Fluorite Apochromat

FS-60CB

Instruction Manual

TAKAHASHI

Thank you very much for your purchase of the TAKAHASHI Fluorite Refractor FS-60CB. Very compact, but with use of fluorite element, FS-60CB can produce various focal lengths with its dedicated reducer, flattener, and extender. In order to use your telescope in its highest possible capabilities, please read this instruction manual very carefully and familiarize yourself with all the functions that your telescope offers.

All the telescopes are strictly inspected before shipment, but if there is anything wrong with your telescope, please contact your authorized Takahashi distributors for cares.

Warning & Caution

⚠ WARNING

NEVER ATTEMPT TO OBSERVE THE SUN THROUGH THIS TELESCOPE WITHOUT A FULL APERTURE SOLAR FILTER DESIGNED FOR THIS PURPOSE. FAILURE TO DO SO COULD CAUSE INSTANT BLINDNESS. COVER THE FINDER WITH AN OPAQUE COVER TO PREVENT ANY LIGHT FROM COMING THROUGH. AN UNCOVERED FINDER CAN ALSO CAUSE SERIOUS DAMAGE TO THE EYE. KEEP CHILDREN AWAY FROM THE TELESCOPE DURING DAYTIME.



⚠ CAUTION

- When placing the tube assembly on to an equatorial mount, be careful to place the tube in the tube holder. This will prevent injury to fingers and will prevent it from falling to the ground.
- Always lay the tube assembly on a completely flat surface that totally supports it to protect it from damage.
- Keep the tube assembly out of the Sun. Otherwise, the tube assembly could heat up, causing lens damage.
- Keep children away from small parts such as eyepieces and caps to prevent them from swallowing these parts. Also keep them away from a large vinyl bag used for packing to prevent children from covering themselves.
- Also keep the flammable packing materials away from fire.

Contents

Warning & Caution ---------- 3

Contents ---------- 4

Specifications ---------- 5

Tube Assembly Layout ---------- 7

Preparation ---------- 8

Observation ---------- 12

Accessories ---------- 15

Care & Maintenance ---------- 21

Additional Precautions ---------- 21

What is Fluorite? ---------- 22

System Charts ---------- 23

Specifications

Configuration	Fluorite Doublet Apochromat
Effective Aperture	60mm all surfaces malti-coated
Effective Focal Length	355mm
Effective Focal Ratio	1:5.9
Resolving Power	1.93”
Limiting Magnitude	10.7
Light Gathering Power	73x
Main Tube Diameter	80mm
Main Tube Total Length	440mm
Weight of Tube Assembly	1.4kg (2.8lbs) w/o 6x30 finder
Finder	6x30 optional
Accessories	Instruction Manual, Warranty Card, Allen Wrench (4mm)

With Reducer-C 0.72x

Effective Focal Length ---------- 255mm

Effective Focal Ratio ---------- 1:4.2

Image Circle ---------- ϕ40mm (60% illuminated)

With Flattener

Effective Focal Length ---------- 370mm

Effective Focal Ratio ---------- 1:6.2

Image Circle ---------- ϕ45mm (60% illuminated)

