

The Sky-Watcher Esprit 100-mm ED Triplet APO Refractor

All that's missing is a cloud filter!

By Austin Grant

When Sky-Watcher USA announced their lineup of Esprit Triplet refractors, I must have been one of the first people on the waiting list. They currently offer the scope in four apertures: 80-mm, 100-mm, 120-mm, and 150-mm. I opted for the 100-mm and couldn't have been more pleased when it arrived at my doorstep.

The scope was triple boxed, with the innermost being a really nice aluminum hard case with handles on three sides. The scope was secured in the custom foam with racquetballs, of all things, as shock absorbers. All the accessories were also neatly arranged into custom cut compartments.

Any concerns I had about collimation with shipping so much glass were quickly quelled. The scope arrived in pristine condition, and it truly was a beautiful specimen. As I assembled the felt-lined rings onto the CGE-style dovetail bar, I couldn't help but notice the attention to detail with this piece of equipment. From the retracting dew shield to the rotating "captains wheel" styled micro-focuser, they've compiled the total package.

The specifications tell only half of the story. This is a 100-mm aperture, apochromatic three-element refractor with a focal length of 550 mm, resulting in a focal ratio of $f/5.5$. For an astrograph, that's decent, but for a refractor that's cookin'! Coming in

around 17-pounds, my Celestron CGE didn't even notice it was up there (**Image 1**).

The aforementioned micro-focuser is a deluxe rack-and-pinion design that is able to perform the most minor of focus tweaks. I liked the rotating ability, but I loved the precision of focus that I could accomplish (**Image 2**). And if that isn't enough, the package also includes a fantastic 9x50-mm right-angle correct image finder (**Image 3**), a 2-inch dielectric diagonal (**Image 4**), a thread-on field flattener (**Image 5**) and a Canon camera adapter. All that's missing is a camera and some clear skies! But before I could attach my Canon 60Da, I had to try the scope out visually.

The weather was nice, and the sun almost directly overhead by the time I finished unpacking all the accessories that came with the scope. I left it outside to acclimate to the heat, while I gathered my Kendrick white-light solar filter and some Tele Vue eyepieces. I used the included 2-inch diagonal, but left the field-flattener off for my visual experience with the sun.

The scope did not disappoint. I was immediately blown away by the detail I was detecting in the photosphere. Sunspots were



Image 1 - Sky-Watcher Esprit 100ED mounted on the author's Celestron CGE.

crisp, and the granulation had more pop and contrast than I've ever seen. I'd also setup an Orion ED80 and a Meade 8-inch SCT, both with full-aperture white-light filters, but the Sky-Watcher Esprit 100 was easily the favorite scope for this outing.

By the time I switched to an imaging setup, the clouds started to roll in. I

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Image 2 - The Esprit 100ED features a deluxe 3-inch rack-and-pinion with sensitive micro-focus functionality and full rotation.



Image 3 - The Esprit 100ED package also includes a 9x50 right-angle, correct-image finder scope.

threaded on the field flattener and attached the Canon 60Da, but didn't have the skies for any serious imaging. What I did notice though, was that the sun was a perfect fit when I added a TeleVue 2.5X PowerMate (**Image 6**). This meant good things for solar and lunar imaging with this setup. Oh, and the scope just looked so nice on the CGE, outfitted with some imaging gear.

On the next clear night, I got out and spent some time getting familiar with the scope. I started by checking out the focuser. It's a 3-inch model, with a step ring to a 2-inch adapter (**Image 7**). It's a rack-and-pin-

ion design, and has a very sensitive micro-focus functionality. Focusing was smooth throughout the entire travel, and tension is adjusted by a small lever on the bottom, between the focus knobs. I also appreciated the rotating function. Even on my German-equatorial mount, I'm able to get the eyepiece in a comfortable position without having to loosen and retighten the diagonal.

So with that included diagonal and a Tele Vue eyepiece, I slewed to the moon. The view was sharp and full of contrast, and as I expected, completely free of any false color. Next, I hopped over to Perseus to

check out the Double Cluster. Stars were pinpoints of light across the entire field, with tons of inky black contrast. This may be a scope aimed at imagers, but it's pretty pleasing for a nice rich-field visual scope as well.

Finally, I stayed up long enough to check out M31. I didn't expect any miracles, and I didn't get any. The laws of physics still apply, and M31 looked like a distant unresolved globular cluster. Still, I was overwhelmingly pleased with the scope as a visual performer.

