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# Red Giant Resizer 2.0 manual

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Scale SD to HD and higher.



An upcoming addition to the Instant HD product line.

<b>Introduction to ReSizer</b>	<b>4</b>
Deinterlacer Included	4
Compare with Version 1.0	4
Getting Started	4
Very Important Tech Note	5
Two Plugins in One	5
<b>Support &amp; Registration</b>	<b>5</b>
<b>Scaling in ReSizer</b>	<b>6</b>
Use Width/Height Values	6
Using Percentage Values	6
<b>Using Presets</b>	<b>7</b>
Related Parameters	7
<b>The Three Algorithms</b>	<b>8</b>
Two Kinds of Best	8
Being Best Gives You Choices	8
<b>Deinterlacer for Interlaced Footage</b>	<b>9</b>
Deinterlace in After Effects	9
Deinterlace in FCP or Premiere	9
<b>List of Parameters</b>	<b>10</b>
Preset Manager	10
Fill Frame	10
Enlarge to Fill Frame	11
Fit In Frame	11
Stretch To Fill Frame	11
Source Aspect Ratio	12
Source Width, Source Height	13
Use Percentage Values	13
Scale Width, Scale Height	13
Lock Ratio	13
Center	14
Note About Center Position	14
Crop	15
Quality	15

No Filtering	15
Fast	15
Best (Smooth)	16
Advanced Sliders	16
Smoothness	16
Sharpness	17
Fine Tuning	17
<b>The DeInterlacer</b>	<b>18</b>
Fields	18
DeInterlace	18
Motion Compensation	19
Correct Motion Errors	19

## Introduction to ReSizer

ReSizer 2.0 allows you to upconvert SD footage to HD or scale any footage by some arbitrary multiple (400%, 800%, etc). While host applications can do this to some degree, ReSizer gives you a choice of algorithms that are better than what the host application provides.

With the Best (Sharp) and Best (Smooth) algorithms, you can adjust settings to get greater control over the final output. This control can be essential for removing artifacts like ‘stair-stepping’ in resized footage.

## Deinterlacer Included

ReSizer also includes a Deinterlacer for dealing with interlaced SD footage. This can work better than the deinterlace functions built into most host applications. It uses time motion estimation algorithms to produce frames with more detail.

Using the Deinterlacer does slow ReSizer down significantly, so you should see if the built-in de-interlacing is adequate for your footage. Only footage with small details, particularly text, will benefit significantly from ReSizer’s Deinterlacer.

## Compare with Version 1.0

We’ve had many people use ReSizer 1.0 to successfully convert SD footage to HD with much better results than the standard scaling available in After Effects or Final Cut Pro. We think 2.0 offers many important improvements over its predecessor. The interface is simplified and the functions are more powerful.

We’ve taken the best algorithms that 1.0 offered and tweaked them further. ReSizer now allows a specific pixel size to be set instead of just scaling up by a percentage. We’ve also added dimension presets and the Deinterlacer previously mentioned.

## Getting Started

ReSizer is a pretty simple plugin to work with. Why shouldn’t it be? You need a tool that will fit easily into your workflow, do what you need it to do, and then get out of the way.

The way you apply ReSizer in After Effects, Final Cut Pro, and Premiere Pro are all different methods. The following sections explain how to get ReSizer started in each application.

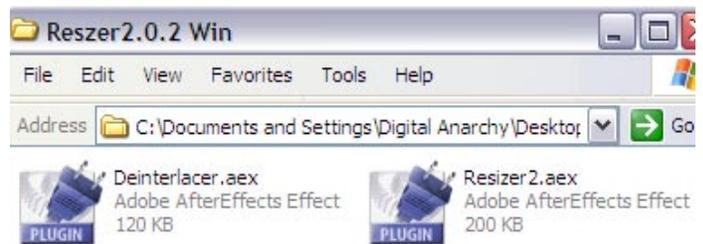
## Very Important Tech Note

ReSizer **MUST** be applied to solids or sequences that are the target size of your up-conversion. ReSizer 2.0 isn't built to be applied directly to your raw footage, and doing so can make the host application severely unstable or cause a crash.

