

INSTRUCTION MANUAL

Orion Field Flattener for Short Refractors

#8893



 **ORION**[®]
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Your Orion Field Flattener for Short Refractors corrects for Petzval field curvature, which if uncorrected leaves the periphery of the image frame slightly out of focus. This Field Flattener's doublet optical lens configuration provides the correction necessary to yield sharp stars across the entire image frame – without affecting the focal length of the refractor. Results will be especially noticeable when using cameras with APS-C and full-size sensors.

The Field Flattener fits 2" focuser drawtubes, and its barrel is internally threaded to accept 2" Orion filters. It has a 55mm backfocus distance, which means that the camera's sensor must be set 55mm behind the Flattener's T-thread flange to achieve optimal focus. The Field Flattener now comes with interchangeable M42 (standard T-thread) and M48 ("wide" T-thread) male thread adapters (**Figure 1**). The M48 adapter is recommended for use with full frame camera sensors.



Figure 1.

Attaching the Field Flattener to a DSLR Camera

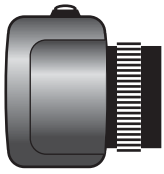
An appropriately sized T-ring (M42 or M48) for the make and model of your camera is the only required accessory to attach the Field Flattener to your DSLR camera. The distance from the camera's sensor to the front plane of the T-ring will be 55mm – a perfect match for the backfocus distance of the Field Flattener (**Figure 2.1**).

Attaching the Field Flattener to an Astronomical CCD/CMOS Camera

Most astronomical CCD or CMOS cameras require less backfocus than a DSLR camera. That means you will need to add spacers as needed to fill the 55mm of required distance to the Field Flattener (**Figure 2.2**). T-thread spacers are available from several astronomical equipment dealers.

For example, if a camera has 20.1mm of backfocus – obtain this spec from your camera's manufacturer – you would need to add approximately 35mm of spacer length between the camera and Field Flattener to achieve the proper distance ($20.1 + 35 = 55.1\text{mm}$). Note that if you do not reach 55mm perfectly, the Field Flattener will still work, but will gradually lose effectiveness the farther from 55mm (in either direction) your camera is positioned. Your CCD/CMOS camera must have compatible female T-threads (usually M42) on the camera body to attach to the Field Flattener. Remove the camera's nosepiece (if equipped) and thread the camera body onto the back of the Field Flattener or T-thread spacer.

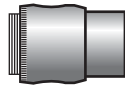
DSLR
camera body



T-ring



Field
Flattener



2" focuser on
telescope

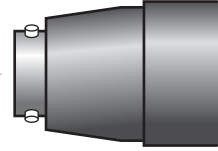
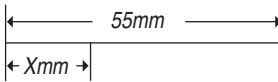


Figure 2.1.

CCD/CMOS
Camera



Distance from CCD
chip to Field
Flattener Flange
should be 55mm

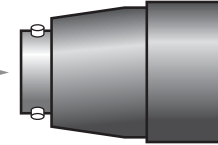


"X"mm of additional spacing may
be required to achieve 55mm,
depending on make and model
of camera.

Field
Flattener



2" focuser on
telescope



**Figure
2.2.**

Care & Maintenance

Care should be exercised when using all optical and mechanical telescope accessories. Keep your Field Flattener in a protected environment when you're not using it, and place the dust cap and threaded metal cap on the Field Flattener for storage. Avoid touching the glass lenses and coatings. If the lens should become dirty, you may want to clean it. Blow off all loose dirt with a blower bulb. Use only optical lens tissue and good-quality lens fluid. Wet a folded tissue and gently wipe the surface of the lens. Immediately use a second piece of lens tissue to gently dry the lens off. Do not rub or apply pressure, as this may scratch the lens if dust or grit is present.

Specifications

Optics	2-element, fully-multicoated
Clear Aperture	38mm
Focal Length	55mm
Mechanical Profile	51mm
Camera Attachment	Male M42 and M48 interchangeable adapters
Weight	192g (6.8 oz)

One-Year Limited Warranty

This Orion product is warranted against defects in materials or workmanship for a period of one year from the date of purchase. This warranty is for the benefit of the original retail purchaser only. During this warranty period Orion Telescopes & Binoculars will repair or replace, at Orion's option, any warranted instrument that proves to be defective, provided it is returned postage paid. Proof of purchase (such as a copy of the original receipt) is required. This warranty is only valid in the country of purchase.

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