Mark V
Großfeld Binokular

The most important visual accessory for every telescope

#2456410

Manual

Thank you for your purchase of the Baader Großfeld (Giant) Binocular Viewer! Properly used, this sophisticated optical accessory will provide a lifetime of amazing views. To insure optimal performance, please read this instruction manual before using your binoviewer.





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Baader Großfeld (Giant) Binocular Viewer Mark V with Mark V Bino-Case

– Developed by Carl Zeiss Jena especially for astronomy –

The Baader Großfeld (Giant) Binocular Viewer Mark V is the fifth edition of the former Carl Zeiss giant binocular with 30 mm prisms and the most elaborate binocular which we have ever produced.

It features recalculated 7-layer dereflective multi-coatings on all air-glass surfaces, a high performance beam-splitter with dielectric splitter layer and self-centering 1¼" ClickLock® eyepiece clamps (without locking screws!), similar to the tool holders of CNC milling machines used for mechanical engineering.

Eyepiece clamps with diopter adjust allow perfect fine-focussing for each eye – this is essential for using any bino-viewer.

Because of the 1:10 power gear ratio, a gentle, small rotation by 20° at the Click-Lock® ring is enough to securely clamp every 1¼" accessory – or to release it later. Such a small rotation results in a lock which is at least as tight as a single clamping screw which is tightend with much more force.

We offer several glasspath compensators for the binoviewer – manufactured according to optical designs by Carl Zeiss – which correct the spherical aberration. They are designed to remove the colour aberration which will occur because of the long light-path through the glasses in the binoviewer, if it is used with fast telescopes (with focal ratios between f/4 and f/7) because of the convergent light beams in these instruments.

Also, a glasspath compensator moves the focus away from the telescope – similar to a Barlow lens – so that you can use the binoviewer at almost any telescope. Only if you use "slow" telescopes like Schmidt-Cassegrains (SC), you do not need a glass-path compensator, because the lightbeams do not converge at such a wide angle. Nevertheless, they can still be used to achieve different magnifications. The sharpness will increase even at SC- and HD-telescopes.

These „color-aberration compensators“ are an important addition to the binoviewer. The peculiar housing of the three models with a clamping collar is designed to be inserted between T-2-screw-connections. This way, these lenses can be used at all telescopes, in different places of the light path, and you can achieve several distances for projection.

The Mark V Großfeld (Giant) Binocular Viewer is made in Germany according to the high quality standards of Carl Zeiss. The optical polish of the prisms, all coatings and last not least the optical adjustment and orthogonality of the 30 mm large prisms are so precise that the image doesn't deteriorate even at highest magnifications. Each binoviewer is tested and collimated at a magnification of 1000x on an optical bench from Carl Zeiss.

If you are looking for the best binoviewer for your high-end telescope, then the Baader Großfeld (Giant) Binocular Viewer Mark V is just what you are looking for!

Scope of Delivery and Accessories

The standard scope of delivery of the Baader Großfeld (Giant) Binoviewer Mark V consists of the binoviewer itself, the TQC Heavy Duty T-2 QuickChanger #16A and a water-, air- and dustproof box (#2456415) with an inlay made of rigid foam.



Not included are glasspath compensator(s) (which version you need depends on your telescope), eyepieces, star diagonal and T-2-adapters (these also depend on the kind of telescope which you want to use the binoviewer with).

Optional Accessories

Glasspath Compensators

A Baader Glasspath Compensator (GC) fulfills two critical roles. Firstly, it corrects for chromatic aberration (color error) caused by the long light-path through the glass prisms of the binoviewer. Secondly, the compensator magnifies and extends the focal point of the main telescope. You will find information about choosing the right compensator in the chapters *Back-focus* und *Choosing a Glasspath Compensator*.


#2456305 #2456300


#2456314Z, #2456316Z, #2456317

Part Number	Factor (T-2-Nr)	Focus gain
#2456314Z	1,25x (#4A)	ca. 20 mm
#2456316Z	1,7x (#4B)	ca. 35 mm
#2456317	2,6x (#4C)	ca. 65 mm
#2456300	1,7x	ca. 80 mm – 2" GC for Newtonians
#2456305	1,8x	ca. 80 mm – 2" GC for refracting telescopes and Schmidt-Cassegrains, requires the T-2 Maxbright mirror (#2456100)


#2458105

T-2 nose piece

A T-2 nose-piece in 1¼" (31,8mm, #2458105) or 2" (50,8 mm, #2408150) is used to connect the T-2-thread of the TQC QuickChanger or a T-2 star diagonal to a standard eyepiece clamp for 1¼" or 2" eyepieces.


