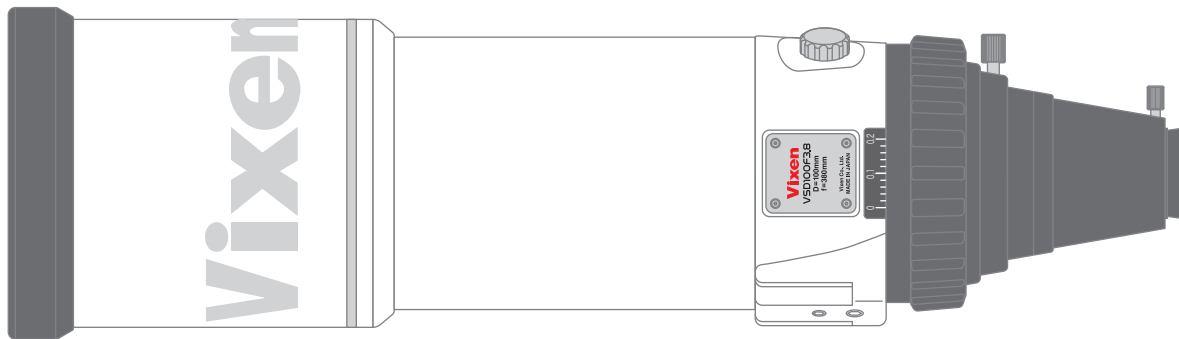




# Instruction Manual for the VSD100F3.8

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## To begin with



Thank you for your purchase of a Vixen VSD100F3.8 refracting telescope.

This manual describes the VSD100F3.8 optical tube assembly. Read the instructions for your mount along with this manual if you purchased the telescope as a complete package.


## Be sure to read the instructions carefully before use.

This instruction manual will assist you in the safe and effective use of the VSD100F3.8 optical tube. Please follow the instructions precisely.



### Legend

 <b>Warning</b>	If misused, it can cause you a serious injury or death.
 <b>Caution</b>	Misuse can cause injury or damage to other property.




## Warning

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

### Legend

 <b>Important</b>	You must complete all of the steps in this manual.
 <b>Direction</b>	You must completely execute the instructions in this manual.

## 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 choking or suffocation.

## Handling and Storage

- ⚠ Do not leave the product inside a car in bright sunshine or in other hot places. Keep any strong heat sources away from the product.
- ⚠ When cleaning the body, do not use solvents such as paint thinner or similar products.
- ⚠ Do not expose the product to rain, water, dirt or sand.
- ① For storage keep the product in a dry place and do not expose to direct sunlight.
- ① Blow off dust on lenses using a commercially available blower brush.
- ① 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 a lens cleaning paper or cloth, or consult your local Vixen dealer. Be sure to touch the lens surface with the most care to prevent it from scratching by accident.