We recommend that you always apply ReSizer to a piece of media that is not the source footage you intend to resize. The exact method is different in each host application, and we will explain why in the following sections for After Effects, Final Cut Pro, and Premiere Pro. However, we wanted to point out that this is the baseline method.

## Two Plugins in One

ReSizer installs two plugin files into your host application's 'Plug-ins' folder. One file is the ReSizer plugin. The other file is the Deinterlacer plugin.



## Support & Registration

Registration occurs when you purchase the filter. We register you in our database using the contact information you supplied upon purchase, and the serial number we've given you. If you need a serial number, installer, or any other material support, just contact [sales@redgiantsoftware.com](mailto:sales@redgiantsoftware.com) or call 1 (260) 918-4505.

We hope that you find ReSizer 2.0 to give you all the control you could want, while simple enough that you can set everything up in a few minutes. It's our desire to make sure you're satisfied with your purchase. If you have any questions, comments, or whatever, we'd love to hear them.

If you're having trouble with ReSizer, please make sure to go through the tutorials available at [www.redgiantsoftware.com](http://www.redgiantsoftware.com).

## Scaling in ReSizer

Aside from using the presets, there's two ways to scale footage in ReSizer 2.0. You can use the Width and Height parameters or you can use the Percentage sliders.

You can use either method to accomplish the same thing, but we've offered both to make ReSizer as intuitive as possible. You'll notice that when you change one set of sliders, the other set moves in sync with them.

### Use Width/Height Values

You can use the 'Source Width' and 'Source Height' options to set a specific pixel value for the enlarged image. (They are called 'Width' and 'Height' in After Effects.) This is useful if you have a specific size you're trying to scale up to, like 1920x1080.

Keep in mind that the 'Source Aspect Ratio' checkbox affects how the pixel size is displayed.

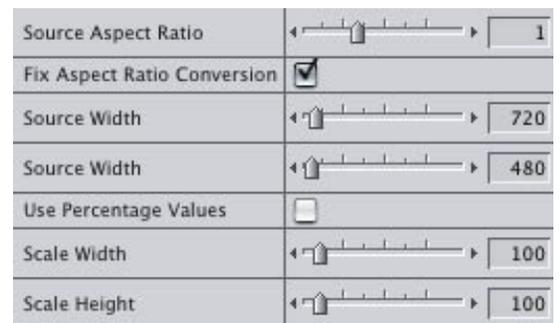
### Using Percentage Values

You can also resize by percentage. To do so, turn on the 'Use Percentage Values' checkbox. Then use the 'Scale Width' and 'Scale Height' parameters.

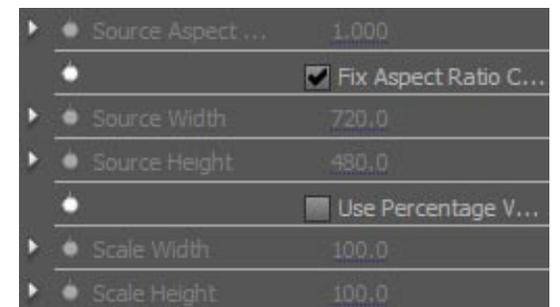
This is the traditional way of scaling things up, and is what After Effects uses, so you should be pretty familiar with this function. Using percentages makes zooming into a part of the footage easier. You just increase the percentage until the element in the footage you're focusing on fills the frame.



