Astronomy HOT Product

Prepare to be assimilated by

Nik Szymanek trials a new high-end refractor from Japanese manufacturers Borg that is perfect form imaging.

■ A view of the supplied Borg helical focuser. The knurled thumbscrew at top right allows the rear end of the telescope to be rotated for framing and the thumbscrew just below it is to secure the focus ring during imaging sessions.

■ The Andromeda Galaxy taken with the Borg 125SD telescope and a QSI 532s CCD camera, and LRGB exposures with Astronomik two-inch filters. All images: Nik Szymanek.

The modern astronomical imager is spoiled for choice these days by an impressive range of high-quality refractors that are eminently suitable for use with CCDs and DSLRs. The Borg 125SD is a 125mm (five-inch) apochromat that has many features making it an attractive option for folk wishing to purchase something larger than the popular 80mm refractor.

Borg, part of the Japanese Tomy company, offer an impressive modular approach to telescopes and accessories. The supplier of Borg products in the UK is SCS Astro in Somerset. The 125SD was loaned to us for review and came in two pieces; the lens assembly can be unscrewed from the optical tube and carried separately as hand luggage on aircraft. This is a really great idea. The high-quality white finish of the tube assembly and no-nonsense Borg logo gave the telescope very professional apparel; let's face it – refractors should all be white, I say! Oh, and by the way, the name has nothing to do with Swedish tennis players or the dastardly, assimilated enemy of the starship Enterprise…

I was surprised how light the complete telescope was once the two parts were assembled. SCS Astro also supplied a pair of tube rings so it was only a few minutes work to get the telescope installed on my Losmandy Titan mount. The 125SD can be supplied with either a popular FeatherTouch Crayford-style focuser or a Borg Helical focuser. The supplied focuser was the FeatherTouch and once the sky darkened I attached my CCD camera and filterwheel and started the focus routine. I had to use my own two-inch extender to get near to focus and sadly, my camera wouldn't quite reach focus with the FeatherTouch. My extender pushed the camera too far back and I didn't have anything else suitable. I contacted SCS Astro and within a few days one of the Borg 7835 Helical focusers arrived. This fixed the focus problem but I still had to use the two-inch extender, which is a shame as these fittings invariably introduce a little bit of flexure into the imaging train.

Optics

The 125SD has a focal length of 750mm and a fast f/ratio of f/6 making it ideal for relatively high-speed imaging. Upon reading the supplied data sheet I was pleasantly surprised to read that this telescope's optics are produced by Pentax (who have been announced as Borg's new partner). I hold Pentax telescopes in the highest regard and can vouch for their top quality optics that deliver remarkable flat fields without the use of field flatteners. The 125SD also boasts the impressive ability to evenly illuminate the popular 60mm x 70mm frame size of medium format film cameras, less popular today perhaps but far larger than any CCD camera on the amateur market.

Back under the night sky I was ready to start imaging. The helical focuser proved to be slightly problematical when the telescope was pointing at low declinations in the sky. The weight of the two-inch extender, CCD camera and filterwheel was causing the focuser to become very tight to

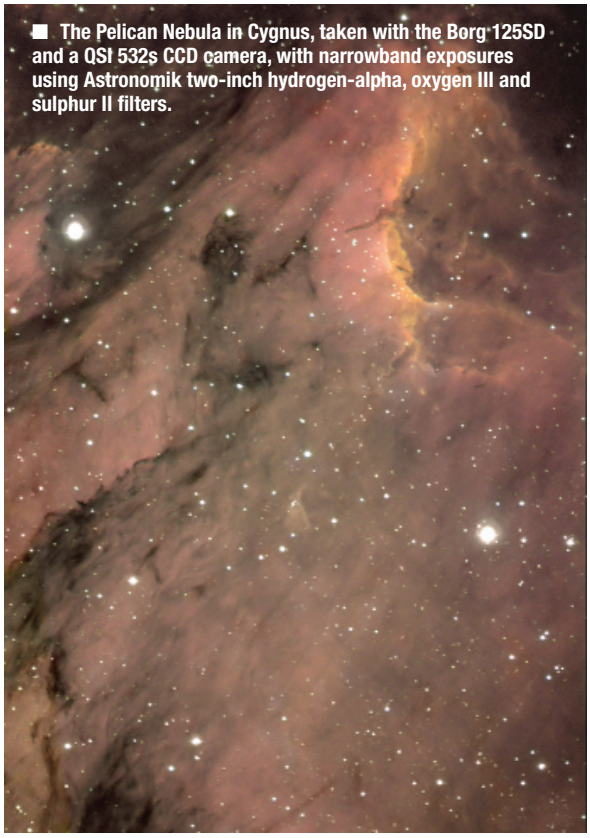
the Borg 125SD!

