



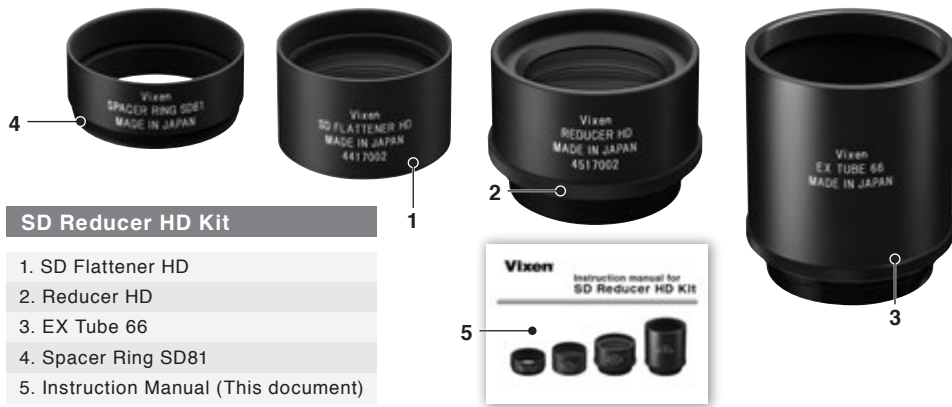
Preface

Thank you for your purchase of an SD Reducer HD Kit.

This kit consists components for prime focus astrophotography with the SD81S, SD103S, SD115S, AX103S or VC200L optical tube. This reducer is made to be used in combination with an accessory such as a wide photo adapter 60DX, sold separately. You may find accessory parts not included in the kit are shown in the descriptions by way of example.

Contents

This kit contains the items listed below. Check if all the items are included.



- SD Reducer HD Kit**
1. SD Flattener HD
 2. Reducer HD
 3. EX Tube 66
 4. Spacer Ring SD81
 5. Instruction Manual (This document)

Identification of Each Unit

1. SD Flattener HD

This is a field flattener lens to use with the SD81S, SD103S or ED115S for astrophotography. It improves images toward the edge of field of view while closely maintaining the original focal length of a telescope. The SD flattener HD covers a photographic field of a DSLR camera with full-frame imaging sensor at prime focus photography. A commercially available 52mm filter is usable with it.*
 * A filter may cause ghost if it is attached.

2. Reducer HD

This is a focal reducer for astrophotography with the SD81S, SD103S, SD115S, AX103S or VC200L optical tube. The reducer HD covers the photographic field of a DSLR camera with full-frame imaging sensor at prime focus photography*. The focal length is reduced between 0.77X and 0.79X depending on the telescope used. The SD flattener HD is also required when the reducer HD is used with the SD81S, SD103S or ED115S optical tube. An optional wide photo adapter 60DX or an optional wide photo adapter 60 is attachable to it. A commercially available 52mm filter can be used with the kit.**
 * The VC200L is applied only when using a DSLR camera with APS-C imaging sensor.
 ** A filter may cause ghost if it is attached.

3. EX Tube 66

This is used in combination with the SD flattener HD at prime focus photography with the SD81S, SD103S or SD115S optical tube. An optional wide photo adapter 60DX or an optional wide photo adapter 60 is attachable to it.