After Effects scaling parameters



Final Cut Pro scaling parameters



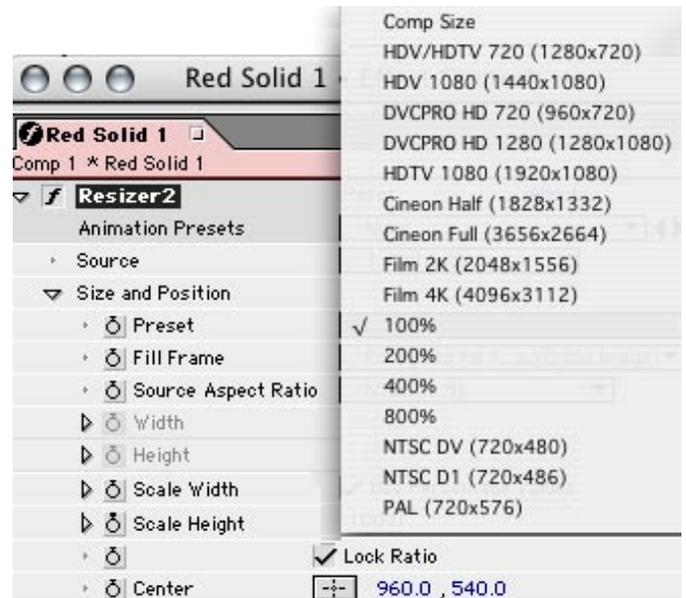
Premiere Pro scaling parameters

## Using Presets

When you choose a preset in ReSizer, your footage automatically scales to meet its dimensions.

The 'Preset Manager' has some common HD and Film resolutions. We haven't included all of the resolutions used – that would be a really long list! – but instead have included the ones that are most frequently used. These presets include:

- HDV 720 and 1080
- DVCPRO HD 720 and 1080
- HDTV 1080
- Cineon Half and Full
- Film 2K and 4K



## Related Parameters

The Preset Manager needs to be used in conjunction with the 'Source Aspect Ratio' and the 'Fill Frame' parameters.

As described earlier, ReSizer needs to know what the aspect ratio of your source footage is to make sure it scales correctly. You also need to tell ReSizer how you want the footage scaled. Do you want it stretched to fill the frame, which creates a distortion? Or scaled up to fill the frame, which then crops off portions of the top and bottom?

Using these 'Fill Frame' options can misalign your footage. You can adjust the center of the footage (controlling what gets cropped) by moving the 'Center' parameter.



## The Three Algorithms

With ReSizer, you have control over how much the resizing algorithms sharpen or smooth the image. This choice is made in the ‘Quality’ popup. ‘Quality’ gives you the ability to produce drastically better results than the built-in scaling of After Effects, Final Cut Pro, or Premiere Pro.

This difference is particularly noticeable in ReSizer’s ability to keep edges sharp and defined. The plugin will leave a minimal aliasing (or ‘stair-stepping’) that is usually found in upconverted footage.

## Two Kinds of Best

There are essentially two important algorithm settings: Best (Sharp) and Best (Smooth). The other two algorithms, Fast and No Filtering, are for quick, down n’ dirty workflow.

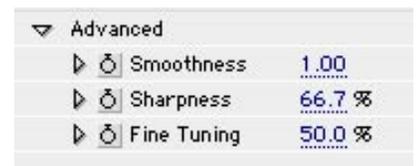


Best (Smooth) tends to work better for people, plus is generally a good choice for large up-conversions. Best (Sharp) tends to work great for footage that has sharp details, such as shots of buildings, landscapes, or mechanical objects.

However, the choice is highly subjective. Best (Smooth) is the default option. If this algorithm doesn’t look right, you should try Best (Sharp). Toggle back and forth to see what method works best on your footage, in your opinion.

## Being Best Gives You Choices

If you select the Best (Sharp) algorithm, three other parameters are activated which allow you to vary the results of the algorithm. In After Effects, these sliders are contained in the ‘Advanced’ section.



You can increase the ‘Smoothness’, ‘Sharpness’, or the weight between the two characteristics with ‘Fine Tuning’. By using Best (Sharp) and these sliders, you have more control over the final look of your footage. In contrast, Best (Smooth) analyzes the footage differently and has more sophisticated built-in smoothing capabilities.

Again, it really comes down to your own visual preference, so play around with both methods. [Read more in the Quality section of the Parameters section.](#)



## List of Parameters

This section details each parameter in the ReSizer 2.0 interface.

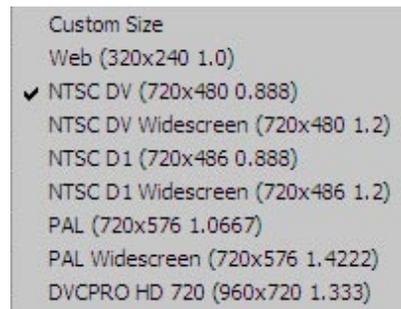
## Preset Manager

The 'Presets' popup offers a variety of common, large format sizes. Just select the resolution that you want to scale your original footage to.