The following night, I setup the scope for imaging. That consisted of uncoupling the 2-inch step-down ring and threading on the field flattener. The camera side of the field flattener simply screws into the included M48-to-EOS adapter, and from there you attach the camera and you're all set. I replaced the 9x50-mm finderscope with a 50-mm guidescope so that I could autoguide, and installed a QHY5L-II for that purpose. What a fantastically sensitive little camera!

I wanted to get an idea of how flat the field was while also seeing what kind of field



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Image 4 - Included 2-inch diagonal with dielectric coatings.

of view I had with an APS-C sensor like on the Canon 60Da. First, I slewed to a bright star and focused with a Bahtinov mask. The focuser performed perfectly, and the weight of the camera was a non-issue.

I then pointed the scope at M8 and

M20, the Lagoon and Trifid Nebulae (**Image 9**). After some initial test shots, it became apparent that I would have to rotate the camera to fit them both in the frame. Not a problem with the easily rotating focuser, but after rotating the setup I was



Image 5 - The Esprit 100ED includes a thread-on field flattener.

concerned that I'd need to refocus. I hopped back to a bright star and checked, only to be amazed that it was still spot on. I've used plenty of rotating focusers, but I don't recall any that have so accurately maintained focus after rotation.

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Image 6 - Sky-Watcher Esprit 100ED set up with Kendrick solar filter, field flattener, Tele Vue 2.5x PowerMate and Canon 60Da.

After getting back over to my targets, I captured some quick images just as the clouds rolled in. It's been one those summers, where we've had nothing but cloudy nights. I did get enough data to show a really nice, flat field of view. Stars in the corners looked just as beautiful as stars in the center of the field. Vignetting, which was slight, was easily mitigated with flats. The fully illuminated field for this scope is a 40-



Image 7 - Included step-ring adapter.

plus-millimeter image circle.

Weeks later, the weather cleared and I was able to finally get in an entire imaging session. The moon was high, but at this point I couldn't afford to be picky. I chose the NGC 6888, the Crescent Nebula, as my target. I shot an hour's worth of full-color data with the Canon 60Da before deciding to switch over to some narrowband Hydrogen-alpha. The moon was just drowning



Image 8 - Included heavy-duty split rings.

out my signal. For this purpose, I used the 6-nanometer Hydrogen-alpha EOS Clip filter from Astronomik. After about two more hours of imaging, a familiar sight loomed on the horizon. Clouds again. Still, I'd seen what I wanted to see. Even with the light pollution and nearly full moon, this scope pulled in some great detail on the Crescent nebula (**Image 10**).

This scope delivers top-tier performance at a ridiculously reasonable price. Pinpoint stars all the way across the large, flat field. It's got excellent contrast, a great focuser and lots of handy accessories. The included field-flattener takes all guesswork out of creating a complete imaging system. It's perfectly matched to provide the best image possible.

With a moderately fast focal ratio, short focal length and light optical tube, this scope is a perfect fit for all ranges of mounts. I'd argue that any mount with autoguider input would be a nice fit for imaging with this scope. If you are looking for your next, or last, imaging refractor, be sure to check out the lineup of Esprit ED Triplet APO refractors from Sky-Watcher USA. You won't be disappointed. 

Features and Specifications:

Lens set: 100-mm apochromatic three-element, fully multi-coated.

Focal length: 550 mm.

Focal ratio: f/5.5.

Image circle: 40 mm.

Focuser: 3.0-inch rack-and-pinion with micro focus.

Back focus: 68.8 millimeters.

OTA weight: 16.3 pounds (7.4 kilograms).

OTA length: 24.5 inches (622.3 millimeters).

Included Accessories:

2-inch mirror diagonal with dielectric coatings.

9x50 right-angle, erect-image finderscope.

Canon Camera adapter.

Thread-on field flattener.

Tube rings with CGE-style dovetail bar.

Aluminum foam-line carry case.



Image 9 - M8 and M20, the Lagoon and Trifid Nebulae, imaged through the Esprit 100ED with a Canon 60Da.



Image 10 - NGC 6888, the Crescent Nebula, full color. The author shot an hour's-worth of full-color data using the Canon 60Da, then two hours through a 6-nanometer Hydrogen-alpha EOS Clip filter from Astronomik, all under a bright Moon.