Vixen®

Instruction Manual for SD Apochromatic Refractors

PREFACE

Thank you very much for your purchase of a Vixen astronomical telescope.

This manual describes the SD81S, SD103S and SD115S apochromatic refractors. You may occasionally find descriptions in the text not relevant to your particular model. If you purchase the product with a telescope mount as a complete package, be sure to read the instructions for your mount along with this manual.

⚠ WARNING

- **Never look directly at the sun with the telescope or its finder scope or eyepiece. Permanent and irreversible eye damage may result.**

⚠ CAUTION

- **Do not leave the optical tube uncapped in the daytime. Sunlight passing through the telescope or finder scope may cause a fire.**
- **Do not use the product while moving or walking, injuries could result from a collision with objects or from stumbling or falling.**
- **Keep small caps, plastic bags or plastic packing materials away from children. These may cause a danger of swallowing or suffocation.**

HANDLING AND STORAGE

- Do not leave the product inside a car in bright sunshine, or in other hot places. Keep away strong heat source away from the product.
- When cleaning, do not use solvents such as paint thinner or similar products.
- Do not expose the product to rain, water, dirt or sand.
- Avoid touching any lens surfaces directly with your hands. In case a lens becomes dirty with fingerprints or general smears, gently wipe it using a commercially available lens cleaner and lens cleaning paper or cloth, or consult your local Vixen dealer.
- Blow off dust on lenses using a commercially available blower brush.
- For storage, keep the product in a dry place and do not expose to direct sunlight.

CONTENTS

The SD shipping box contains the items listed below. Check if all the items are included.

● In Case of SD81S

1	SD81S Optical Tube
1	Flip Mirror Diagonal
1	XY Red Dot Finder II Body
1	Low-profile Mount for the finder
2	M6X18mm bolts
1	Allen wrench of 5mm on a side
	Instruction manuals for the optical tube and accessories

● In Case of SD103S and SD115S

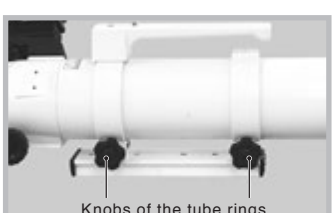
1	SD103S or SD115S Optical Tube
1	Flip Mirror Diagonal
1	7X50mm Finder Scope with illuminated reticle
1	50mm XY Finder Bracket II
1	O ring
	Instruction manuals for the optical tube and accessories

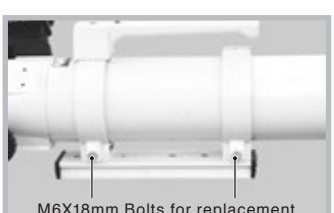
About the M6X18mm bolts supplied with the SD81S

If the knobs to tighten the tube rings interfere with a telescope's mount, replace the knobs with the supplied M6X18mm bolts.

Unscrew the knobs on the tube rings to remove. Replace them with the M6X18mm bolts. Then, tighten the bolt with the supplied Allen wrench moderately. It is not necessary to tighten the bolts securely.

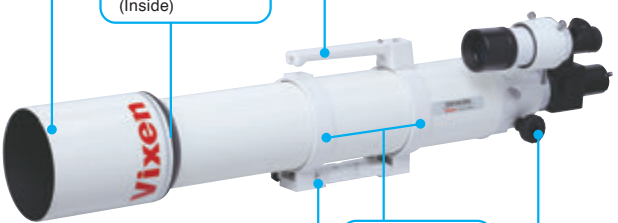
M6X18mm bolts Allen wrench of 5mm





NAME OF EACH COMPONENT

EXAMPLE: SD103S



Metal Carry Handle
(With 1/4 inch camera screw)

Objective Dew Shield

Objective Lens
(Inside)

Tube Rings

Focus Knob

Dovetail Tube Plate or Dovetail Slide Bar M for SD81S

SD81S

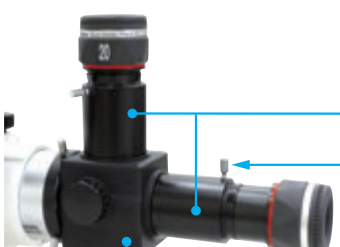
Finder Bracket Shoe

Drawtube Lock Screw

Drawtube

Rack-and-Pinion Focuser

Finder Bracket Lock Screw



Eyepiece Adapter 31.7mm
(An eyepiece projection camera adapter sold separately can be attached to the top part.)

