Oasis Tilt Adjuster

User Manual

Version 1.2

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https://www.astroasis.com/en
We dedicate to providing high quality products and services for amateurs of astronomical observation and photograph

Content

1. Product introduction

This product consists of three aluminum alloy components. Two components are in red, and the other is in black.

One of the red components is a camera connector, as shown in Figure 1-1. The camera connector has multiple screw holes which allow for connection to cameras from various brands. It replaces the original front plate of the cameras' tilt adjuster.

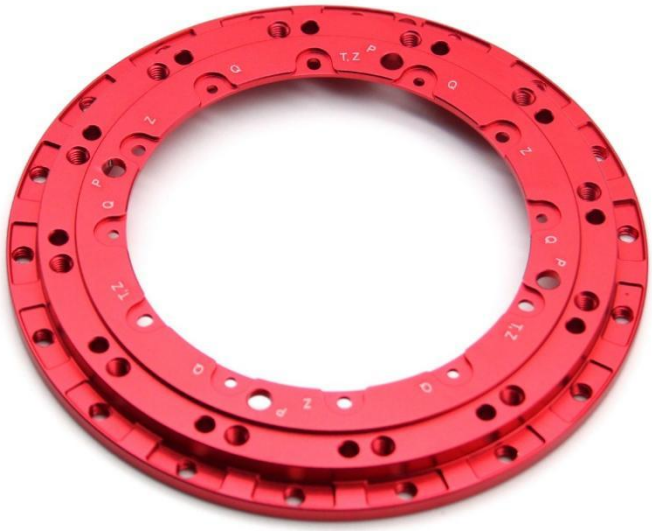

Figure 1-1 Camera Connector

The black component is a filter wheel connector, as shown in Figure 1-2. The filter wheel connector has multiple screw holes which allow for connection to filter wheels from various brands.

Figure 1-2 Filter wheel connector

Another red component is a back focus fine-tuner, as shown in Figure 1-3.

Figure 1-3 Back focus fine-tuner

When all the three components are combined, this product occupies 5.0~5.5mm back focus which is the same as or very similar to the back focus of the original tilt adjuster of the cameras. Thus, it will not increase the occupied back focus or just increases very little (~1mm).

The product is pre-assembled as shown in Figures 1-4 and 1-5. The three screws on the outer cycle are used to connect the camera connector and the back focus fine-tuner, while the three or four sets of push-pull screws on the inner cycle are used to connect the filter wheel connector and camera connector. Before connecting this product to the camera, please loosen the three or four pull screws to separate the filter wheel connector and the camera connector.

Figure 1-4

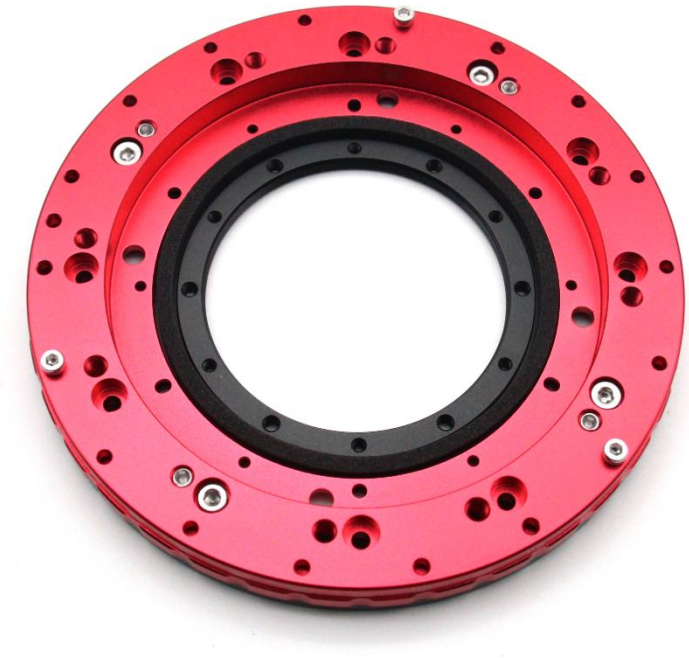

Figure 1-5

Table 1 lists some of the camera and filter wheel models compatible with this product. Please note this product is not compatible with Touptek ATR2600 camera.

Table 1. Compatible Cameras and Filter Wheels

Brand	Abbreviation	Camera	Filter Wheel
Astroasis	A		Oasis 7x36mm, 7x2”
Player One	P	Poseidon-M Pro etc	Phoenix 7x36mm, 5x2”, 7x2”
QHY	Q	QHY268/600 etc	QHYCFW3-M-SR QHYCFW3-M-US QHYCFW3-L
Touptek	T	Compatible with SkyEye62AM Not Compatible with ATR2600	AFW, AFW-L
ZWO	Z	ASI2600 etc	EFW 7x36mm, 5x2”, 7x2”

2. Connect to camera

Place the camera connector on top of the camera as shown in Figure 2-1, then use screws to connect it to the camera. To ensure compatibility with cameras of different brands, the camera connector is designed with multiple screw holes.

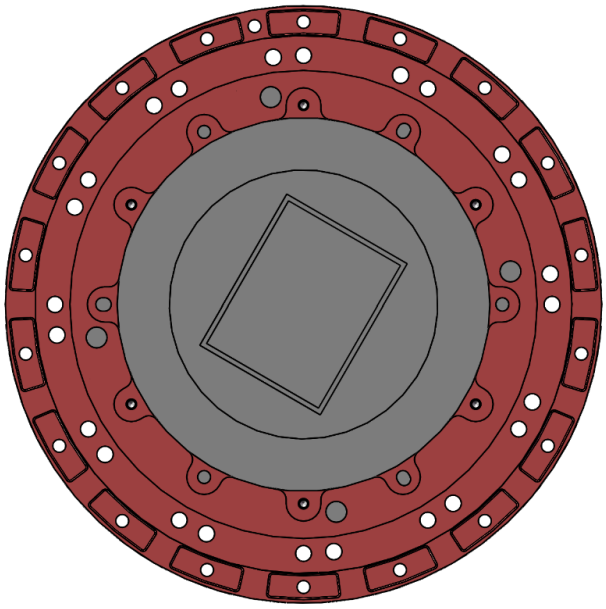

Figure 2-1

Figure 2-2 and Table 2 indicate the correspondence between these screw holes and cameras from different brands. Please connect the camera connector to the camera according to the screw hole and camera correspondence shown in Figure 2-2 or Table 2.

