

Oasis Focuser

Clutch Electronic Focuser

Installation Reference Manual

Version 1.17

2023.12.13



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Quick Guidance

Before starting the installation, please read [Chapter 1 Brief description of installation](#).

If you have read Chapter 1, please find the type of your telescope on which you would like to install Oasis Focuser from the table below. And then you can go to the corresponding section to learn the installation steps by clicking "Go".

Simplest installation				
Telescope/Focuser	Installation Position	Gear	Clamp (mm)	Installation
Skywatcher Evolux 82ED	Coarse-tuning	B6	28	Go
Sharpstar FRA 300	Coarse-tuning	A6	29	
Askar 61EDPH	Coarse-tuning	A6	30	
Skywatcher Esprit 120	Coarse-tuning	SCA6+A5	30	
Maxvision 152/1900mm Maka	Coarse-tuning	SCB6+A5	30	
Askar 80PHQ/185 APO/FRA 400/FRA 600 Sharpstar AL90/107 PH Sharpstar RP30S Meade SolarMax III 70DS MEYON 80ED	Coarse-tuning	A6	32	
SkyRover 70/80/90/102/130 APO Starfield APO Apertura 60EDR/72EDR/90APO	Coarse-tuning	B6	33	
Sharpstar 107 PHQ/130PHQ/Z4/FRA 500 Askar 103APO	Coarse-tuning	A6	34	

Note:

- 3 or 4mm Binary-extender is needed for Sharpstar 107PHQ/130PHQ/Z4/ RP30S/Meade SolarMaxIII 70DS
- 2mm Binary-extender is needed for Askar 80PHQ
- For some telescopes, please refer to the following table for the gear installation.

Telescope	Gear Installation
Skywatcher Evolux 62ED/82ED	Go
Skywatcher Esprit 120	Go

Celestron SCT installation				
Telescope	Adapter	Gear	Clamp (mm)	Installation
Celestron 8SE/C8/C8HD/C925/C925HD	CSA8925	A5	30	Go
Celestron C11/C11HD/C14/C14HD	CSA1114	A5	33	
Video tutorial		https://youtu.be/o3li5mXsSaE&t		

Installation with universal adapter				
Telescope/Focuser	Installation Position	Shaft-Converter	Fixing-bracket	Installation
Takahashi FSQ106/TOA130-NFB APO	Coarse-tuning	A8	Model C	Go
Takahashi Epsilon Newtonian/TOA130-NS	Coarse-tuning	B8	Model T	
Sharpstar 130F2.8HNT/150F2.8HNT	Coarse-tuning	A6	Model T	
Askar 103APO				
Askar V/Askar 65PHQ	Coarse-tuning	A5	Model T	
SkyRover 72ED APO	Coarse-tuning	A6	Model D	
SVBONY SV503 70ED				
V-Power 2" Focuser	Coarse-tuning	B6	Model V	
Video tutorial		https://youtu.be/KLGeKOnrQnY		

Installation with binary extender				
Telescope/Focuser	Installation Position	Gear	Clamp	Installation
FeatherTouch FTF30 series	Fine-tuning	A4	1.33inch	Go

Installation with rabbit-head clamp				
Telescope/Focuser	Installation Position	Gear	Rabbit-Head Clamp	Installation
Takahashi FSQ106/TOA130-NFB APO	Fine-tuning	A3.5	25mm	Go
FeatherTouch FTF20 series	Fine-tuning	A7/64	1.00inch	

Installation on helical-focusing telescopes	
Telescope/Focuser	Installation
William Optics RedCat51 APO	Go
Askar ACL200	

Installation with dedicated adapters				
Telescope/Focuser	Installation Position	Gear	Clamp	Installation
2047 2-inch Focuser	Coarse-tuning	B5	30mm	Go
Feather Touch FTF3515/3545	Fine-tuning	A4	1.46inch	

1. Brief description of installation

1.1. Introduction

An important feature of the Oasis Focuser is that the main assembly and the clamp are separated. By using different clamps Oasis Focuser can be installed on a variety of telescopes. Not only can it be installed directly with a clamp, but it can also be installed on various models of telescope focusers via customized adapters.

1.2. Specification of clamps

Different telescopes require different clamps. The number on the clamp indicates the diameter of this clamp.



Figure 1-1 Clamp

1.3. Specification of gears

Oasis Focuser uses gears to drive focuser. One of the gears is pre-installed on the shaft of the motor, and another large gear needs to be installed by the user on the shaft of the telescope focuser. The gears mentioned below in this document are always the large gears that need to be installed by the user.

Different telescopes may use different gears. We currently have two types of gears, i.e., A-type and B-type gears. The difference between the two types of gears is that they have different length, 8mm and 16mm respectively, as shown in Figure 1-2 and 1-3. In addition, the diameter of the inner hole of the gears are also available in a variety of sizes. The number on the gear model indicates the diameter of the inner hole of the gear.



Figure 1-2 A-type gear



Figure 1-3 B-type gear

The following table lists the models and specifications of some gears.

Type	Model	Length (mm)	Diameter (mm)
A-type	A4	8	4
	A5		5
	A6		6
B-type	B5	16	5
	B6		6

1.4. Installation position of the gears

Whether the large gear is installed in the correct position is very important for whether Oasis Focuser is installed correctly. Oasis Focuser components have been designed carefully to make it easy for users to install the gears correctly.

As shown in Figure 1-4 and Figure 1-5, this is the simplest installation method without using any adapters. The large gear used is an A-type short gear (the total length is 8mm as shown in Figure 1-6). When the large gear is installed correctly, the distance between the outermost side of the gear and the outermost side of the telescope focuser mount should be 8.5 ± 0.5 mm, that is, between 8~9mm.

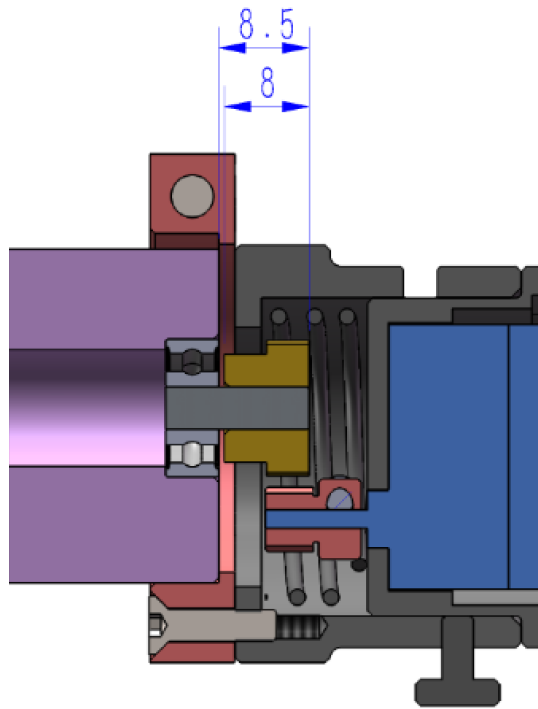


Figure 1-4

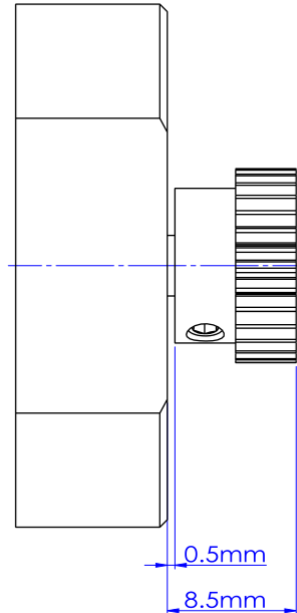
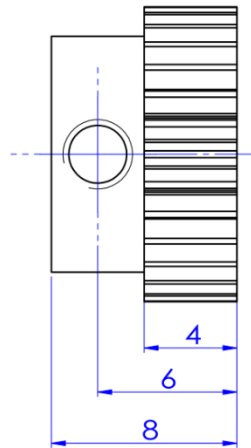


Figure 1-5



Unit : mm

Figure 1-6

In Figure 1-4, since the total length of the large gear is 8mm, it is only necessary to leave a small gap of about 0.5mm between the innermost side of the large gear (the leftmost end of the large gear in Figure 1-4) and the outermost side of the telescope focuser mount (the rightmost end of the telescope focuser mount in Figure 1-4). Leaving this gap also avoids friction between the gear and the telescope focuser mount when motor moves.

For the cases of installation using adapters, the installation position of the gears is the same as above. Please refer to the specific installation guide of adapters for the details of how to install the large gears.

For cases where B-type gears are used, the gears can be positioned automatically through some holes. Therefore, it will be easier to install in these cases.

1.5. Summary of installation methods

For some telescope focusers Oasis Focuser cannot be installed directly with a clamp. We designed several adapters for them to solve this problem. By using these adapters, Oasis Focuser can be installed on most telescope focusers.

To illustrate how to install Oasis Focuser, we define the installation methods into 7 categories:

- 1、Simplest installation
- 2、Celestron SCT installation
- 3、Installation with universal adapter
- 4、Installation with binary extender
- 5、Installation with rabbit-head clamp

6、 Installation on helical-focusing telescopes

7、 Dedicated installation

The following is a brief description of these types of installation methods.

1、 Simplest installation

With this installation method Oasis Focuser can be installed on the telescope focuser directly by using a clamp. Since this method does not need to use any adapters, the installation method is very simple. So it is called the simplest installation.