Eyepiece Setscrew

Flip Mirror Diagonal
(Threaded to fit a 42mm T-ring)

SETTING UP THE TELESCOPE

Refer to your mount instructions along with this manual.

Attach the Optical Tube Assembly to the Mount

1 Loosen both the dovetail plate lock screw and safety screw until the tips of these screws no longer extended into the inner part of the dovetail block.

2 Slide the dovetail mounted optical tube into the dovetail mounting block as shown in the figure. Tighten the dovetail lock screw (centered on the notch) onto the dovetail tube plate until snug. First tighten the dovetail lock screw, and then tighten the small chrome safety screw onto the dovetail mounting block until snug.

Refer to your mount instructions as to balancing the optical tube.

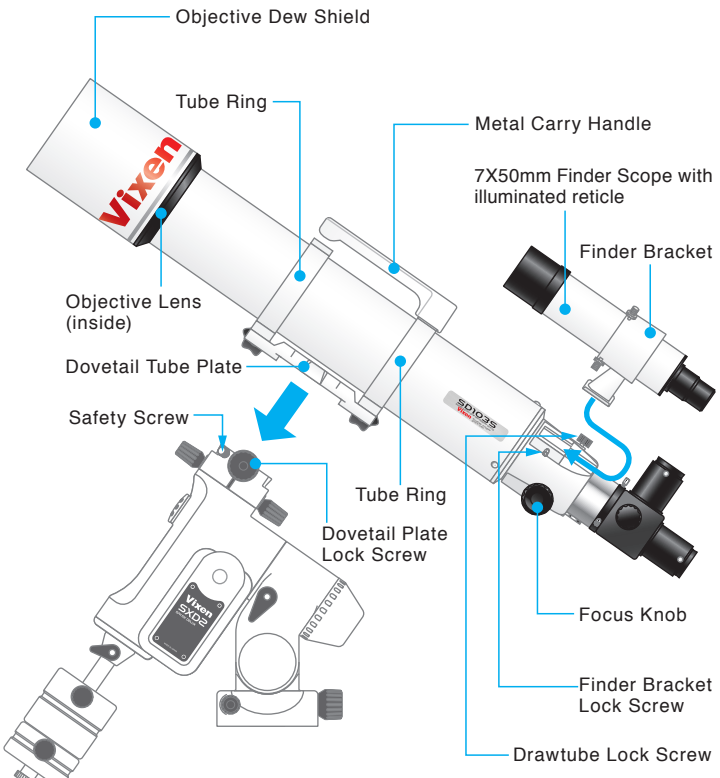
Attach the Finder Scope

Loosen the finder scope bracket lock screw on the finder bracket shoe of the optical tube. Attach the 7X50mm finder scope (or XY Red dot finder for SD81S) as shown in the figure. Tighten the finder bracket lock screw securely.

Use of the Finder Scope

For the novice telescope user it is difficult to locate a selected object in the telescope's field of view at high magnification. Using a finder scope will make this easier.

For usage, refer to the instructions for your finder scope.



(SXD2 mount and SD103 optical tube shown here.)

VISUAL OBSERVING

Eyepiece

- The optical tube assembly requires an eyepiece to view images.
- The eyepiece determines magnification of your telescope.
- The optical tube assembly does not come with the eyepiece as standard accessory unless you purchase a complete telescope package.

Magnification of the Telescope

Dividing the focal length of the telescope by the focal length of the eyepiece gives the magnification.

