

Chapter 2

Vixen Sphinx Mounts Using Star Book Technology

It is important to get familiar with the family of Vixen telescope mounts with the integrated Star Book and Star Book TEN GoTo technology. In Vixen nomenclature, these equatorial mounts are their Sphinx line (Fig. 2.1).

Common to all of the Sphinx mounts, first- and second-generation, is the unique internal mounting of the right ascension (RA) and declination (DEC) motors. This internal location of the motors, electronics, and gears within the declination housing of the Sphinx mount acts as a built-in counterweight. Therefore, the amount of actual counterweights used to balance the mount with its telescope is less, resulting in an overall lighter and more portable equatorial mount. All wiring for the RA and DEC motors are also internal, achieving a clutter-free telescope setup.

The Vixen Sphinx mount system is designed in a modular fashion, allowing the user the flexibility for adapting the mount in a multiple of configurations. A more detailed discussion of the various configuration options will be addressed in a later chapter.

The original Vixen Sphinx mounts, with the original product introduction in 2004, included the original Sphinx SXW, the somewhat heavier duty SXD, and the king of the Sphinx line the ATLUX (Fig. 2.2).

The Sphinx SXW specifications, aside from the Star Book (more details later in the book), are quite respectable: 180-tooth worm gears driving it (implying smoothness and accuracy suitable for astrophotography), and the full-up weight of the equatorial head, tripod, and one counterweight is about 30 lb, with a rated capacity of 26.5 lb. Applying excellent system engineering principles to the SXW design, the Sphinx mount features a retractable counterweight shaft, fully enclosed servo motors placed inside the mount housing to provide counterbalance and minimize (but not eliminate!) the role for counterweights, and no external cables except to



Fig. 2.1 Vixen equatorial mounts family picture (Vixen)



Fig. 2.2 The original Vixen SXW (shown with Vixen ED81S apochromat refractor) (Vixen)

connect to power and the Star Book. The SXW design is elegant, light, clean, and compact. Using the Vixen dovetail system, the Sphinx mount can accommodate a wide variety of optical tubes, either Vixen's or other makes. A variant tabletop version was marketed by Vixen as the SWC, to be used on a special tabletop tripod without counterweight (Fig. 2.3).



Fig. 2.3 The Vixen Sphinx SXD (Vixen)

The heavier duty Sphinx SXD can be viewed as a SXW on steroids. Using the basic housing as the SXW, the SXD is supplied with the identical Star Book system of electronics and motors as the SXW, but mechanically beefed-up, with the mount, tripod, and counterweights weighing in at 44 lb and a load capacity of 33 lb. The main difference between the SXD and the SXW was the use of improved bearings on the axes, and steel shafts instead of aluminum shafts (Fig. 2.4).

At the top of the line, the original Star Book equipped mounts culminated with the ATLUX model. With the mount, counterweights, and tripod, the ATLUX total weight comes in at almost 75 lb. This increased size allowed the use of optical tubes weighing up to 50 lb to be attached via the Vixen dovetail system. The ATLUX is viewed as a highly stable platform for astrophotography.

Beginning in 2013, Vixen began introducing its updated and upgraded line of mounts. Featuring the next generation Star Book Ten (Ten is not the number 10, but the Japanese word for heavens) computer/controller and new high resolution digital stepping motors, and in ascending order of cost and payload, the Vixen family equatorial mounts currently include the SX2, SXD2, SXP, and the AXD (aka the ATLUX DELUX) (Fig. 2.5).

The SX2 represents the second generation of the entry level Sphinx mount, replacing the SXW in the Vixen line. The quieter digital stepping motors replaced



Fig. 2.4 The Vixen ATLUX mount (shown with Vixen VMC 260L catadioptric telescope) (Vixen)

the original DC servo motors, providing smooth, quiet slewing with quick response to commands. The load capacity of 26.4 lb and a mount weight of 27 lb enables the SX2 to be a very portable equatorial mount. The axis shafts are aluminum alloy, and aluminum gears are used for the drive system (Fig. 2.6).

The revised SXD2 Equatorial Mount built on the success of the original Sphinx SXD. The quieter stepping motors replaced the original DC servo motors, providing smooth, quiet slewing with quick response to commands. Heavier components, nine bearings, and increased loading capacity enables the SXD2 to be a solid platform for observing or astrophotography. The SXD2 differs from the SX2 mechanically with use of carbon steel axis shafts and brass wheel gears in place of the SX2 aluminum components. The mechanical upgrades enable the SXD2 to have a load capacity of 33 lb while avoiding any weight gain from the previous SXD model (Figs. 2.7 and 2.8).



Fig. 2.5 The Vixen SX2 with Star Book Ten (Vixen)



Fig. 2.6 The Vixen SXD2 (Vixen)



Fig. 2.7 Upgraded mechanical parts in the SXD2 (Vixen)

If the SXD2 can be viewed as the SX2 on steroids, the SXP should be viewed as the SXD2 on steroids, a high protein diet, growth hormones, and a lot of gym work. Seriously, the SXP, which stands for the Sphinx Professional, is the ultimate expression of the Sphinx mount lineup and is optimized for astrophotography. Armed with a 40 mm diameter carbon steel declination shaft and low-friction ball bearings, the SXP takes the Sphinx architecture to a load capacity of 35.2 lb, while only being 5 lb heavier than the SXD2 (Fig. 2.9).

The flagship of the Vixen equatorial mounts is currently the AXD, the successor to the ATLUX mount. Sometimes called the ATLUX DELUX, the AXD is the ultimate expression of a Star Book Ten equipped equatorial mount, weighing in at 55.1 lb, excluding counterweights, the pier, or tripod. The AXD is designed for a load capacity of 66 lb!



Fig. 2.8 The Vixen SXP (with Vixen AX103S refractor and optional half-pillar) (Vixen)



Fig. 2.9 The Vixen AXD (ATLUX DELUX) (shown with Vixen VMC-260L Catadioptric) (Vixen)

The Vixen Star Book User Guide

How to Use the Star Book TEN and the Original Star
Book

Chen, J.L.; Chen, A.

2016, XII, 292 p. 276 illus., 271 illus. in color., Softcover

ISBN: 978-3-319-21592-1