With Extender-Q 1.6x

Effective Focal Length ---------- 568mm

Effective Focal Ratio ---------- 1:9.4

With Extender-CQ 1.7x

Effective Focal Length ---------- 600mm

Effective Focal Ratio ---------- 1:10.0

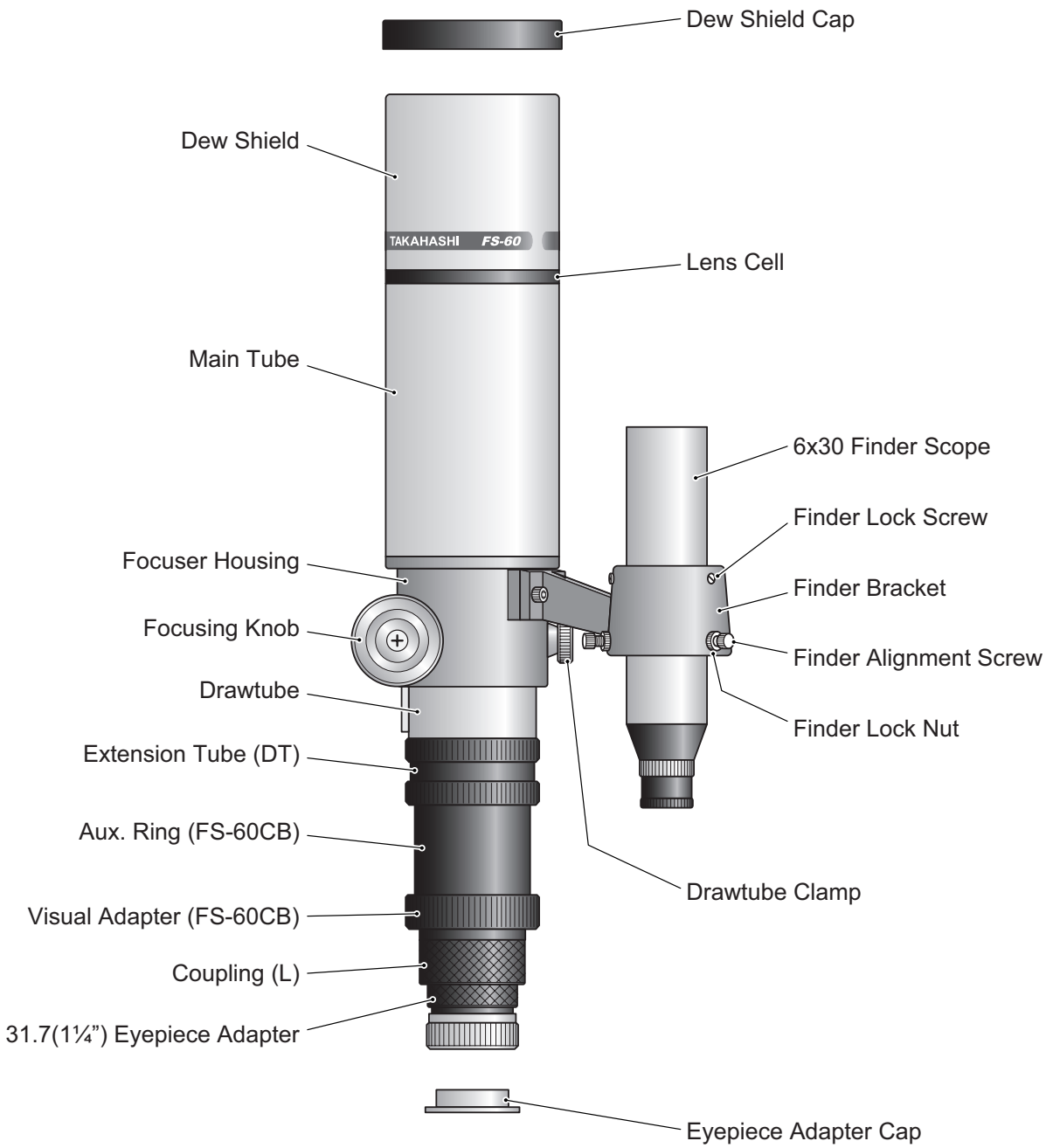
Image Circle ---------- ϕ44mm

With Extender-C2x

Effective Focal Length ---------- 710mm

Effective Focal Ratio ---------- 1:11.8

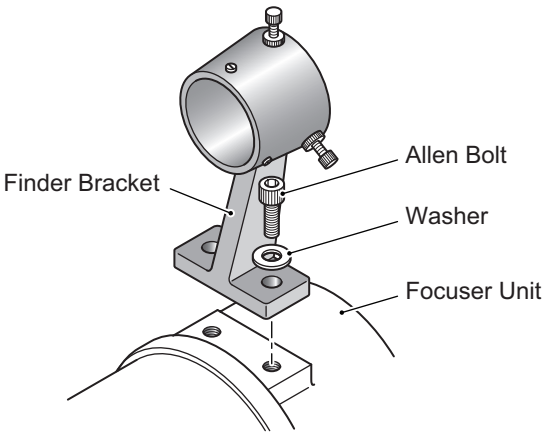
Tube Assembly Layout

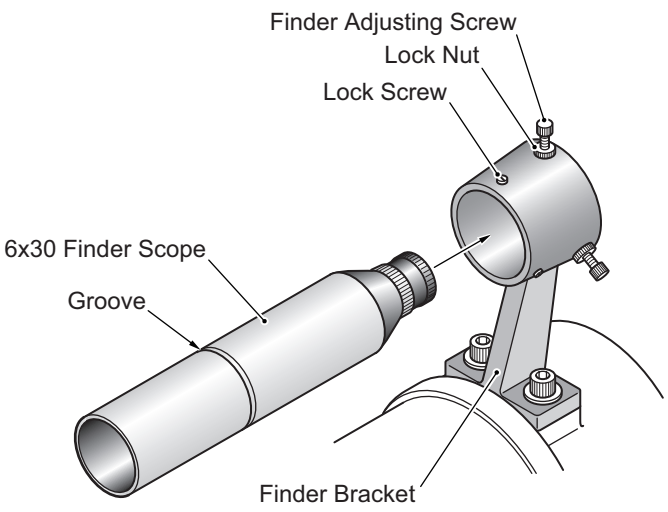


Preparation

◆ Attaching Finder Scope

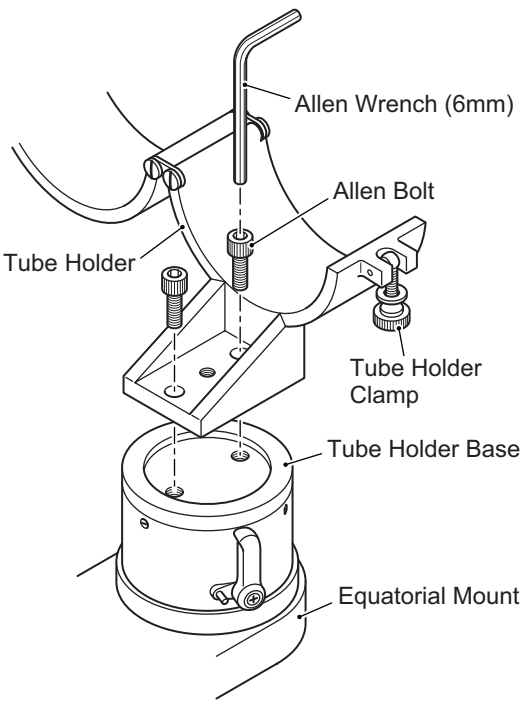
Place the finder bracket leg on the finder base on the focuser unit and lock it firmly with two Allen bolts provided. Set the finder as parallel to the tube as possible. Failure to do so will make alignment difficult.
Refer to the illustration.





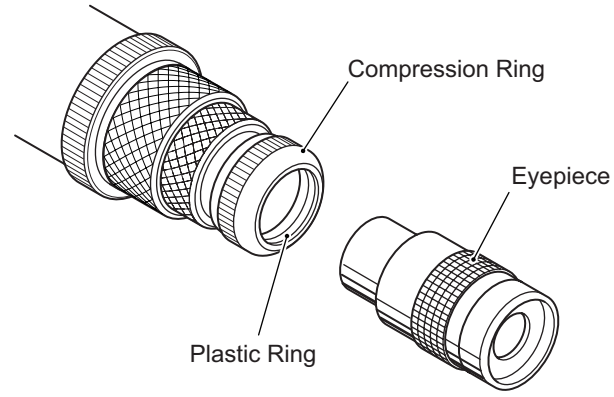
◆ Setting the Main Tube Assembly onto the Equatorial Mount

Set the tube holder onto the head of the mount with two Allen bolts as illustration at the right and lock the tube with a tube holder clamp after balancing the tube. The tube holder can be used with all Takahashi mounts.



◆ Attaching Eyepiece

Remove the eyepiece adapter cover and loosen the compression ring by turning it counter-clockwise. Then, insert your desired eyepiece into the eyepiece adapter and lock the eyepiece by turning the compression ring clockwise.
Refer to illustration at the right.



◆ Eyepieces

A wide variation of eyepieces are available from Takahashi.

▼ LE Series

Standard type, wide view field and high magnification are available in:

- 31.7mm (1¼") barrel
  LE5mm, LE7.5mm, LE10mm, LE12.5mm, LE18mm, LE24mm, LE30mm
- 50.8mm (2") barrel
  LE50mm

▼ HI-LE Series

Long eye-relief, most suitable for planetary observation with high magnification, available in:

- 31.7mm (1¼") barrel
  HI-LE2.8mm, HI-LE3.6mm

▼ Abbe Series

Simple 2-group 4-element eyepiece with high contrast, less expensive with high performance, available in:

- 31.7mm (1¼") barrel
  Abbe 4mm, Abbe 6mm, Abbe 9mm, Abbe 12.5mm, Abbe 18mm, Abbe 25mm, Abbe 32mm

▼ Erfle

With 3-group 5-element optics, offering 60 degree apparent field of view, almost no flare and ghost, available in:

- 31.7mm (1¼") barrel
  Er-32mm

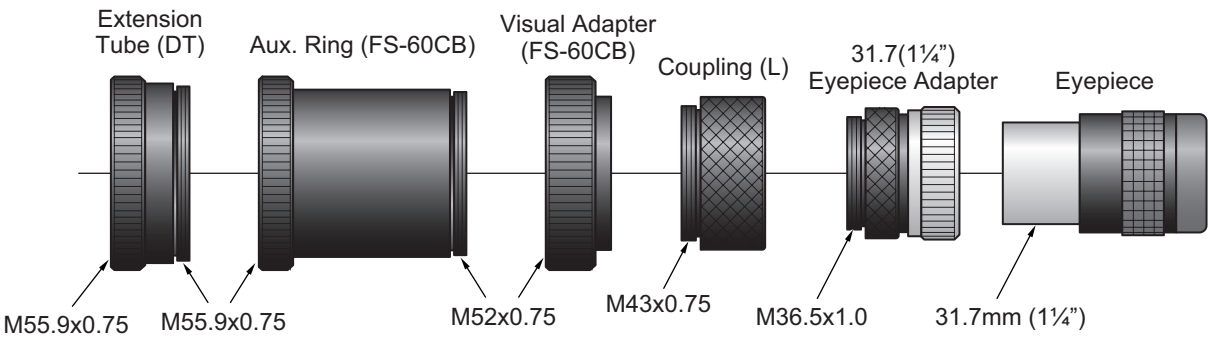
▼ TAK-UW Series

Ultra wide angle with apparent field of 90 degree designed to get sharpest star image with a flat field scope are available in:

- 31.7mm (1¼") barrel
  TAK-3.3UW, TAK-5.7UW, TAK-7UW, TAK-10UW

◆ Attaching Accessories

Adapters and rings are attached on the visual back to attach various accessories. Please check the system charts and attach the desired accessories correctly. Please refer to illustration at the bottom for standard connection.

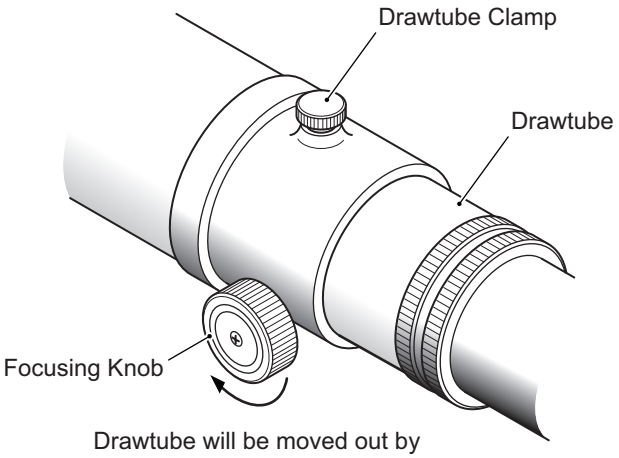


◆ Focusing

After inserting an eyepiece into the telescope, it is necessary to achieve the best possible focus. Remember the atmosphere will limit the highest magnification that can be used on any given night. Using the lowest power eyepiece, focus the image and then use successively higher magnification, until the desired magnification is achieved. This is particularly useful, if very high magnification will be used and will permit the continual centering of the object viewed. Please familiarize yourself with the following procedure.

▼Focusing System

Focusing is made with a rack-and-pinion system. This system will permit rapid focusing. Turning the focusing knob backwards as arrowed will move the focuser out, and turning it in the other direction will make the focuser move in. Refer to illustration at the bottom.



Drawtube will be moved out by turning the knob this direction.

▼Focusing

Remove dew shield and eyepiece cover from your telescope. Insert the diagonal prism into the compression ring adapter at the end of the focuser and tighten it with a clockwise motion. Do not overtighten the ring. Then insert an eyepiece into the compression ring on the diagonal prism, repeating the process.

Use a brighter star at low power or an object in the daylight that is at least a mile away. You may place a small mark on the focuser tube as a reference. When you think you have achieved best focus, move the focuser in and out past focus then back to best focus of an object. When a star is brought into critical focus, you may notice a bright and a dimmer ring around the star. This is not defect, but rather is a result of diffraction limited optics.

▼Drawtube Clamp

The drawtube clamp can be used to lock your telescope at best focus. It is a good idea to use this lock when critical focus must be held for a long period when a heavy accessory such as a camera is attached. For visual use, it will be rare to use the lock. Remember to always loosen the lock before refocusing your telescope.

