

Sky-Watcher Explorer-130PM

Ade Ashford rediscovers the joys of small 'scope observing with this superb value for money Newtonian.

Until relatively recently it was uncommon to find a Newtonian with an aperture between 114mm and 150mm. Now it's possible to find 5-inch (127mm) reflectors on equatorial or computerised GOTO mounts, the Explorer-130PM being a fine example of the former. Not to be confused with its earlier incarnation, the Explorer-130 (a 900mm focal length Newtonian with a 130mm spherical primary), this version with a 'PM' suffix to the name sports a shorter focal length (650mm, $f/5$) parabolic primary mirror and has a single-axis motor driven mount as standard equipment. Given the new specification, the Explorer-130PM has the potential to turn in a far better performance, a fact quickly verified during subsequent testing.

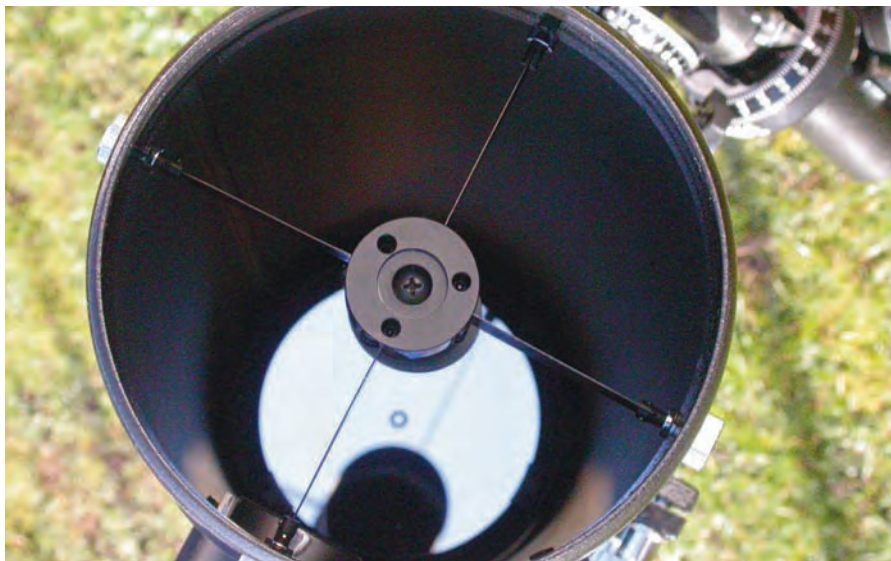
Delivery and assembly

The courier will deliver a single box measuring some 107cm x 50cm x 29cm and weighing-in at 18 kilograms. Once you've divested yourself of the packaging (which I urge you to recycle as there's rather a lot of it), the telescope, mount and accessories tip the scales at around 16 kilograms (35 lbs). It's therefore quite feasible for most adults to move short distances fully assembled. The Explorer-130PM comes with a profusely illustrated and lucidly written 24-page A4 manual that covers assembly, use and maintenance of your instrument. Even if you've never assembled one before, you'll be up and running in less than an hour.

I was particularly impressed with the section on how to use the supplied EQ2 German equatorial mount. This can prove a great obstacle for novices moving up to a 'real' astronomical telescope, so to see a good introduction to the concepts of polar alignment and the use of setting circles as applied to the very mount you will be using is especially welcome. It doesn't pretend to be a comprehensive treatment, but the manual will get you up and running in the quickest possible time and enable you to make sense of the more generalised treatment you will find in textbooks on the subject.

First impressions

The 62cm long, 16cm diameter rolled steel tube comes in the distinctive metallic sky blue and black trim Sky-Watcher livery. The 35mm diameter



The well-engineered secondary mirror support of the Explorer-130PM introduces minimal diffraction noise and provides the correct secondary offset for such a short focal ratio instrument. Notice the centre-marked parabolic primary mirror.

secondary mirror holder (28 percent central obstruction) is held in the tube by four thin tensioned vanes that carry a minimal diffraction penalty. Given that the 'scope has a relatively fast focal ratio of $f/5$, I was particularly pleased to see that the elliptical secondary mirror was mounted with the correct amount of offset to fully intercept the light cone coming from the primary mirror.

The secondary mirror holder is robustly made and fully adjustable once collimation becomes necessary (the 'scope was accurately collimated straight out of the box and held its factory settings throughout the period of testing). Interestingly, the collimation adjustment screws of the centre-marked primary mirror lie beneath a plate on the base of the tube, so they are wisely hidden from casual tinkerers. It is a simple matter to remove the plate if you so wish, exposing the rear of the primary mirror and thereby accelerating its cool down time.