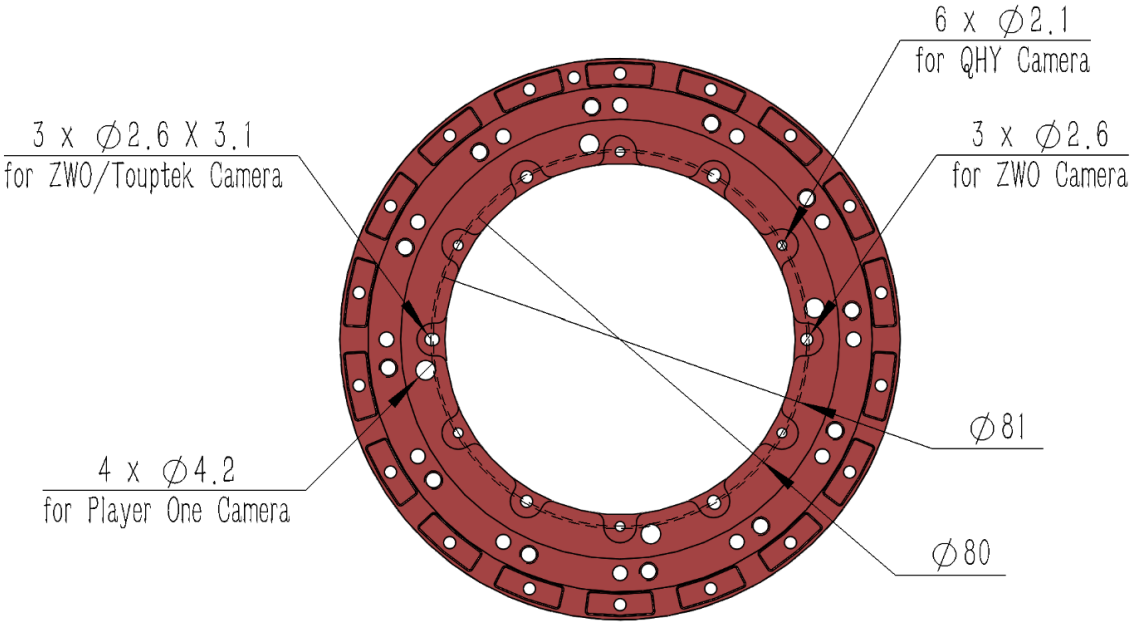

Figure 2-2

Table 2. Screws for camera connection

Brand	Abbreviation	Camera Model	Screw Position	Screw	Screw Count
Player One	P	Poseidon-M Pro etc		M4*8	4
QHY	Q	QHY268/600 etc	Φ80	M2*4.5/M2*6	6
Touptek	T	SkyEye62AM	Φ81	M2.5*6	3
ZWO	Z	ASI2600 etc	Φ80	M2.5*6	6

Figure 2-3 shows an example of the installation on the QHY268M camera.

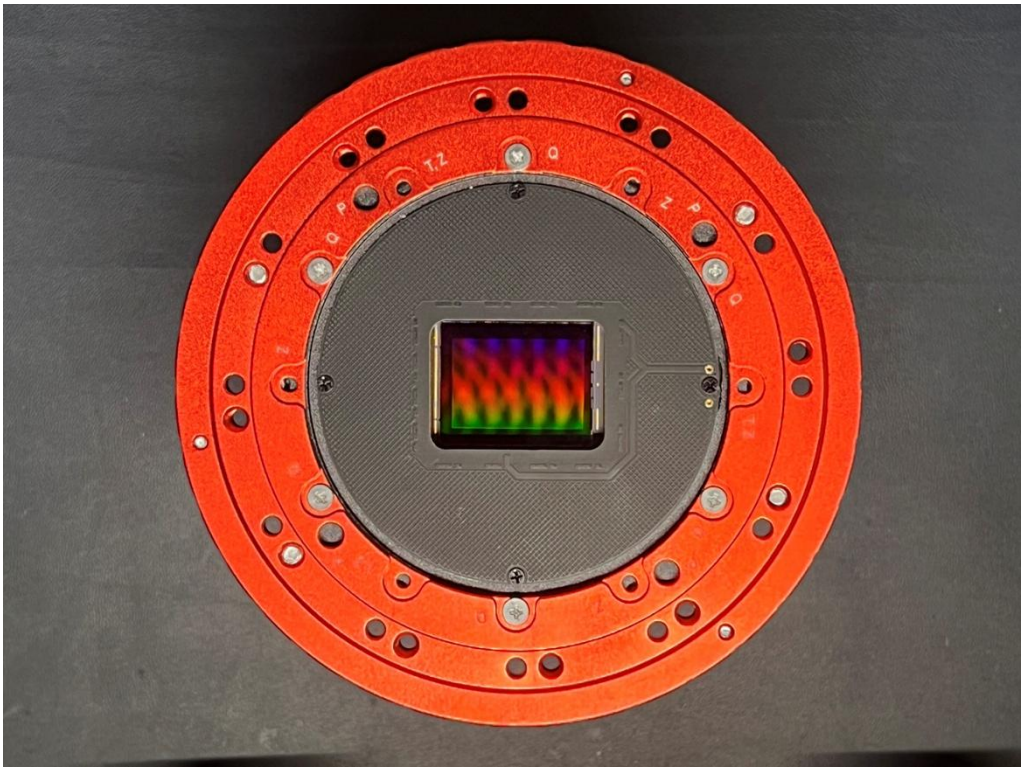

Figure 2-3

Please note:

1、 Some QHY camera models can use M2*6 screws, while others cannot and require M2*4.5 screws instead.

2、 The plug screw for the desiccant tube port on QHY cameras protrudes from the camera housing and may interfere with the camera connector of this product. Therefore, when installing this product on a QHY camera, please first replace the original plug screw of the camera with the included M5 plug screw. The M5 plug screw is shown in Figure 2-4.

3、 Player One cameras come with a built-in tilt adjuster. When connecting this product to a Player One camera, first remove the 5mm adapter from the front of the original Player One tilt adjuster, then use screws to connect the camera connector of this product to the M4 screw holes (designed for push-pull adjustment) on the rest part of the original Player One tilt adjuster. Among the four sets of push-pull screws on the Player One camera, each set has two M4 screw holes. Please select

one hole from each set to align the camera's image sensor orientation as closely as possible with the filter wheel.

4、 The screw holes on the camera connector for connecting to the camera are evenly spaced at 60°, 120°, or 90° intervals. If needed, the camera connector can be rotated relative to the camera to achieve an appropriate orientation between the camera and the filter wheel after the product is connected to the filter wheel.

5、 Currently, the Touptek ATR6200 is not supported by this product.

6、 To help users quickly identify the screw holes compatible with their camera, the abbreviations of the corresponding brands are engraved next to the screw holes on the camera connector used for camera connection, as shown in Figure 2-5.

Figure 2-4

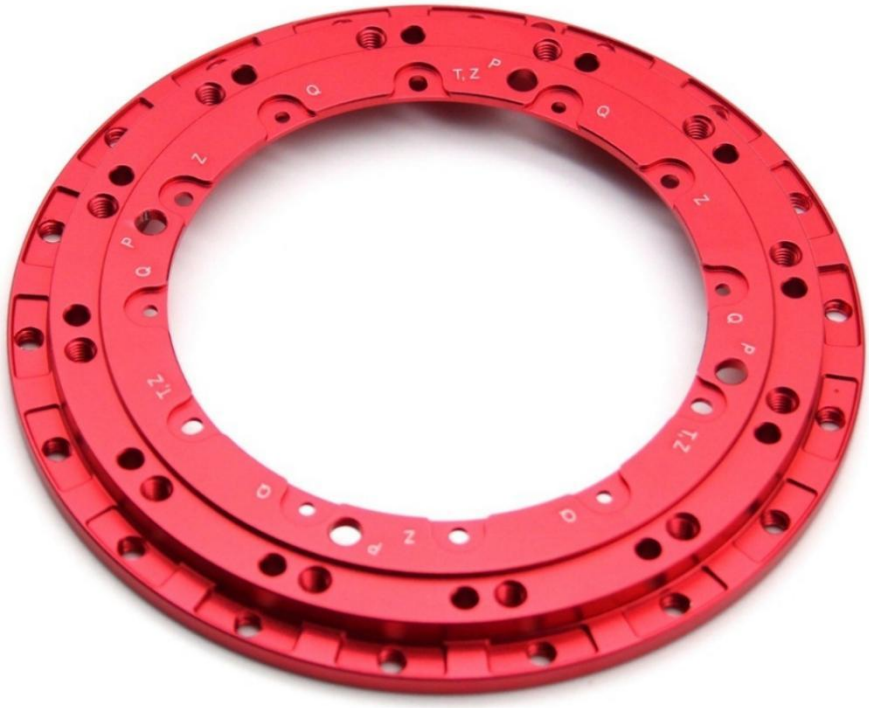

Figure 2-5

3. Connect to filter wheel

The black component of this product is used to connect to the filter wheel. There are two methods to connect the filter wheel to this product. One method involves tightening screws from the filter wheel side, while the other method involves tightening screws from the camera side.