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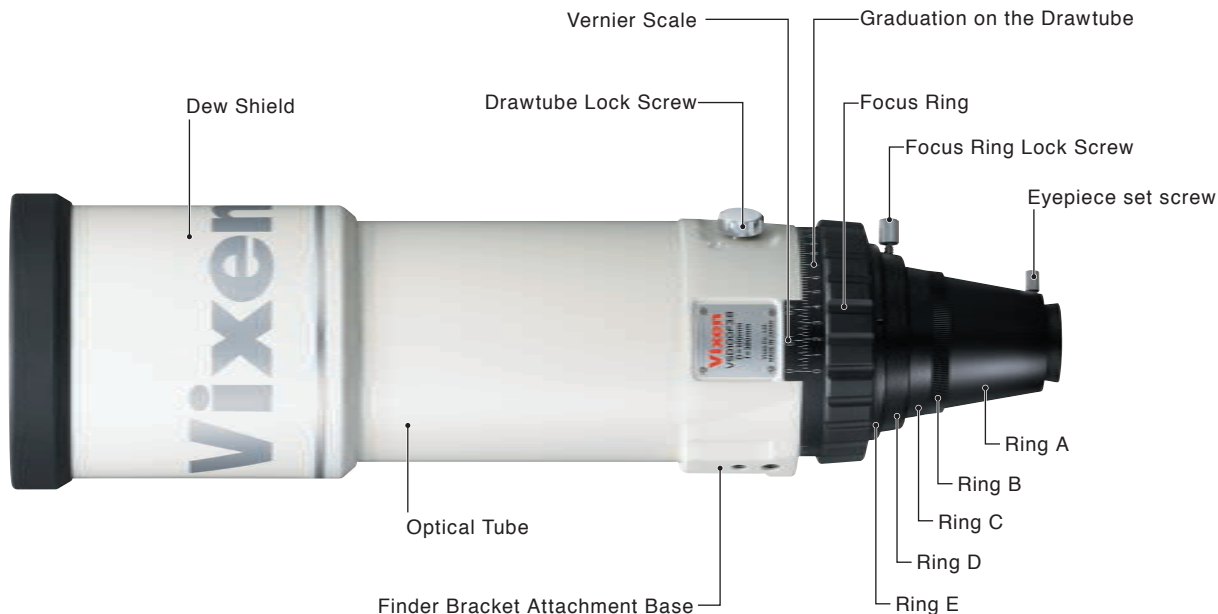
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## Description

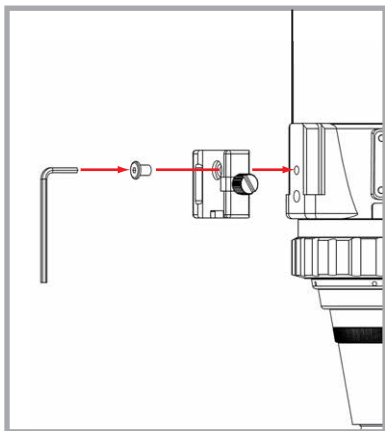


## Setting up the Telescope

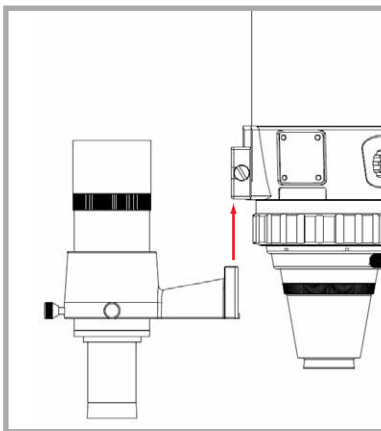
### 1. Attaching the Telescope to the Mount (A dedicated tube ring 115mm unit for VSD is required.)

The SX tube ring 115mm does not fit the VSD100F3.8 OTA. (Refer to your mount instructions along with this manual.)

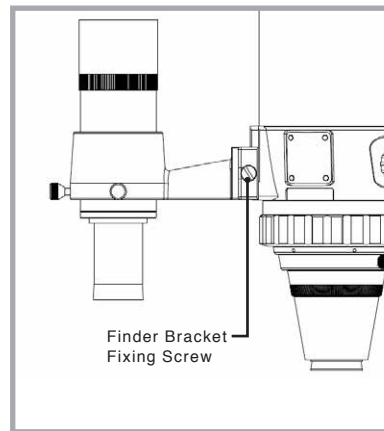
## 2. Attaching the Finder Scope



Attach the optional finder scope bracket shoe to the attachment base on the VSD100F3.8 with a bolt. The bolt is supplied with the finder scope bracket shoe.



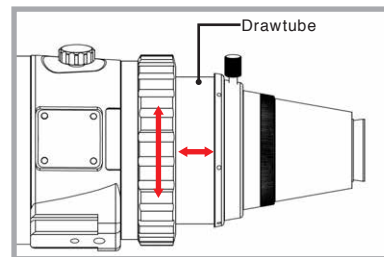
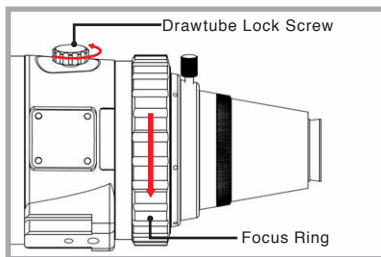
Slide the 7x50 finder scope with the bracket into the finder scope bracket shoe as shown in the diagram.