Example:

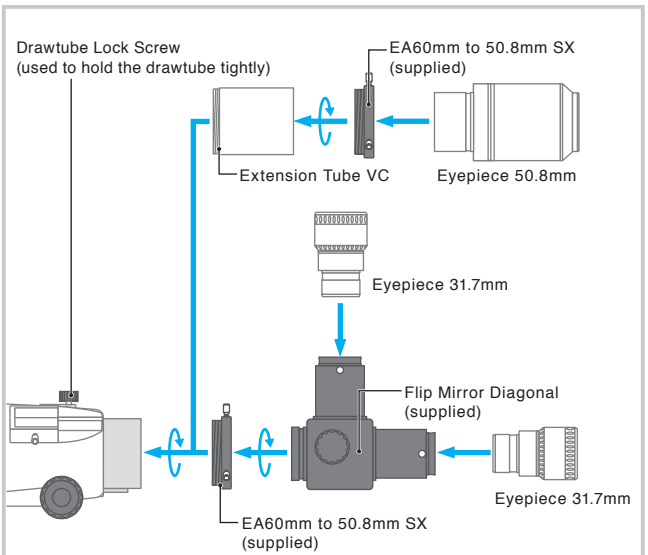
Using the optical tube unit with SLV20mm or SLV5mm eyepiece.

Eyepiece	Telescope's focal length	Eyepiece's focal length	Magnification
SLV20mm	625mm (SD81S)	20mm	31.25X
	795mm (SD103S)		39.75X
	890mm (SD115S)		44.5X
SLV5mm	625mm (SD81S)	5mm	125X
	795mm (SD103S)		159X
	890mm (SD115S)		178X

Note:

Begin with an eyepiece with long focal length (large number in millimeters). When using an eyepiece with short focal length, the image becomes dimmer and the range of field of view becomes narrower. Also the range of sharp focus becomes smaller.

