, that is to say, for the gradation of the CMY values for a 50% tone, enter the value into a field and press the "Alt" key a and click into the field again- all values are now equal (in a row).


Fourth Column for Grey Values

Besides the values for red, green, blue or cyan, magenta and yellow, the expert dialogue has an added fourth column. This fourth column (Gr.) is a separate channel for greyscale images and always reflects the grey values of an image

Showing / Hiding the Curve Window Dialogue

With the small rectangle, the curve window dialogue on top of the expert dialogue can be hidden or shown

Button shows or hides the curve window

Grey channel
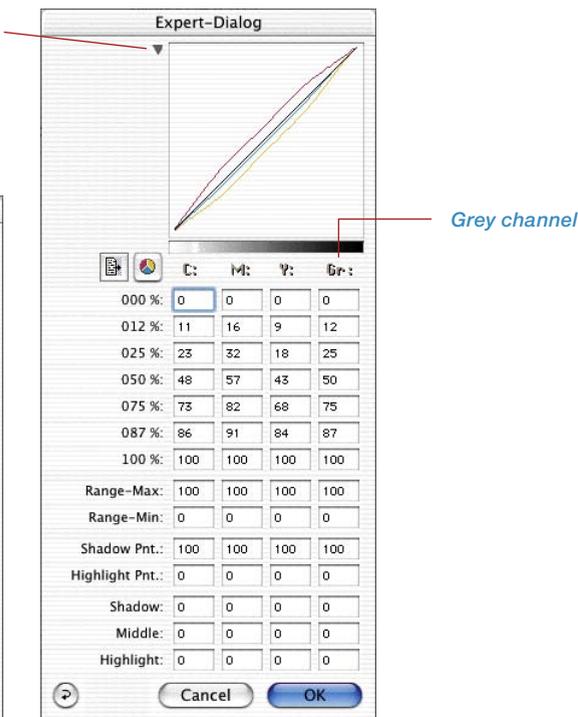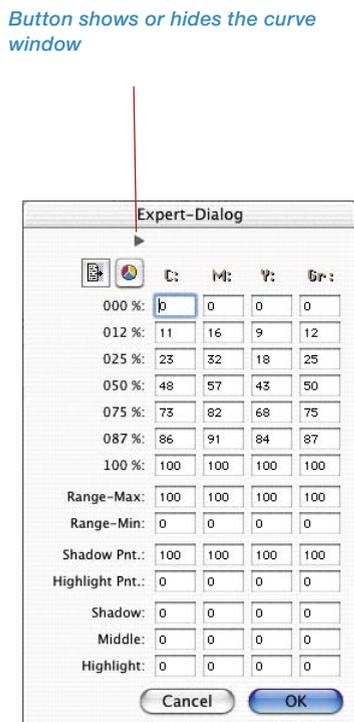
Exporting the Image Parameters as a Text File

All set parameters for image optimisation are exportable into text files by *SilverFast*.

This allows independent archiving of important parameters, i.e. especially in regard to critical scans. It also allows for an easier exchange of adjustment values between different operating systems.

In order to export previously selected optimising parameters, simply click on the text icon, located in the vertical icon opening on the left side of the prescan window.

A dialogue appears which allows you to choose the save position of the text file. By clicking "Save" the dialogue is closed and the parameter file is generated.
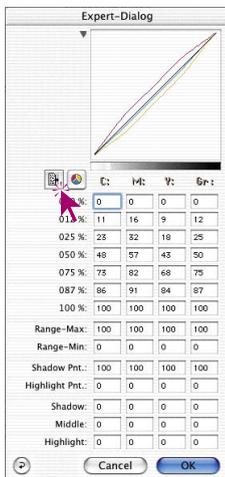
SF Statistic.txt
Example file.

5.8 • Expert dialogue