#2408150

1¼" Star Diagonals

The optical length (that is, the necessary backfocus) must be added to the optical length of the binoviewer.

Part Number	Name	Optical length
#245 6100	#1A – T-2 Baader T-2 Maxbright Mirror Diagonal made of Sitall mirror material	43 mm
#245 6005	#1C – T-2 90° (32 mm Baader Prisma)	35 mm
#245 6095	#1B – Baader T-2 Stardiagonal (Zeiss) 36mm Prism	38,5 mm
#245 6130	#02 – 90° / T-2 Baader roof prism for upright images, Astro Quality Grade	48 mm


#2456100


#2456095


#2456130


#2456005



2" Star Diagonals and Herschel Wedge



#29565000V/
#2956500P

The optical length (necessary back-focus) of all components must be added to the optical length of the binoviewer. To save space, you can remove the 2" Clicklock® clamp of our star diagonals. Then you can attach the binoviewer directly to the housing with the adapter #27 – 2"/T-2 (#1508035) as shown in the image to the left. The following table gives the optical length *without* the Clicklock®-clamp.

Part Number	Name	Optical length
#2956100	Baader 2" ClickLock® Mirror Diagonal	71,5 mm
#2456115	Baader 2" BBHS® Mirror Diagonal	71,5 mm
#2456117	Baader 2" BBHS® Prism Star Diagonal	59,5 mm
#2456200P/ #2456200V	2" Baader Herschel Wedge (Photo/Visual) for solar observation	67 mm



#2956100



#2456115



#2456117

Connecting the TQC QuickChanger to a 2"-Star Diagonal or Herschel-Wedge



Remove the Clicklock



2"/T-2-adapter
#1508035



Star Diagonal with accessible SC-thread



Star Diagonal with T-2-adapter screwed into it

The 2"-Clicklock® clamp of our 2"-star diagonals and the Herschel Wedge can be removed. To do so, you either have to loosen the small Allen screws, as shown here for a BBHS-mirror #2456115, or in the case of the Herschel Wedge you have to unscrew the eyepiece clamp as described in its manual. Then you will see a 2"-SC-thread, into which you can screw the 2"/T-2-adapter. Now you can attach the QuickChanger directly to the housing.



Star Diagonal with T-2-adapter and TQC QuickChanger

Assembly

Assembly with T-2 star diagonal and a 1¼" (or 2") nosepiece

1. Remove the plastic dust caps from the eyepiece clamps by loosening the ClickLock-clamp through rotation. Please note: Both clamps rotate in opposite directions!
2. Remove the black dust cap from the TQC QuickChanger
3. If necessary, remove the TQC QuickChanger from the binoviewer by loosening the chrome-plated locking screw.
4. a) Glasspath Compensators 1,25x and 1,7x:
   Screw the GC into the chrome-plated Zeiss Micro-bayonet on the front end of the binoviewer (image on the lower right).
   b) Glasspath Compensator 2,6x:
   Screw the GC into the T-2 star diagonal (image on the lower left).
5. Screw the TQC QuickChanger onto the T-2 star diagonal (or directly onto the T-2 nosepiece, if you do not use a star diagonal).
6. Re-attach the TQC QuickChanger together with T-2-nosepiece and star diagonal to the binoviewer.
7. Now you can attach the binoviewer to your telescope. Make sure that all connections are tight and secure.
8. Insert two eyepieces with identical optical design and focal length into the eyepiece clamps of the binoviewer. You can loosen or tighten the clamps simply by rotating them.



3)



4a)



6)



The 2,6x Glasspath Compensator is inserted into the Baader T-2 Star Diagonals #1A/1B/1C



Both 1,25x- and 1,7x-Glasspath Compensators are screwed directly into the binoviewer.

Assembly without a star diagonal

If you want to attach a 1¼" nosepiece directly at the binoviewer, you have to insert the 1.25x and 1.7x GCs into the nosepiece. For the 2" nosepiece, you need the white spacer which is included in the scope of delivery of the glasspath compensator (right image). The 2.6x glasspath compensator is mounted into the binovierwer as described on page 7.



The Baader glasspath compensators (GC) #4A/B/C can be combined with many Baader-T2-accessories. For straight viewing with a 1¼" nosepiece, the 1.25x and 1.7x GCs have to be screwed into the nosepiece.