3.1. Connecting from the filter wheel side

Figure 10 and Table 3 indicate the correspondence between the screw holes on the filter wheel connector and filter wheels of different brands when connecting from the filter wheel side. Please connect the filter connector to the filter wheel according to the screw hole and filter wheel correspondence shown in Figure 3-1 or Table 3.

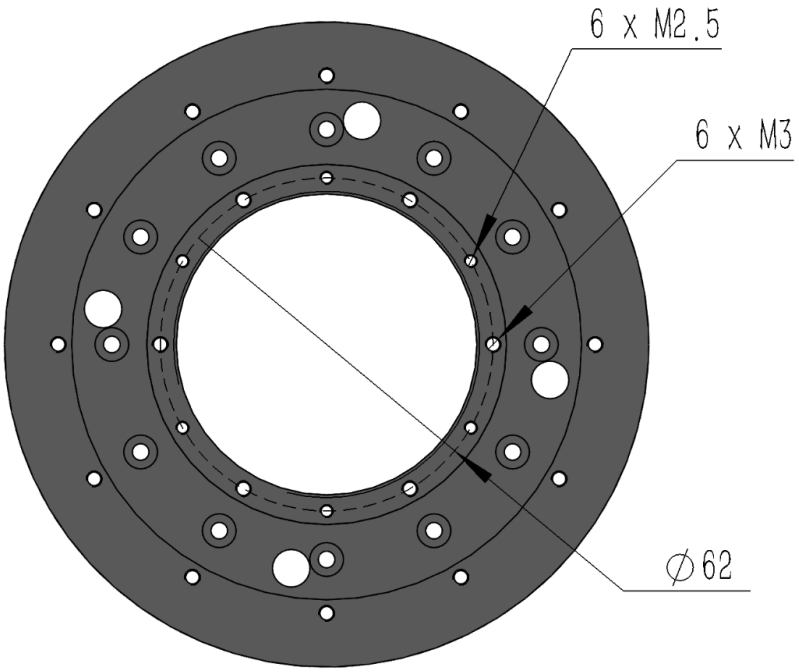

Figure 3-1

Table 3. Screws for filter wheel connection from filter wheel side

Brand	Filter Wheel Model	Screw Position	Screw	Screw Count
Astroasis	Oasis 7x36mm, 7x2"	Φ62	M2.5/M3	4
QHY	QHYCFW3-M-SR QHYCFW3-M-US QHYCFW3-L	Φ62	M3	4
Touptek	AFW, AFW-L	Φ62	M2.5	4
ZWO	EFW 7x36mm, 5x2", 7x2"	Φ62	M2.5	4

Please note:

1、 The filter wheel brands supported for this connection method include Astroasis, QHY, Touptek, and ZWO.

2、 The filter wheel housing must be opened for connection.

3、 If you are using an Astroasis filter wheel, there is no need to remove the filter disc when connecting it to this product. If using filter wheels from other brands, the filter disc may need to be removed during connection.

4、 This product can be connected to the filter wheel either when fully assembled or by first connecting the filter wheel connector to the filter wheel while it is separated from the camera connector, then attaching the filter wheel connector and the camera connector together.

5、 When using this connection method, the screw holes used on the filter wheel connector are all located at a Φ62mm diameter.

6、 Since the length and the shape of the screw heads depend on the filter wheel housing, this product does not include screws for this connection method. Please use the screws provided with the filter wheel or purchase screws separately for connection. The maximum allowable depth for screws screwed into the filter wheel connector is 4mm.

7、 The screw holes on the filter wheel connector for connecting to the filter wheel are evenly spaced at 60° intervals. If necessary, the filter wheel connector can be rotated relative to the filter wheel to achieve a suitable orientation between the camera and the filter wheel before this product is connected to the filter wheel.

3.2. Connecting from the camera side

When using the Astroasis Model A version filter wheel or the Player One filter wheel, Oasis Tilt Adjuster can be connected to the filter wheel by tightening the screws from the camera side. The Model A designation for the Astroasis filter wheel is engraved on the housing, as shown in Figure 3-2.

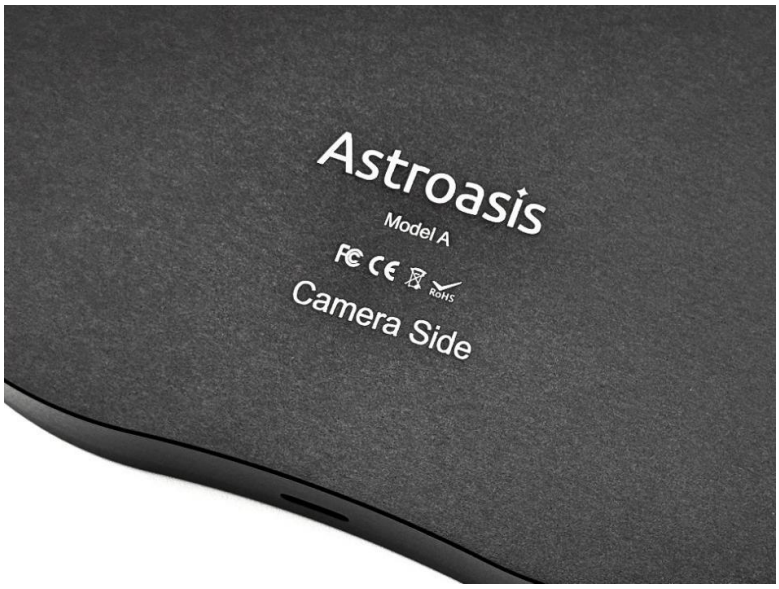

Figure 3-2

When the tilt adjuster is attached to the filter wheel from the camera side, there is no need to remove the filter disc or open the filter wheel housing, which offers considerable convenience.

Figure 3-3 and Table 4 specify the correspondence between the screw holes on the filter wheel connector and different brands of filter wheels when connecting from the camera side. Please connect the filter wheel connector and the filter wheel according to the screw hole and the filter wheel correspondence shown in either Figure 3-3 or Table 4.

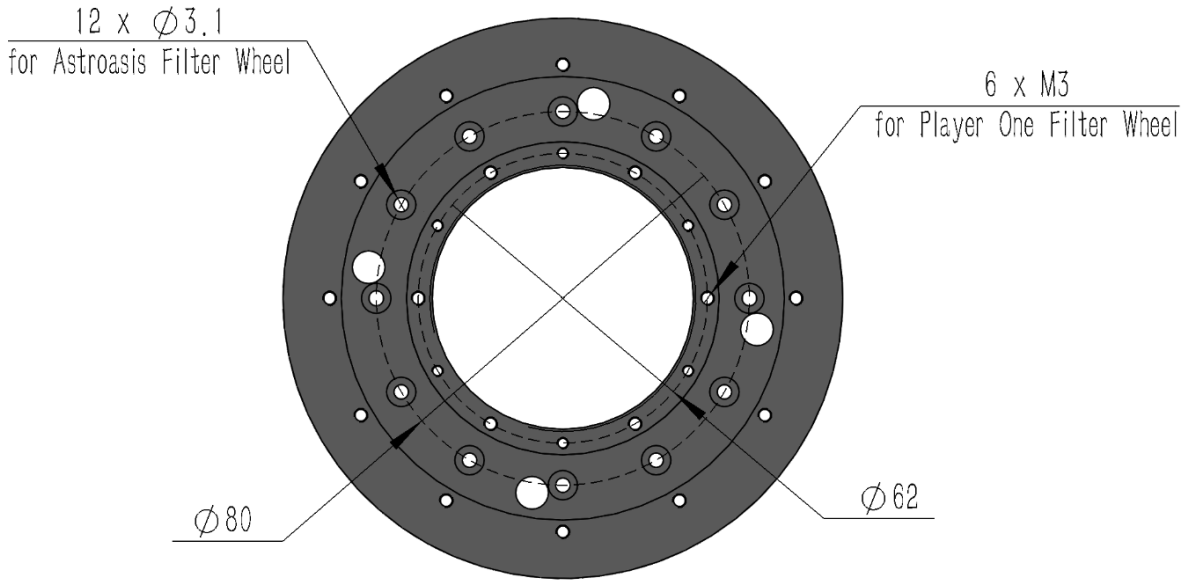

Figure 3-3

Table 4. Screws for filter wheel connection from camera side

Brand	Filter Wheel Model	Screw Position	Screw	Screw Count
Astroasis	Model A	Φ80	M3*6	4
Player One	Phoenix 7x36mm, 5x2", 7x2"	Φ62	M2.5*8	6

Figure 3-4 shows an example of the installation on the Astroasis Model A filter wheel.