■ The Borg 125SD apochromatic refractor installed on a Losmandy Titan mount in the reviewer's observatory.

At a glance:

Borg 125SD apochromatic refractor

Aperture:	125mm (five inches)
Focal Length:	750mm
Focal Ratio:	f/6 (f/3.9 with optional reducer)
Cost:	£3,199
Available from:	SCS Astro, The Astronomy Shop, 1 Tone Hill, Wellington, Somerset TA21 0AU, www.scsastro.co.uk/



■ The Pelican Nebula in Cygnus, taken with the Borg 125SD and a QSI 532s CCD camera, with narrowband exposures using Astronomik two-inch hydrogen-alpha, oxygen III and sulphur II filters.

operate and on some occasions I found that as I attempted to focus the whole assembly would rotate, changing the careful framing I had achieved. This could be alleviated somewhat by lifting the CCD camera slightly to relieve the pressure or by using one hand to secure the focuser while the other turned the focus ring. Happily, when the telescope was pointing in a more vertical direction, the focuser was smooth and easy to operate. It does come with large locking screw to fix it in place once focus is achieved and a second screw on the rear assembly of the telescope tube can be released to rotate the whole focuser for framing purposes.

Once focused, the 125SD produced very pleasing and crisp star images. My QSI 532s CCD camera gave a field of view of 38 x 67 arcminutes and as sky conditions were quite poor I concentrated on using a hydrogen-alpha filter. The fast focal ratio coupled with the high quantum efficiency of my QSI camera made short work of my first target, a monochrome view of the 'Wall' section of the North America Nebula in Cygnus. This produced a strong image with plenty of contrast and an impressive flat field. My next target was the lovely Andromeda Galaxy, nicely placed in the evening sky. I switched to using a set of Astronomik broadband filters and took an LRGB image using five-minute exposures. Once again, the telescope performed superbly, the fast combination of optics and CCD camera producing great images in a very short time (quite useful with our treacherously changeable skies!).

Early riser

Indeed, after a good start, the weather closed in and I had to wait quite a while for my next target, M42 the popular Orion Nebula, although this meant crawling out of bed at 3:00am! I used a set of Astronomik narrowband filters to produce a colour image of M42 that incorporated a variety of exposure times to show all parts of the dynamic nebula. Notwithstanding the caveats of the helical focuser mentioned earlier, the stars snapped into tight focus and within a few hours I had a very pleasing image of this most colourful of deep sky targets. The weather continued to hold and I was able to rattle off another three-hour total exposure with the narrowband filters of the enigmatic Pelican Nebula in Cygnus. Once again, the end result had good contrast, with crisp shadow details and very pleasing.

I found the Borg 1245SD to be a remarkable telescope to use for imaging and a well thought out concept with lightweight tube assembly and detachable lens element. At £3,199 this is a major investment but, considering it features outstanding Pentax optics, it is a bargain at the price. An optional focal reducer converts the 125SD into a blisteringly fast f/3.9 astrograph with a Petzval optical design that will deliver flat fields over a full 35mm frame size. I'd be happy to have this as my main imaging telescope, it's a tempting thought and, as they say, resistance is futile…

Nik Szymanek is a keen astrophotographer and the author of Infinity Rising. *He would like to thank Kieron McGrath of SCS Astro for assistance with this review.*