Placing the 1.25x or 1.7x GC into the optional T2 (#16) 2"-adapter (*without* star diagonal). The white spacer ring has to be put over the thread of the GC, so that it is centered in the 2" nosepiece.

Assembly with the 2" Glasspath Compensator for Newtons #2456300

Prepare the unit as described before up to step 3 (page 7). Then connect the Glasspath Compensator for Newtons instead of the TQC QuickChanger to the binoviewer. The TQC QuickChanger is not necessary for this setup.



The 2" Glasspath Compensator for Newtons provides you a focus gain of approx. 80mm. It is the only chance for many Newtons to reach focus with moving the main mirror.

Assembly with the 2" Glasspath Compensator #2456300 for refracting telescopes and Schmidt-Cassegrains

Prepare the unit as described before up to step 3 (page 7).

Attach the Glasspath Compensator to one side of the T-2 Maxbright Mirror (#2456100) and the TQC QuickChanger to the other side. For the GC to work correctly, the distances have to match exactly, which is why you must use the T-2 Maxbright Mirror and no other star diagonal.



Then put the Glasspath Compensator with the attached star diagonal into the 2" eyepiece holder of your telescope and secure it. Then you can attach the binoviewer at the TQC QuickChanger and insert the eyepieces.

PLEASE NOTE: This GC is inserted deeply into the telescope, therefor it can only be used at Schmidt-Cassegrains with a sufficiently large baffle, or at telescopes without correctors close to the visual back. It can not be used with Petzval, EdgeHD or some Maksutov-telescopes with corrector lenses close to the eyepiece holder.

Back-Focus

Sometimes referred to as “in-focus” or “in-travel”, back-focus is an important factor to consider when choosing a binocular viewer or any other long accessory (cameras, Herschel Wedge, etc). Back-focus is simply the distance from a telescope's focal point to the surface of its fully retracted focuser. Any accessory inserted into the focuser consumes some of this back-focus – star diagonals, eyepiece adapters, reducers, cameras, eyepieces, etc. In order to reach focus, the focal plane of an eyepiece or camera must be positioned at the telescope's focus.

To aid in determining the total path length when using various components, our listing of Baader Astro T-2 System™ includes the optical path length for each product. If the stack-up of parts is longer than the telescope's back-focus, it will not be possible to reach focus.

Unfortunately, there is no consistency in the telescope industry for the amount of back-focus a telescope provides. *Very few manufacturers provide the back-focus specifications for their scopes. Thus, the best way to determine your telescope's back-focus is to measure it yourself.* To reduce the possibility of errors, it is best to measure the back-focus using all adapters or star diagonals that will be present when using the binoviewer.

Newtonians typically have the least amount of back-focus; in order to extend the focal point well past the focuser surface, a larger secondary mirror would be required. This increases the central obstruction resulting in a loss of contrast and increased cost. For this reason, we offer a large 2" 1.7x Glasspath Compensator that is designed specifically for Newtonians. This compensator also corrects the off-axis coma that affects fast Newtonians and reduces the required back-focus to 31mm!

Most Schmidt-Cassegrain and Maksutov telescopes provide large amounts of back-focus due to their movable primary mirror. It may be possible to use a binoviewer without a compensator, though our 1.25x Glasspath Compensator is recommended for its color correction and to keep the focal length of the telescope closer to its optimal design.

Refractors vary considerably in the amount of back-focus they provide, sometimes even within the same model line. Even if a refractor will come to focus without a compensator, it is again recommended that at least the 1.25x Glasspath Compensator be used for color correction or to allow the use of longer focal length eyepieces while still providing higher magnifications.

How to measure the back-focus of my telescope?

The best method for finding out the back-focus of your telescope is: Do a measurement! Don't forget to attach all the adapters you will need for the binoviewer.

The easiest way to measure back focus is to point your scope at the Moon (with all accessories, but without an eyepiece) and project its image onto a white card. The focuser should be fully retracted. Hold the card behind the empty focuser or above

the star diagonal and find the position where the image of the Moon comes to sharp focus. This position is your telescope's focal plane. Measure the distance from the card to the end of the focuser or the top of the star diagonal. This is the amount of available back-focus for additional accessories – for example, a binoviewer plus eyepieces. Armed with this information, revisit the last section and refer to the first row of the table below. First, subtract the recommended 5-10mm from your back-focus value to allow for differences in eyepiece design and vision. Then, find the first column with a value less then your adjusted back-focus. The heading of this column indicates the appropriate Glasspath Compensator.