Generally, this installation method is to install Oasis Focuser on the coarse-tuning knob side, and requires that the telescope focuser mount is round or D-shaped so that a clamp can be used. Also, there should be enough space for clamp installation.

Two typical examples of those telescopes that are suitable for simplest installation are the Sharpstar APO series and SkyRover APO series, as shown in Figures 1-7 and 1-8.



Figure 1-7



Figure 1-8

2、 Celestron SCT installation

Oasis Focuser can be installed on Celestron 8SE/C8/C925/C11/C14 and its HD version Schmidt-Cassegrain telescopes (SCT) by using dedicated adapters. Figure 1-9 is the adapter for installing Oasis Focuser on Celestron 8SE/C8/C925. Figure 1-10 illustrates what it looks like when Oasis focuser is installed on a Celestron C14HD.



Figure 1-9



Figure 1-10

3、 Installation with universal adapters

Universal adapters are designed for telescopes that cannot be installed directly by using a clamp. This installation method can be used on SkyRover 72ED APO, Takahashi APO/Epsilon series etc., as shown in Figure

1-11.



Figure 1-11

4、 Installation with binary extender

Usually this installation method is used to install Oasis Focuser on fine-tuning side of telescope focuser, however the principle can also be used for some special installation cases.

For telescope focusers that cannot be installed on coarse-tuning side while they have a dual-speed knob, Oasis Focuser can be installed on the fine-tuning side (Figure 1-12). With our innovative binary extender, Oasis Focuser can be installed on a variety of dual-speed knob side with great flexibility. The binary extender is shown in Figure 1-13.



Figure 1-12



Figure 1-13

The convenience of installing in this way is similar to the simplest installation method. However, the focuser moving speed will be slower comparing to installations on coarse-tuning side.

5、 Installation with rabbit-head clamp

The rabbit-head clamp is used to install Oasis Focuser on the fine-tuning position of some certain telescope focusers, such as FeatherTouch FTF20 series. The rabbit-head clamp is shown in Figure 1-14. The rabbit-head clamp is also available in several models to accommodate different telescope focusers.



Figure 1-14

6、 Installation on helical-focusing telescopes

This installation method is used to install Oasis Focuser on telescopes with helical-focusing system such as William Optics RedCat 51 APO and Askar ACL200, as shown in Figures 1-15 and 1-16.



Figure 1-15



Figure 1-16

7、 Installation with dedicated adapters

For some particular telescope focusers, we designed special adapters for Oasis Focuser installation. An example is the adapter for 2047 2" focuser as shown in Figure 1-17.



Figure 1-17 Adapter for 2047 2-inch focuser

Another example is the adapter for FeatherTouch FTF35 series focusers as shown in Figure 1-18.



Figure 1-18 Adapter for FeatherTouch FTF35 series

The subsequent chapters of this document describe the installation methods in detail.

2. Simplest installation

With this installation method Oasis Focuser can be installed on telescope focusers directly by using a clamp. Since this method does not need to use any adapters, the installation method is very simple. So it is called the simplest installation.

Generally, this installation method is to install Oasis Focuser on the coarse-tuning knob side, and requires that the telescope focuser mount is round or D-shaped so that a clamp can be used. Also, there should be enough space for clamp installation.

Two typical examples of those telescopes that are suitable for simplest installation are the Sharpstar APO series and SkyRover APO series. In following sections we will use them as examples to illustrate how to perform a simplest installation.

2.1. Basic installation steps

The basic installation procedure is very simple and takes only 3 steps as follows:

- 1、Remove the knob
- 2、Install the gear
- 3、Tighten clamp

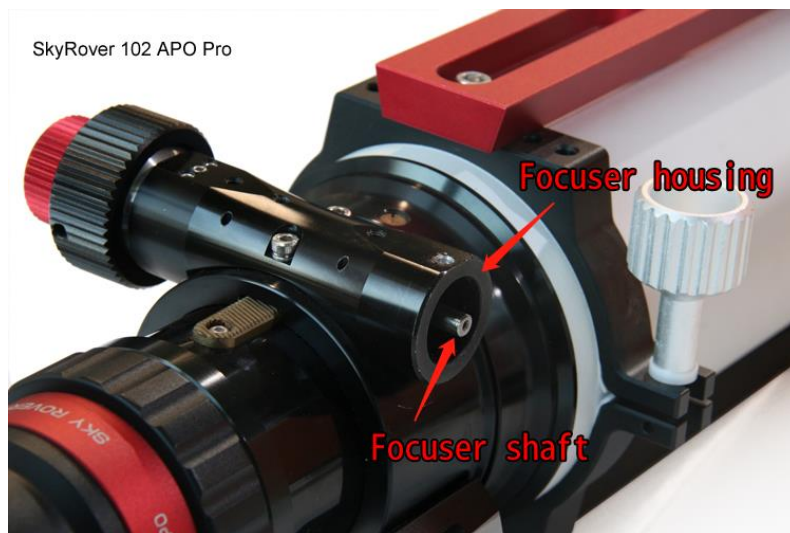


Figure 2-1 Remove knob

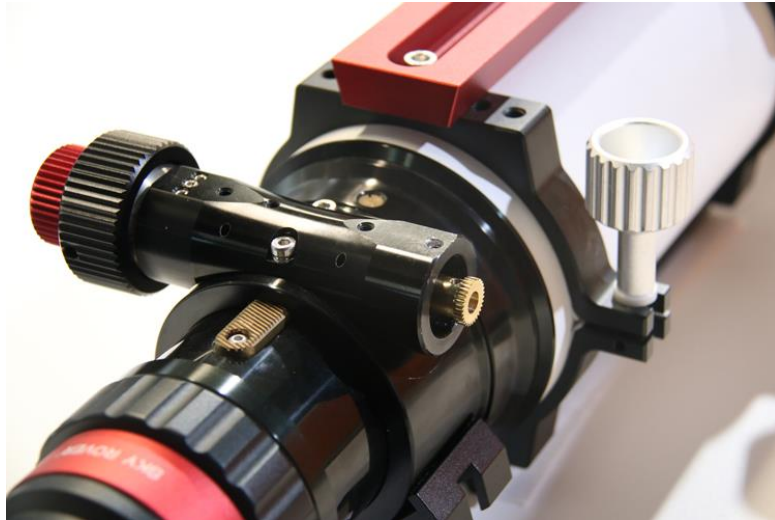


Figure 2-2 Install gear



Figure 2-3 Tighten clamp

2.2. Detailed installation steps

In this section we will describe the installation steps in detail.

1、 Remove the knob

Normally telescope focuser has a single-speed knob (i.e., coarse-turning knob) at one end and a dual-speed knob at the other end. Usually, Oasis Focuser can be installed at the single-speed side. In this case please remove the single-speed knob as shown in Figure 2-1.

2、 Install the gear

- 1) Take SkyRover 102 APO Pro as an example. As shown in Figure 2-4 and Figure 2-5, after removing the knob it can be found that there is space between the shaft and the housing. And the shaft is too short to install an A-type gear. But we can see there is a threaded through hole in the housing.



Figure 2-4



Figure 2-5

We can use B6 gear for this focuser. Use an M1.5 hex key through the hole on the housing, then screw the gear setscrew into the threaded hole that is away from the tooth end and tighten it in place, as shown in Figure 2-6, Figure 2-7 and Figure 2-8.



Figure 2-6



Figure 2-7

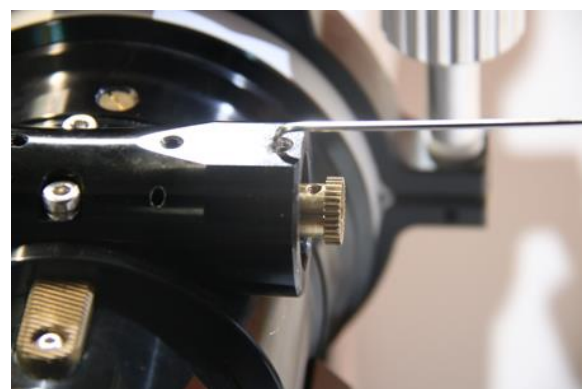


Figure 2-8

The B-type gear has 3 setscrew threaded holes, two of which are reserved. Only one of them is required for installation. Users can also use 2 or 3 setscrews in case they can be installed on the shaft or when it is needed.

- 2) Take Sharpstar 107PH as an example. As shown in Figure 2-9 there is no space between the shaft and focuser housing (Or we can say the space is filled by a small bearing in this example). An A-type gear can be used for this focuser. When installing, push the gear to the side of the housing, leaving a slight gap between the gear and the side of housing. **Make sure the gap between the gear and the side of housing is less than 1mm** (The purpose of leaving a slight gap between the gear and housing is to guarantee the shaft and gear can move freely). Then use the setscrew and hex key to tighten the gear on the shaft as shown in Figure 2-10.



Figure 2-9



Figure 2-10

3、Tighten the clamp

Oasis focuser main assembly can be connected to telescope focuser housing by using a clamp. A small step is designed on the inner hole of the clamp to help user determine where the clamp should be installed on focuser housing, as shown in Figure 2-11. When installing, just push the clamp to the housing until it is stopped by the step, and then tighten the clamp on the housing. Figure 2-12 shows an example of how the clamp is installed on the focuser housing.