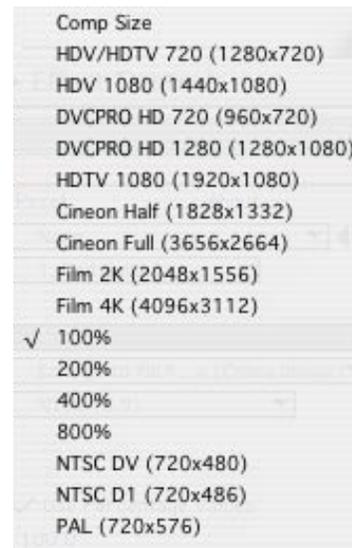
The size you select is affected by the Pixel Aspect Ratio of your original footage. Make sure the 'Source Aspect Ratio' parameter is set correctly, and tell ReSizer how you want to scale the footage in the 'Fill Frame' popup.



Premiere Pro presets



Final Cut Pro presets

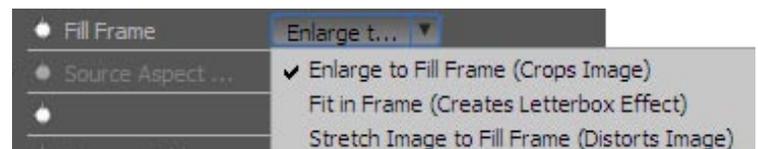


After Effects presets

## Fill Frame

Standard Definition footage has a different ratio (4:3) than High Definition (16:9). As a consequence there's no simple way to magically upconvert SD to HD. The SD footage has to be cropped or distorted to get it to fit into an HD frame.

ReSizer will do an admirable job of both, but you need to determine what is correct for you. In the 'Fill Frame' popup, there are three choices for treating your scaled footage.



'Fill Frame' popup in Premiere Pro

## Enlarge to Fill Frame

Enlarge to Fill Frame crops the top and bottom of footage. This option keeps the SD ratio of 4:3 (actually it keeps the original ratio of any footage, SD or not) and scales the footage up until the HD frame is completely filled.

Since the HD frame is wider than it is tall, the top and bottom of the SD footage get cropped off. You can move the SD footage around so you can have more of the top cropped off and less of the bottom, or vice versa.



Enlarge to Fill Frame option

## Fit In Frame

Fit in Frame creates a Letterbox effect. This option keeps the ratio of the footage (4:3 in the case of SD footage) and scales it up as far as it will go with the entire frame of the original footage still visible.

Since an HD frame is wider than high, the scaled up SD footage will hit the top and bottom before becoming wide enough to fill the frame. This creates gaps along the sides, effectively letterboxing or wideboxing your footage based on its aspect ratio.



Fit in Frame option

## Stretch To Fill Frame

Stretch to Fill distorts the original footage. This option changes the SD ratio from 4:3 to 16:9 and scales it to fill the HD frame.

Obviously this creates some horizontal distortion as the SD footage is stretched wider. In most cases, this distortion looks ok, but for some subjects the distortion will be too much.



Stretch to Fill option

## Source Aspect Ratio

This parameter allows you to tell ReSizer what aspect ratio your footage is. In After Effects, you choose the correct option from a popup list. In Final Cut Pro and Premiere Pro, you type in the numeric value.

The aspect ratio is needed so ReSizer can ‘correct’ the footage to the proper size. If the aspect ratio of the footage and the aspect ratio of the comp don’t match up, you will get unexpected gaps along the sides or top/bottom when the footage is scaled up.

The issue of differing aspect ratios is another reason why you should apply ReSizer to a Solid layer, instead of applying ReSizer directly to the footage to be scaled.

Here’s a good example: If you apply ReSizer to a piece of footage that is NTSC 0.9, in order to scale the footage up to HDTV (which is square pixels, an aspect ratio of 1.0), the 0.9 footage will be stretched and distorted in the square pixel space. Using a Solid that is already set to the aspect ratio of the target comp allows the footage to take advantage of the entire frame, and not be limited to the aspect ratio of the source footage.