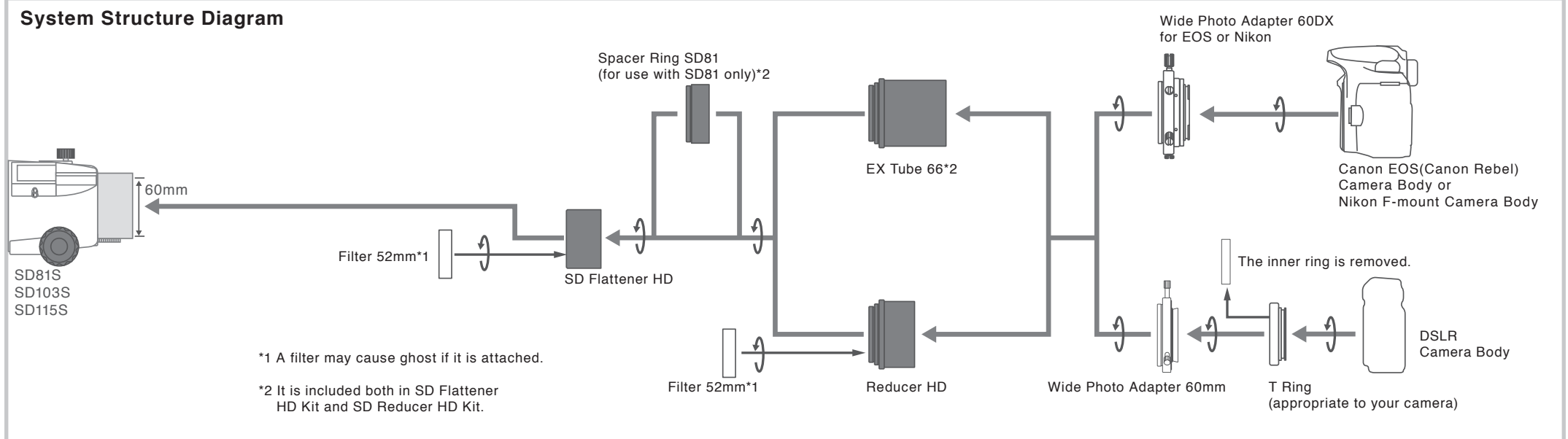
4. Spacer Ring SD81

This is used in combination with the SD flattener HD for astrophotography with the SD81S optical tube.

Setting Up / for use with the ED81S, ED103S or ED115S optical tube

Install the each unit in accordance with the diagram below

This manual explains installation of the reducer HD to the optical tube with a wide photo adapter 60DX, sold separately and a commercial available DSLR camera by way of example. For usage of optional accessory parts, read the manual supplied with each of the units.