◆ Finder Alignment



Before the finder is placed in the finder bracket, use plastic clear tape and tape the finder with two layers to prevent the tube from being scratched by the from finder set screws.

A finder is a useful tool. It permits the precise centering of an object in the field of view. The 6x30 finder scope (optionally available) has 8 degree field of view, which enables you easy centering of an object to be viewed or imaged.

The Takahashi finder used an interrupted crosshair which is designed to allow easy centering of an object to be imaged and observed. The wide field of the finder makes finding of an object easier, therefore, it is important that the finder and the telescope is in alignment. The following procedure can be used to align the finder.

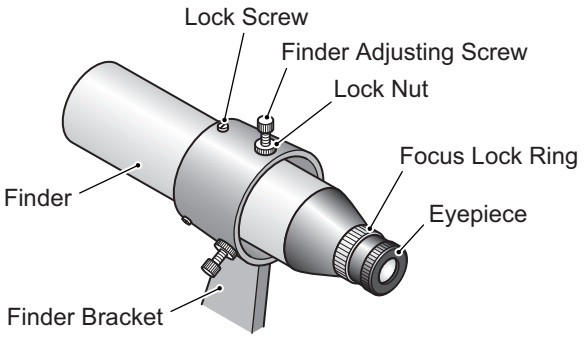
▼Finder Alignment Procedure

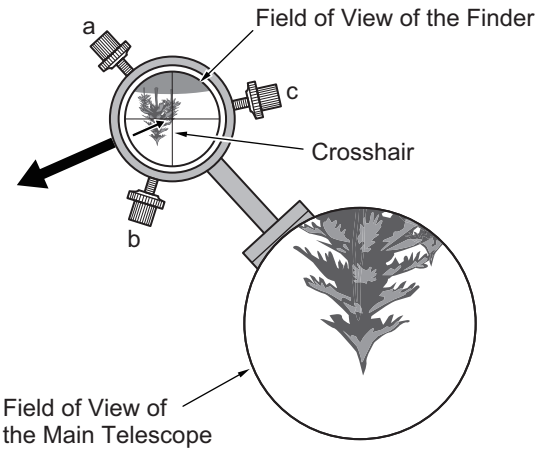
1. Place a low power eyepiece in the telescope and center a bright star in a convenient part of the sky. Do not forget to engage the motor drive to keep the star centered. If this procedure is done in daylight, use an object that is at least one mile away. Loosen the lock nuts on the finder bracket and slightly move the star to the center of the field using the finder adjusting screws.
2. Then use a higher magnification eyepiece and repeat the procedure by centering the object in the field of view of your telescope and then the finder. Continue this process until the highest possible magnification has been used.

▼Adjusting Screw Procedure

1. Turn all the lock nuts until they reach the head of the finder adjusting screws.
2. In order to move the crosshair in the direction of the arrow, first loosen screw (a) and tighten (push) the finder with screw (c). Next loosen screw (b) and tighten (push) the finder with screw (c). This procedure will move the crosshair in the desired direction. The top of the finder will move in the opposite direction and the object will move in the direction of the smaller arrow.
3. In a similar fashion, the direction of the movement of the finder is made by adjusting the three screws.

Learn the relationship between the movement of the three adjusting screws. If the finder cannot be moved in the desired direction, loosen the locking nuts.





Observation

Before starting observation, the objective lens must be equalized to the outside temperature. In the low temperature, leave your telescope outside for an hour or so to get stable images to be viewed or imaged.

◆ Visual Observation

▼Magnification

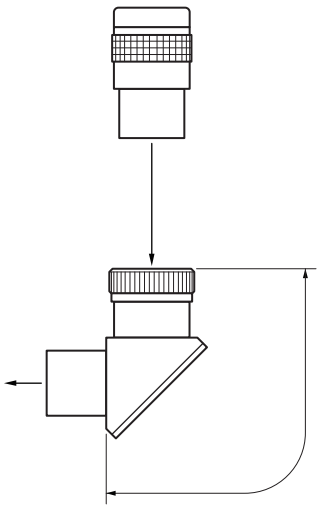
The magnification of any eyepiece used with your telescope can be calculated by using the following formula.

(focal length of a telescope) divided by
(focal length of an eyepiece)

Therefore, the shorter focal length eyepieces will produce the higher magnification. On some nights of exceptional seeing, it is a fun to use highest possible magnification to view the Moon and planets. Generally, however, there are the upper limit and the lowest magnification up to the effective aperture of a telescope. The upper limit is 20x of the aperture and the lowest is 1.4x. Therefore, the upper limit of FS-60CB is 120x and the lowest 8.4x. Takahashi eyepieces can cover these magnification.

▼Diagonal Prism

A 90 degree diagonal prism is optionally available from Takahashi. This permits easy viewing of objects at the zenith. The 31.7mm(1¼") standard diagonal prism is set into the compression ring adapter at the end of your telescope and the ring is tightened just enough to hold the diagonal prism. Then the eyepiece is placed in the compression ring on the prism and held by the same procedure.



31.7(1¼") Diagonal Prism

◆ Lunar Observation

The Moon is an excellent object for beginners and advanced amateur astronomers as well. The entire Moon can be viewed at about 50x (with LE7.5mm), but the Moon in the clear sky just before and after the full Moon is too bright so that be careful not to harm your eye by a long time view of such Moon.

Using higher magnification on the Moon is any phase to see detail will allow the observer to see smaller and smaller detail, ray structures, and rilles. The high contrast images produced by the FC-60CB will amaze the observer.

◆ Planetary Observation

The fluorite refractor can produce high contrast and stable images, suited for planetary observation. This will reveal a wealth of details of planets, which are seen as very small images in the view field. So, use highest possible magnification on the night of the steadiest of seeing. View a star at the zenith and see how much the image appears to twinkle. If the star twinkles a good bit, the planets will look good at relatively low magnifications. On the other hand, on nights when the twinkle is almost gone, push the telescope up to the highest possible magnification. Also these good nights will produce amazing images with a digital camera.

In order to obtain higher magnification, use a short focal length eyepiece together with the Extender-Q 1.6x and Extender-C2x optionally available.

◆ Observation for Nebulae and Star Clusters

In general, observing nebulae and star clusters requires a low power, wide field eyepiece which will take advantage of the light gathering power of a telescope. On the other hand, observing globular clusters and small nebulae requires high magnification. This is particularly true in cities with high brightness. High magnification will help reduce the sky background and hence improve the contrast necessary to view the object(s).

◆ Observation for the Sun

Any parts necessary to observe the Sun is not available for FC-60CB. When you like to observe the Sun, please use the other telescope.

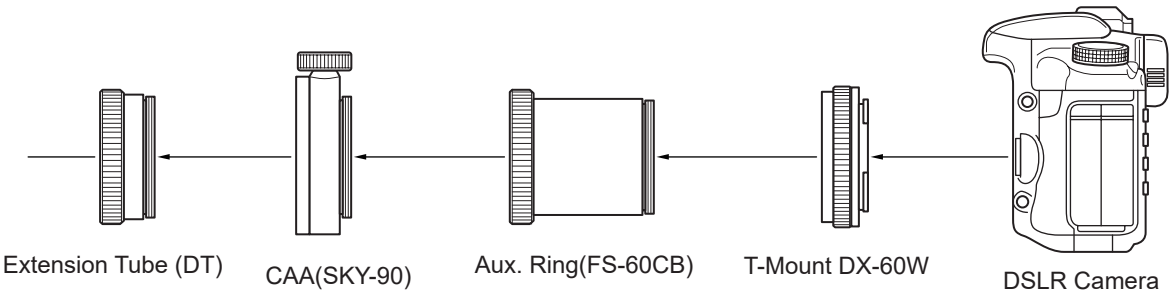


NEVER VIEW THE SUN WITH NAKED EYE THROUGH THE TELESCOPE. DOING SO WILL CAUSE INSTANT BLINDNESS.

◆ Astro Imaging

▼Prime Focus Imaging

Focusing is most critical element of making great astro images. Once critical focus has been achieved, then outstanding images can be made. It is a good practice to recheck critical focus before each image is made.