[Learn more about Aspect Ratio in the Solid Layer & Aspect Ratio section of the Apply ReSizer section.](#)

▸ <input type="radio"/> Fill Frame	Square Pixels
▸ <input checked="" type="radio"/> Source Aspect Ratio	√ NTSC (0.9)
▸ <input type="radio"/> Width	NTSC Widescreen (1.2)
▸ <input type="radio"/> Height	PAL (1.07)
▸ <input type="radio"/>	PAL Widescreen (1.42)
▸ <input type="radio"/> Scale Width	HDV (1.33)
▸ <input type="radio"/> Scale Height	DVCPRO (1.5)
▸ <input type="radio"/>	Anamorphic 2:1 (2.0)

‘Source Aspect Ratio’ in After Effects



‘Source Aspect Ratio’ in Final Cut Pro



Wrong method for ‘Source Aspect Ratio’. This example demonstrates the severe squeezing and stretching that can occur when you select the improper aspect ratio for your source footage.



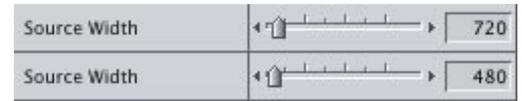
Right method for ‘Source Aspect Ratio’

## Source Width, Source Height

These parameters are called 'Width' and 'Height' in After Effects. They allow you to specify the exact pixel dimensions you want your footage scaled up to.

In most cases, you can just use the Preset Manager menu to find common sizes. If those aren't what you're looking for and you want a specific custom size, you can enter those number here. The footage will be scaled up to match your settings.

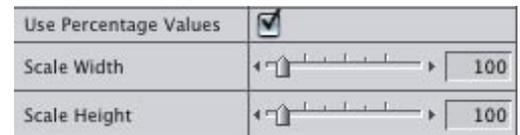
As mentioned earlier in this manual, 'Source Width' and 'Source Height' are affected by the 'Source Aspect Ratio' parameter. After setting these parameters, be sure to set the Source Aspect Ratio parameter in order to give ReSizer all the information it needs to properly upscale your footage.



'Source Width' and 'Source Height' in Final Cut Pro

## Use Percentage Values

This checkbox activates the 'Scale Width' and 'Scale Height' parameters. It allows scaling by percentage.



'Use Percentage Values', 'Source Width' and 'Source Height' in Final Cut Pro

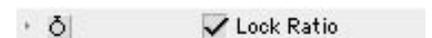
## Scale Width, Scale Height

These parameters are a common way of scaling footage, and are the method used by After Effects. You set a percentage value (200%, 400%, 266%, etc) and the footage is scaled up by that amount. They are active when 'Use Percentage Values' is checkmarked.

This method is very useful if you're zooming in on a particular element in the footage and don't know the exact pixel dimensions. Just keep increasing the scale amount until the element is full frame.

## Lock Ratio

'Lock Ratio' maintains the proportions of your footage. When this parameter is selected, any adjustment to one of the Width/Height or Scale Width/Height parameters will result in the other parameter being adjusted as well. 'Lock Ratio' forces Height to change along with Width if you happen to drag the Width slider, and vice-versa.



'Lock Ratio' is After Effects only

For example, if 'Scale Width' is set to 80 and 'Scale Height' is set to 100, adjusting 'Scale Width' to 60 will cause 'Scale Height' to be set to 75. So,  $80/100 = 60/75$ . The same goes for 'Width' and 'Height'. If they're set to 800x600 and you change 'Height' to 480, 'Width' will get changed to 640.

'Lock Ratio' is only present in After Effects. This is because Final Cut Pro and Premiere Pro can't have any parameters that change other parameters. These apps don't have the ability to control several parameters by dragging only one slider, so we left it out of the parameters list.

## Center

'Center' can be used in a few ways. Its primary use is in regards to scaling up by a large amount, say 600%. You can use 'Center' to select the area that the clip is being scaled around.

If you want to zoom into someone's eye, for instance, you would set the Center point over the eye. As you zoomed in, the eye would eventually be centered in the middle of the frame.