Figure 2-11

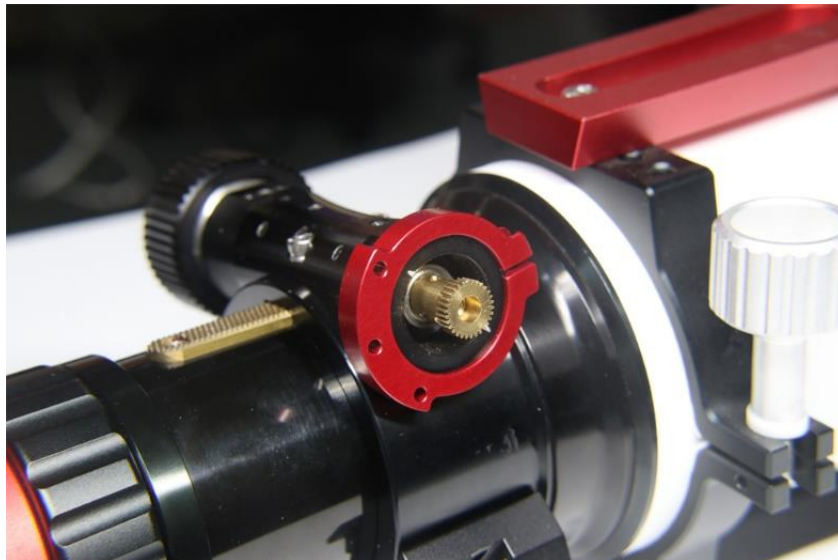


Figure 2-12

When installing, use 3 screws to connect the clamp and oasis focuser main assembly. Then, hold the front end of oasis focuser body in your left hand and the rear end in your right hand and **turn the focuser to "OFF" state**, i.e., the disengaged mode, as shown in Figure 2-13.



Figure 2-13

Then locate the clamp onto the focuser housing and tighten the clamp, as shown in Figure 2-14.



Figure 2-14 Tighten the clamp

Due to the limited space around the telescope focuser knob, when installing the clamp may need to be rotated in particular angle to avoid confliction of the clamp and telescope focuser. In Figure. 2-15, the clamp is installed correctly and it does not touch the telescope focuser shell.



Figure 2-15

Note: When installing or uninstalling, please switch Oasis Focuser to disengage mode so that the two gears don't touch with each other.

2.3. Gear installation on some telescopes

For some telescopes the installation method of the gear is a little different from the descriptions in above sections. For gear installation on those telescopes, please refer to following sections.

2.3.1 Skywatcher Esprit 120

On Skywatcher Esprit 120 please refer to Figure. 2-16 for the installation of the gear. An A6 shaft-converter and an A5 gear are required for the installation.

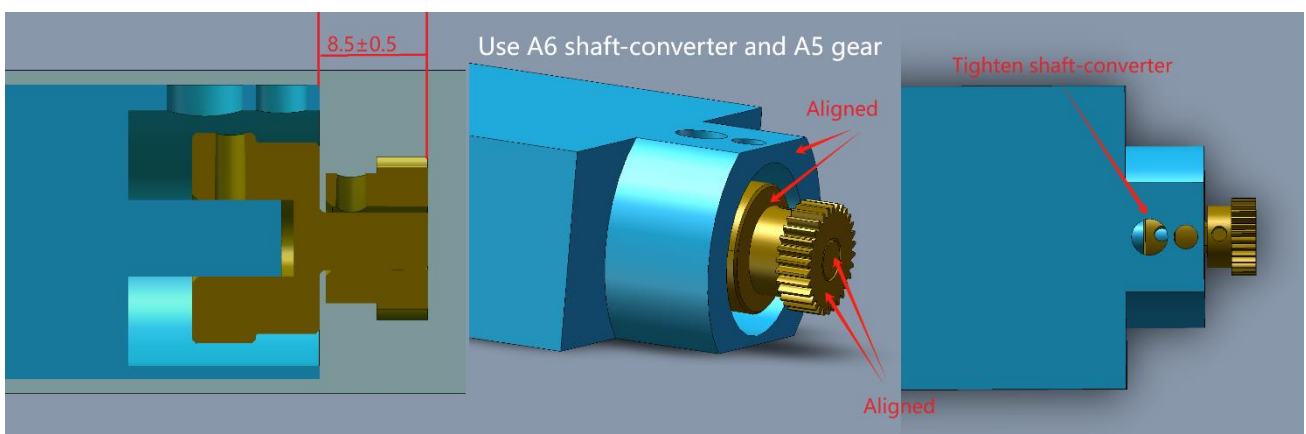


Figure 2-16

2.3.2 Skywatcher Evolux 62ED/82ED

On Skywatcher Evolux 62ED/82ED please refer to Figure. 2-17 for the installation of the gear.

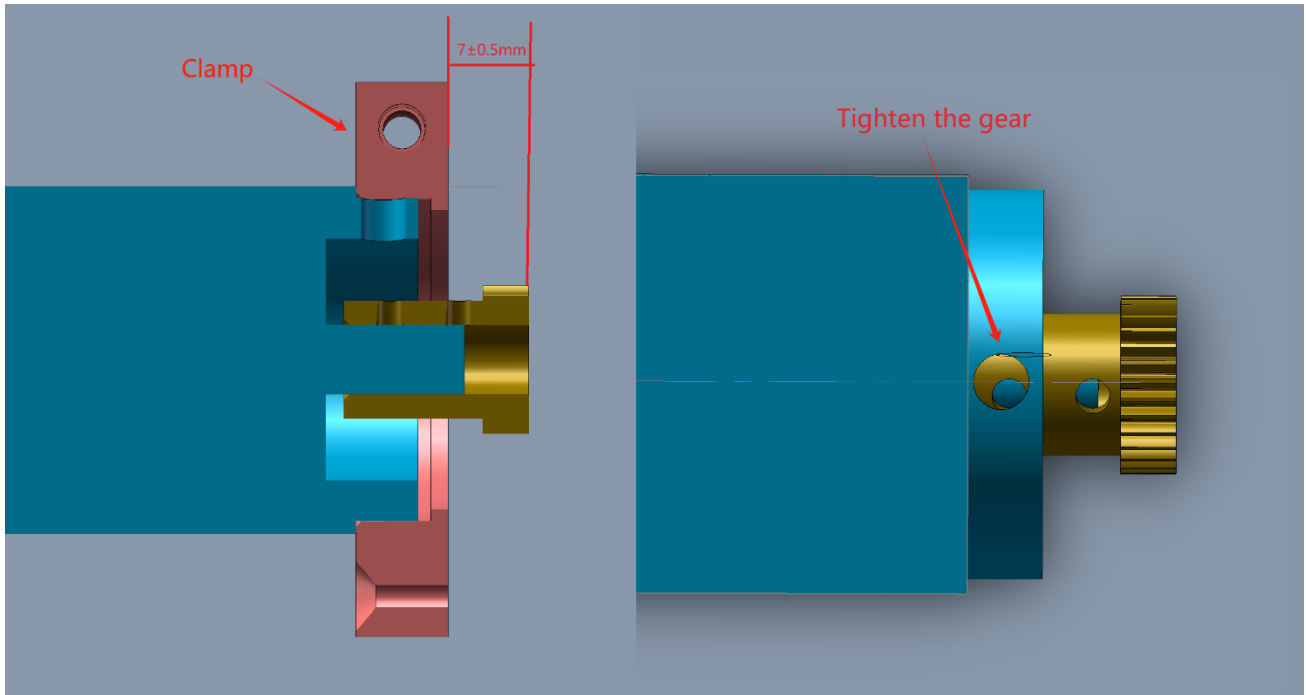


Figure 2-17

3. Installation on SCT

Oasis Focuser can be installed on Celestron 8SE/C8/C925/C11/C14 and its HD version Schmidt-Cassegrain telescopes (SCT) by using dedicated adapters. There are two models of adapters for SCT, CSA8925 and CSA1114. CSA8925 is used for 8SE, C8 and C925, and CSA1114 is used for C11 and C14. The method of installing the adapter and Oasis Focuser on these SCTs is similar. Figure 3-1 illustrates what it looks like when Oasis focuser is installed on an SCT.



Figure 3-1

Each SCT adapter consists of a base cover, a bracket, a knob and two bearings, as well as some screws.

The following takes C14HD as an example to illustrate how to install dedicated Oasis Focuser adapter on Celestron SCT.

- 1、 Remove the rubber knob and orange cover from C14HD focuser, as shown in Figure 3-2.



Figure 3-2

2、 Use screws to install the base cover on the telescope, as shown in Figure 3-3.



Figure 3-3

3、 Put two bearings onto the knob and put the knob onto the shaft of the telescope, as shown in Figure 3-4 and 3-5. There is no need to fix the knob on the telescope shaft by tightening setscrews at this time.



Figure 3-4



Figure 3-5

4、 Put the bracket on the knob, and then use screws to fix the bracket and base cover, as shown in Figure 3-6.



Figure 3-6

- 5、 Use setscrews to fix the knob on the telescope shaft, as shown in Figure 3-7.



Figure 3-7

- 6、 Switch Oasis Focuser to OFF state, and then use a $\Phi 33$ clamp to install Oasis Focuser main assembly on the bracket, as shown in Figure 3-8. Now the installation completes. When installing on 8SE, C8 or C925, please use a $\Phi 30$ clamp instead.