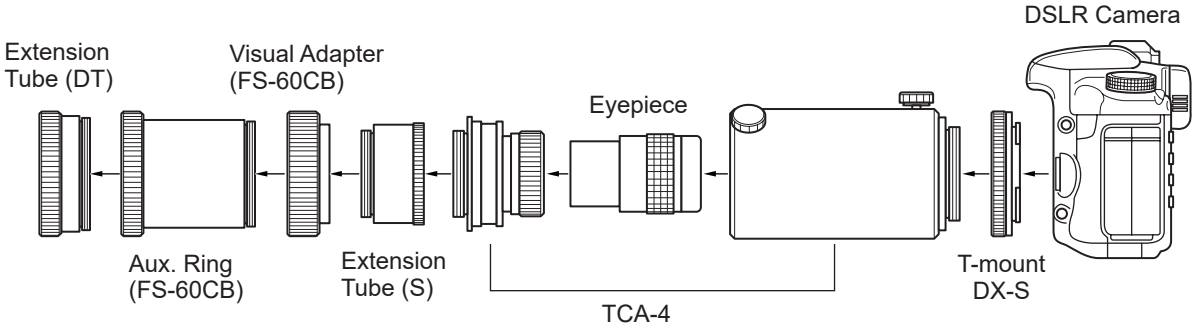


▼Eyepiece Projection Imaging

When you want to make lunar or planetary images, the TCA-4 is designed to make eyepiece projection images easier. The TCA-4 will accept any Takahashi 31.7mm(1¼") eyepiece and variable feature sliding tube gives the variable latitude in determining the size of the final image.

⚠ Caution

When taking high magnification imaging of the Moon and planets, pay careful attention to balance. Rebalance the telescope when the object is placed in the center of the camera. If Dec. clamp is carelessly loosened in unbalancing, the telescope will turn abruptly and dangerously. Whenever the Dec. clamp is loosened, hold the camera with one hand and then loosen the clamp carefully.

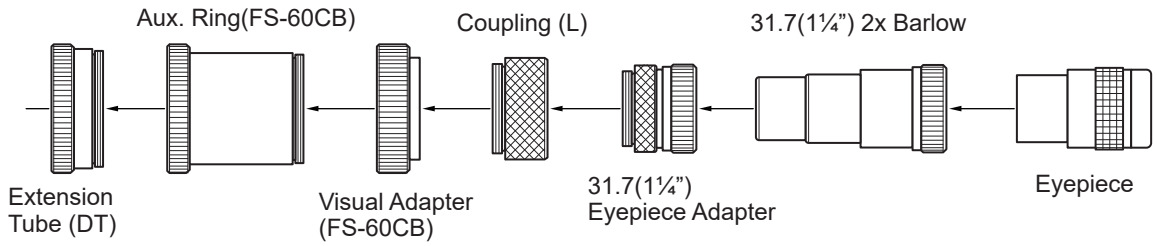


Accessories

Takahashi offers a wide range of dedicated system parts for imaging and visual applications.

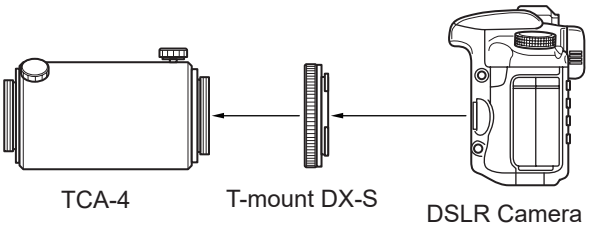
◆ 31.7(1¼") 2x Barlow

This will extend the focal length of FS-60CB double (710mm), holding aberrations as originally corrected. This is used for visual observation.



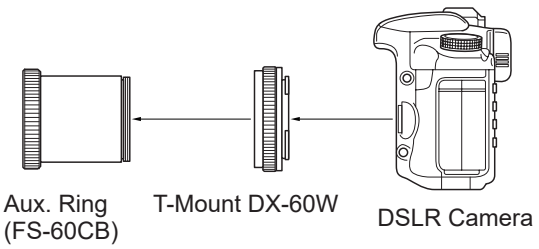
◆ T-Mount DX

To attach DSLR camera, use T-mount (DX-S) or equivalent in projection imaging. In other prime focus imaging and with reducer, flattener, and extender, use T-mount (DX-60W) or equivalent. T-mounts are available for Canon EOS & Nikon.



⚠ Caution

Clean the T-mount and brush it to make certain it is perfectly clean and free of debris that could cause the ring to jam on the camera.



◆ Camera Angle Adjuster (CAA)

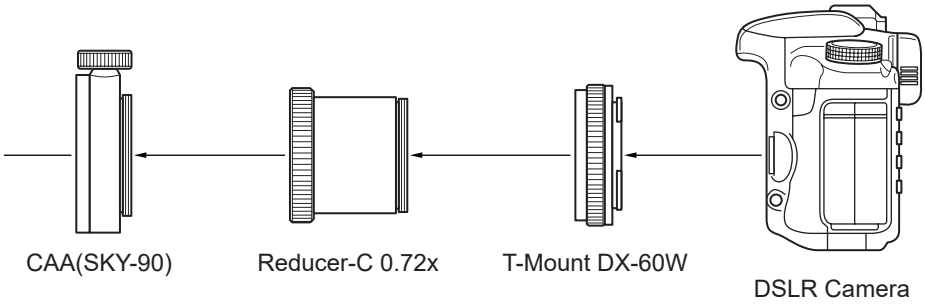
The CAA is a unique bearing device that is used on Takahashi telescope that allows for the 360-degree rotation of a camera to allow proper framing of an image without loss of focus. This is necessary to use FC-35 reducer 0.66x. This is also a handy device for visual use.

◆ Reducer-C 0.72x

The Reducer-C 0.72x is designed to image deep sky objects and can make its imaging field brighter at f/4.2. In the light wave length from g line to c line, the image size will be less than 20 microns across its image circle. Illumination will be 95% at the 25mm image circle and 70% at 35mm.

▼ Imaging with the Reducer

Effective focal length ----- 255mm
Effective focal ratio -------- f/4.2
Image circle ---------- 40mm

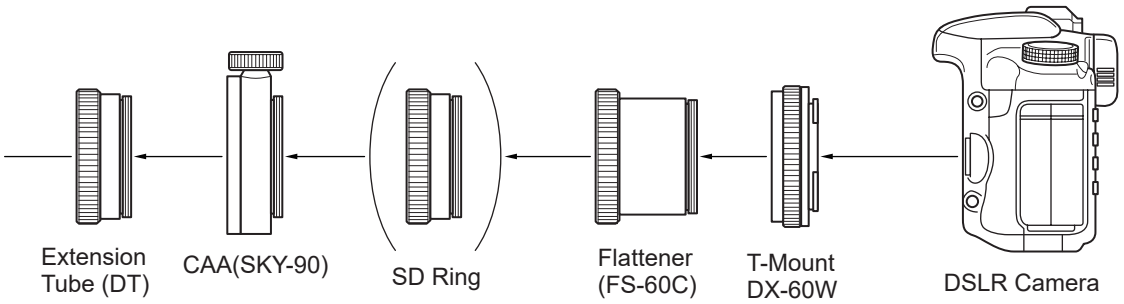


◆ Flattener

The FC-60CB Flattener can make the image plane across 40mm image circle almost perfectly flat, which makes FS-60CB an ideal mini visual/imaging telescope. When used with SD ring, it can focus at the very close distance of 6m to infinity on the ground.

▼ Imaging with the Flattener

Effective focal length ----- 370mm
Effective focal ratio -------- f/6.2
Image circle ---------- 45mm

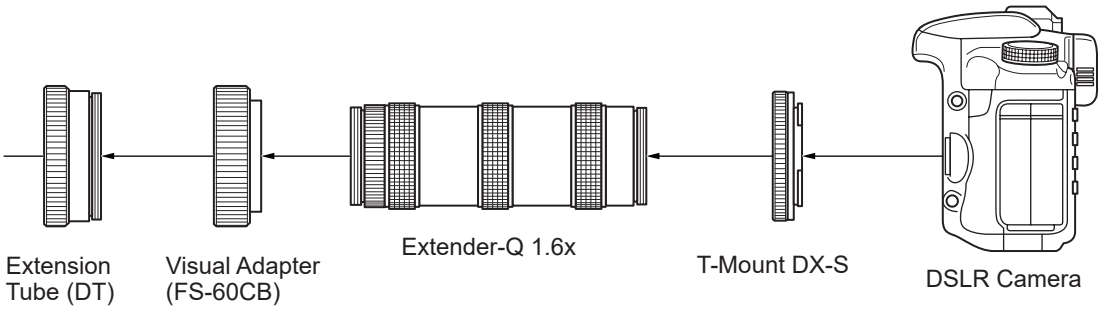


◆ Extender-Q 1.6x

This extender can extend the focal length of a telescope, allowing extended imaging by placing a SLR camera at the effective focal point. This extender can extend the focal length of FS-60CB to 568mm (f/9.4).
Use T-Mount DX-S or equivalent to attach a DSLR camera.

