

TOA-645 Flattener Instruction Manual

Thank you for purchasing the TOA-645 Flattener. Please read this manual before use for correct handling procedures.

⚠ WARNING

1. Do not look directly at the sun. The intense light and heat of the sun are concentrated in the focus, which will cause blindness.
2. Do not place in direct sunlight. Unexpected concentration of light may cause fire and/or blindness.



Overview of the TOA-645 Flattener

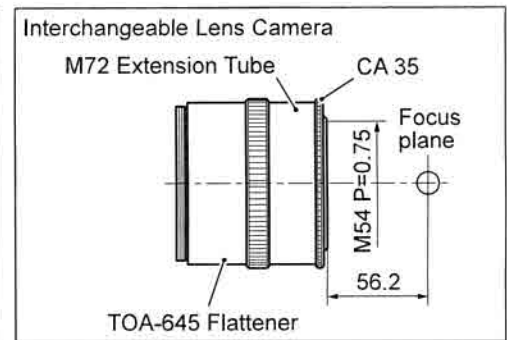
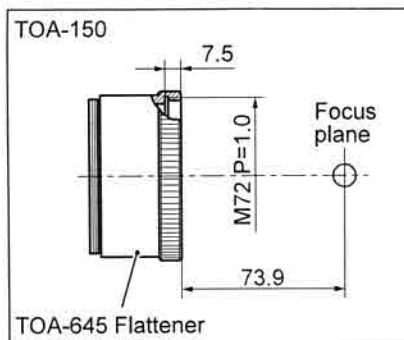
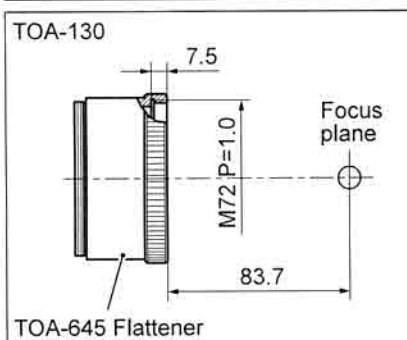
The newly designed 645 flattener features two fully multi-coated lens elements in two groups and provides outstanding correction out to a 60mm image circle. Being designed specifically for the TOA-130N and TOA-150B, RMS spot diameters of 1 micron on-axis are achieved. At a 30mm diameter image circle, the RMS spot diameter is 2 microns, and at 43mm it is 3 microns. Even out to the full diameter of 60mm, the RMS spot diameter is 5 microns. With these spot sizes, images are nearly aberration free on even the newest small pixel sensors.

Using the Filter

The system chart on the back shows where the filter will be installed when using the TOA-645 Flattener Set. You can attach a 67mm filter to the TOA-645 Flattener 0.99x set and a 48mm filter to the camera mount DX-WR, but not all filters can be attached because some filters have a large mounting frame. For TOA-130S and TOA-130NS, use TOA-645 Flattener.

* Ghost may occur when using a filter.

Backfocus



Installations

To connect an interchangeable lens camera* to TOA-645 Flattener, you need a camera mount DX-WR suitable for your camera. The TOA-150 set and TOA-130 set differ only in the length of the M72 extension tube, but the back focus is set to match each lens barrel. If you use another model of M72 extension tube, your star image will not reach optimal performance, so be sure to use it in combination with the compatible M72 extension tube. Cooled digital cameras have various mounting methods as well as camera mount specifications. You can attach a cooled digital camera directly by making a connection part using a screw of M72 P=1.0 without using an M72 extension tube. By doing so, you can reduce vignetting that can occur on larger sensors. The metal back from the rear end of the M72 thread to the focal plane is 83.7mm for the TOA-130 and 73.9mm for the TOA-150. See the system chart on the back for basic connections.

* Interchangeable lens cameras is a general term for single-lens reflex cameras and mirrorless cameras + mount adapters.