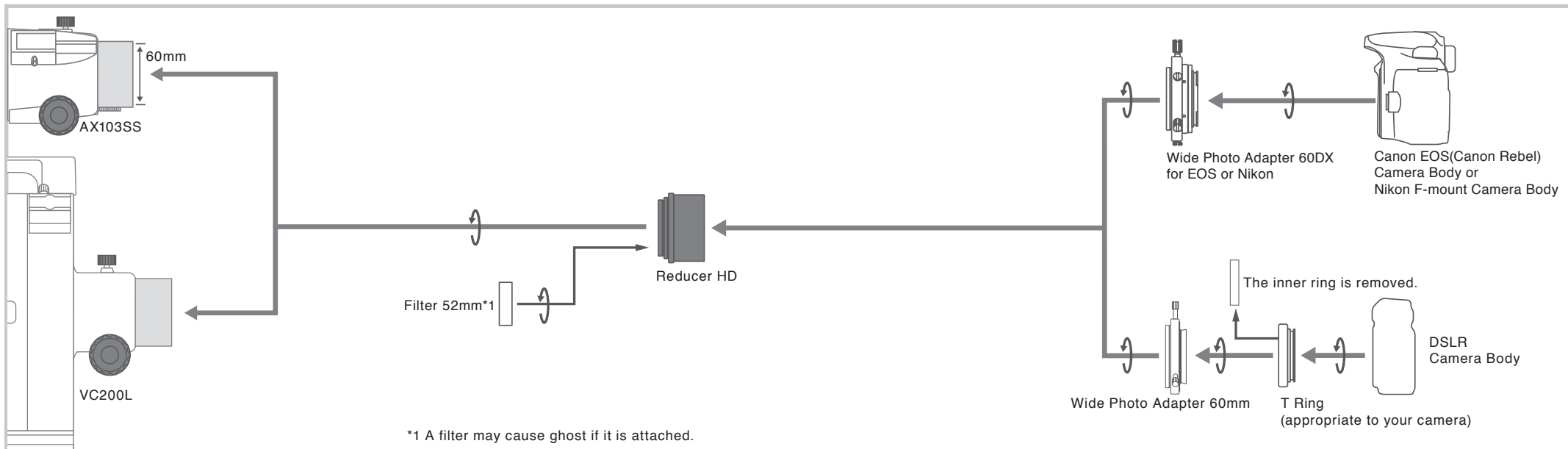
Using the SD Flattener HD only

- 1 Attach the SD flattener HD to the EX tube 66. If you use the SD81 optical tube, thread the spacer ring SD81 into the EX tube 66 so that you can fit the SD flattener HD.
- 2 Remove the flip mirror diagonal and the ED60mm to 50.8mm SX ring from the focuser drawtube. Attach the EX tube 66 combined with the SD flattener HD into the drawtube.
- 3 Attach the wide photo adapter 60DX to the EX tube 66. Then, attach your DSLR camera body to finish the installation.

Using the reducer HD combined with the SD Flattener HD

- 1 Attach the SD flattener HD to the reducer HD. If you use the SD81 optical tube, thread the spacer ring SD81 into the SD flattener HD so that you can fit the reducer HD.
- 2 Remove the flip mirror diagonal and the ED60mm to 50.8mm SX ring from the focuser drawtube. Attach the reducer HD combined with the SD flattener HD into the drawtube.
- 3 Attach the wide photo adapter 60DX to the reducer HD. Then, attach your DSLR camera body to finish the installation.

Both the AX103S and VC200L optical tubes come equipped with a built-in field flattener lens which is designed for prime focus astrophotography. The reducer HD reduces the focal length, very useful in wide field astrophotography.



1 Remove the flip mirror diagonal and the ED60mm to 50.8mm SX ring from the focuser drawtube. Attach the reducer HD into the drawtube.

2 Attach the wide photo adapter 60DX to the reducer HD. Then, attach your DSLR camera body to finish the installation.

Specifications

The specifications are subject to change without notice.

	SD Flattener HD			SD Flattener HD+Reducer HD			Reducer HD	
	SD81S	SD103S	SD115S	SD81S	SD103S	SD115S	AX103S	VC200L
Optical tube	SD81S	SD103S	SD115S	SD81S	SD103S	SD115S	AX103S	VC200L
Focal length	625mm	795mm	890mm	625mm	795mm	890mm	825mm	1800mm
Magnification	1.03x	1.02x	1.02x	0.79x	0.79x	0.79x	0.77x	0.77x
Synthetic focal length	644mm	811mm	908mm	496mm	624mm	699mm	635mm	1386mm
F ratio	7.9	7.9	7.9	6.1	6.1	6.1	6.2	6.9
Image circle diameter*	44mm dia.	44mm dia.	44mm dia.	44mm dia.	44mm dia.	44mm dia.	44mm dia.	36mm dia.**
Peripheral illumination	89%	83%	80%	72%	63%	60%	63%	60%
Lens elements	2 elements in 1 group			2 elements in 1 group + 2 elements in 2 groups			2 elements in 2 groups	
Lens coatings	AS coatings (Over 99.9% light transmission on every single surface.)							
Dimensions	58mm dia. x34mm						68mm dia.x45.2mm	
Weight	111g						218g	
Others	EXtube66: 64mm dia.x76mm, 89g Spacer ring SD81: 57.5mm dia. x22.5mm, 18g							

* An area of excellent image with 60% and more of the incoming light at the edge of field of view. The image circle of 44mm diameter covers the full-frame imaging sensor and that of 28.8mm diameter covers the APS-C sensor.

**It holds excellent image with the whole area of 44mm diameter but the incoming light is reduced to 47% at the edge of field of view.

Dimensions