Tighten the finder scope bracket lock screw to secure the 7x50 finder scope in place.

## 3. Focusing the Telescope

Loosen the drawtube lock screw and turn the focus ring on the precision helical focuser. This allows you to move the drawtube back and forth in small increments.



## 4. Reading the Graduations on the Focus Ring

- (1) Read the value of the graduation where the zero point on the vernier scale indicates.
- (2) Read the value of the graduation where the two lines are aligned straight on both the graduation on the focus ring and the vernier scale.
- (3) Put the above two values together to get a total.

**Example 1** Vernier 0.02mm Increments



Drawtube 0.02mm Increments

**Example 1: A total value is 24mm**

- (1) The line of zero point on the vernier scale is aligned straight to the line of 24 on the graduations of the focus ring.
- (2) The line of 0.2 on the vernier scale is aligned straight to a line on the graduation of the focus ring. The value can be read as 0.00.
- (3) The total value is  $24 + 0.00 = 24.00$

**Example 2**



**Example 2: A total value is 24.10mm**

- (1) The line of zero point on the vernier scale indicates a middle place between the lines 24 and 24.2 on the graduations of the focus ring.
- (2) The line of 0.1 on the vernier scale is aligned straight to a line on the graduation of the focus ring. The value can be read as 0.10.
- (3) The total value is  $24 + 0.10 = 24.10$

**Example 3**



**Example 3: A total value is 24.14mm**

- (1) The line of zero point on the vernier scale indicates a place between the lines 24 and 24.2 on the graduations of the focus ring.
- (2) The line of 0.14 on the vernier scale is aligned straight to a line on the graduation of the focus ring. The value can be read as 0.14.
- (3) The total value is  $24 + 0.14 = 24.14$

## About the Vernier Scale

The vernier scale does not correspond with the zero point on the focuser drawtube.