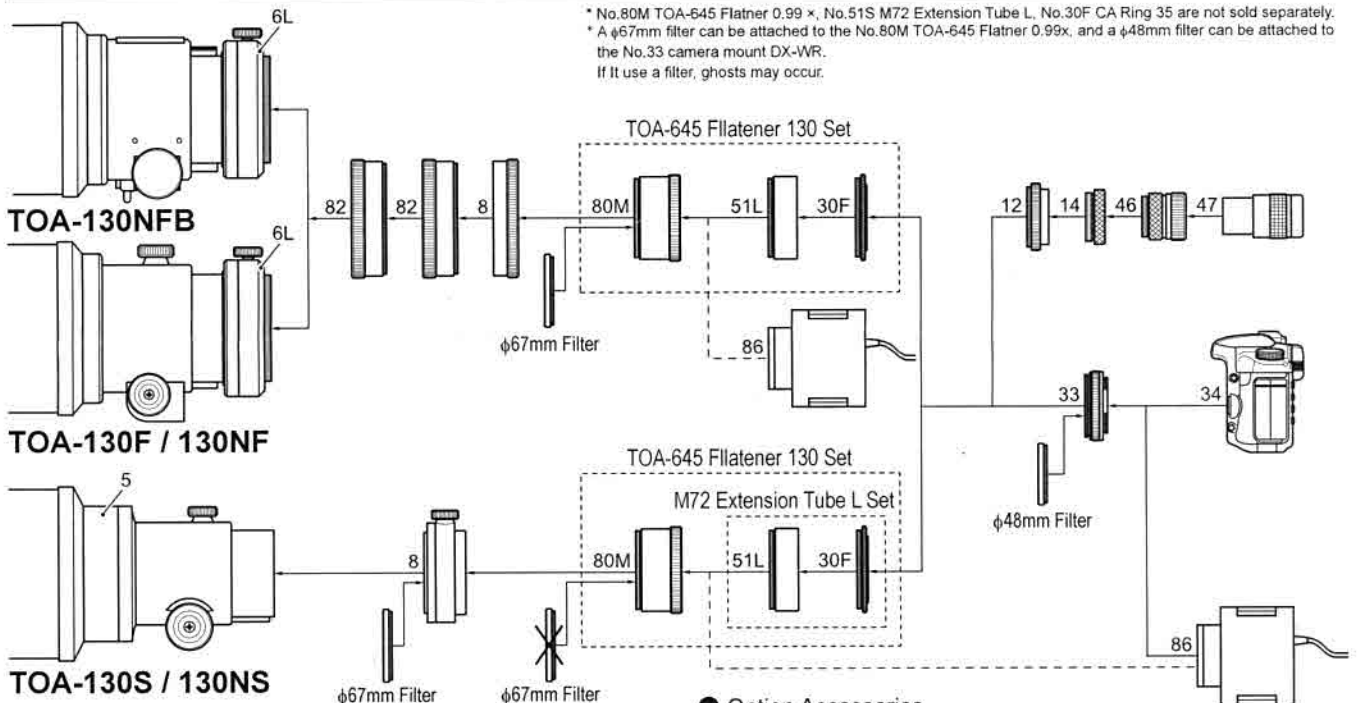
Specifications

	TOA-130 series	TOA-150 series
TOA-645 Flattener	130 sets	150 sets
Focal Length	990mm	1085mm
Focal Ratio	1:7.6	1:7.2
Image Circle	φ60mm	φ60mm
Optical Design	2 elements in 2 groups	2 elements in 2 groups
External Dimensions	78mm dia. By 75mm	78mm dia. By 65.2mm
Flattener Thread	M72 x 1.0	M72 x 1.0
Adapter Thread	M54 x 0.75	M54 x 0.75
M72 Extension	22.5mm	12.7mm
Weight	360g	360g

TAKAHASHI SEISAKUSHO Ltd.

41-7, Oharacho, Itabashiku, Tokyo 174-0061, JAPAN PHONE:+81-3-3966-9491 FAX:+81-3-3966-9524

TOA-645 Flattener 130 System Chart



* No.80M TOA-645 Flattener 0.99 ×, No.51S M72 Extension Tube L, No.30F CA Ring 35 are not sold separately.
 * A φ67mm filter can be attached to the No.80M TOA-645 Flattener 0.99×, and a φ48mm filter can be attached to the No.33 camera mount DX-WR.
 If it use a filter, ghosts may occur.