For example, let's say your telescope is measured to have 90mm of back-focus above the diagonal you intend to use with your binoviewer. After subtracting 10mm, your adjusted back-focus value is 80mm. The first column with a value less than 80 is the column for the 1.7x Glasspath Compensator with a value of 77. The 2.6x compensator would also work, as it requires just 44mm of back-focus. You would decide between the two by considering the eyepieces you are planning to use, the focal length of your telescope and the desired magnification for your observations. Or, you could purchase both compensators and have two magnifications available with a single pair of eyepieces.

In some rare cases, you may find that your scope does not have sufficient back-focus to work with any of the Glasspath Compensators we provide. If you are using a 2" star diagonal, you may want to consider using a shorter optical path 1.25" star diagonal. Newtonian reflector owners may want to consider shifting their primary mirror forward (or shortening their truss tube poles) in order to increase the amount of back-focus.

Part Number	Configuration with the several Baader Glass-path Compensators	No GC	1,25x GC	1,7x GC	2,6x GC	2" 1,7x Newton-GC	2" 1,8x RT/SC-GC
	straight (only with nosepiece)	110	92	77	44	31	n/a
#2456005	T-2 #1C 32 mm prism	148	131	116	83	n/a	n/a
#2456095	T-2 #1B Deluxe Zeiss prisma	151	134	119	86	n/a	n/a
#2456130	T-2 #2 Deluxe roof prisma, 90° (for upright images)	158	141	126	93	n/a	n/a
#2456100	T-2 / 90° Maxbright Mirror	153	135	120	87	n/a	31

Table 1: Combinations of Glasspath Compensators (GC) and the Mark V binoviewer. The required back-focus is given in millimeters. na = not adaptable
Please note: The values are approximate values.

Choosing a Glasspath Compensator

The Baader Glasspath Compensator fulfills two critical roles. First, it corrects the chromatic aberration (color error) caused by the long light-path through the binoviewer glass prisms. Second, the compensator magnifies and extends the focal point of the main telescope. A glasspath corrector is more than a simple Barlow element! The optical design is from Carl Zeiss and Astro Physics – we have tested many lens systems from other sources which only extend the focal point, but which do not remove the color error.

The focal extending aspect is vital to using a binocular viewer with most telescopes. Due to the basic design of all binocular viewers, light must travel an additional 110mm or more before reaching the focal plane of the eyepieces. Many telescopes, especially Newtonian reflectors, do not have sufficient back-focus (in other words, not enough focuser in-travel) to achieve focus with such an optically long accessory. By using a Glasspath Compensator, the focal point of the telescope can be extended sufficiently to accommodate the length of the binoviewer.

Another benefit of the compensator is to provide additional magnification ahead of the binoviewer. For high magnifications (for example, planetary observation), it is preferable to magnify the image before the binoviewer, rather than to use shorter focal length eyepieces. By magnifying prior to the binoviewer, the effects of any optical tolerances and misalignments in the centering of the eyepieces are reduced. Additionally, longer focal length eyepieces tend to have longer eye relief and are more comfortable to use. In general, for binoviewing use we recommend eyepieces with focal lengths of 5 mm or longer. It is also less expensive to purchase an additional compensator to provide additional magnifications rather than to purchase additional pairs of eyepieces.

We recommend first choosing the lowest powered compensator that will allow your scope to reach focus. This will permit the widest possible field of view. In addition, one or more higher powered compensators can be added to give a greater range of magnifications.

For selecting the matching Glasspath Compensators, you need to measure the back-focus of your telescope first, as described in the previous chapter. Table 1 on page 10 then tells you, which compensators will work.

Please Note: The distances in the table are approximate and are measured from the front mounting flange of the binocular viewer or nosepiece, to the top surface of the eyepiece holders. Many eyepieces have their focal points located ahead of, or behind, their shoulder. The effects of an eyepiece's focal point location are not taken into consideration here and thus the distance required to reach focus will usually vary from these values. Additionally, those who are near or far-sighted will also find that more or less back-focus is needed. *For these reasons, we recommend at least 5 – 10 mm additional back-focus.*

Let's look at an example. The Takahashi Sky90 SV Teleskop is found to have 160mm of back-focus as measured from the rear surface of its stock 2" eyepiece clamp to its focal point. Referring to Table 1, this scope can reach focus without a Glasspath Compensator, even when using the Baader Deluxe Amici erecting prism. Anyway, we would recommend either the 1.7x or 2.6x compensator. This would provide the ability to use the binoviewer with no compensator for low-power wide field viewing or with the higher powered compensator for optimum image quality at higher magnification for planetary observations. Otherwise, the color abberation would harm the image quality at high magnifications. Only for wide-field observations e.g. of the milkyway at low power, you can work without the Glasspath Compensator.