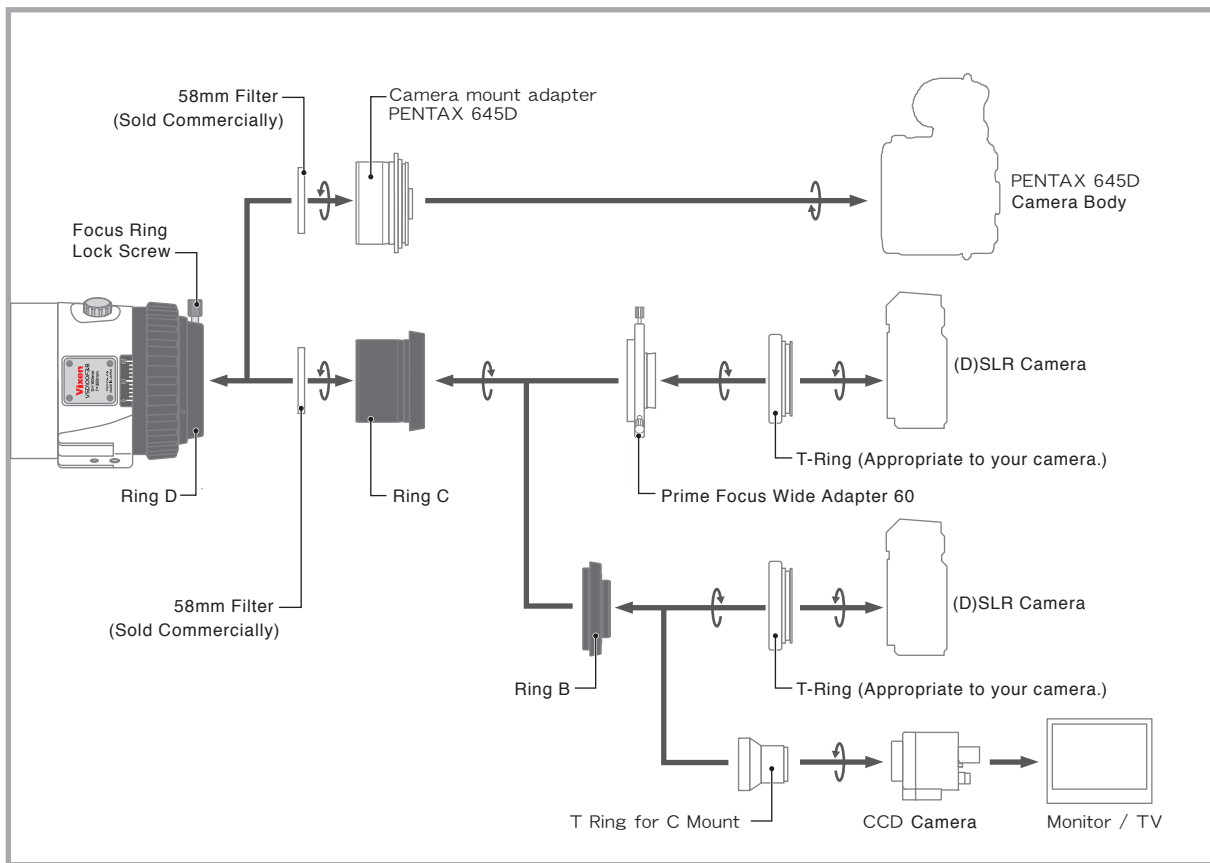
The vernier scale can read the amount of drawing the tube in/out up to 0.02mm but the position of focus shifts according to environmental temperature where the VSD100F3.8 is used. When the drawtube is drawn in to the end, the vernier scale may not come to an end at zero point because of this effect. Therefore, the vernier scale on the VSD100F3.8 is designed to go across the zero point.