Another use of this parameter is when 'Fill Frame' is set to Enlarge to Fill Frame. In this situation, 'Center' allows you to move the clip around and decide how you want the image cropped.

You can also use 'Center' to just move the scaled image around. This is useful if you only want the image to occupy a certain part or portion of your comp.

### Note About Center Position

'Center' MUST be positioned within the dimensions of the original layer. This means that if you scale a 720x480 image up 10x in an HD comp, you can only place the Center within the original 720x480 area. Otherwise, you will be setting the center to be off the edge of the original, and zooming into blank space.

Even though the end result is 1920x1080, that's not the original image. The Center point needs to be on the original image.



'Center' in After Effects



'Center' in Final Cut Pro

## Crop

One of the problems with scaling images up by large amounts is that this function takes up memory. That's where 'Crop' comes in handy.



'Crop' is After Effects only

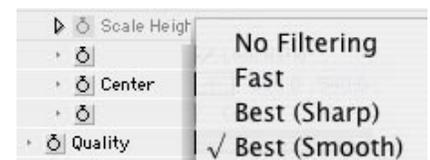
If you try to scale something by 1000%, you end up with a huge image which may cause your application to run out of memory when trying to render the footage. If you're just zooming in on someone's eye in an SD comp, you certainly don't need to render out a 7200x4860 pixel image.

If you turn on the 'Crop' checkbox, however, ReSizer will only render the size of the layer that you have it applied to. Anything larger than that will get cropped and won't be rendered. This can save render time and reduce out of memory errors. 'Crop' is only present in After Effects.

The 'Crop' parameter is only present in After Effects. This is because a Crop function is, in effect, always on in FCP and Premiere Pro due to the way that these apps resize footage.

## Quality

'Quality' is a very important parameter, as it sets the behavior of ReSizer's algorithms.



'Quality' popup in After Effects

### No Filtering

This option produces a pixilated result with no smoothing or sharpening. It's more for use as a visual effect than any other situation.

### Fast

This option is basically the same type of scaling found in After Effects and is provided as a fast preview mode. It's about 20–30% faster than Best (Sharp) mode and 50+% faster than Best (Smooth).

Initially this looks similar to the Best (Sharp) algorithm, but Best (Sharp) has more defined edges and when scaling up by a large amount, Best (Sharp) produces obviously superior results.

## Best (Sharp)

This algorithm is more useful for footage where sharpness is important. Establishing shots, such as buildings, landscapes work well, as does imagery with mechanical objects. It also works really well for minor up-conversions.

When this algorithm is selected, three additional parameters are activated in the Advanced section. [See the Advanced Sliders section below for more info.](#)

## Best (Smooth)

Best (Smooth) is a great algorithm for large up-conversions. It produces softer results but does so with fairly well defined edges that don't have the stair-stepped edges that are common with sharpened algorithms. Best (Smooth) softening is an improvement over the Softening parameter available in the Advanced section for the Best (Sharp) option.

The results produced by Best (Sharp) and Best (Smooth) are very subjective. Try both to see what works best on your footage.

## Advanced Sliders

The 'Smoothness', 'Sharpness', and 'Fine Tuning' sliders adjust variables that are internal to the Best (Sharp) algorithm, and let you customize its results. The result of scaling is highly subjective; everyone has a different eye for detail. This extra control allows you to properly get the look that you want for the style you are going for.

These three controls only work when Best (Sharp) is selected in the 'Quality' popup. In Final Cut Pro and Premiere Pro, the three sliders are not contained in a subsection. By mixing the three parameters, you can get a variety of effects.

### Smoothness

'Smoothness' applies a blur algorithm, and its results goes a long way to smoothing out rough edges. The down side is that this parameter makes the edges softer, potentially making the footage look a little out of focus.



'Advanced' sliders in After Effects



'Advanced' sliders in Premiere Pro

### Sharpness

As you might suspect, 'Sharpness' increases or decreases the amount of sharpening. The downside to this parameter is that the higher it is set, the more likely you will see stair-stepped artifacts.

This is not always the case and will vary from clip to clip. Also, you can mix a high level of 'Sharpness' with the other two controls to reduce the artifacting. The Best (Sharp) algorithm and a high 'Sharpness' work really well on footage that has a lot of hard edges.