Configurations

One of the unique features of the Baader Großfeld (Giant) Binocular Viewer Mark V is the versatility possible with our Astro T-2 System® components. In order to keep the back-focus requirement as short as possible, the TQC QuickChanger has an internal T-thread (M42 x 0.75 mm) allowing it to be directly coupled to any externally T- threaded accessory. The TQC allows the binoviewer to be oriented as desired, and securely locked in place. The accessories shown on page 5 are just some of the more popular combinations. Of course, you are free to invent your own, using any of our Astro T-2 System® components. For example, you can equip a star diagonal with an additional quickchanger to attach it to your telescope, if you have enough back-focus. Visit our web site for more information on all of our Astro T-2 System® components.

Choosing the most suitable star diagonal

When the binoviewer is used with refractors and Cassegrain telescopes, it is much more comfortable to use a diagonal between the telescope and the binoviewer. Unfortunately, many cheaper 1¼" star diagonals are no good choice because they were only designed for an eyepiece which is fitted directly into the eyepiece holder. So close to the eyepiece, the optical quality of the star diagonal does not have to be very high. On the other hand, all of our star diagonals are of such a quality that they can be used up to 160 mm in front of the focal point. To achieve this, all surfaces have to be of a very good quality.

When chosing a star diagonal, care must be taken to insure the safety of the binoviewer and eyepieces. Many cheaper 1.25" (31.8 mm) diagonals are simply not up to the task of supporting a binoviewer setup, especially with two heavy wide-field eyepieces like the Baader Hyperion. Plastic or stamped metal bodies, small locking screws and generally lightweight construction are inadequate to safely hold heavy accessories like a binoviewer. Unfortunately it's quite common to hear about heavy and expensive eyepieces being dropped to the ground (and broken) because of the poor locking system of these budget diagonals. This is compounded by the extra height (and increased leverage) imparted by placing the binoviewer on top of the diagonal's existing eyepiece clamp (which also consumes a large amount of precious back-focus). This is a large problem if you use 2" star diagonals. An eyepiece clamp can use approx. 60mm of optical length. That is why the 2" Clicklock® of our BBHS, Click-Lock® and Universal star diagonals can be removed, so that you can attach the binoviewer (or a camera body) directly onto the housing of the star diagonal. You need the optional adapter T-2/2" (T-2 part #27) #1508035 with an optical length of only 0.5 mm (page 6).



The binoviewer can be attached directly and compact to our 2" star diagonals with the optional 2"/T-2-adapter #27 – here for example with Baader Classic Orthos at a 2"-Clicklock®-mirror.

The perfect solution for this problem consists of using a Baader T-2 diagonal. Our T-2 diagonals are equipped with T-2 threads allowing the binoviewer to be mounted directly onto the diagonal body. The result is a very sturdy mounting solution utilizing the minimum amount of back-focus possible. These diagonals feature prisms or mirrors of the absolute best optical quality, incorporated into a solid one-piece precision machined metal body perfectly suited to hold the heaviest accessories.

If your telescope is equipped with a 2" eyepiece clamp, you can use the binoviewer with an optional 2" nosepiece. You can attach it either directly to the binoviewer with the TQC QuickChanger, or to an optional T-2 star diagonal. If you do so, you need to insert the glasspath compensator as shown before.

If you use the 2"-nosepiece for straight-viewing directly at the binoviewer, the glasspath compensator is not to be screwed into the 2"-T2-nosepiece. Instead, it is only placed inside the nosepiece and centered with the white plastic spacer ring (see also page 7).



Mounting a Glasspath Compensator into the optional T2 (#16) 2"-adapter (*without* star diagonal) requires the white spacer ring to be placed over the thread of the GC. This way, the GC will be centered in the nosepiece.

Choosing the most suitable eyepieces for binoviewing

The Baader Großfeld (Giant) Binocular Viewer Mark V features an optical window with a clear aperture of 30mm, so you can use (almost) all 1¼" eyepieces with focal lengths of ca. 4 mm or more.