## Reproduction of a Point in Focus

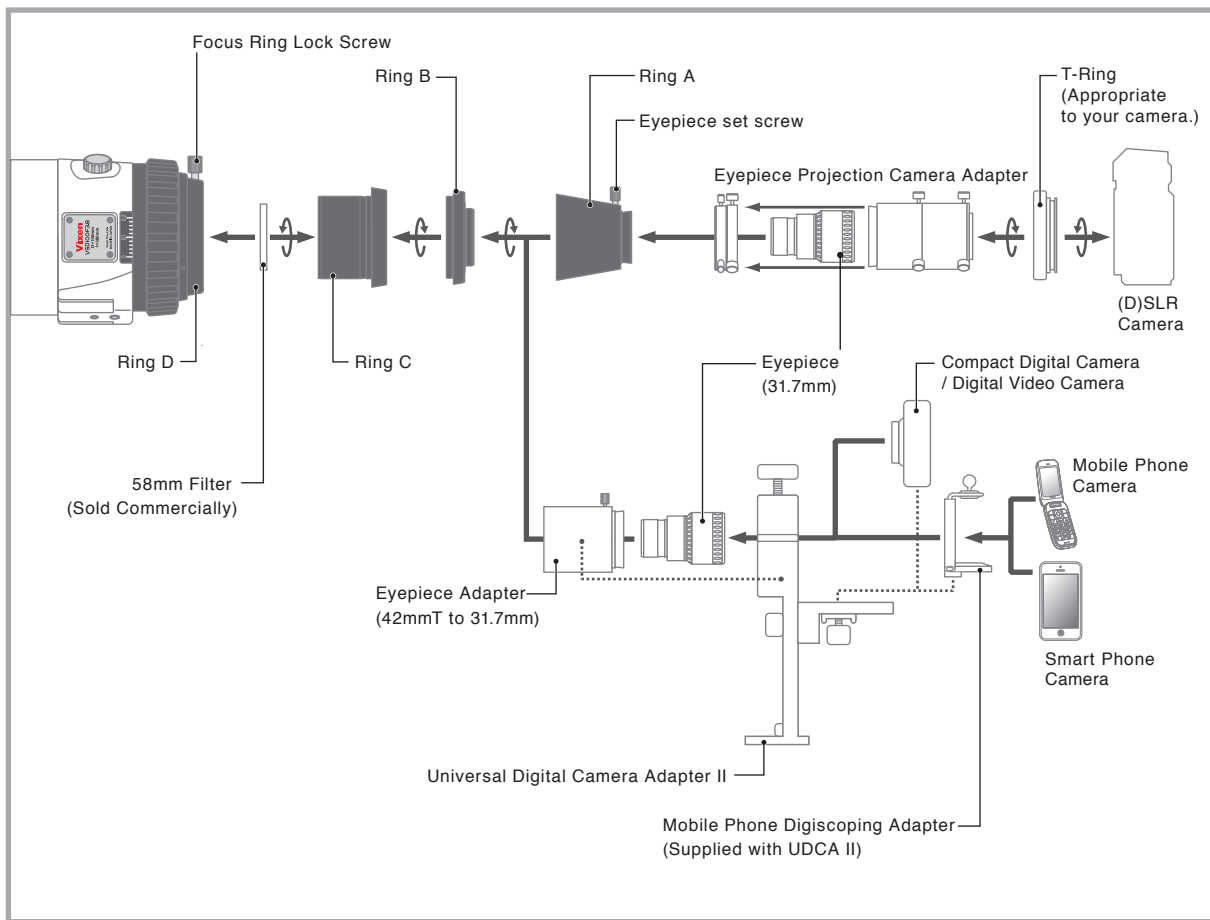
The travel of the focuser drawtube to a focal point varies with environmental temperature. Recording the readout of the vernier scale and the corresponding temperature will be helpful in setting the focus next time. It is recommended that you turn the focus ring in the same direction when you reproduce the focal point with the vernier scale.