### Fine Tuning

'Fine Tuning' allows you to adjust the balance between 'Smoothness' and 'Sharpness'. Think of it as sort of a contrast filter for the two controls. The effects of this parameter can be very subtle, especially on footage that's only moderately enlarged (2 -3x). However with footage that has been significantly enlarged (6-10x), Fine Tuning has an obvious effect.

We recommend you play around with this on different types of footage and different scales to see the effect it has.

## The DeInterlacer

Version 2.0 of ReSizer includes a Deinterlacer. Deinterlacing is available for Standard Definition footage or any resolution that has fields. This function can be very helpful; however, it will dramatically slow down ReSizer. As with all tools, not every situation calls for the same usage.

You should really only use ReSizer’s Deinterlacer if the deinterlace function that is built into your host application is not producing good results. We recommend using the deinterlacing that is built into After Effects, FCP, and Premiere Pro if it produces satisfactory results.

The deinterlacing in ReSizer 2.0 uses time estimation algorithms to analyze multiple fields and produce the best progressive frame. This is particularly effective for small details such as text on a sign, but the analysis can be time intensive.

If there aren’t small details or fast motion in your footage then you’re probably better off using the host application’s built-in deinterlacing. Even if those details are present, it’s worth trying both methods to see which is faster vs which works better, in order to speed up rendering.

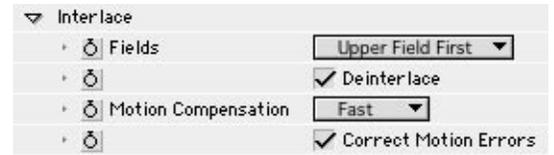
## Fields

The field order of the footage that you’re scaling up. If there are no fields or you’re using the host application’s Deinterlacer, leave this set to Progressive.

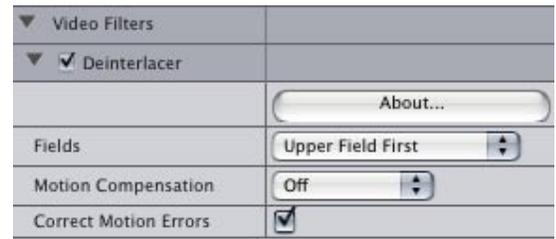
## DeInterlace

In After Effects, this parameter turns ReSizer’s Deinterlacer on, and activates the ‘Motion Compensation’ popup. Make sure this checkmark is OFF if you are NOT using the ReSizer function and are instead using After Effects’ deinterlacer.

This is an After Effects-only parameter. The Deinterlacer is turned on in Final Cut Pro and Premiere Pro by choosing and applying the Deinterlace plugin.



‘Interlace’ section of the ReSizer interface in After Effects



A Deinterlace plugin is separately applied in Final Cut Pro and Premiere Pro



‘Fields’ choices in Final Cut Pro

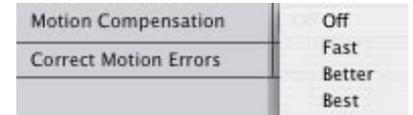


‘Interlace’ section of the ReSizer interface in After Effects

## Motion Compensation

'Motion Compensation' has three options. Draft, Better, and Best provide increasingly higher quality at the expense of speed. The higher quality comes from how many frames are analyzed to put together the progressive frame.

In this case, Best is always best and is generally what you should use. Although Better can produce good results, the speed difference isn't that significant.



'Motion Compensation' choices in Final Cut Pro

## Correct Motion Errors

Deinterlacer contains a 'Correct Motion Errors' parameter that basically runs a second pass over your footage to clean up any errors that the first motion estimation pass leaves behind.

Motion estimation is a really tough algorithm to execute. Although Deinterlacer was designed to be fully robust under bad interlaced conditions, it's not always perfect. 'Correct Motion Error's is built in to clean up anything that motion estimation messes up.

The catch here is that sometimes 'Correct Motion Error' might clean up too much, which can result in too soft of a look. This is why the parameter is turned off by default. Every case is different, so it is up to you to figure out what looks best for your particular footage.



'Correct Motion Errors' in Final Cut Pro