The maximum outside body diameter of eyepieces that can be used with the binocular viewer is about 58mm. If the binoviewer is used with eyepiece having a larger diameter, for example the Pentax XW, you may have problems reaching the correct separation between the two eyepieces if the interpupillary distance between your eyes is less than 60 mm.

To achieve the largest possible field of view, we recommend our Eudiaskopic eyepieces with 35 mm focal length, #2404105 (image to the right). Their field of view is almost the same as that of 2" Erfle eyepieces with 32 mm focal length.

For observing the planets with high resolution, we recommend our Classic Ortho or even Carl-Zeiss-Abbe eyepieces. For general observations, we recommend the Hyperion 68° and the Morpheus 76° wideangle eyepieces.

It is extremely important to choose pairs of identical eyepieces made by the same manufacturer in the same period of time. It is quite common to find significant differences (optically and mechanically) in eyepieces of the same brand and type built at different periods of time. If you do not use identical eyepieces, you may experience problems merging the two images.



#2404105

Using rubber eyeshields

If your eyepieces are equipped with round rubber eyeshields (like e.g. our Hyperion or Morpheus eyepieces), leave them in an upright position, unless you are wearing glasses. If you need to wear glasses, fold the eyeshield down to see the complete field of view. If you are using eyepieces like the Baader Classic Orthos, it is best to use the eyeshields with folding side wing.

Please note: If you are very short-sighted, you should wear the glasses for observations with the binoviewer – focussing will be easier. This is also valid in case of astigmatism, which is best corrected with glasses (or contact lenses) – you can't correct for astigmatismus only with the diopter adjustment.

Using the Binoviewer with Zoom Eyepieces

Owners of pairs of identical zoom eyepieces may wish to use them with the binoviewer. To adjust left/right focus you should zoom the two eyepieces to their highest available power. As you change the power of the two zoom eyepieces, objects should stay focused or only require a minor adjustment of the focus of the main telescope.

Two special considerations should be kept in mind when using zoom eyepieces with a binoviewer. First, when you twist the eyepiece to change the focal length (magnification), the individual eyepiece focusing mechanism of the binoviewer is likely to change. Thus, you should hold the eyepiece holder of the binoviewer when adjusting the zoom to prevent the focus from changing. Second, both eyepieces must be set to the same focal length or it will be difficult or impossible to merge the left and right image. This can be difficult with many zoom eyepieces as the focal length scale on the eyepiece is often not precise.



The Mark V with a compact T-2 star diagonal, 2"-T-2-nosepiece and two Hyperion-Zoom-eyepieces.

We recommend the Baader 8-24mm Hyperion Universal Zoom eyepiece for binoviewing. This eyepiece is optimized for use with binoviewers providing a generous field of view across the entire range of focal lengths, bright, high contrast views and precise click stops at 8/12/16/20/24mm.

Many economically prized zoom eyepieces only have a small field of view which decreases at higher magnifications, and have a low optical quality especially at higher magnifications.

Adjusting Interpupillary Distance

Interpupillary distance (the separation between the centers of the eyes' pupils) varies from person to person. The binoviewer should be adjusted to match your interpupillary distance. Using both hands, hold the body of the binoviewer like a pair of binoculars. While viewing a distant object (daytime) or a bright star field, rotate the two halves of the binocular body about the central pivot until you see the field of view as a single sharp circle with both eyes.

Adjusting Left-Right Focus Difference (diopter compensation)

Many people require a different focus for their left and right eyes. This diopter adjustment can be achieved easily. Adjust the focus of both eyepieces as follows:

1. With the telescope aimed at an object, close the right eye and look into the left eyepiece. Using the telescope's focus mechanism, adjust until the image is sharp.
2. Close the left eye and with the right eye look into the right eyepiece. Rotate the right eyepiece holder until you see a sharp image. If you reach the limit of the rotation, use the telescope's focus mechanism to adjust the image until it is sharp – then switch back to the left eye and rotate the left eyepiece holder for a sharp image.
3. Now you can look with both eyes into the eyepieces. You can now focus for different eyepieces or addition of other components to the optical path by using just the telescope's focus mechanism.

Please note: If the dioptric difference between your eyes is very large (more than 5 – 6 diopters), you may find that even with one eyepiece holder adjusted fully in and the other fully out, you cannot bring both to focus. If so, you may want to view while wearing your eyeglasses. Or, you may unlock the eyepiece in the fully extended holder and lift it out a few millimeters to compensate for the strong difference between your eyes.