Figure 3-4

Please note:

1、The filter wheels compatible with this connection method include the filter wheels from Astroasis Model A batch and Player One filter wheels.

2、When connecting the tilt adjuster to the filter wheel via this method, it is required to disassemble the filter wheel connector and the camera connector first.

3、When connecting the tilt adjuster to the filter wheel in this manner, the screws provided with the tilt adjuster can be used.

4、For this connection method, the screw holes on the filter wheel connector for attaching the filter wheel are equally spaced at 30° or 60° intervals. If needed, the filter wheel connector can be rotated by a certain angle relative to the filter wheel, so as to achieve a proper orientation between the camera and the filter wheel.

5、When connecting the tilt adjuster to a Player One filter wheel via this method, the screws shall be M2.5. Given that the holes at the Φ62 position on the filter wheel connector are screw holes instead of through holes, please fasten the M2.5 screws through the M3 screw holes instead of the M2.5 screw holes on the filter wheel connector to secure the Player One filter wheel.

4. Back focus fine tuning

In addition to the sensor plane tilt adjustment function, this product also features a back focus fine tuning function. The back focus fine-tuner is provided with 3 protrusions as shown in Figure 4-1, while the camera connector is machined with a series of recesses, as shown in Figure 4-2. After assembly, the protrusions of the back focus fine-tuner fit into the recesses of the camera connector.

These recesses vary slightly in depth and are divided into 6 levels, with a pitch of 0.1 mm between adjacent levels. Therefore, by rotating the back focus fine-tuner relative to the camera connector to engage its protrusions with different sets of recesses, the occupied back focus of the tile adjuster can be fine-tuned within the range of 5.0–5.5 mm at a resolution of 0.1 mm.

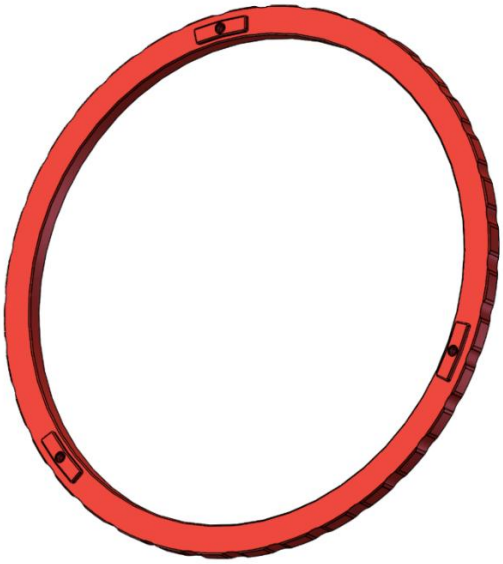

Figure 4-1

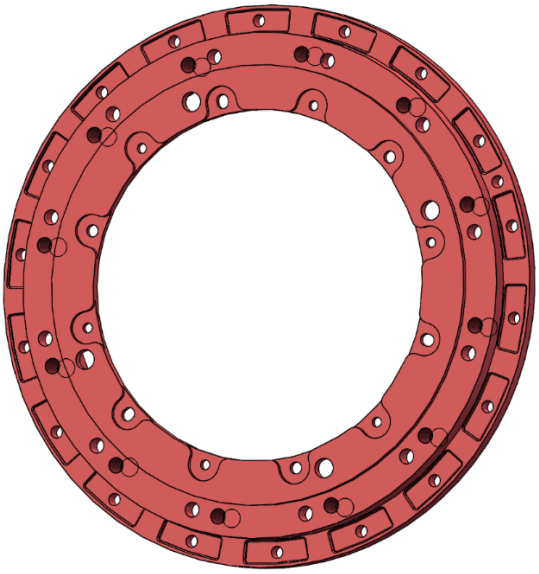

Figure 4-2

A back focus indicator is engraved on the outer surface of the back focus ring, and graduations are engraved on the outer surface of the lower ring. The graduation value aligned with the back focus indicator denotes the currently occupied back focus of the sensor mount ring. As shown in Figure 4-3, when the back focus indicator aligns with the graduation marked 5.5, the currently occupied back focus of the sensor mount ring is 5.5 mm.

A back focus indicator is engraved on the outer surface of the back focus fine-tuner, and graduations are engraved on the outer surface of the camera connector. The graduation value aligned with the back focus indicator denotes the currently occupied back focus of the tilt adjuster. As shown in Figure 15, when the back focus indicator aligns with the graduation marked 5.5, the currently occupied back focus of the tile adjuster is 5.5 mm.

Figure 4-3

The back focus fine-tuner and the camera connector are secured by three screws positioned at Φ113.5 mm, as shown in Figures 4-4 and 4-5. When back focus adjustment is required, first remove these three fixing screws, then loosen the tilt adjustment pull screws located at Φ100 mm, push the back focus fine-tuner toward the filter wheel connector and rotate it, stop rotating when the back focus indicator aligns with the desired back focus graduation, and finally retighten the three fixing screws that fasten the back focus fine tuner and the camera connector. With this, the back focus adjustment is completed.