# Photographic Components Guide

## Prime Focus Photography

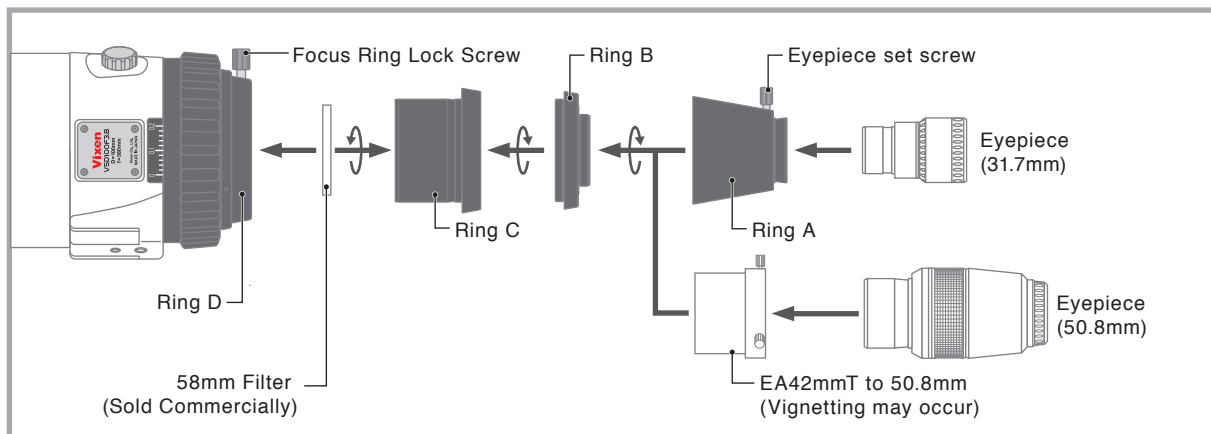


## Eyepiece Projection Photography, Afocal Imaging Photography



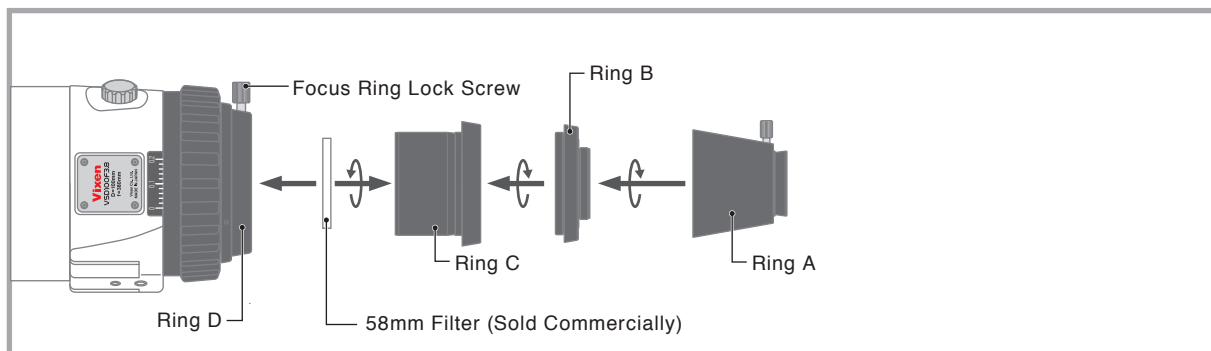


## Visual Observing Components Guide



## Filter Attachment

Commercially available 58mm filters can be screwed onto the top of the ring C. The filters may cause ghost images in photography.



## Focuser Squaring Adjustments

Be sure to read this complete page before you make these adjustments.

**The focuser squaring adjustments are subject to your clear understanding and acceptance of the following:**

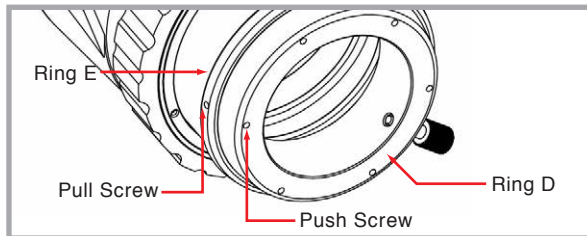
- (1) The focuser squaring adjustments are set at Vixen's factory and re-adjustments of this part are not generally needed. The focuser squaring adjustment described here is a highly technical method designed for professionals and experienced amateurs who have ample knowledge of complex technology and equipment for astro-imaging with a large format imaging sensor. Never touch this part if you are not comfortable with complex technology.
- (2) Vixen does not provide details or endorse your adjustment of the focuser squaring. It is the users responsibility for the focuser squaring adjustments if you proceed with the adjustments.

## Necessity of the focuser squaring adjustments

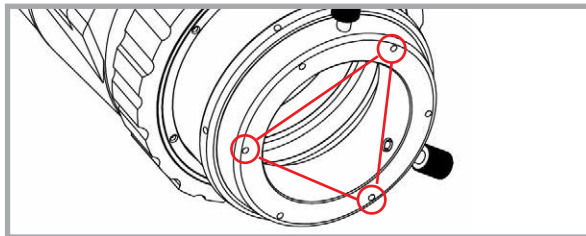
The VSD100F3.8 produces a very flat focal plane that can detect a subtle misalignment of the mount\* of a camera used. The resulting image will not be sharp on part of the focal plane if you use a medium size camera with a large imaging sensor like 645D format. \*It is within the tolerance of the specifications.

### ⚠ Caution

- (1) To secure the focuser squaring adjustments, the camera must be attached to the focuser in the same position and orientation as it was attached to the focuser at the squaring adjustments; otherwise, the image will not be entirely sharp.
- (2) To secure the focuser square adjustments, a rotation of the imaging frame must be done by rotating the whole optical tube. A rotation of the imaging frame with the camera adapter ring only will produce an image that is not completely sharp.
- (3) To secure the focuser squaring adjustments, the same camera should be used with the optical tube for astrophotography. Attaching a different camera to the optical tube will require the focuser squaring adjustments be performed again with the camera being used.