Using the Binoviewer with the Baader Herschel Solar Prism (Solar Observation)

Binoviewing is especially impressive when you look at the sun – you'll see it in 3D, like a ball floating in space. Delicate surface details will be much more obvious compared to monocular viewing. The Baader Großfeld (Giant) Binocular Viewer Mark V is uniquely suited to provide outstanding views with the 2" Baader Herschel Solar Prism, an optical accessory designed for refractor telescopes to permit safe, high-resolution observation and imaging of the solar photosphere. As the Herschel Solar Prism does not have T-2 threads on the top, a T-2/2" adapter ring (Baader part no. #1508035) is required. Inserting the binoviewer into the 2" eyepiece holder is not recommended as it may not be possible to reach focus on many refractors due to the long optical path length of the various components.

CAUTION: Before you start exploring the sun it is very important to be informed about all the possible risks of solar observation. Please take a careful look at the manuals of all the equipment and filters before pointing your telescope at the sun.

Adapting the binoviewer to the Cool Ceramic Safety Herschel Wedge

You need adapter #1508035 (#27 in our T-2-system) to connect the binoviewer to the Herschel Wedge. The adapter changes the 2" female thread of the Herschel wedge into a male T-2-thread. The 2" female thread is hidden under the 2" ClickLock®-clamp – you can see this also on page 6.

Once you have removed the 2" Clicklock®, you'll see a 2" inverter ring (2" male thread), onto which the 2" filters OD 3.0 and Solar-Continuum are screwed. Remove the filters from the inverter ring and attach them to the 2"/T-2 adapter #27. Then screw the adapter with the filters into the housing of the Herschel Wedge. Now you can screw the TQC QuickChanger onto the T-2 thread of the adapter #27. Finally, attach the binoviewer to the TQC, as usual.

The glasspath compensators 1,25 and 1,7 are to be screwed directly into the binoviewer, without the black plastic ring. The 2,6 glasspath compensator must be put into the TQC QuickChanger together with the black spacer ring. It is locked in place by the dovetail ring of the binoviewer. You can find a detailed description in the manual of the Herschel Wedge.



Herschel Wedge without Clicklock®, but with T-2-adapter #1508035.



Herschel Wedge with TQC QuickChanger



Binoviewer and glasspath compensator on the Herschel Wedge

Care and cleaning of the binoviewer

IMPORTANT WARNING! Do NOT try to disassemble the binoviewer and do NOT try to clean it inside!

When not in use, cover the eyepiece holder and optical window apertures with the provided caps and store the binoviewer in its padded case.

Do not try to open the binoviewer. The collimation of the prisms is critical for its performance. The optical components are aligned as good as possible when the binoviewer leaves our house. If the binoviewer was damaged – e.g. because it fell to the ground – it may have to be readjusted. This can only be done at Baader Planetarium and is subject to a fee. If an inspection should be necessary, please contact Baader Planetarium or the authorised dealer for your country.



Baader Optical Wonder is perfect for cleaning optical surfaces. It causes no scratches and cleans without leaving residues.
Item-Nr.: 2905000

Generally the glass surfaces of your binoviewer will not require anything more than a burst of clean air from a blower bulb in order to remove dust. Avoid touching the optical window lens or the prisms inside the eyepiece holders with your fingers. Should you touch them, it is advisable to clean them promptly, since the natural grease of fingerprints contain weak acids which can corrode the optical coatings of the lens/prisms. Before cleaning fingerprints or other dirt spots, first remove dust with a soft brush and a burst of clean air. To achieve the best results, we suggest you use a few drops of Baader Optical Wonder Fluid on a Baader Optical Wonder Cloth. This combination does not scratch or damage optics and won't leave a halo, film, chemical residue or tissue fibers. Additionally, unlike many cheaper microfiber cloths, Optical Wonder Cloth is antistatic, inhibiting the attraction of dust onto freshly cleaned optical surfaces.



Baader Optical Wonder Cleaning Fluid is the perfect cleaning fluid for sensitive optical surfaces. It removes dirt, fat and finger prints from modern, multi-coated lenses without leaving stains or residues.
Item-Nr.: 2905007

Never spray the cleaning fluid directly onto the glass surfaces! The fluid might soak into the housing and distribute dirt in such a way that the binoviewer becomes useless. Always apply the fluid only to the cloth and never to the lenses!