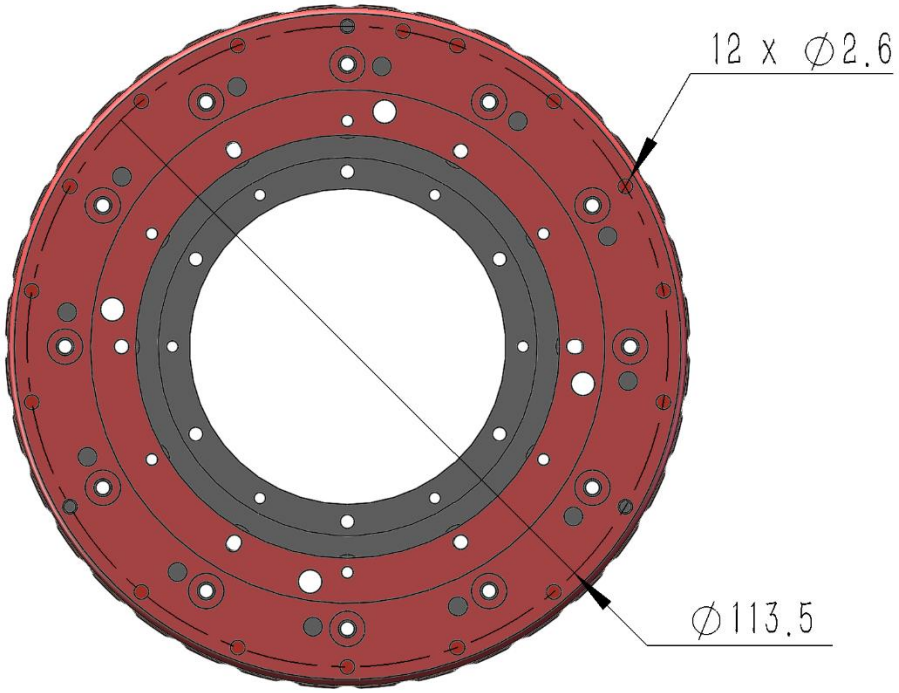

Figure 4-4

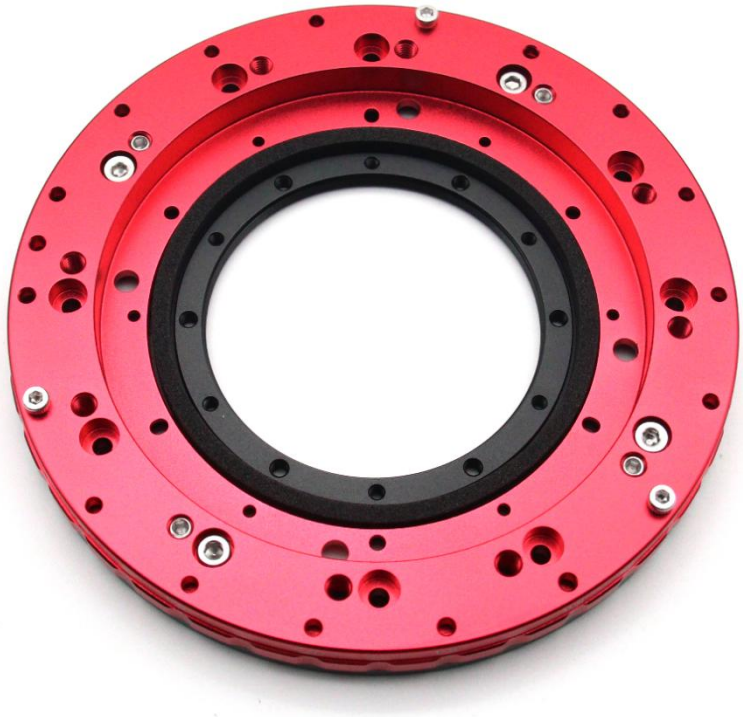

Figure 4-5

5. Light-leakage protection

Light-leakage protection can be easily achieved between the tilt adjuster and the camera, as well as between the tilt adjuster and the filter wheel.

5.1. Light-leakage protection between the tilt adjuster and the camera

Light-leakage protection between the tilt adjuster and the camera is implemented using light-protection foam, as shown in Figure 5-1.

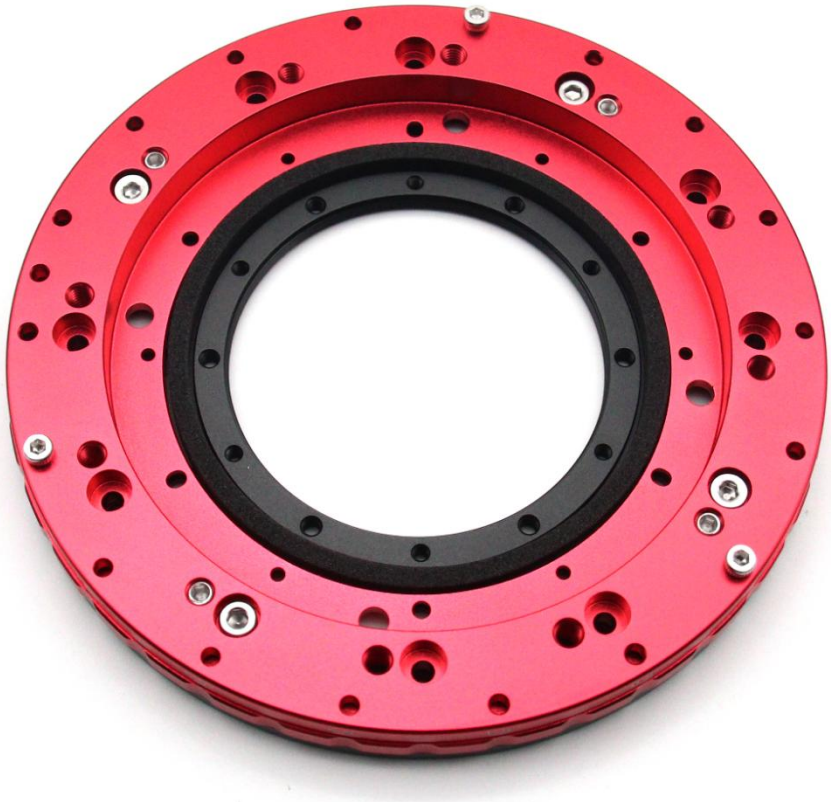

Figure 5-1

5.2. Light-leakage protection between the tilt adjuster and filter wheel

Light-leakage protection between the tilt adjuster and the filter wheel is achieved by using an O-ring. A groove with a depth of 0.8 mm is located on the filter wheel side of the filter wheel connector, as shown in Figure 5-2. Placing the O-ring (supplied with the tilt adjuster) into this groove enables light-leakage protection between the tilt adjuster and the filter wheel, as shown in Figure 5-3.

