

STARIZONA SCT CORRECTOR

Coma-Free Images from a Standard Schmidt-Cassegrain

The Starizona SCT Corrector is a focal reducer and field flattener for standard Schmidt-Cassegrain telescopes. It converts the telescope from f/10 to f/7.5, resulting in a wider field and faster imaging. f/7.5 is nearly 1.8 times faster than f/10!

The field is optimized for a 35mm image circle. Spot sizes are up to 6 times smaller than the native telescope, and coma is completely eliminated. The result is much sharper stars across a large, flat field of view. A standard 2" mounting allows a variety of telescope attachment options.

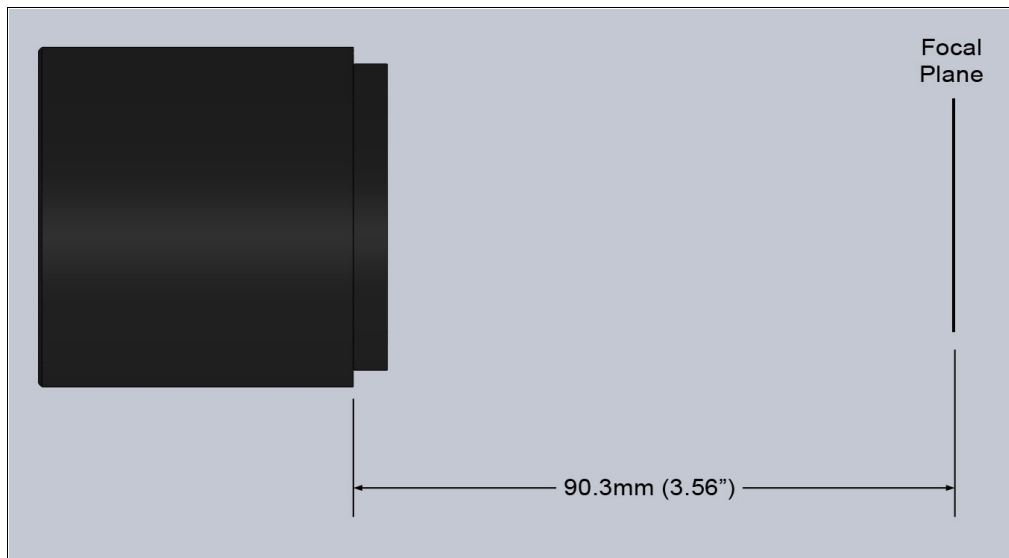
Note that since the SCT Corrector is designed to eliminate the coma inherent in standard Schmidt-Cassegrain telescopes, it will not work with coma-free designs like the Celestron Edge HD or Meade ACF telescopes.



Above: *The Starizona SCT Corrector without camera adapter*

Backfocus

The SCT Corrector has 90.3mm (3.56") of mechanical backfocus from the base of the thread shelf to the focal plane of the camera.



Above: *The mechanical backfocus of the SCT Corrector*

The backfocus distance from the SCT Corrector to the camera focal plane is critical. Starizona sells standard camera adapters for the most common imaging systems which are matched to the correct spacing and mounting thread for each camera. We can also manufacture custom adapters.

Installing the Camera Adapter



The camera adapter simply threads onto the male threads on top of the SCT Corrector. This sets the proper backfocus for your camera.

Attaching the Camera



Most CCD cameras attach to the adapter using T-threads. This requires removing the standard 1.25" or 2" nose from the camera. Digital SLR cameras attach using a standard bayonet mounting, just like a camera lens.

Attaching to Telescope



The SCT Corrector has a 2" diameter body, allowing it to fit into a 2" visual back or 2" focuser drawtube. Ideally, the SCT Corrector will be mounted as close to the back of the telescope as possible. The performance of the lens does not change significantly if the SCT Corrector is farther from the telescope, but the focal reduction factor changes, reducing the field of view and increasing the telescope's focal ratio.

On most 10" and larger SCTs, the 2" diameter SCT threads can be removed to expose larger 3"+ diameter threads. If possible, we recommend removing the smaller SCT threads because the inside diameter of the SCT threads is only 1.5" and this can cause extra vignetting over large CCD sensors. There are a variety of 2" visual backs and focusers available that make use of the larger threads.