- There is a set of six adjustment screws on the D ring and E ring respectively which are placed at even intervals.
- The adjustment screws on the D ring work as push screws and the ones on the E ring work as pull screws.
- The squaring adjustments can be done with the supplied Allen key (1.5mm).



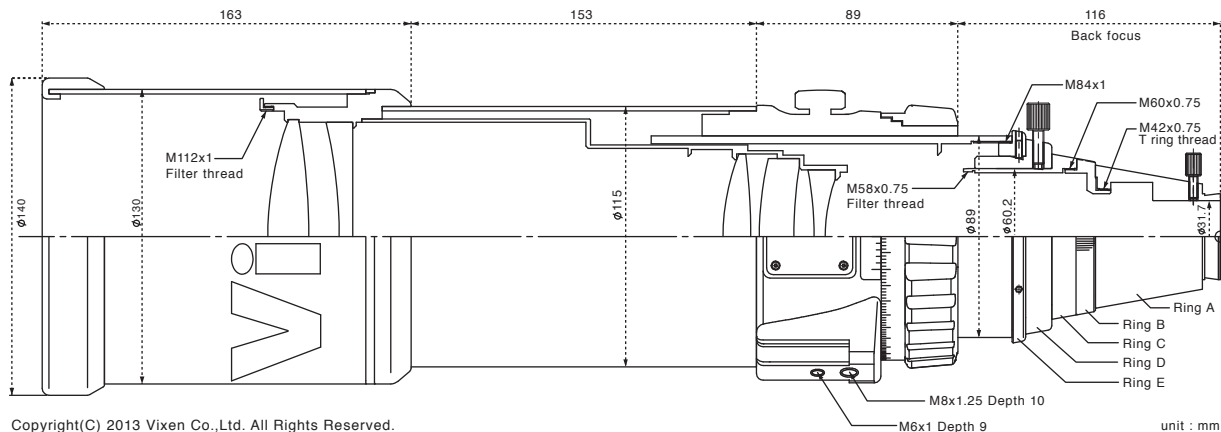
- Choose a set of any three of the six push screws at 120 degrees apart on the D ring for the adjustments. Loosen a set of the remaining three push screws in advance as they are used along with adjustment screws.
- Slightly loosen two push screws on the side you want to bring toward you and tighten the corresponding two pull screws.
- After the squaring adjustments finish, tighten the set of the three supportive adjustment screws lightly.

## How to return the focuser position to the factory default

Loosening all the push screws and then tightening all the pull screws will bring the focuser position to the initial setting at the Vixen's factory.

# Specifications

	Model	VSD100F3.8
Objective lens	Objective lens design	: SD Apochromatic, fully AS coatings, 5-group 5-element design(SD lens x 1, ED lens x 1)
	Effective aperture	: 100mm
	Focal length	: 380mm
	Focal ratio	: F/3.8
	Light gathering power	: 204x unaided eye
	Resolving power	: 1.16 arc seconds
	Limiting magnitude	: 11.8
Focuser	Image circle	: 70mm, about 60% illumination at the edge (covering 645 format)
	Drawtube diameter	: 89mm
	Adapter threads dia	: M84-pitch 1mm, M60-pitch 0.75mm, M42-pitch 0.75mm
	Push-fit	: 60.2mm, 31.7mm
	Filter threads dia	: 58mm
Size & weight	Optical tube length	: 497mm
	Optical tube diameter	: 115mm (*SX tube ring 115mm is not compatible with VSD100F3.8.)
	Optical tube weight	: 4.5 kg
Others	Accessories	: Aluminum case, Allen key 1.5mm
	Optional accessories	: VSD Tube ring115mm, Finder bracket shoe, Camera mounting adapter for 645D, VSD Focal Reducer 0.79x



# Vixen®

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