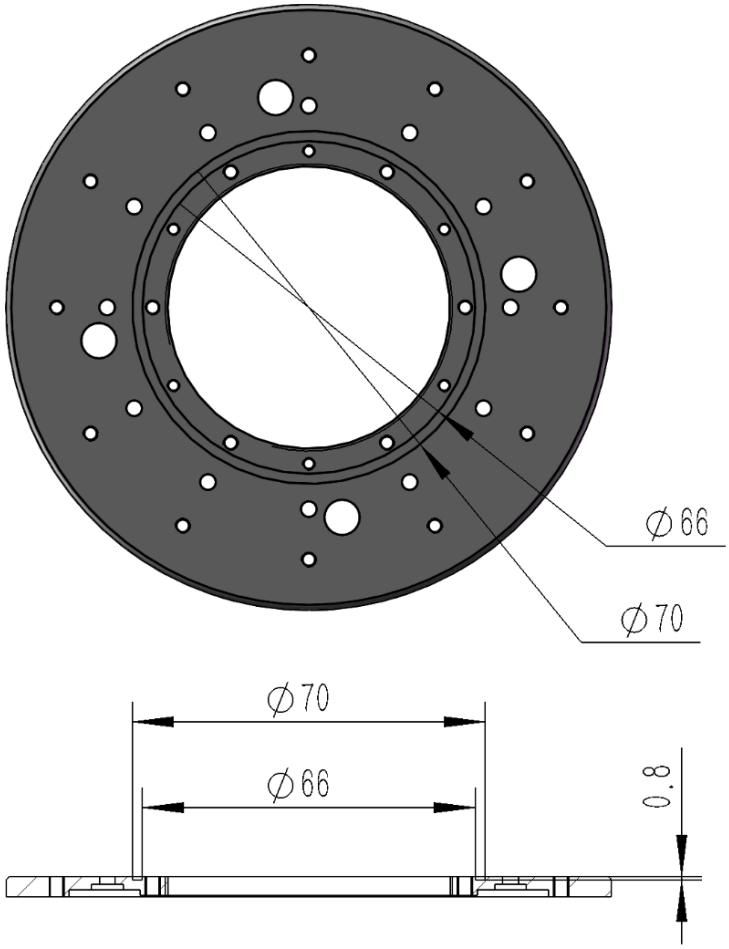

Figure 5-2

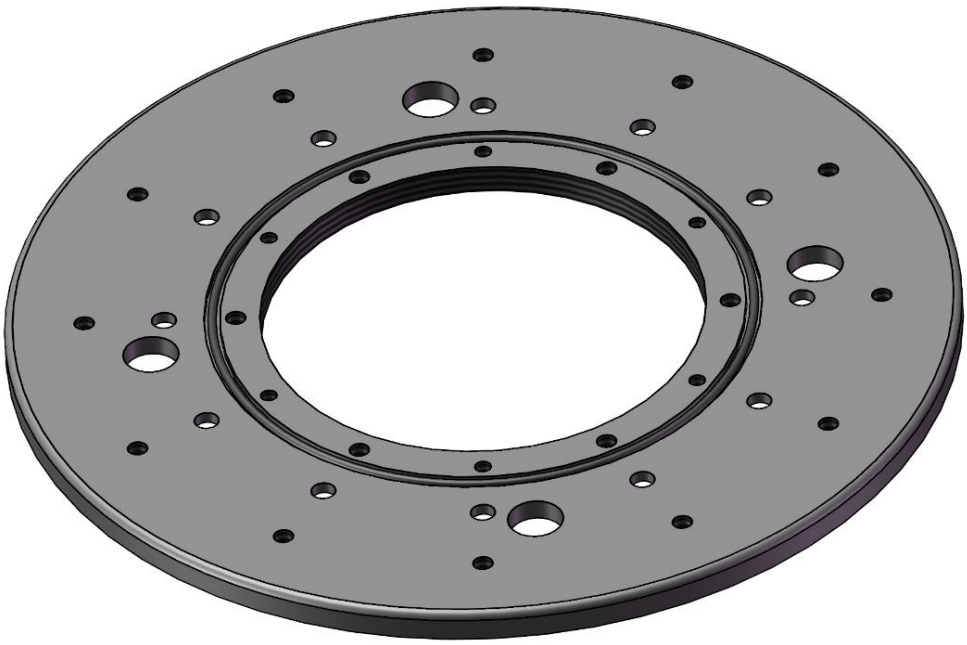

Figure 5-3

The tilt adjuster is equipped with two O-rings, one with a 1mm cross-section diameter and the other with a 2mm cross-section diameter, which are used in the following situations respectively:

1、 When using the Astroasis filter wheel: The camera side of the Astroasis filter wheel features a 1 mm deep recess. In this case, the 2 mm cross-section diameter O-ring can be placed into the groove of the filter wheel connector for light-leakage protection.

2、 When using the Player One, Touptek, or ZWO filter wheel: These filter wheels do not have a recess on the camera side. In this case, the 1 mm cross-section diameter O-ring can be placed into the groove of the camera connector for light-leakage protection.

5.3. Light-leakage protection of the tilt adjuster itself

The design of this product ensures that no light leakage will occur even if the camera connector and the back focus fine-tuner are made of transparent materials. Therefore, there is no need to worry about light leakage when adjusting the back focus or the tilt.

6. Adjustment of the tilt

The adjustment of the tilt is achieved via the push and pull screws located at the Φ100 mm position of the filter wheel connector and the camera connector. There is a total of 12 sets of push-pull screw holes, with each set comprising one push screw hole and one pull screw hole, as shown in Figure 6-1.

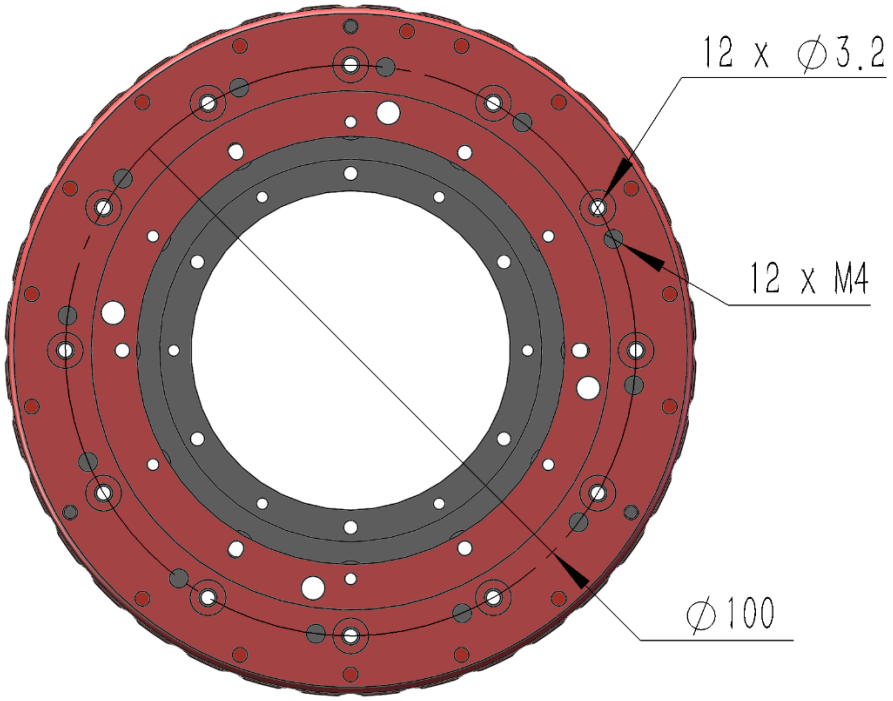

Figure 6-1

Theoretically, 3 sets of push and pull screws are sufficient to achieve the adjustment of the tilt. However, 4 sets of screws can also be used for adjustment according to personal preference. When 4 sets of screws are used, you can either select the screws on the four edges of the camera image sensor or those at the four corners of the camera image sensor, depending on your habit. The redundant screw hole design enables flexible adjustment methods. As an example, four sets of push and pull screws are used in Figure 6-2.