The 31mm (1.25-inch) focuser body is plastic but perfectly serviceable with a rack and pinion of 48mm travel. All of my 3.7mm format eyepieces came to focus. Rather than an optical finder, the Explorer-130PM sports a reflex finder that appears to project an LED red-dot onto the sky. While it's very intuitive to adjust and use, the optical coatings on its 20mm-diameter viewing window drastically reduces the amount of light passing through.

Consequently, all but the brightest stars are visible though it. Fortunately, the tube has a standard finder bracket connector, so it's easy to substitute a standard optical finder.

The 'scope comes with generic coated, modified, achromatic eyepieces of 10mm (65x) and 25mm (26x) and a 2x Barlow. While the eyepieces are of tolerably good quality (for example, the 25mm delivers a nice two degree field of view), the uncoated Barlow leaves a lot to be desired in the performance stakes. My recommendation would be to invest in a decent 5mm focal length multi-coated Plössl or long eye relief design as soon as you possibly can.

Performance

The Sky-Watcher EQ2 mount is far from the beefiest German equatorial on the market, but it's certainly not overtaxed by the Explorer-130PM tube assembly. The aluminium tripod height ranges from 70 to 120cm, but the 'scope is most comfortably used with the legs in the retracted (and consequently most stable) configuration. The vibration damping time is in the region of three seconds. The polar axis motor drive runs from a convenient 6V pack housing four D cell batteries and is perfectly adequate for prolonged visual use or short exposure webcam imaging. The drive's hand controller is switchable for northern or southern hemisphere operation, offering 2x and 4x sidereal speed correction with minimal backlash. This



Left: The EQ2 German equatorial mount sports setting circles and slow motion controls on both axes. A relatively lightweight mount, it handles the Explorer-130PM with ease. Vibration damping time is in the region of three seconds.



Sky-Watcher's decision to refit the Explorer-130PM with a shorter (f/5) focal ratio parabolic mirror and provide a polar axis drive as standard makes for a value for money performance 'scope. All images: Ade Ashford.

is a real bonus for a budget telescope.

I was most impressed with the views revealed by the scope during tests conducted into the night of 1 March 2007. Bright winter star Capella studied at high power revealed that the main mirror had excellent correction for spherical aberration with a smoothly polished surface that merely hinted at a zone that had no real impact on subsequent performance. Despite a phase of nearly 96 percent, the waxing gibbous moon revealed a seemingly inexhaustible amount of fine detail along the rapidly vanishing terminator. Particularly memorable was Schröter's Valley and the environs, a sinuous rille that meanders across the Aristarchus plateau.

Saturn, just two degrees away from the intense glare of the 12-day-old Moon, easily revealed tenth magnitude moons Tethys and Dione from my heavily light polluted urban location, while Titan and Rhea were obvious. Just 19 days after the planet's opposition, the first bite of shadow caused by Saturn's globe on the rings was readily seen, while the Cassini Division between the A and B rings was obvious. For an f/5 instrument the Explorer-130PM also performed surprisingly well on double stars, Castor in Gemini being easily resolved.

Conclusion

A good reflector like this sits on the cusp of an aperture divide that on the one hand has small apertures that will show the Moon and bright planets as interesting objects, while on the other you have instruments that will permit you to study these bodies in considerable detail in addition to deep sky objects. For

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The single-axis motor drive for the EQ2's polar axis comes with a 6V power pack (4 x D cell batteries extra) and a variable speed corrector handset. A clutch mechanism enables you to override the motor with the manual slow motion control.

example, the Explorer-130PM gathers 30 percent more light than a 114mm (4.5-inch) reflector without having a tube that is any less manageable. To get optimal performance you will need to invest in better eyepieces, but the mechanical and optical specification delivered at this price break puts it in an essentially peerless position. Highly recommended!

Ade Ashford is a freelance astronomy journalist. He appraises more optics at ScopeTest.com.

At a glance

Type:	Newtonian reflector
Aperture:	130mm
Focal length:	650mm
Focal ratio:	f/5
Objective:	paraboloidal mirror
Mount:	EQ2 equatorial + single axis drive
Focuser:	1.25-inch R&P, 48mm travel.
Eyepieces:	10mm & 25mm + 2x Barlow