Above: *Removing the smaller SCT threads from an 11" SCT to expose the larger mounting threads*

Recommended Compatible Cameras

The SCT Corrector has a nominal 35mm image circle. Due to the nature of a focal reducer increasing the angular field of the telescope and thereby increasing the diameter of the incoming light beam, there will be some vignetting associated with large CCD sensors. Vignetting is minimal over a 27mm APS-sized field of view. Optical performance is still very good over the full 35mm nominal field, but flat-field images will be necessary to remove the inherent vignetting.

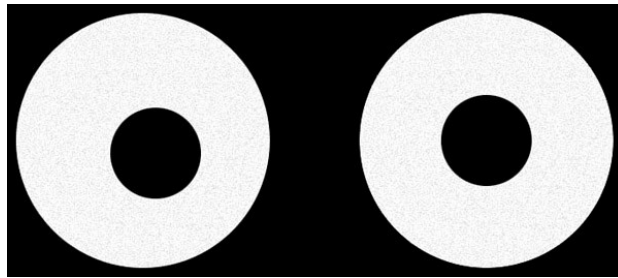
Recommended cameras include those with APS-size sensors, including Canon EOS DSLRs and the Starlight Xpress SXVR-M25C and M26C models. Any of the cameras using the Kodak KAF-8300 sensor are ideal as well, including the SBIG ST-8300 and QSI-583. In general, any camera with a sensor diagonal less than 35mm will work great.

The SCT Corrector's 90mm backfocus is sufficient to accommodate most camera and filter wheel combinations, as well as many off-axis guiders.

Note on Collimation

Because of the coma correction and field-flattening effect of the SCT Corrector, it is somewhat sensitive to proper telescope collimation. A critical star-test collimation with a high-power eyepiece as would normally be done with an SCT will be a very good start and may well be all that is necessary. A more detailed procedure is described below if needed.

With a high-power (200x or so) eyepiece, examine an out-of-focus star that is centered in the field of view. Check that the hole in the center of the star image is concentric with the outer edge of the star. If it is not, make small adjustments to the three collimation screws on the telescope's secondary mirror until the star looks as perfectly concentric as possible. Be sure to keep the star centered in the field after each adjustment.



Above: *The image on the left is how an out-of-collimation star will look at high magnification. A properly collimated star will appear concentric like the image on the right.*

Once the SCT Corrector and camera are in place, you can easily check that the collimation is ideal by examining a short exposure. Aim the telescope to a fairly dense star field such as an open star cluster or area of the Milky Way. Be sure the telescope is well focused. Take a short (5-10 second) exposure and look at the stars at the edges and corners of the image at full resolution. If the stars appear elongated on one side of the image but round on the opposite side, this indicates that an adjustment is necessary.

Make a very small adjustment (probably no more than 1/8 of a turn) to one of the secondary mirror collimation screws. Wait a few seconds for any vibrations to settle out then take another short exposure. See if the stars appear to have gotten better or worse and continue making small adjustments until the stars are sharp across the full field of view.



Above: *The left image shows stars at the edge of the field that appear elongated because of collimation error. On the right is a properly collimated image. The stars should appear round over the full field of view.*

Using a Filter



The SCT Corrector is threaded for standard 2" (48mm) filters. The filter simply threads into the front of the SCT Corrector. This setup is ideal for light-pollution filters that will always be in place ahead of the camera.

Note that the 48mm filter threads are just over 1/8" deep. This is sufficient to accommodate most filters. If the threads on your filter are too tall, this is not a problem. Simply thread the filter in as far as possible and it will work fine.

Specifications

- 0.75x Focal Reduction
- 35mm Optimized Image Circle
- 90mm Backfocus
- Threaded for 2" (48mm) Filters
- Fully Multi-Coated Optics
- Made in USA
- Diameter: 2.0" (50mm)
- Length: 2.0" (50mm)
- Weight: 0.38 lbs (173g)

Camera Adapter Specifications

- SCT Corrector Top Thread: 1.800 x 32
- Mechanical Backfocus (thread shelf to focal plane): 90.3mm (3.56")

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