If moisture should condense inside of the binoviewer, never try to remove it manually! Store the binoviewer in a warm and dry place without dust caps until it is dry. Wait until it is completely dry before storing it in the box.

Servicing and Maintenance

Your Baader binoviewer does NOT require any special or periodic maintenance. If the binoviewer should need servicing please return it to the shop where you purchased it, directly to Baader Planetarium or to a facility recommended by the authorized distributor of Baader products in your country.



Baader Optical Wonder Cleaning Fluid and Micro Fibre Cloath are also available as set.
Item-Nr.: 2905009

Please do not attempt to open the binoviewer. The optical collimation (alignment) of the internal prisms is the most important technical aspect of a binocular viewer. Baader Planetarium has gone to great lengths to produce the most accurately collimated binoviewer possible. If your binoviewer has been accidentally dropped or otherwise physically damaged, it is possible for it to loose its optical alignment and require servicing to restore the collimation of its prisms.

If you should happen to notice problems or defects inside your binoviewer, NEVER try to open it yourself and do not request service from personnel not authorized by Baader Planetarium. Doing so will void the warranty. If you have any problems or questions about the use of the binoviewer or its optional accessories, please contact Baader Planetarium or your local distributor.

Second to none for **20 years:**

Mark V
Großfeld Binokular

The most important visual accessory for every telescope

baader planetarium

Mark V Giant Binoviewer for professionals

The Mark V Großfeld (Giant) Binoviewer is made in Germany according to the quality standards of Carl Zeiss. The optical precision of the prsim surfaces, all coatings and last not least the optical alignment and orthogonality of the 30 mm larges prisms is so good that the image doesn't deteriorate even at highest magnifications. Every Mark V is tested at a magnification of 1000x on an optical bench by Carl Zeiss.

If you are looking for best binoviewer for your high-end telescope, then you are looking for the Mark V Giant Binoviewer.



(Optionally available)
2" Refracting / SC Glasspath compensator Factor 1.8 # 2456305

(Optionally available)
Hyperion Universal Zoom Mark IV eyepieces 8-24 mm # 2454826

(Optionally available)
3 different Glasspath compensators® to adapt the binoviewer to every kind of telescope:
- Factor 1.25 # 2456314Z
- Factor 1.7 # 2456316Z
- Faktor 2.6 # 2456317

(Optionally available)
20 different Astro T-2 System® adapter, for connection to every focuser

(Optionally available)
2" Newton glasspath- and coma compensator Factor 1.7 # 2456300

2456410

Scope of delivery:
- Mark V Großfeld (Giant) Binoviewer
- TQC QuickChanger #6A
- Mark V bino storage case

Important: the shortest connection to your telescope

(Optionally available)
90° Prism T-2 # 2456095
90° Mirror T-2 Maxbright # 2456100
90° erect-image Amici-prism T-2 # 2456130

Good to know about binoviewing.

If your observing monocular, only a part of the „computing power" of our brain can be used. It has got an „emergency mode" to distribute monocular views to both parts of the brain, but then there is no possibility to erase „image errors" or the „noise" which always arises in our nerves – similar to a CCD image!

Your brain can process the data from your eyes and eliminate all the errors which are not part of the real image – in real-time, while you are observing! That's a similar technic to the one used by owners of CCD-cameras, when they are stacking images to eliminate the noise of high-iso images.

So it is no wonder that you need some rest after a couple of minutes of monocular viewing – your brain has to work hard when you are obsereving with high concentration and only one eye. This problem is non-existent when you are using both eyes! You can observe as long as you want – without any stress or strain! Even if vision is severely restricted in one eye, the reduced strain makes binoviewing much more satisfying.

You can use our extensive accessories to adapt the Mark V Binoviewer to every telescope without wasting space!



Mark V Bino storage case for safe transportation and storage # 2456415

LAST CHANCE!

Since 1988, our Eudiaskopic 35 mm eyepieces are amongst the most favorite eyepieces for binoviewing with low magnification. That's no wonder: Because of the large field stop of 31.5 mm, these eyepieces offer the largest TRUE field of view of all 1¼" eyepieces – and there is no vignetting when they are used togetter with the Mark V Giant Binoviewer.

We have reserved the last of our 35mm ED-eyepieces for our Mark V Binoviewer. Get them, while they are still in stock!



(Optionally available)
35 mm ED-eyepiece # 2404105

baader planetarium

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