Figure 3-8

4. Installation with universal adapter

4.1. Introduction

For some telescope focusers Oasis Focuser cannot be installed directly by using a clamp due to the limitation of shape, size, space etc. However with universal adapters, Oasis Focuser can be installed on the coarse-tuning side of most telescope focusers.

As shown in Figure 4-1, a universal adapter includes the following components:

- 1、 Mount-bracket
- 2、 Fixing-bracket (One of Model A/B/C/D/T)
- 3、 Shaft converter (One of A-type or B-type)
- 4、 Bearing
- 5、 A5 Gear
- 6、 Screws

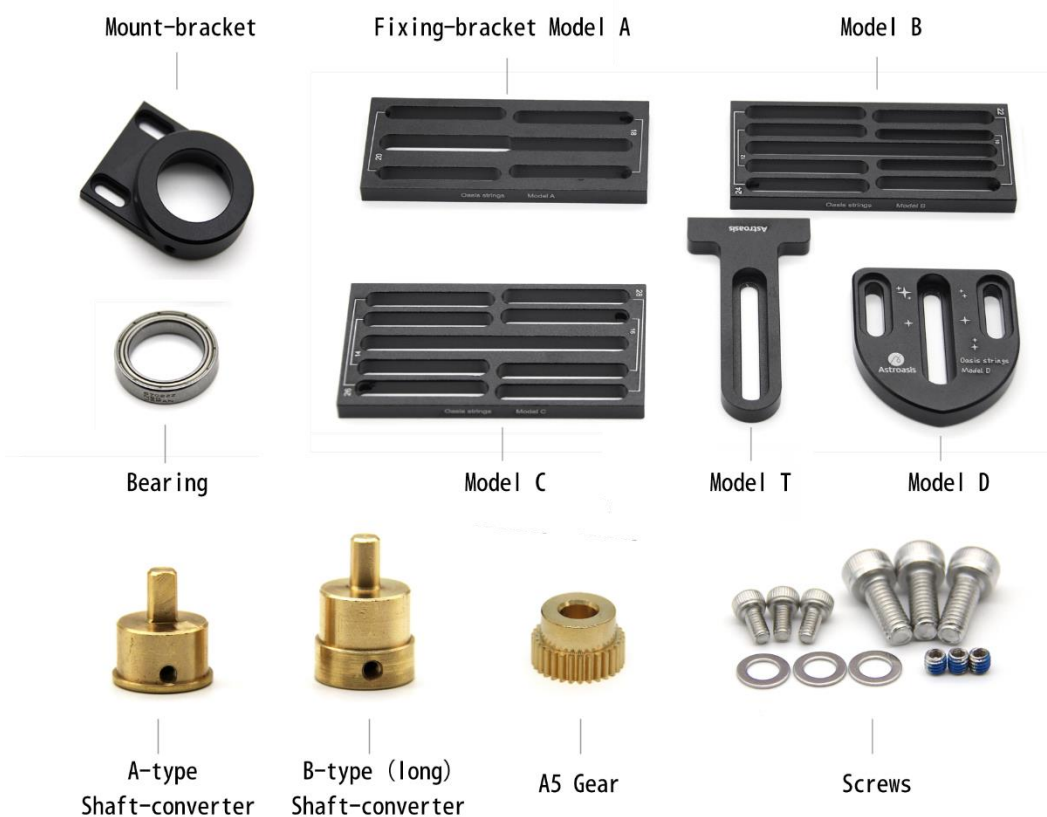


Figure 4-1

In order to ensure the success of the installation, here are a few key points that you need to pay attention to:

- 1、 The center of the mount-bracket needs to be concentric with the center of the telescope focuser shaft. This is achieved by adding a small bearing between the shaft-converter and the mount-bracket. Please

do not miss this bearing when installing.

- After installation, the distance between the front end of the gear and the front end of the mount-bracket should be between $8.5 \pm 0.5 \text{mm}$, as shown in Figure 4-2.

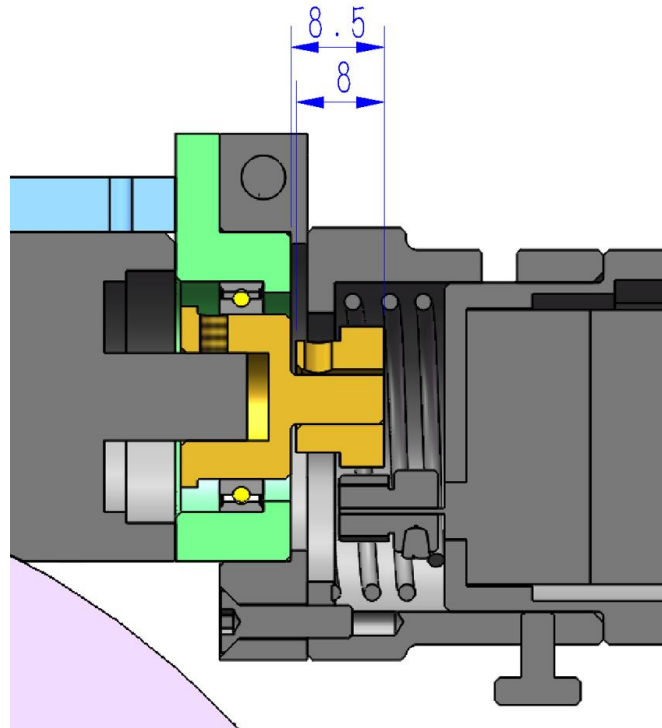


Figure 4-2

The installation of this adapter can be separated into two methods: standard installation and Takahashi Epsilon-like installation. In most cases, you can use standard installation method. And if you are using a Takahashi single-speed focuser, use the Takahashi Epsilon-like installation method. Following sections describe each of these two methods.

4.2. Standard installation

In this section we take SkyRover 72ED APO (Figure 4-3) as an example to illustrate how to install universal adapter on the telescope. Its focuser has a square-like shape and the clamp can't be used on it directly. So we should use universal adapter to install Oasis Focuser on it.



Figure 4-3

The installation steps for standard installation method are as follows:

- 1、 Remove the single-speed knob of the telescope focuser, as shown in Figure 4-4.



Figure 4-4

- 2、 Select a suitable fixing-bracket, as shown in Figure 4-5. This fixing-bracket should match the threaded holes in your telescope focuser. In this stage it is not need to fix the bracket to the telescope focuser. The fixing-bracket for SkyRover 72Ed is Model D. For other telescopes we may choose other models of fixing-bracket.



Figure 4-5

- 3、 Select the shaft-converter that matches the shaft of the telescope focuser. Install the gear on the shaft-converter by using the setscrew, and align the front end of the gear and the front end of the shaft-converter, as shown in Figure 4-6. Normally the gear has been already pre-installed on the shaft-converter by Astroasis and you do not need to install it by yourself. In this case you can just skip this step.

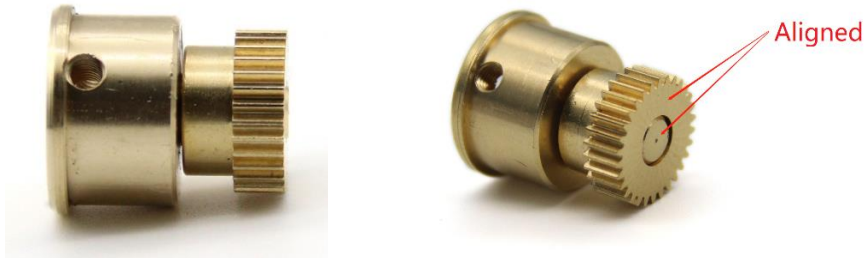


Figure 4-6

- 4、 Put the shaft-converter on the shaft of the telescope focuser, and then use the hex key and setscrew to fix the shaft-converter on the shaft, as shown in Figure 4-7.



Figure 4-7

- 5、 Put the bearing and the mount-bracket on the shaft-converter. Now the bearing is in the place between the shaft-converter and the mount-bracket, as shown in Figure 4-8 and Figure 4-9.

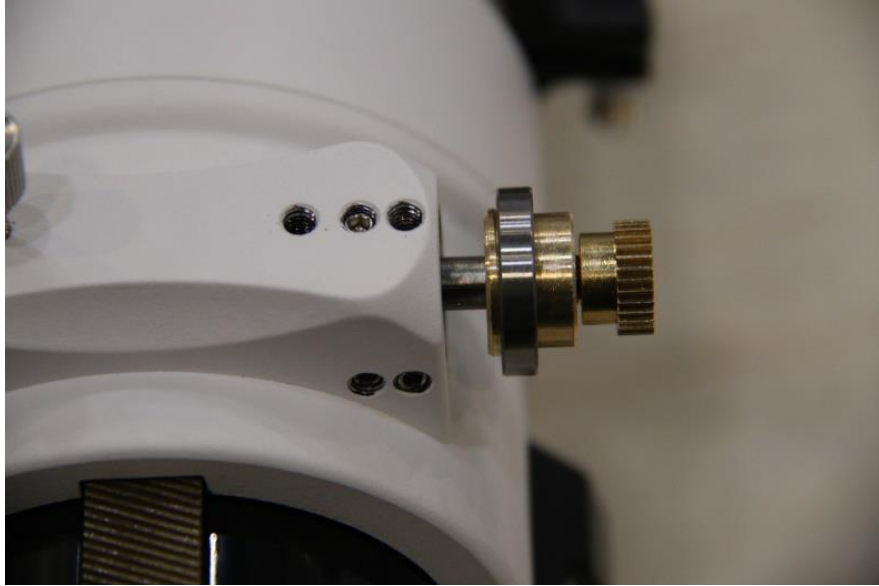


Figure 4-8



Figure 4-9

- 6、 Put the fixing-bracket to the telescope focuser, and then use screws to connect the mount-bracket and the fixing-bracket, as shown in Figure 4-10.



