# Building custom lens profiles

How to photograph a lens calibration chart

Ideally the Adobe Lens Calibration chart should be shot using a carefully balanced lighting setup, especially if you wish to accurately estimate the amount of vignetting associated with a particular lens. An alternative option is to photograph the Lens Calibration chart directly from the computer display. Providing it is an LCD type and is evenly illuminated all over, there is no reason why you can't make effective measurements by photographing the chart in this way.
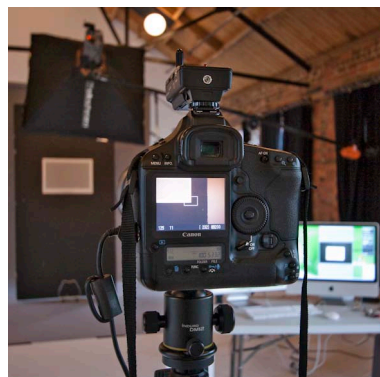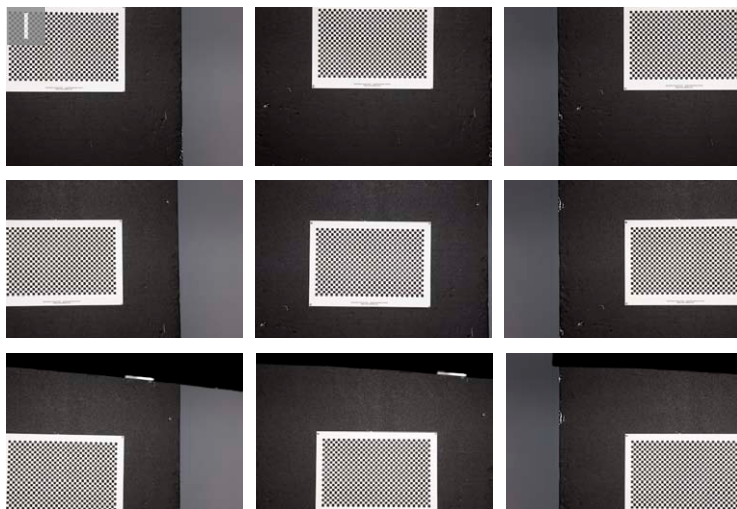
1 This shows the setup I used to photograph the Adobe Lens Calibration chart in preparation for creating a custom lens calibration profile for one of my camera lenses. To shoot the chart it is important that it is photographed completely flat and that the focus distance is consistent. It helps if you mount the camera on a tripod and shoot at an optimum aperture that is around 4 stops down from the maximum aperture for the lens (unless you normally shoot at the wider apertures on your particular lens). Here, I shot a sequence of 9 frames in which I photographed the chart centered in the frame, along with shots of the corners plus the top, right, bottom and left centers. The aim here is to make sure that the chart fills at least a quarter of the frame in each exposure so that the checkerboard coverage fills the entire image frame when they are all combined together. It is also important that you photograph the corner and edge charts so that they are as close to the boundaries of the frame as possible. Above all, you need to make sure that none of the checker squares are clipped at the edges or corners. When shooting the chart it is best to start with the centered frame. As you shoot all the subsequent frames you should combine moving the camera slightly and tilt the camera angle when recomposing. Refocus if necessary, but you should keep all the other camera settings the same. If you shoot JPEG try to minimize any in-camera processing and if you shoot raw then it is important to make sure that all the subsequent settings are set to their defaults. If your camera provides a Live View facility you can use this to accurately preview the position of the chart relative to the sensor (which you won't be able to do so accurately via the viewfinder).