▼ Imaging with the Extender-Q 1.6x

Effective focal length ----- 568mm
Effective focal ratio -------- f/9.4

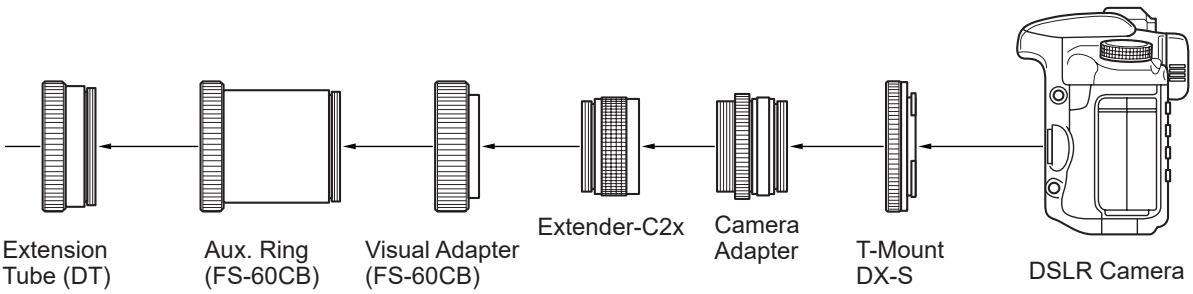


◆ Extender-C2x

As same as the other extenders, the Extender-C2x can extend the focal length of FS-60CB. By placing a DSLR camera at the extended focal plane, magnified imaging can be made. For example, you can image the Moon at moderate magnification and objects on the ground. Use T-Mount DX-S to attach a DSLR camera.

▼ Imaging with the Extender-C2x

Effective focal length ----- 710mm
Effective focal ratio -------- f/11.8

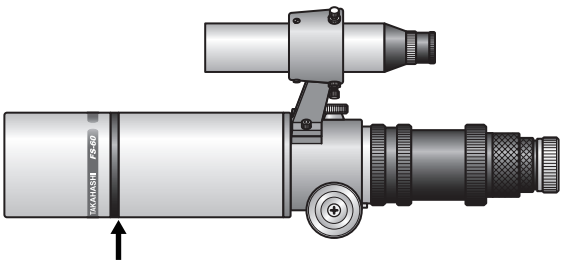


◆ Extender-CQ 1.7x

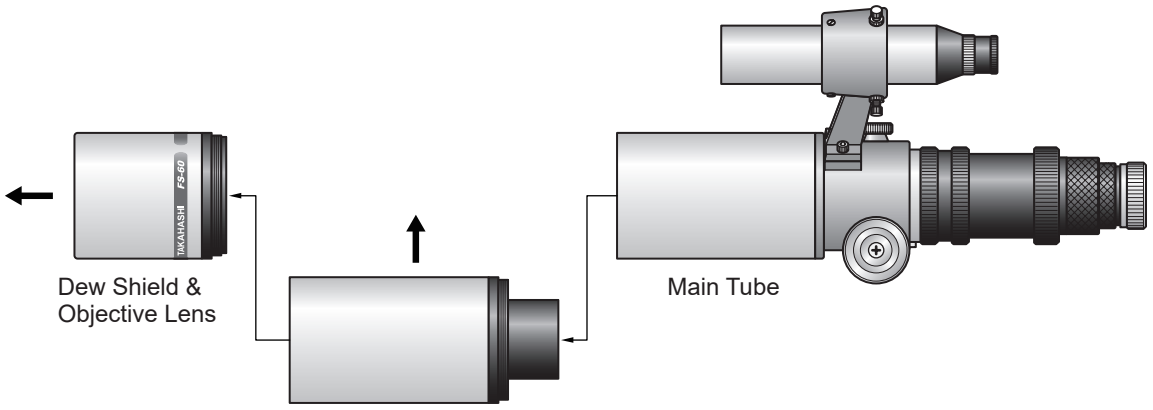
This extender has 2-element 1-group optical system and attach to FS-60CB in between the objective lens and the main tube as shown in the illustrations below. This extender can extend the focal length of FS-60CB to 600mm and improve the center aberration by more than 10% than original, making images flat across 35mm image circle with 95% illumination at the edge.

▼ Imaging with the Extender-CQ 1.7x

Effective focal length ----- 600mm
Effective focal ratio -------- f/10.0
Image circle ---------- 44mm



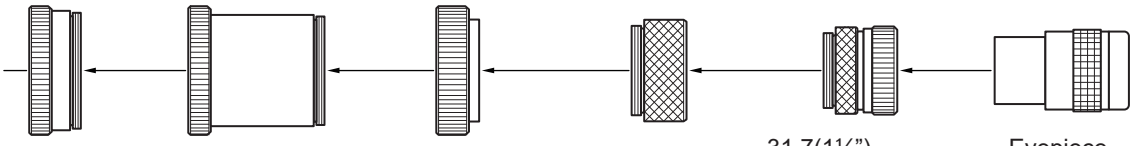
＜ Position to attach ＞
Remove the objective and the main tube once



Dew Shield &
Objective Lens

Extender-CQ 1.7x

Main Tube



Extension
Tube (DT)

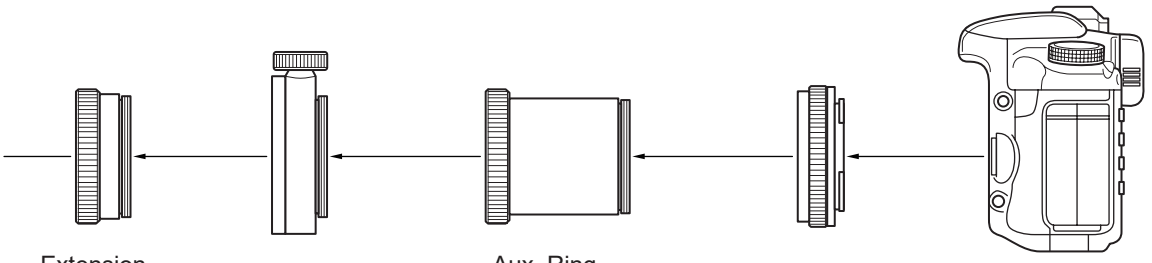
Aux. Ring
(FS-60CB)

Visual Adapter
(FS-60CB)

Coupling (L)

31.7(1¼")
Eyepiece Adapter

Eyepiece



Extension
Tube (DT)

CAA(SKY-90)

Aux. Ring
(FS-60CB)

T-Mount DX-60W

DSLR Camera

◆ FC-76DC Objective Unit

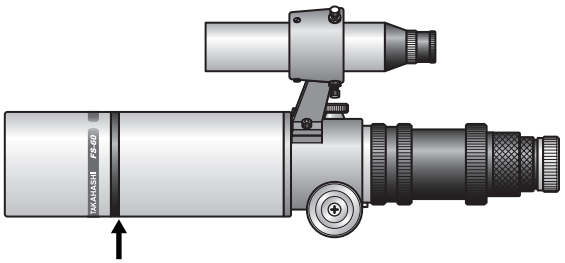
FS-60CB can be turned into FC-76DC when the objective unit of FC-76DC is changed with the objective lens packed in the cell. So, if you want a bit larger aperture telescope, this is a proposal from Takahashi.

1. Removing the objective lens
   Remove the dew shield first by turning the dew shield counter-clockwise, holding the tube assembly. Next, remove the objective lens of FC-60CB by turning the cell counter-clockwise. Then, attach the cell with the objective lens to the dew shield by turning the cell clockwise.

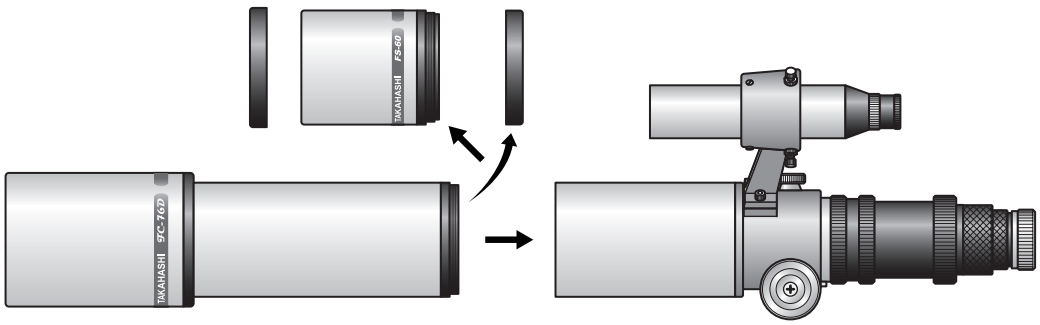
2. Attaching the objective unit of FC-76DC
   Attach the unit to the tube assembly of FS-60CB.

▼ The optical specifications when the FC-76DC objective unit is attached.