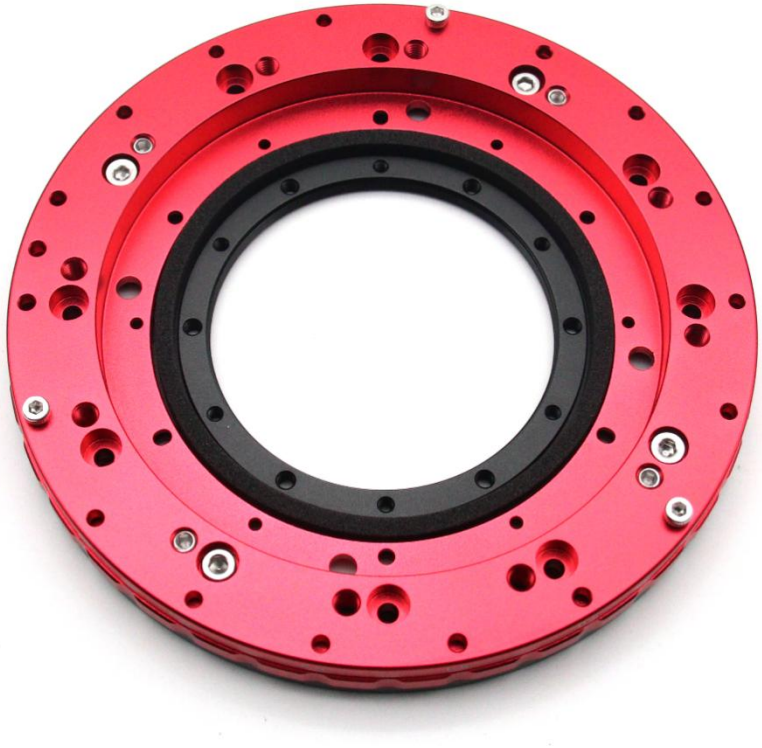

Figure 6-2

7. Dimension diagrams

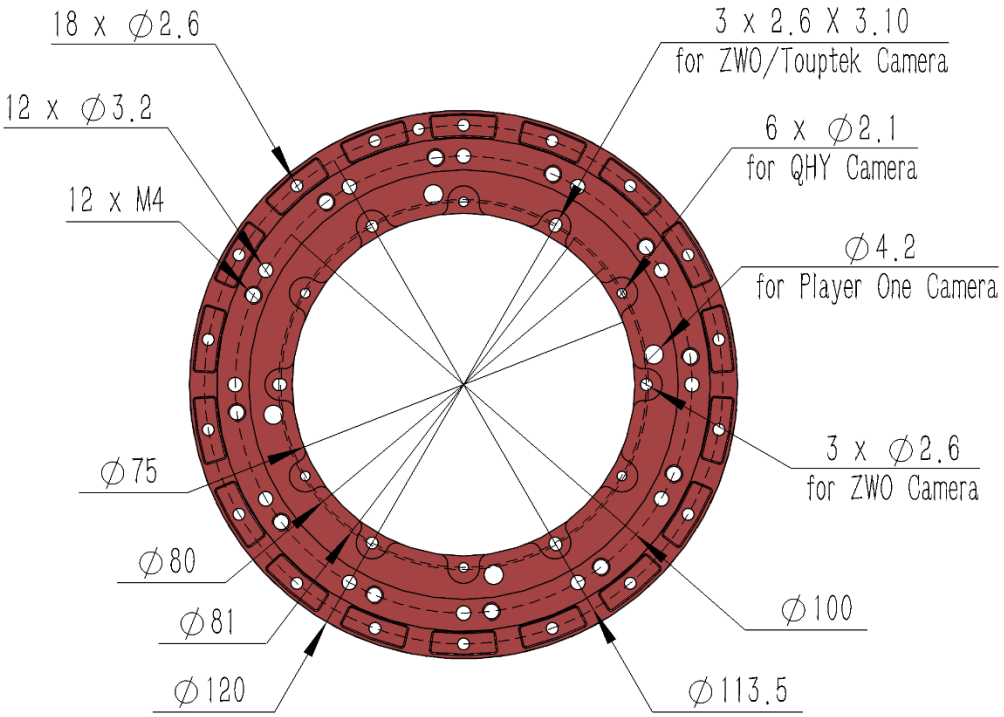

Figure 7-1 Camera connector

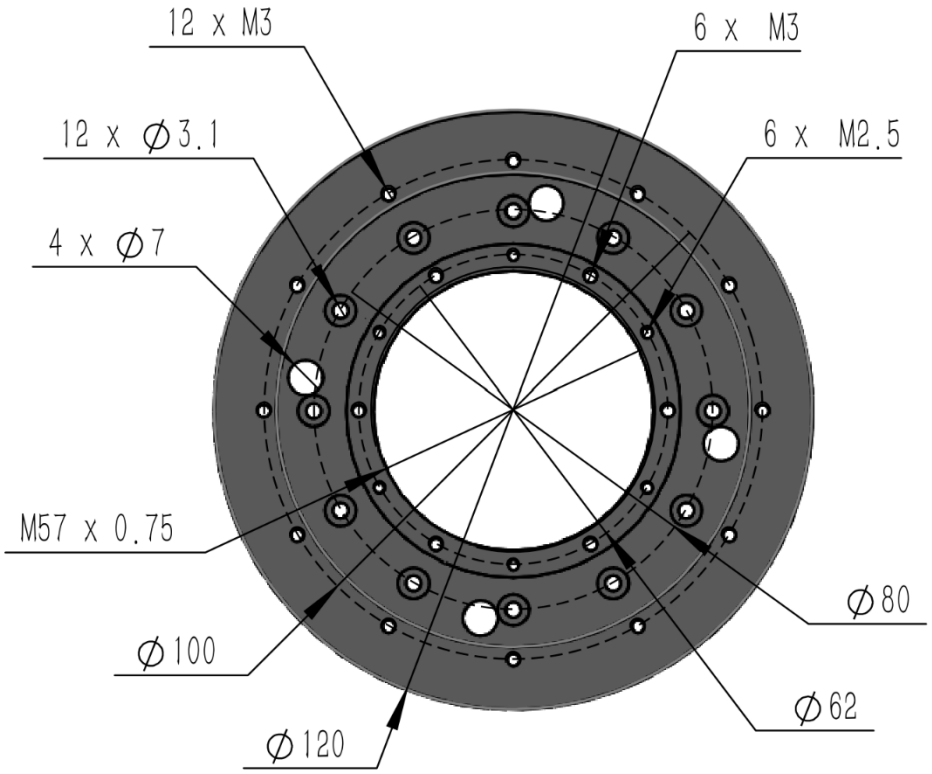

Figure 7-2 Filter wheel connector

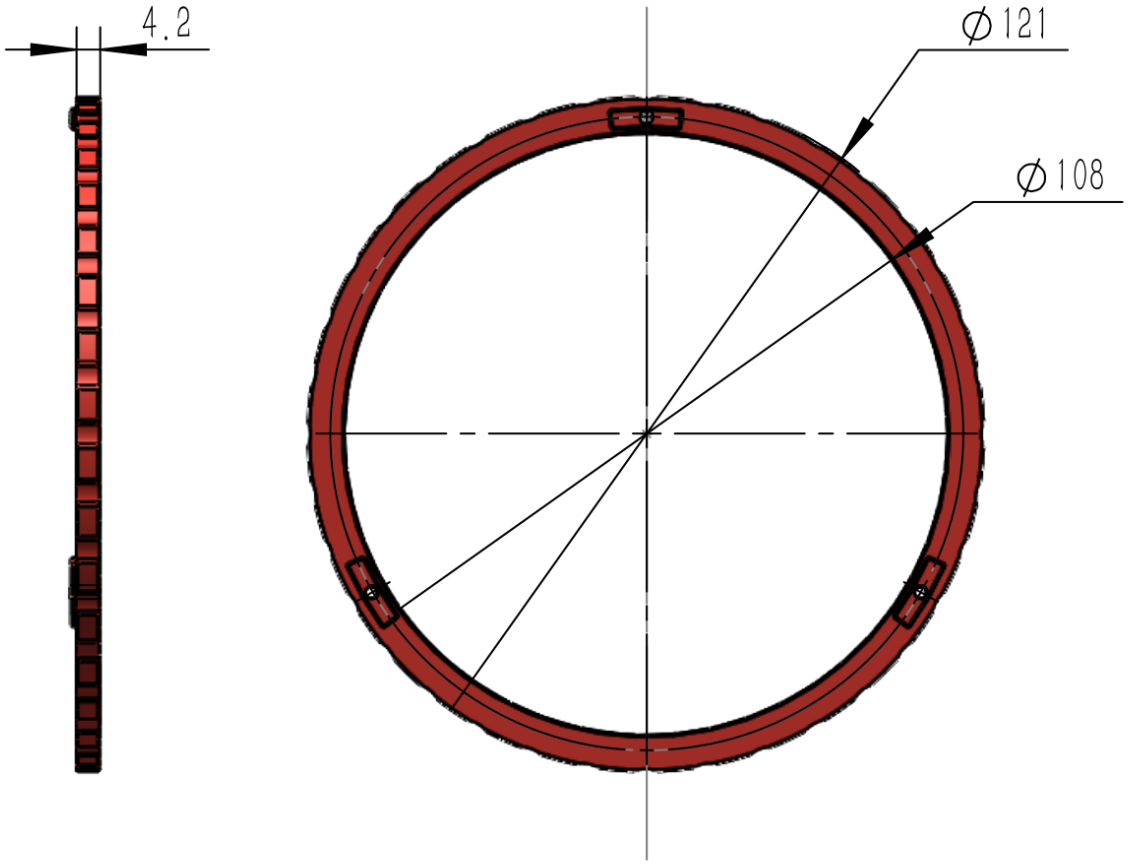

Figure 7-3 Back focus fine-tuner

8. Back focus solutions