Figure 4-10

- 7、 Adjust the position of the fixing-bracket and the mount-bracket so that the front end of the mount-bracket is aligned with the front plane of the shaft-converter. Tighten screws to fix the fixing-bracket on the telescope focuser, as shown in Figure 4-11.



Figure 4-11

- 8、 Switch Oasis Focuser to OFF state, and then install Oasis Focuser on the mount-bracket through the clamp. The installation is completed, as shown in Figure 4-12.



Figure 4-12

The key point of standard installation is "two alignments", i.e., the front of the gear should be aligned with the front of the shaft-converter, and the shaft-converter plane is aligned with the front end of the mount-bracket, as shown in Figure 4-2. The other steps in the installation process can be adjusted to your liking.

4.3. Takahashi Epsilon-like installation

Pay attention: When fixing the fixing-bracket on the central protrusion, the screws used should not be too long, otherwise it may hit the worm parts underneath and cause damage. Since the thickness of the fixing-bracket for screw locking is 1.5mm, the screw length used is 1.5mm longer than the length of the original screw. Based on our measurement, the length of the original screw's teeth is about 6.5mm, and the length of the screw's teeth we provided is 8mm. Please confirm that your device matches the length before installing on Takahashi Epsilon telescopes.

In this section we take the Takahashi FS-60CB telescope (60mm aperture) as an example to illustrate how to install the adapter. The appearance of FS-60CB focuser is shown in Figure 4-13.



Figure 4-13

The installation steps for Takahashi Epsilon-like installation method are as follows.

- 1、 Remove the single-speed knob and center screw of the focuser as shown in Figure 4-14.



Figure 4-14

- 2、 Put the bearing inside the mount-bracket, as shown in Figure 4-15.



Figure 4-15

- 3、 Using the shaft-converter dedicated for Takahashi Epsilon-like focuser. Install the gear on the shaft-converter by using the setscrew, and align the front end of the gear and the front end of the shaft-

converter, as shown in Figure 4-16.



Figure 4-16

- Put the shaft-converter on the shaft of the telescope focuser, and then use the hex key and setscrew to fix the shaft-converter on the shaft, as shown in Figure 4-17.



Figure 4-17

- Put the mount-bracket and the bearing on the shaft-converter. Now the bearing is in the place between the shaft-convert and the mount-bracket, as shown in Figure 4-18.



Figure 4-18

- Use Model T fixing-bracket, put it on the central protrusion and make sure it is parallel with the stainless shaft. Then use screws to connect the fixing-bracket and the mount-bracket, as shown in Figure 4-19 and Figure 4-20.

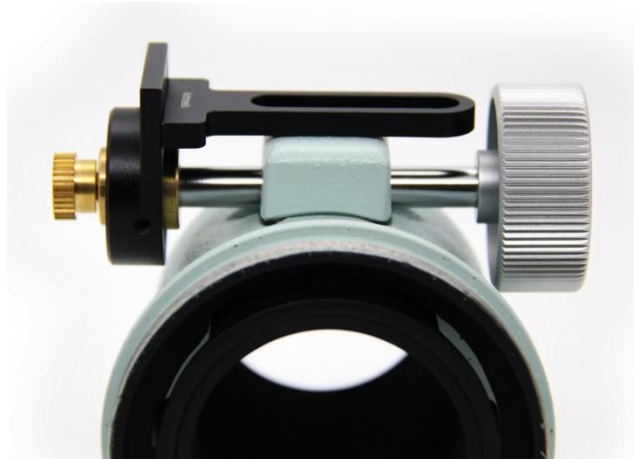


Figure 4-19



Figure 4-20

- 7、 Adjust the position of the fixing-bracket and the mount-bracket so that the front end of the mount-bracket is aligned with the front plane of the shaft-converter. Tighten screws to fix the fixing-bracket on the central protrusion, as shown in Figure 4-21, Figure 4-22 and Figure 4-23.



Figure 4-21



Figure 4-22



Figure 4-23

- 8、 Switch Oasis Focuser to OFF state, and then install Oasis Focuser on the mount-bracket through the clamp. The installation is completed, as shown in Figure 4-24.



Figure 4-24

Takahashi Epsilon-like installation method is very similar to the standard installation method, except that the models of shaft-converter and fixing-bracket are different.

5. Installation with binary extender

Usually this installation method is used to install Oasis Focuser on fine-tuning side of telescope focuser, however the principle can also be used for some special installation cases.

5.1. Introduction

Many telescope focusers have fine-tuning dual-speed knobs, as shown in Figure 5-1. If Oasis Focuser cannot be installed on your telescope focuser coarse-tuning side in previous ways, and your telescope focuser has a dual-speed knob, then you can install Oasis Focuser in the way described in this section.



Figure 5-1

Dual-speed focusers are very similar in the structure. The structure is shown in Figure 5-2 after removing the coarse-tuning and fine-tuning knobs. The outermost and thinnest shaft is used to install the large gear of Oasis Focuser, while the thicker and stainless shell can be used to install the clamp.



Figure 5-2

There are two main differences in the dual-speed structures for different telescopes:

- 1、 The diameter of the stainless steel shell is different
- 2、 The length is different

Different clamps can be used for the stainless shells in different diameters. In order to accommodate different length of dual-speed focuser, we designed the innovative and simply-used binary extender. With binary extender, Oasis Focuser can be installed on almost any dual-speed focusers.

Binary extender is a set of four extension chips which have the same shape but have different thicknesses. The thickness of each chip is 1mm, 2mm, 4mm, 8mm, respectively. After combining the chips, you can obtain any length between 1~15mm and at 1mm intervals. This length range matches most dual-speed focusers. Since the thickness of each extension chip is an integer power of 2, each chip equivalent to one of the 4-bit binary numbers. So, we name it as binary extender. The shape of the binary extender is shown in Figure 5-3.



Figure 5-3

5.2. Installation Steps

The steps to install the Oasis Focuser to the dual-speed focuser using a binary extender are as follows:

- 1、 Remove the coarse-tuning and fine-tuning knobs, as shown in Figure 5-2.
- 2、 As shown in Fig. 5-4 and 5-5, measure the diameter of the frontmost shaft and stainless shell in order to select the appropriate gear and clamp. We recommend that you measure both dimensions in advance or consult with sales at the time of purchase to ensure that you can receive the appropriate gears and clamps.



Figure 5-4 Measure the diameter for clamp

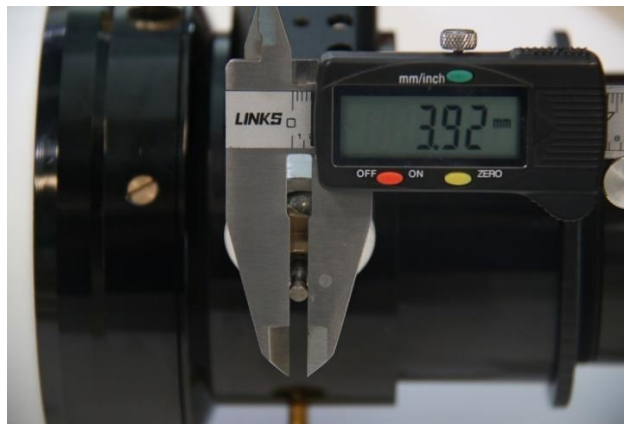


Figure 5-5 Measure the diameter for gear

- 3、 Install the gear on the frontmost shaft, as shown in Figure 5-6. Be sure to leave a slight gap between the gear and the shaft of the coarse-tuning knob so that the gear can rotate freely.



Figure 5-6

- 4、 Measure the distance between the end of the gear and the front end of the stainless shell, as shown in Figure 5-7. This distance can also be measured with a fine-tuning knob before the gear is installed, as shown in Figure 5-8. By using the fine-tuning knob, the measurement can be easier and more accurate.

Note that when measuring in this way, make sure that the end of the knob and the end of the gear are in the same position.



Figure 5-7

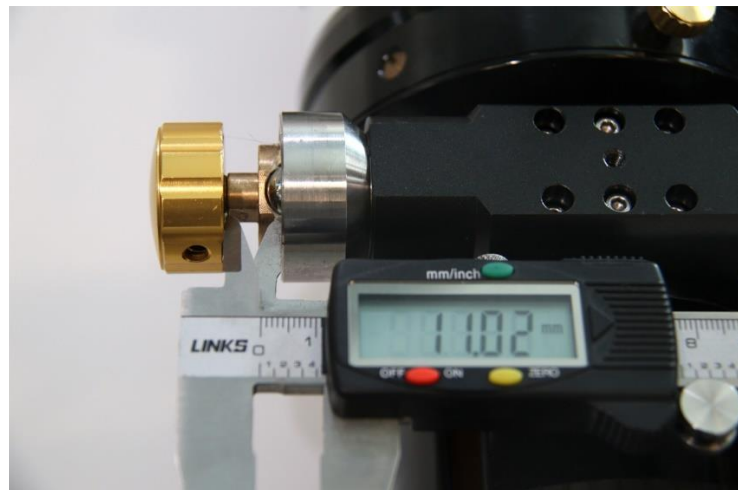


Figure 5-8

- 5、 The length measured in the previous step is the length that needs to be extended using the binary extender. For example, if the measured length is 11mm, then select the 1mm, 2mm, and 8mm extension chips. Insert the chips between the clamp and the main assembly, and connect them using screws, as shown in Figure 5-9.