Effective focal length ----- 570mm
Effective focal ratio -------- f/7.5



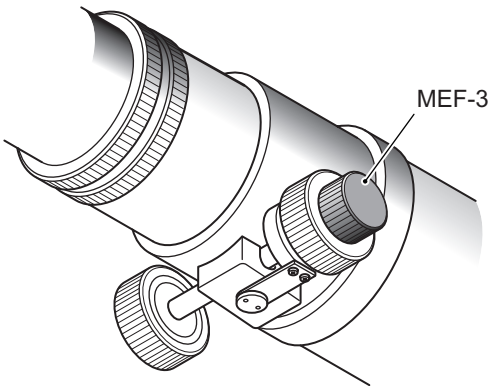
＜ Dividing Position ＞
Remove the dew shield & the objective here



FC-76DC objective unit

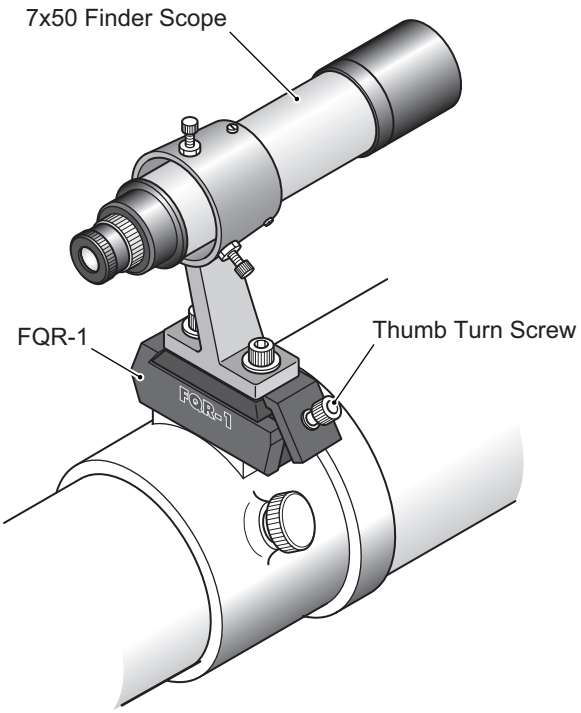
◆ MEF-3

The Micro Edge Focuser MEF-3 is designed to move focuser at a fine speed of 8 to 1 when the small knob is turned, while the outside larger knob moves the focuser a speed of 1 to 1. This is optionally available from Takahashi.



◆ FQR-1

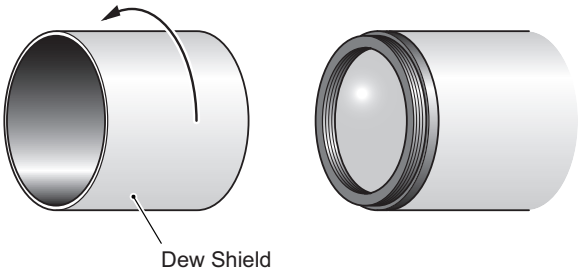
The FQR-1 is optionally available quick release bracket that can be used with the Takahashi 6x30 or 7x50 finders. This allows the user to align the finder with the optics and keep the adjustment by removing the finder when the telescope is being transported and reattaching it when the telescope is used. This does away with the need to have to align the finder each time the telescope is used.



Care & Maintenance

◆ Collimation

FS-60CB telescope has been perfectly collimated before shipment and there will be no chance to be out of collimation in normal use. However, its collimating could be lost by strong shocks. In this case, please contact your local authorized distributor for proper cares.



◆ Cares for the lens

If dust and particles collect on the front element, blow them off the surface by using a large hand powered blower. If any particles remain, then it will be necessary to carefully clean them off. Under no circumstances should canned air be used to remove these particles. Canned air contains a refrigerant that is very cold and could cause damage to the front element. The front surface of the objective should never be rubbed as this could permanently damage the front surface and is not covered under warranty. In these events, please contact your local authorized distributor for cleaning instruction.

Additional Precautions

▼Keep the telescope away from large fluctuations in temperature. When the Telescope is brought out from a warm room to colder open air, dew may form.

▼Store the telescope in a cool dry environment. Any dew should be removed by flowing it with a hair dryer with heating element turned off, which means the air will be at room temperature. This flow of cool, room temperature air, will dry the dew and not leave a residue. Additionally, it is a good idea to store the telescope with as desiccant (drying agent) near the objective to keep any moisture away from the objective.

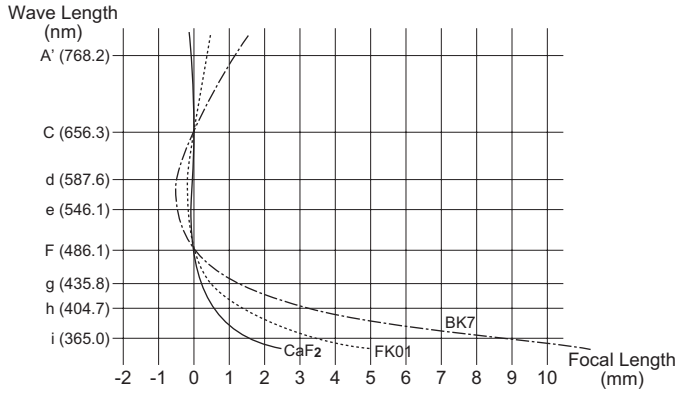
▼As mentioned previously, never use canned air due to the fact that the propellant is a refrigerant which could cause damage to the front element. If the element must be cleaned, make certain it is done in a cool room.

▼Under no circumstances should the lenses be disassembled. The lenses have been properly aligned and set in place by skilled optical technician with special tools. Doing so will void any warranty on the tube assembly.

What is Fluorite?

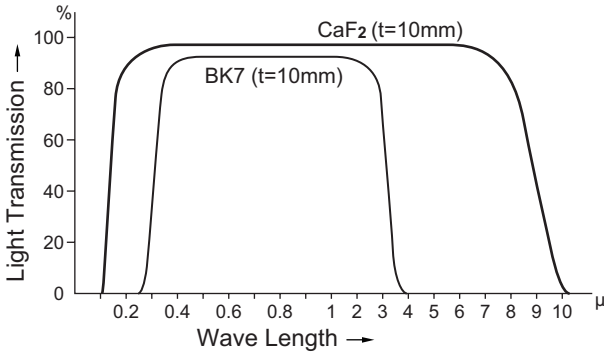
Calcium fluorite (CaF_2) is a naturally occurring crystal. Its very low refractive index makes it the best of the materials to use in the manufacture of apochromatic telescope. Unfortunately, the natural crystal contains impurities and as a result, displays some properties that make it unsuited for use in a telescope.

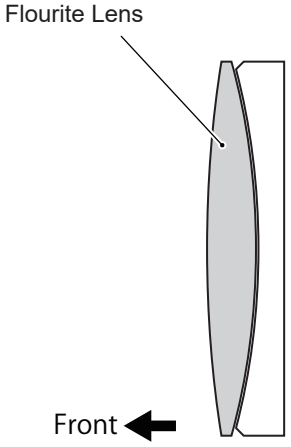
Comparative Color Aberration Curves



Now thanks to modern technology, fluorite crystals are grown in a oven. This process produces a totally pure mono crystal structure that does not display any of the unsuitable properties of the natural crystal and has the same very low refractive index. Now, calcium fluorite crystal can be hard multi-coated for maximum light transmission and durability.

Comparative Diagram (non-coated)