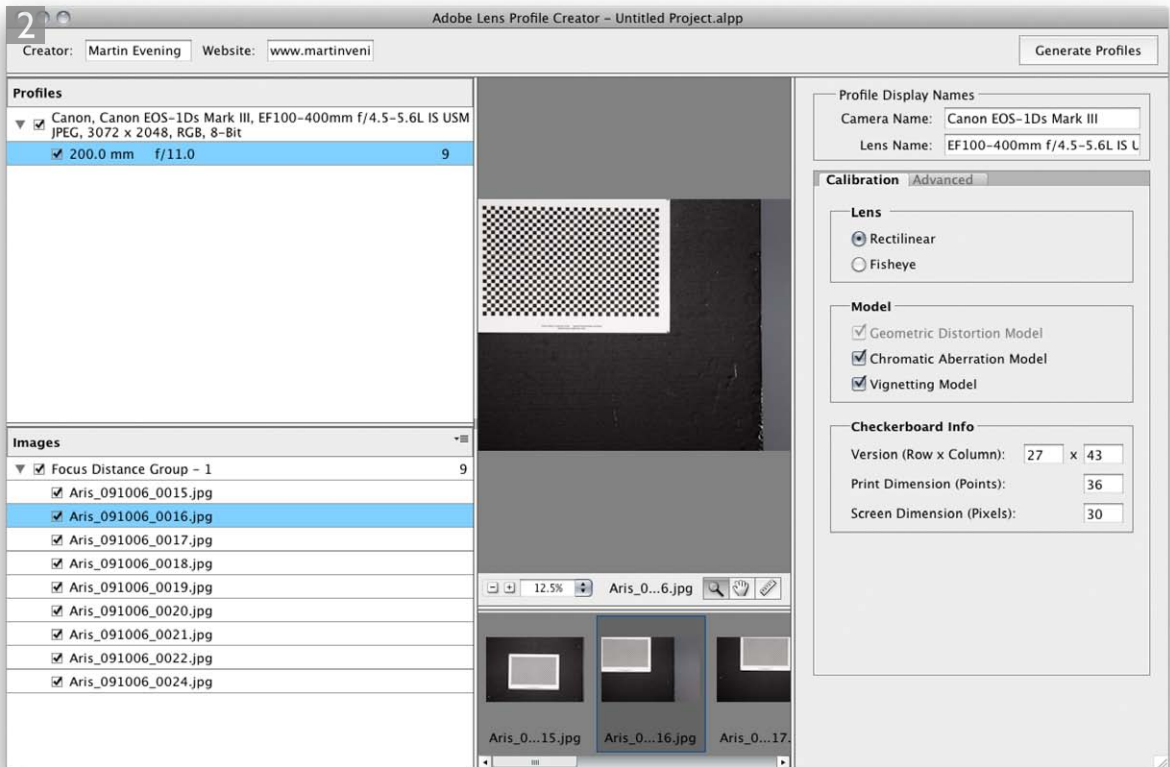
2 Once I had shot all the frames I loaded these into the Adobe Lens Profile Creator program (⌘ N (Mac), ctrl N [PC]). The camera and lens name should show up automatically in the Profile Display Name section and include the focal length information. This will all be read from the image file EXIF metadata. Next, I needed to configure the Calibration settings to indicate whether this was a rectilinear or fisheye lens I was calibrating. Next, I checked the options I wished to include in the calibration such as: Geometric distortion, Chromatic aberration and Vignetting. Lastly, in the Checkerboard Info section, I noted down the information from the bottom of the calibration chart and entered this here. Once I had done all this I clicked on the Generate Profiles button to commence processing the files. I should also mention here that the individual checkerboard squares must be at least 20 x 20 pixels in size in order for the Adobe Lens Profile Creator program to work properly. This shouldn't be a problem with most digital SLRs but is something to be aware of if shooting with a small sensor camera. Once the processing had been completed, the resulting lens profile was saved to the shared lens profiles folder which Photoshop references when applying automatic lens corrections. The exact location is: Library/Application Support/Adobe/Camera Profiles/Lens Correction/1.0 (Mac), Program Files\Common files\Adobe\Camera Profiles\Lens Correction\1.0 (Windows).

Selecting the correct file format

Custom user lens profiles can be created from raw, TIFF or JPEG capture images and it is important that you select the appropriate file format from the Add files system dialog when adding photos to the Adobe Lens Profile Creator program.