Figure 5-9

If the measured length is a non-integer value, the length should be rounded to integer. For example, if the measured length is 11.3mm or 11.7mm, the length that needs to be extended is 11mm.

- 6、 Switch Oasis Focuser to OFF state, and then install Oasis Focuser on the stainless shell through the clamp. The installation is completed, as shown in Figure 5-10.



Figure 5-10

6. Installation with rabbit-head clamp

The rabbit-head clamp is used to install Oasis Focuser on the fine-tuning position of some certain telescope focusers, such as FeatherTouch FTF20 series. The rabbit-head clamp is shown in Figure 6-1. The rabbit-head clamp is also available in several models to accommodate different telescope focusers. As shown in Figure 6-2, it gets its name because it resembles a rabbit head.



Figure 6-1

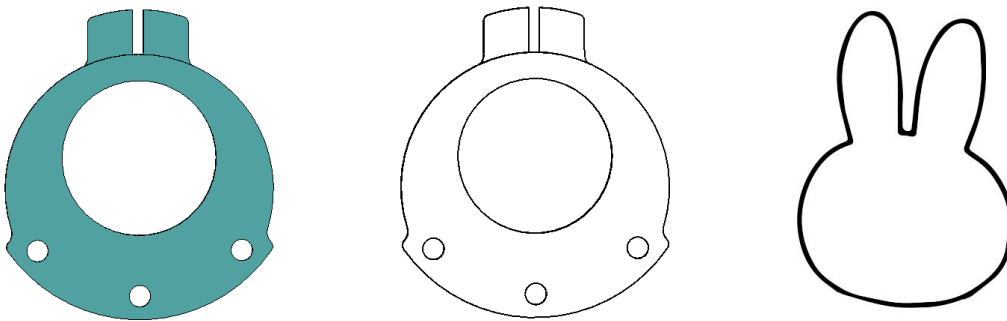


Figure 6-2

The steps to install Oasis Focuser on the fine-tuning position of telescope focusers using a rabbit-head clamp are as follows:

- 1、 Remove the coarse-tuning knob and fine-tuning knob, as shown in Figure 6-3.

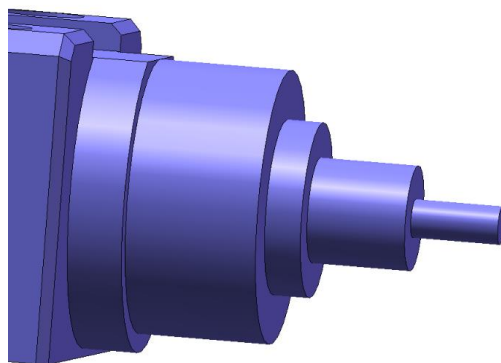


Figure 6-3

- 2、 Push rabbit-head clamp tightly against the stainless steel shell of the telescope focuser and tighten it with a screw, as shown in Figure 6-4.

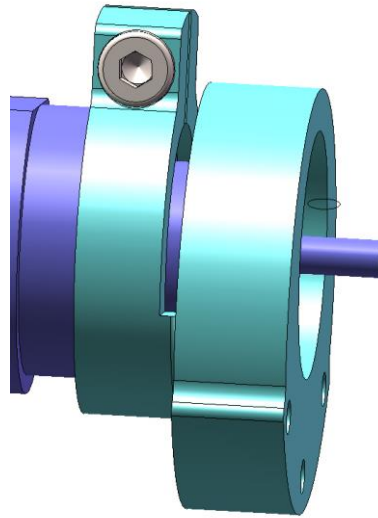


Figure 6-4

- 3、 Install the gear as shown in Figure 6-5 and Figure 6-6. Pay attention to the installation position of the gear. The distance between the front end of the gear and the front end of the rabbit-head clamp should be within the range of $7\pm 0.5\text{mm}$.

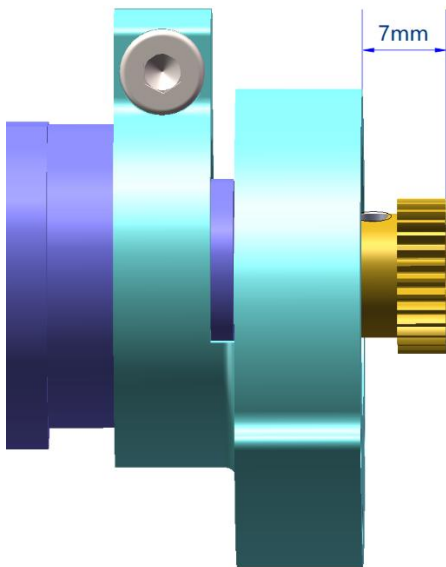


Figure 6-5

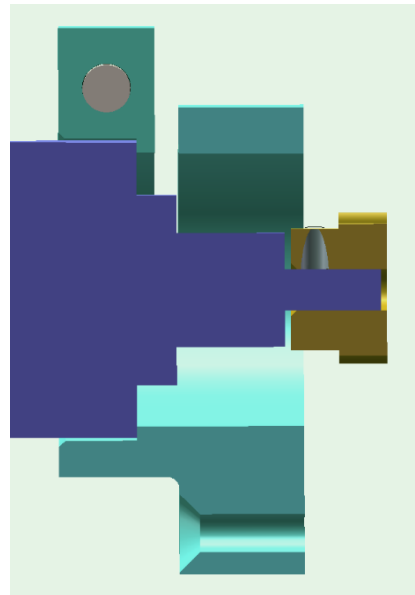


Figure 6-6

- 4、 Remove the rabbit-head clamp from the telescope focuser. Then connect the rabbit-head clamp with Oasis Focuser body with screws. Switch Oasis Focuser to "OFF" state, as shown in Figure 6-7.

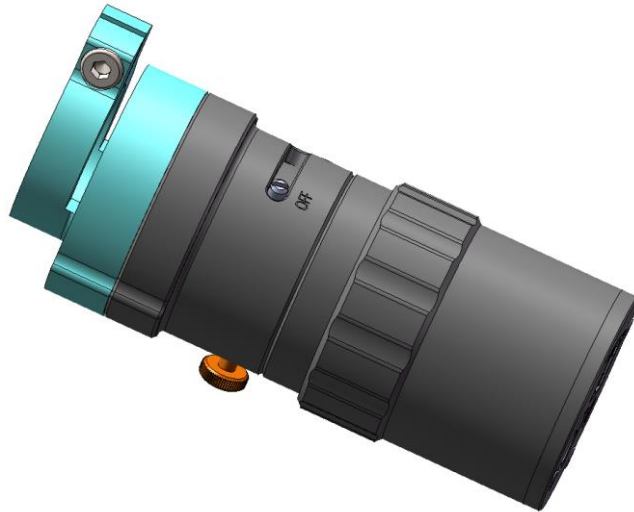


Figure 6-7

- 5、 Put the rabbit-head clamp back on the stainless steel shell of the telescope focuser and tighten it with the screw. Now the installation is completed, as shown in Figure 6-8.

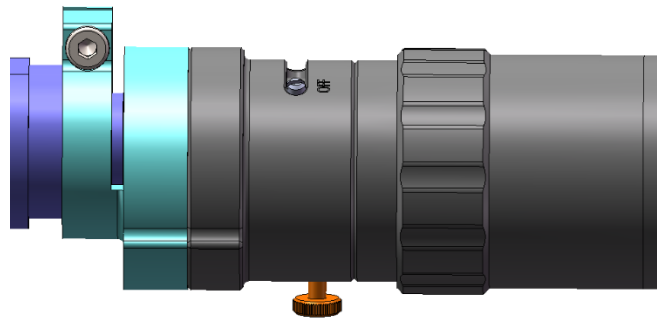


Figure 6-8

7. Installation on helical-focusing telescopes

Some telescopes have a focusing system similar to the helical-focusing structure of a DSLR camera lens. This chapter takes the Askar ACL200 and William Optics RedCat51 APO as examples to describe the steps to install an Oasis Focuser on such telescopes.

7.1. Installation on Askar ACL200

In addition to the Oasis Focuser body, the parts required to install on Askar ACL200 are shown in Figure 7-1. The overall effect after installation is shown in Figure 7-2.

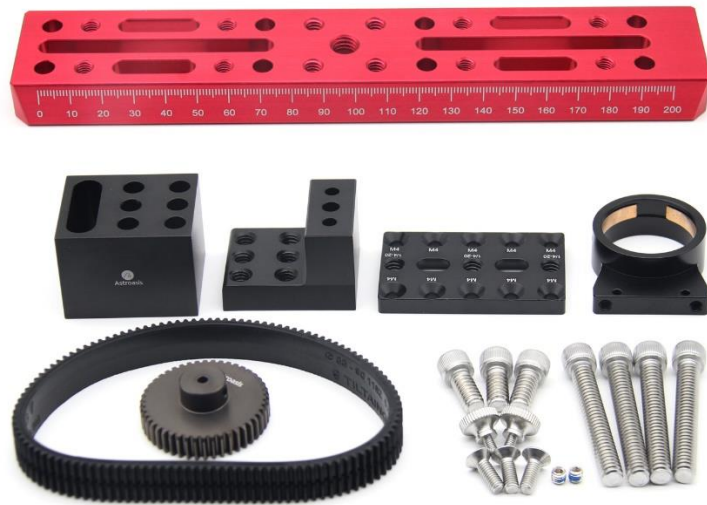


Figure 7-1



Figure 7-2

To install Oasis Focuser, we use RBASTRO's 220mm dovetail plate to replace the ACL200's original dovetail plate. The installation steps are as follows:

- 1、 Remove the original dovetail plate of ACL200, and use the original screws to connect the base to the hoop of ACL200, as shown in Figure 7-3, 7-4.