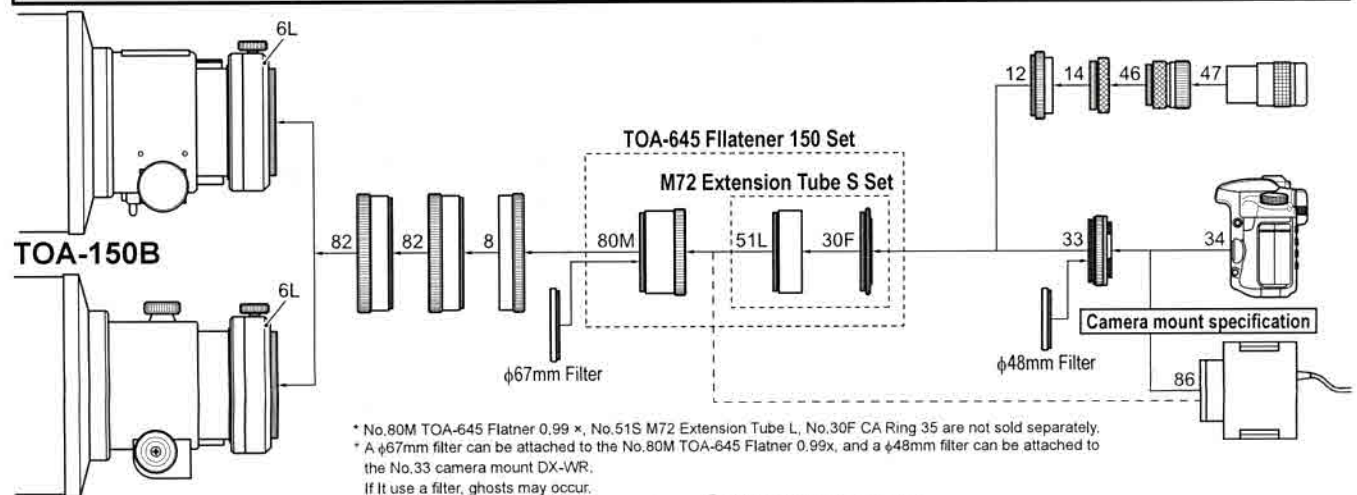
◆ TOA-645 Flattener 130 Set [TKA31587S]
 80M. TOA-645 Flattener 0.99×
 51L. M72 Extension Tube L
 30F. CA 35

● Standard Accessories
 5. Extension Tube F [TKP31005]
 6L. C.A.A (FSQ-106) [TKP30200]
 8. Coupling (TW) [TKP31003]
 14. Coupling (S) [TKP00103]
 46. 1.25"(31.7mm) Eyepiece Adapter [TKP00101]

● Option Accessories
 6. C.A.A (TSA-120) [TKP23200]
 12. Visual Adapter (CCA-250) [TKP30200]
 33. Camera mount DX-WR (EOS) [TKA01251]
 Camera mount DX-WR (Nikon) [TKA01251]
 34. DSLR Camera
 47. Eyepiece (3.17mm)
 82. Extension Tube TOA-130F [TKA31586]
 86. CCD(CMOS)

◆ M72 Extension Tube L Set [TKA31588S]
 51L. M72 Extension Tube L
 30F. CA 35

TOA-645 Flattener 150 System Chart



* No.80M TOA-645 Flattener 0.99 ×, No.51S M72 Extension Tube L, No.30F CA Ring 35 are not sold separately.
 * A φ67mm filter can be attached to the No.80M TOA-645 Flattener 0.99×, and a φ48mm filter can be attached to the No.33 camera mount DX-WR.
 If it use a filter, ghosts may occur.

◆ TOA-645 Flattener 150 Set [TKA32587S]
 80M. TOA-645 Flattener 0.99×
 51S. M72 Extension Tube S
 30F. CA 35

● Standard Accessories
 6L. C.A.A (FSQ-106) [TKP30200]
 8. Coupling (TW) [TKP31003]
 14. Coupling (S) [TKP00103]
 46. 1.25"(31.7mm) Eyepiece Adapter [TKP00101]

● Option Accessories
 12. Visual Adapter (CCA-250) [TKP30200]
 33. Camera mount DX-WR (EOS) [TKA01251]
 Camera mount DX-WR (Nikon) [TKA01251]
 34. DSLR Camera
 47. Eyepiece (3.17mm)
 82. Extension Tube TOA-130F [TKA31586]
 86. CCD(CMOS)

◆ M72 Extension Tube S Set [TKA32588S]
 51S. M72 Extension Tube S
 30F. CA 35