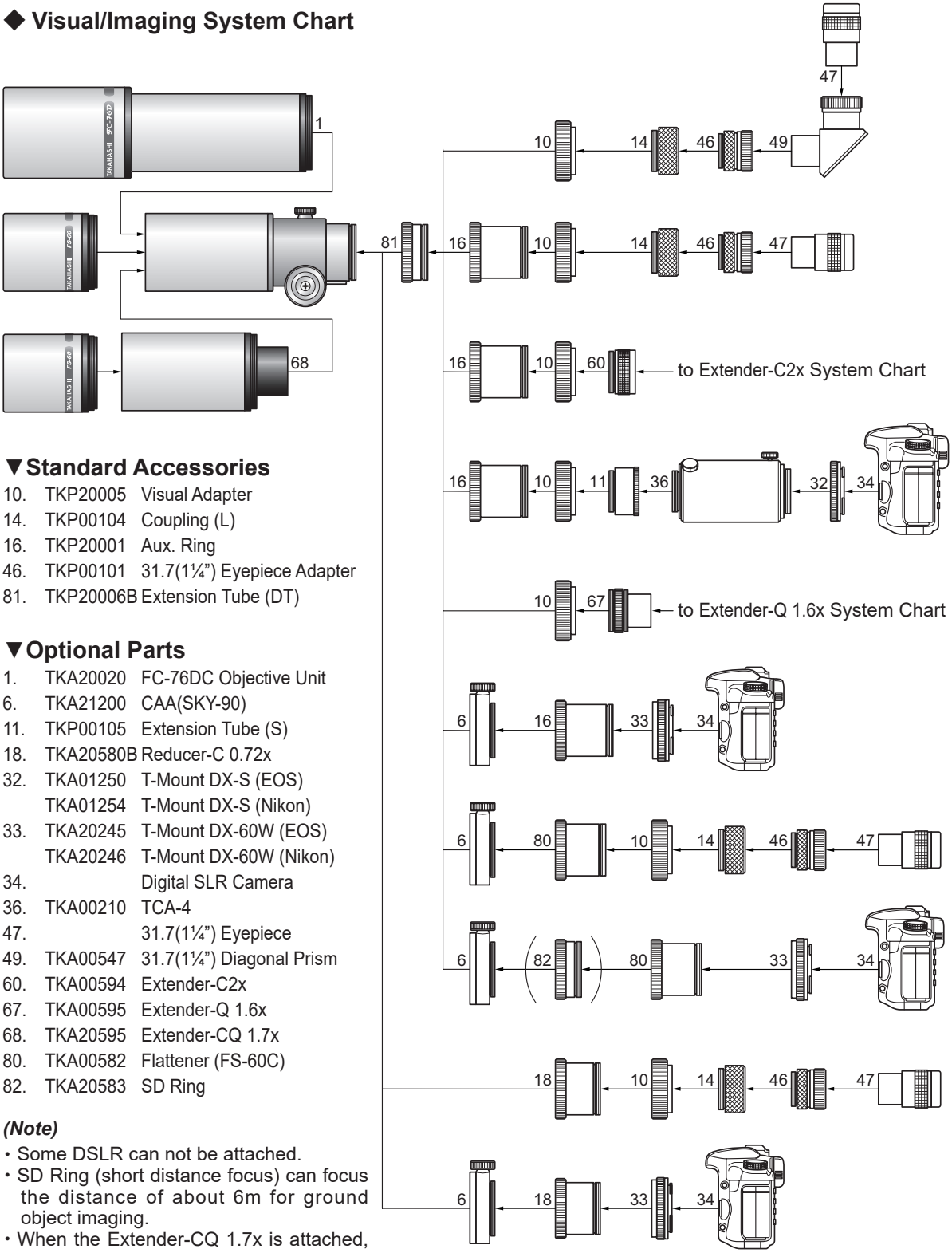


As the diagram shows, the band pass of fluorite of 100 to over 10,000 nanometers eclipses by many magnitudes that of any optical glass. Additionally, the use of multi-coatings further increases light transmission over any ED glass and can place the fluorite lens at the front. These features make the fluorite objective the premier visual/imaging telescope for deep sky or lunar and planetary observations in their size class.

When the fluorite telescope is take out for an observing session, it will take about one hour for the objective to temperature equalize for maximum performance. This fact is also true for any optical system used.

System Charts

◆ Visual/Imaging System Chart



▼Standard Accessories

10. TKP20005 Visual Adapter
14. TKP00104 Coupling (L)
16. TKP20001 Aux. Ring
46. TKP00101 31.7(1¼") Eyepiece Adapter
81. TKP20006B Extension Tube (DT)

▼Optional Parts

1. TKA20020 FC-76DC Objective Unit
6. TKA21200 CAA(SKY-90)
11. TKP00105 Extension Tube (S)
18. TKA20580B Reducer-C 0.72x
32. TKA01250 T-Mount DX-S (EOS)
    TKA01254 T-Mount DX-S (Nikon)
33. TKA20245 T-Mount DX-60W (EOS)
    TKA20246 T-Mount DX-60W (Nikon)
34. Digital SLR Camera
36. TKA00210 TCA-4
47. 31.7(1¼") Eyepiece
49. TKA00547 31.7(1¼") Diagonal Prism
60. TKA00594 Extender-C2x
67. TKA00595 Extender-Q 1.6x
68. TKA20595 Extender-CQ 1.7x
80. TKA00582 Flattener (FS-60C)
82. TKA20583 SD Ring

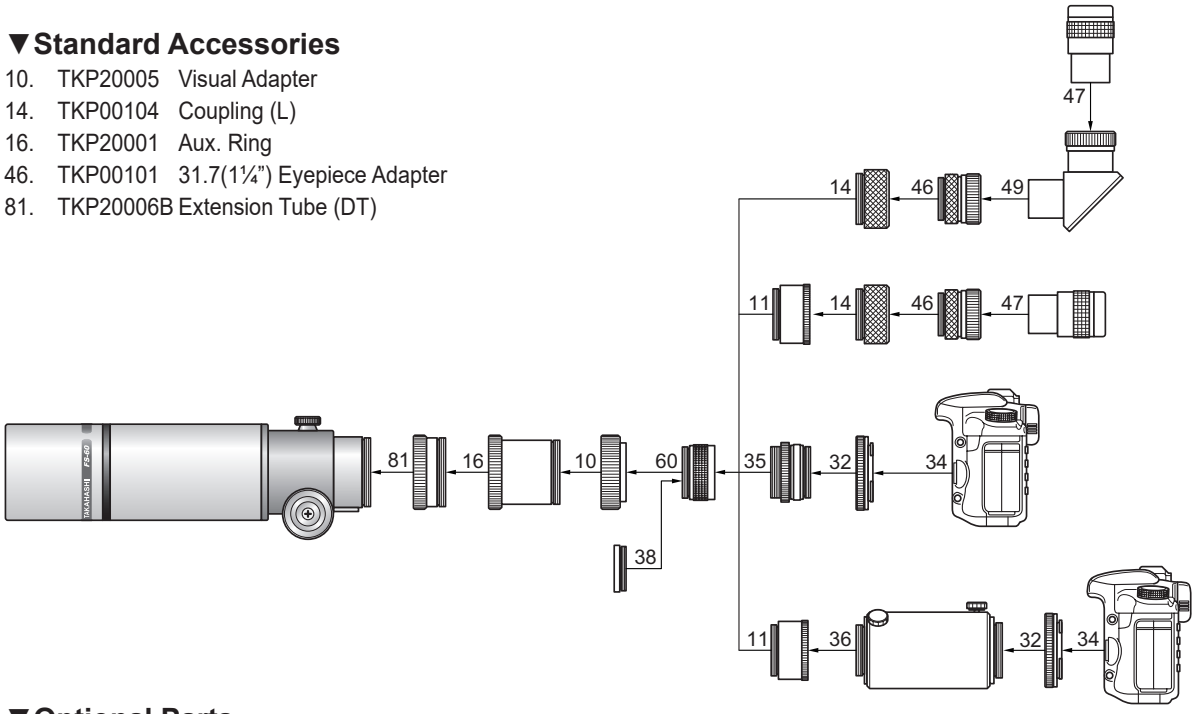
(Note)

- Some DSLR can not be attached.
- SD Ring (short distance focus) can focus the distance of about 6m for ground object imaging.
- When the Extender-CQ 1.7x is attached, FS-60CB is turned into FS-60Q.

◆ Extender-C2x System Chart

▼Standard Accessories

10. TKP20005 Visual Adapter
14. TKP00104 Coupling (L)
16. TKP20001 Aux. Ring
46. TKP00101 31.7(1¼") Eyepiece Adapter
81. TKP20006B Extension Tube (DT)



▼Optional Parts

11. TKP00105 Extension Tube (S)
32. T-Mount
34. Digital SLR Camera
35. Camera Adapter
36. TKA00210 TCA-4
38. 30.5mm Filter
47. 31.7(1¼") Eyepiece
60. TKA00594 Extender-C2x