Figure 7-3



Figure 7-4

- 2、 Put the square gasket between the base and the dovetail plate, and then use a 1/4" screw to fix the base and the hoop on the dovetail plate, as shown in Figure 7-5 and 7-6.



Figure 7-5



Figure 7-6

- 3、 Remove the ACL200 lens from the hoop, put the gear ring on the lens shell from the rear end of the lens, then gradually move the gear ring to the focusing part of the lens, and then install the ACL200 into the hoop again, as shown in Figure 7-7.



Figure 7-7

4、 Use M4 screws to connect the collar and the fixing-bracket, as shown in Figure 7-8 and Figure 7-9.



Figure 7-8



Figure 7-9

5、 Adjust the fixing-bracket to the appropriate position of the dovetail plate, and use 1/4" screws to fix the fixing-bracket on the dovetail plate, as shown in Figure 7-10 and 7-11.



Figure 7-10



Figure 7-11

- Use a slotted screwdriver to remove the indicator pin on the body and remove the front sleeve. When disassembling the pin, you can gently press the front and back sleeves by hand so that the friction between the indicator pin and the sliding groove disappears, as shown in Figure 7-12.



Figure 7-12

- Use hex key to remove the gear on the motor shaft, as shown in Figure 7-13.



Figure 7-13

- Put the front end of the Oasis Focuser body into the collar, use the M4 setscrews to fix the gear on the motor shaft. Then screw two hand-screwed screws into the collar, but there is no need to tighten the hand-screwed screws at this time, as shown in Figure 7-14.

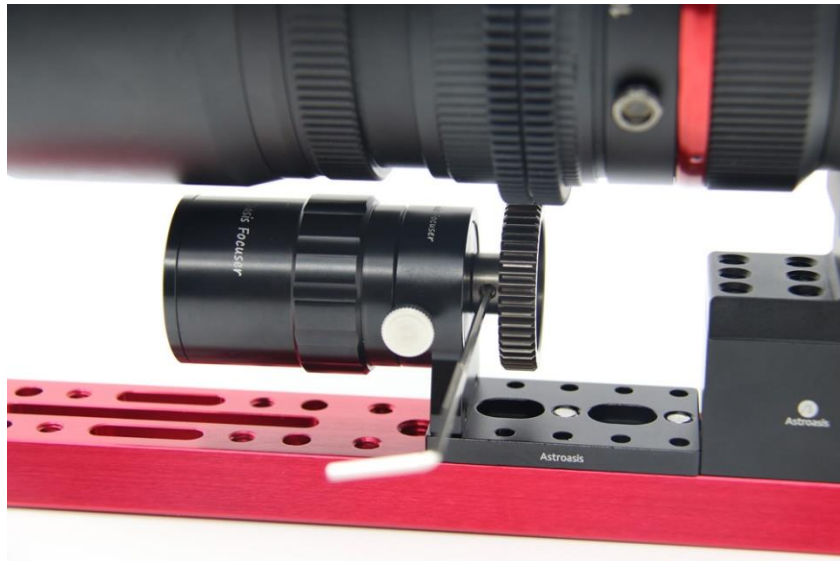


Figure 7-14

- 9、 Adjust the position of the gear ring on the lens so that the gear ring can touch the gear. Turn the Oasis focuser body to mesh the gear and gear ring, lock the two hand-screwed screws after meshing. Now the installation completes, as shown in Figure 7-15.



Figure 7-15

7.2. Installation on William Optics RedCat 51 APO

The Installing steps for William Optics RedCat 51 APO is similar to the installation steps for Askar ACL200, with the following differences:

- 1、 When installing on RedCat 51, you can just use its original dovetail plate, and only one square gasket is used between the hoop and the dovetail plate.
- 2、 When installing the gear ring, remove the lens hood and push the gear ring from the front of the lens.
- 3、 The relative position between the components will be a little different, and it can be adjusted according

to the actual situation.

The overall effect after installation is shown in Figure 7-16.



Figure 7-16

8. Installation with dedicated adapters

8.1. Adapter for new 2047 2-inch Focuser

Installing Oasis Focuser on the new 2047 2-inch focuser requires a special ring adapter, as shown in Figure 8-1.



Figure 8-1

The gear used is B5 (Total length is 16mm, and the diameter of the inner hole is 5mm), as shown in Figure 8-2.



Figure 8-2

The steps to install Oasis Focuser on new 2047 2-inch focuser are as follows:

- 1、 Remove the coarse-tuning knob, as shown in Figure 8-3. After removing the coarse-tuning knob, we can see 4 threaded holes on the sides and a spacer on the shaft. Remove the spacer, which is not required for this installation.



Figure 8-3

- Use 4 screws to fix the ring adapter on the side of the focuser, as shown in Figure 8-4.



Figure 8-4

- Using a hex key to tighten the B5 gear on the shaft through the small hole in the ring adapter, as shown in Figure 8-5.



Figure 8-5

- Switch Oasis Focuser to OFF state, and then install Oasis Focuser on the ring adapter through a $\Phi 30$ clamp. The installation is completed, as shown in Figure 8-6. When installing the clamp on the ring adapter, pay attention to adjust the angle of the clamp to prevent the clamp from interfering with the focuser.



Figure 8-6

8.2. Adapter for FeatherTouch FTF3515/3545

To install Oasis Focuser on FeatherTouch FTF3515/3545 focusers we need a special clamp and an intermediate ring, as shown in Figure 8-7. With this adapter Oasis Focuser is installed on the dual-speed side of the FeatherTouch focusers.

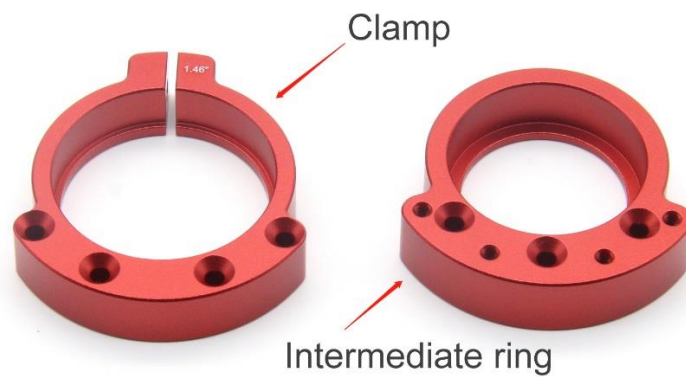


Figure 8-7

The gears used is A4 (8mm long, 4mm inner hole diameter), as shown in Figure 8-8.



Figure 8-8

The steps to install Oasis Focuser on FTF3515/3545 focusers are as follows:

- 1、 Use screws to connect the clamp and the intermediate ring, as shown in Figure 8-9.

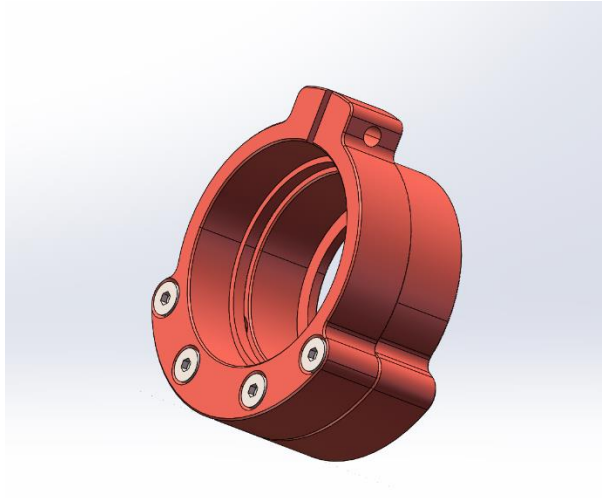


Figure 8-9

- 2、 Remove the dual-speed side coarse-tuning knob and fine-tuning knob. Then install the clamp on the housing, as shown in Figure 8-10.

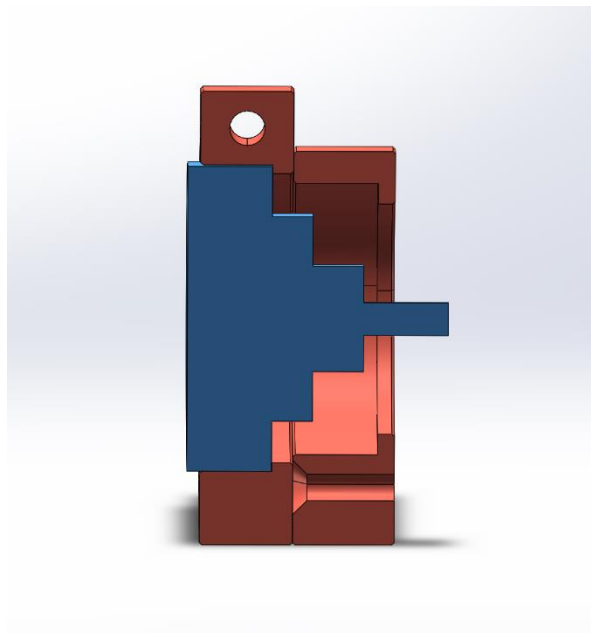


Figure 8-10

- 3、 Install the gear. Make sure the distance between the front end of the gear and the front end of the ring is $7\pm 0.5\text{mm}$ (i.e., 6.5~7.5mm), as shown in Figure 8-11.