Case 1: for Player One/ZWO cameras

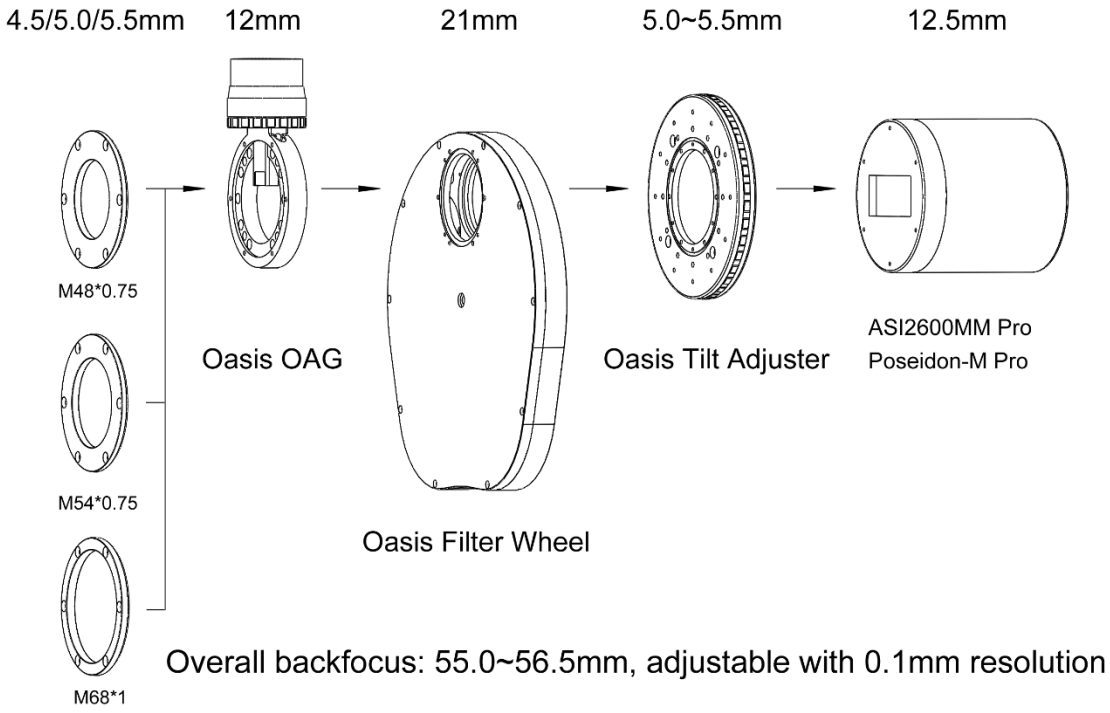

Figure 8-1 Case 1 - for Player One/ZWO cameras

Case 2: for QHY cameras

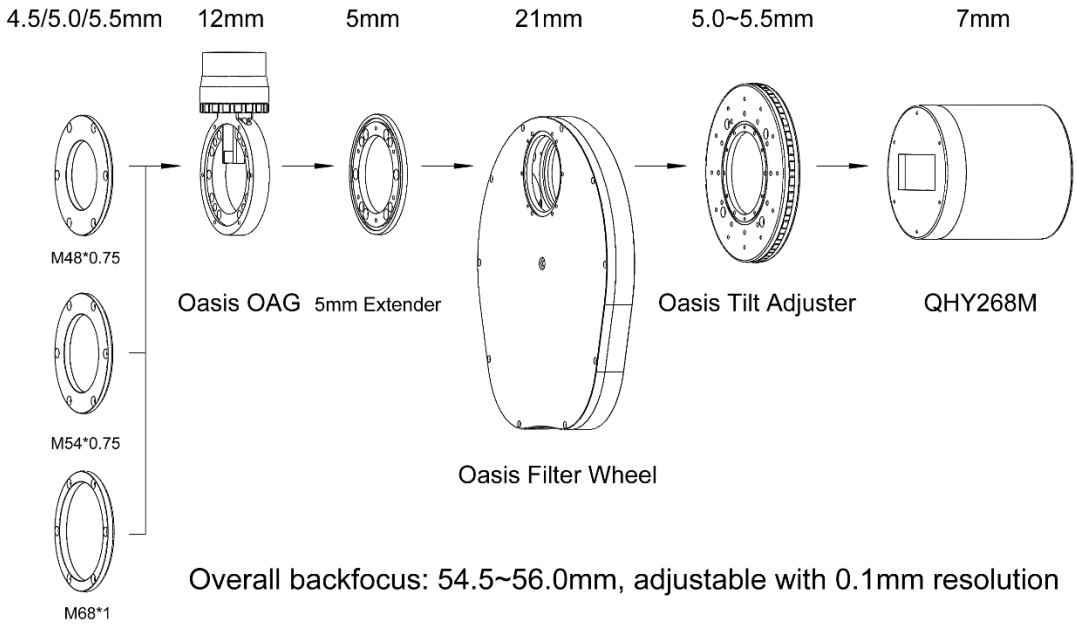

Figure 8-2 Case 2 - for QHY cameras

Case 3: for Touptek cameras

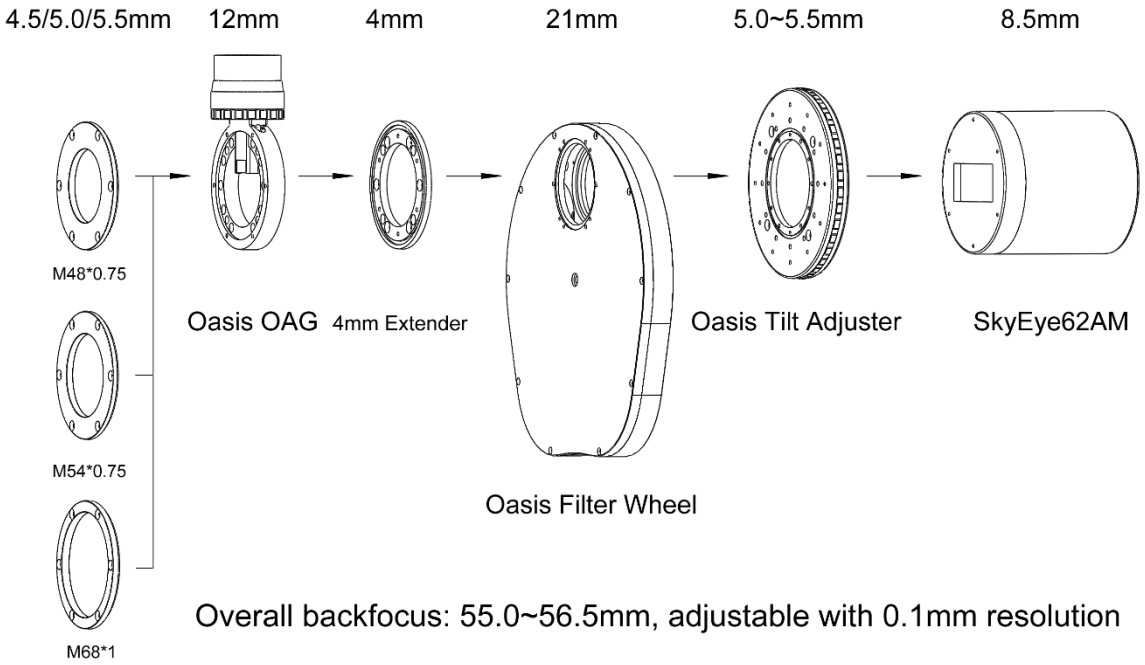

Figure 8-3 Case 3 - for Touptek cameras