Visual Observing Configuration

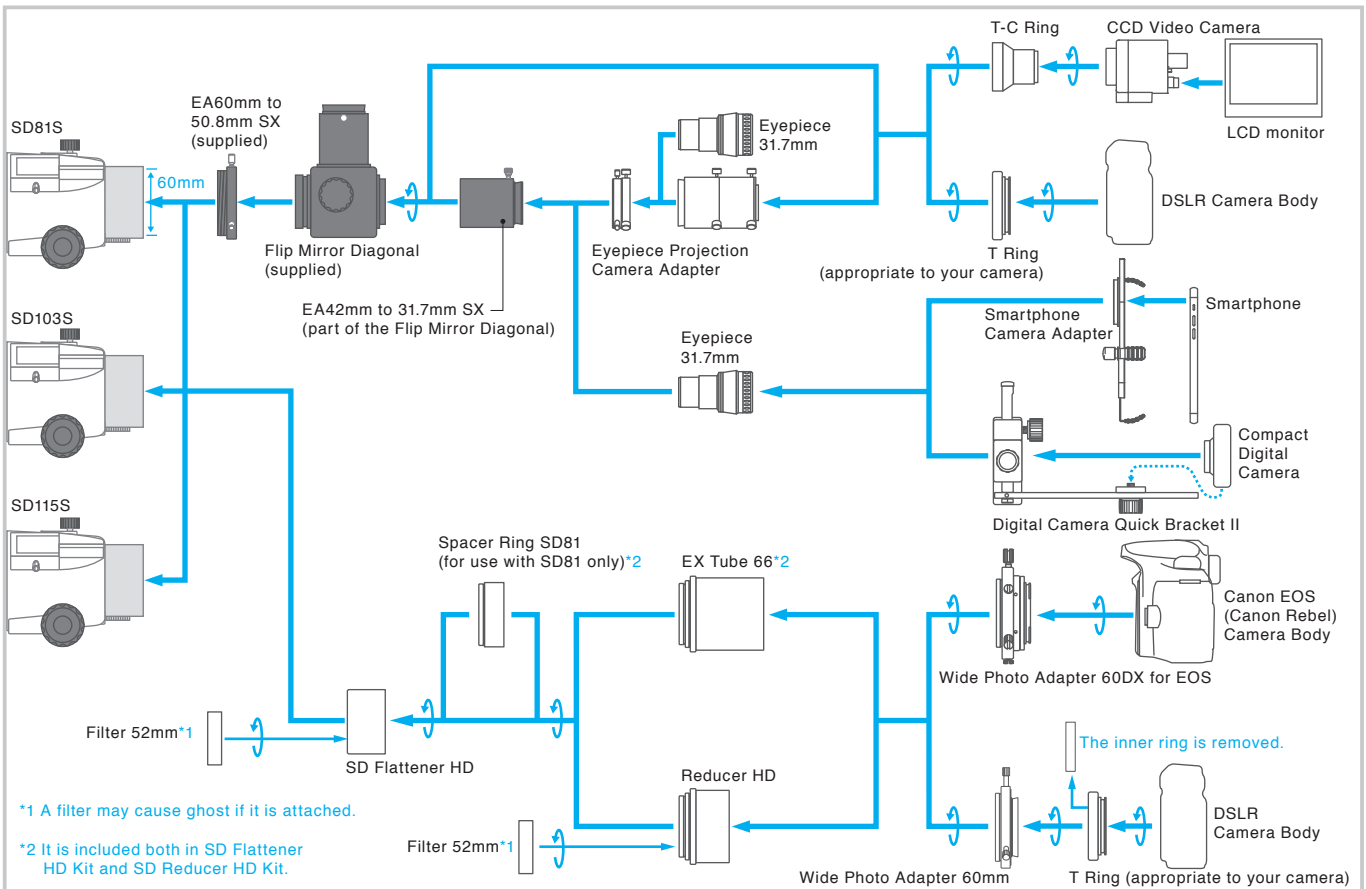


Focusing the Telescope

Look though the telescope with an eyepiece of low magnification. Turn the focus knob forward or backward as shown in the figure until images in the eyepiece's field of view come to focus clearly.

Photographic Configuration

Some of the optional accessories shown in this diagram will be needed if you take pictures with a DSLR camera, a compact digital camera or a CCD video camera.



Specifications

	Model	SD81S	SD103S	SD115S
Objective Lens	Objective Lens	SD Apochromatic lens	SD Apochromatic lens	SD Apochromatic lens
	Lens coatings	Multi-coated	Multi-coated	Multi-coated
	Effective Aperture	81mm	103mm	115mm
	Focal Length	625mm	795mm	890mm
	Focal Ratio	f/7.7	ff/7.7	f/7.7
	Light Gathering Power	134X unaided eye	217X unaided eye	270X unaided eye
	Resolving Power	1.43 arc sec.	1.13 arc sec.	1.01 arc sec.
	Limiting Magnitude	11.3	11.8	12.1
Focuser	Focuser Design	Rack-and-pinion focuser with drawtube lock knob	Rack-and-pinion focuser with drawtube lock knob	Rack-and-pinion focuser with drawtube lock knob
	Threads	60mm, 42mm for T ring	60mm, 42mm for T ring	60mm, 42mm for T ring
	Push-fit	50.8mm, 31.7mm	50.8mm, 31.7mm	50.8mm, 31.7mm
Dimensions and Weights	Optical Tube Length	585mm	810mm	930mm
	Outer Diameter	90mm	115mm	125mm
	Weight	3.6 kgs (Net 2.3 kgs) 7.93 lbs (Net 5.06 lbs)	5.4 kgs (Net 3.6 kgs) 11.89 lbs (Net 7.93 lbs)	6.2 kgs (Net 4.4 kgs) 13.65 lbs (Net 9.69 lbs)
Finder Scope		XY Red Dot Finder II (zero power)	7X50mm Finder w/illuminated reticle	7X50mm Finder w/illuminated reticle
Accessories		Flip Mirror Diagonal, Dovetail Slide Bar M (built-in) XY Red Dot Finder II M6X18mm bolts (2 pcs) and a 5mm Allen wrench	Flip Mirror Diagonal, Dovetail Tube Plate (built-in) 7X50mm Finder w/illuminated reticle 50mm XY Finder Bracket II	Flip Mirror Diagonal, Dovetail Tube Plate (built-in) 7X50mm Finder w/illuminated reticle 50mm XY Finder Bracket II

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