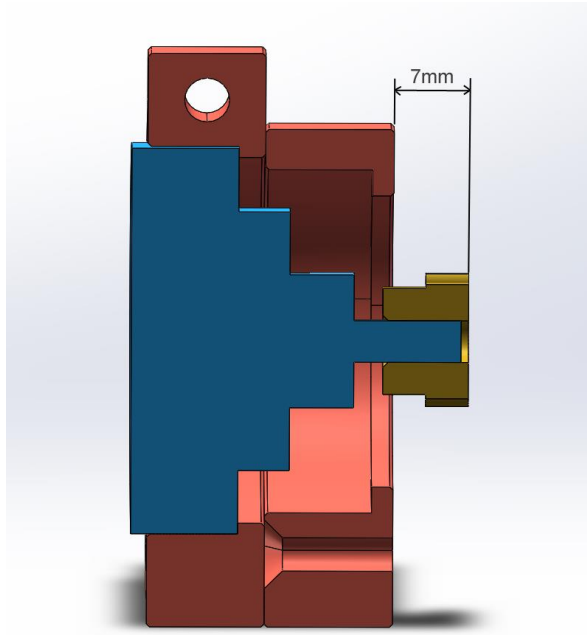


Figure 8-11

- 4、 Remove the clamp from the focuser housing. Disconnect the clamp and the ring. Use screws to connect the ring and the focuser body, as shown in Figure 8-12. Then use screws to connect the clamp and the ring, as shown in Figure 8-13.

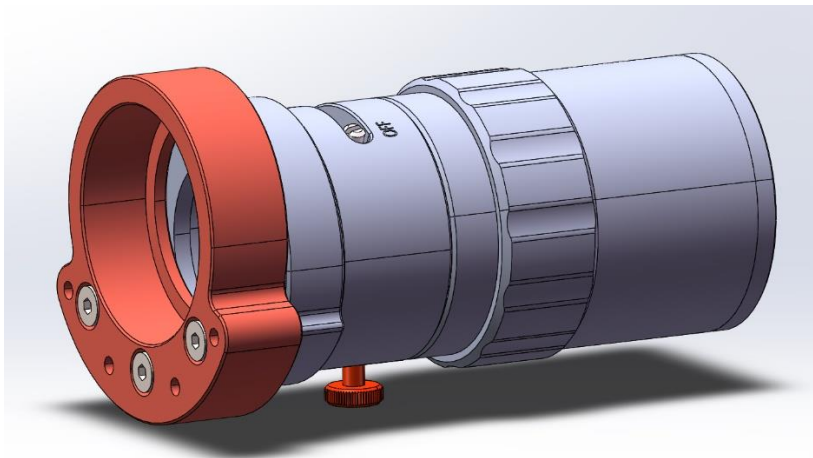


Figure 8-12

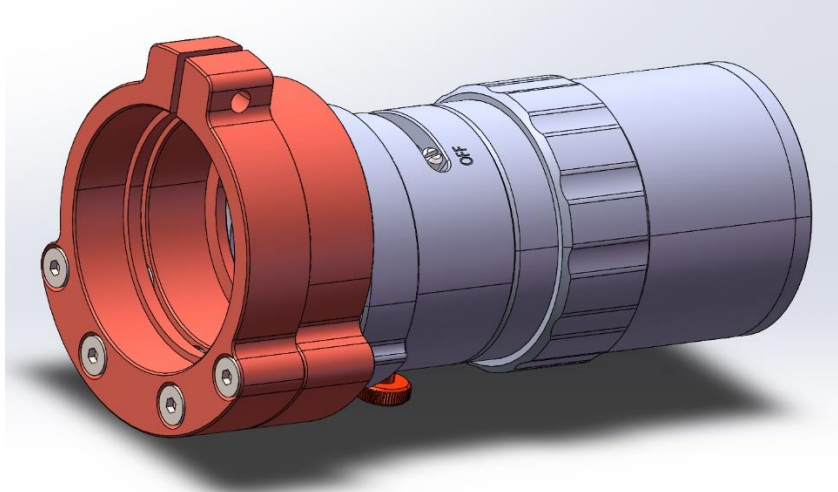


Figure 8-13

- 5、 Switch Oasis Focuser to OFF state. Use screws to connect clamp on the FTF3515/3545 focuser housing again. The installation completes, as shown in Figure 8-14.

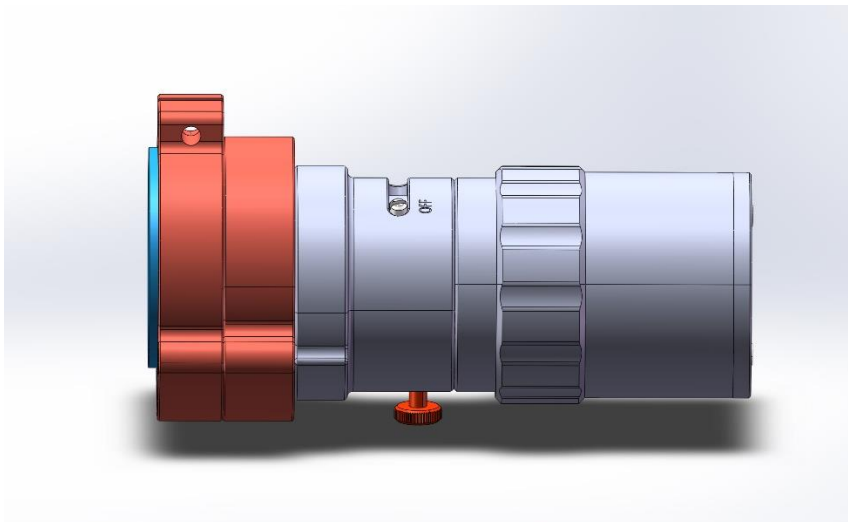


Figure 8-14

9. Known List

9.1. Simplest installation

The following table lists the gears and clamps for those telescopes/focusers that can be installed in the simplest installation method.

Telescope/Focuser	Installation Position	Gear	Clamp (mm)
Skywatcher Evolux 82ED	Coarse-tuning	B6	28
Sharpstar FRA 300	Coarse-tuning	A6	29
Askar 61EDPH	Coarse-tuning	A6	30
Skywatcher Esprit 120	Coarse-tuning	SCA6+A5	30
Maxvision 152/1900mm Maka	Coarse-tuning	SCB6+A5	30
Askar 80PHQ/185 APO/FRA 400/FRA 600 Sharpstar AL90/107 PH Sharpstar RP30S Meade SolarMax III 70DS MEYON 80ED	Coarse-tuning	A6	32
SkyRover 70/80/90/102/130 APO Starfield APO Apertura 60EDR/72EDR/90APO	Coarse-tuning	B6	33
Sharpstar 107 PHQ/130PHQ/Z4/FRA 500	Coarse-tuning	A6	34

9.2. Installation with universal adapters

A universal adapter always uses a $\Phi 30$ clamp and A5 gear. However different adapters for different telescopes may use different fixing-brackets and different shaft-converters. Below are the types of the shaft-converter and fixing-bracket that are used by some telescopes.

Telescope/Focuser	Installation Position	Shaft-Converter	Fixing-bracket
Takahashi FSQ106/TOA130-NFB APO	Coarse-tuning	A8	Model D
Takahashi Epsilon Newtonian/TOA130-NS	Coarse-tuning	B8	Model T
Sharpstar 130F2.8HNT/150F2.8HNT Askar 103APO	Coarse-tuning	A6	Model T
Askar V/Askar 65PHQ	Coarse-tuning	A5	Model T
SkyRover 72ED APO SVBONY SV503 70ED	Coarse-tuning	A6	Model D
V-Power 2" Focuser	Coarse-tuning	B6	Model V

9.3. Installation with binary extender

The following table lists the gears and clamps for those telescopes/focusers that can be installed with binary extender.

Telescope/Focuser	Installation Position	Gear	Clamp
FeatherTouch FTF30 series	Fine-tuning	A4	1.33inch

9.4. Installation with rabbit-head clamp

The following table lists the gears and rabbit-head clamps for those telescopes/focusers that can be installed with rabbit-head clamp.

Telescope/Focuser	Installation Position	Gear	Rabbit-Head Clamp
Takahashi FSQ106/TOA130-NFB APO	Fine-tuning	A3.5	25mm
FeatherTouch FTF20 series	Fine-tuning	A7/64	1.00inch

9.5. Installation with dedicated adapters

The following table lists the gears and clamps for those telescopes/focusers that can be installed in the dedicated installation method.

Telescope/Focuser	Installation Position	Gear	Clamp
2047 2-inch Focuser	Coarse-tuning	B5	30mm
Feather Touch FTF3515/3545	Fine-tuning	A4	1.46inch