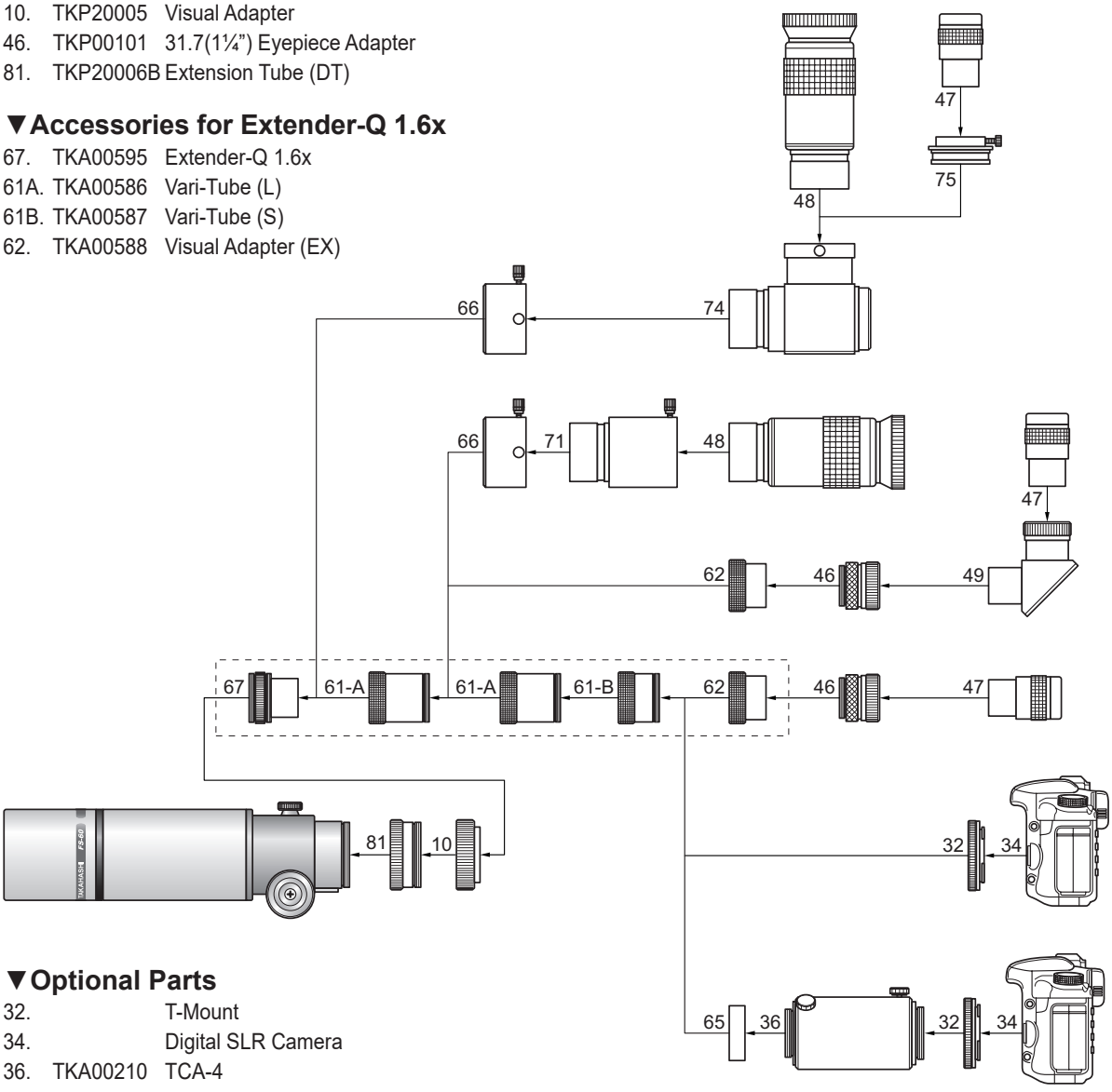
◆ Extender-Q 1.6x System Chart

▼Standard Accessories

10. TKP20005 Visual Adapter
46. TKP00101 31.7(1¼") Eyepiece Adapter
81. TKP20006B Extension Tube (DT)

▼Accessories for Extender-Q 1.6x

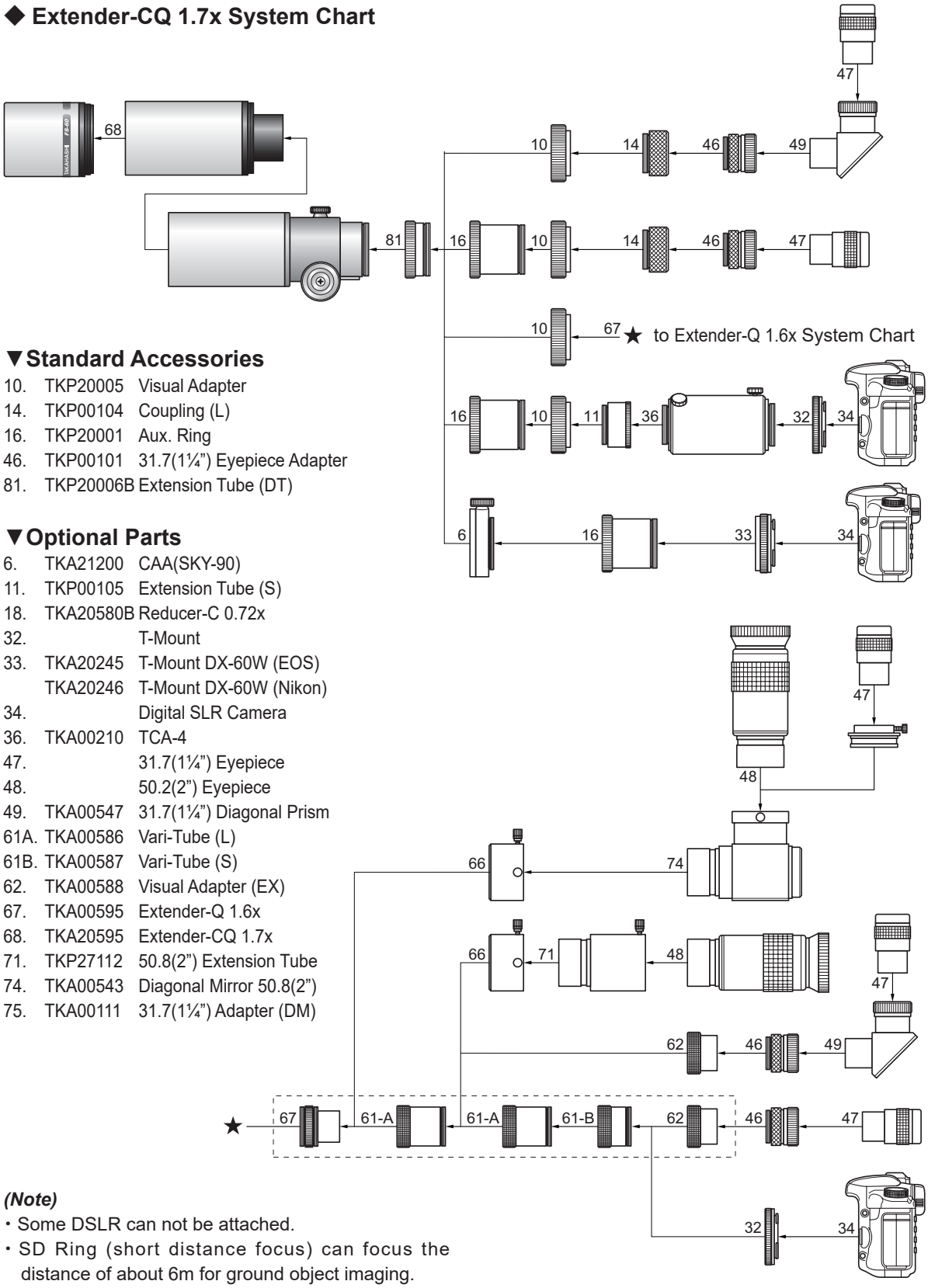
67. TKA00595 Extender-Q 1.6x
61A. TKA00586 Vari-Tube (L)
61B. TKA00587 Vari-Tube (S)
62. TKA00588 Visual Adapter (EX)



▼Optional Parts

32. T-Mount
34. Digital SLR Camera
36. TKA00210 TCA-4
47. 31.7(1¼") Eyepiece
48. 50.8(2") Eyepiece
49. TKA00547 31.7(1¼") Diagonal Prism
65. TKA00590 EC Ring
66. TKA00596 50.8(2") Adapter (EX-Q 1.6x)
71. TKP27112 50.8(2") Extension Tube
74. TKA00543 Diagonal Mirror 50.8(2")
75. TKA00111 31.7(1¼") Adapter (DM)

◆ Extender-CQ 1.7x System Chart



▼Standard Accessories

10. TKP20005 Visual Adapter
14. TKP00104 Coupling (L)
16. TKP20001 Aux. Ring
46. TKP00101 31.7(1¼") Eyepiece Adapter
81. TKP20006B Extension Tube (DT)

▼Optional Parts

6. TKA21200 CAA(SKY-90)
11. TKP00105 Extension Tube (S)
18. TKA20580B Reducer-C 0.72x
32. T-Mount
33. TKA20245 T-Mount DX-60W (EOS)
    TKA20246 T-Mount DX-60W (Nikon)
34. Digital SLR Camera
36. TKA00210 TCA-4
47. 31.7(1¼") Eyepiece
48. 50.2(2") Eyepiece
49. TKA00547 31.7(1¼") Diagonal Prism
61A. TKA00586 Vari-Tube (L)
61B. TKA00587 Vari-Tube (S)
62. TKA00588 Visual Adapter (EX)
67. TKA00595 Extender-Q 1.6x
68. TKA20595 Extender-CQ 1.7x
71. TKP27112 50.8(2") Extension Tube
74. TKA00543 Diagonal Mirror 50.8(2")
75. TKA00111 31.7(1¼") Adapter (DM)

(Note)

- Some DSLR can not be attached.
- SD Ring (short distance focus) can focus the distance of about 6m for ground object imaging.
- When the Extender-CQ 1.7x is attached, FS-60CB is turned into FS-60Q.

MEMO

TAKAHASHI SEISAKUSHO Ltd.

41-7, Oharacho, Itabashiku, Tokyo 174-0061, JAPAN

PHONE:+81-3-3966-9491 FAX:+81-3-3966-9524