Baader Star Diagonals (T-2 and 2")



Instruction Manual and Recommended Use

A Baader star diagonal (both prisms and mirrors) can show you impressive images for a lifetime and offers more connection and configuration options than standard star diagonals. They also let you achieve the shortest possible configurations, so that you can optimize your telescope without changing its optical properties. To get the most out of them, we therefore recommend that you spend a few minutes reading this brochure.



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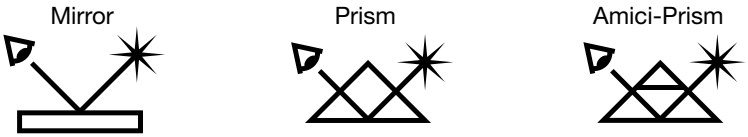
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All of our star diagonals can be combined with the Universal Filter Changer UFC.
Read more about this system on page 18 and online at www.baader-planetarium.com/en/ufc

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Multi-Purpose and Modular: Baader Star Diagonals



Many telescopes are shipped with a simple star diagonal which is fine for the first nights. But to make use of the full optical power of a telescope, all parts of the system must be at the highest quality level – the weakest link in the chain determines the final result.

Baader Planetarium's star diagonals not only offer the highest mechanical and optical quality, but also have the additional advantage of being part of a large, modular system. They make very short adaptations possible and offer threads for direct connections to a telescope or a Baader focuser, as well as adapters to a wide range of threads for torsion-free use with heavy or long accessories, such as binoviewers. Would you like to integrate a filter permanently in the light path or use a low-profile UFC filter changer to save space? All this is no problem with Baader system components.

Last but not least, this system is a solution to a common problem that many customers face: There is not an infinite amount of backfocus in a telescope – even if you can reach focus, the accessories must not cut off the beam of light or change the focus length in an undesired way! That's why such a multitude of Baader adapters exists – because there are always customers who need a short or special adaptation for their astronomical work. Decades of customer feedback led Baader Planetarium to create a seemingly overwhelming amount of adapters. But each adapter has its purpose. This is the reason why you can always find the optical length of each part in the product description, so that you can find the best solution for your needs.

This brochure will give you an overview of the various models and possibilities. Here you will find explanations of our classic mirrors and prisms.

If you are looking for an even more flexible solution, take a look at the Baader FlipMirror II Star Diagonal *#2458055*, which we describe on our website at *www.baader-planetarium.com/en/flipmirror* in detail – its user manual shows how you can connect e.g. camera, eyepiece, autoguider or even a spectrograph at the same time!

On the following pages you will first find an overview of the different models, next the connection possibilities to the telescope, followed by the eyepiece/camera side connection options. Finally, a tabular comparison of the different models follows.

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How to Chose the Right Star Diagonal

Dielectric or BBHS®?

The *tDielectric Coating* of Baader T-2- and 2"-ClickLock® Star Diagonals is optimised for the visual part of the spectrum and for absolutely safe observations. The dielectric Baader mirror diagonal has the additional advantage that, just like a UV/IR blocking filter, it has the highest reflectivity in the 400 - 700 nm visual spectral range but does not allow other wavelengths to reach the eyepiece. In addition, this type of mirror is perfectly suited for the tough everyday life in a public observatory. It is absolutely scratch-resistant, highly reflective and resists even harsh environmental conditions (e.g. in a non-insulated protective structure like a hut or a simple dome with frequent moisture formation) for decades.

It is important to mention, with regard to the dielectric coating, that Baader Planetarium was the first manufacturer worldwide to develop a dielectric coating for mirror diagonals for amateur astronomy which does not affect the quality of the mirror surface. It was previously considered impossible to apply a dielectric coating in such a way that a flat surface would not warp under the accumulated stress of the many coating layers – i.e. would not deform astigmatically. The result of this special coating technique was so good that the legendary company Astro Physics purchased dielectrically coated mirrors from Baader Planetarium for their 2" star diagonal over many years. Baader dielectric mirrors for astronomical applications therefore contain the longest existing dielectric mirror coating in the world. In 30 years, no complaints have been reported for surface uneveness, decreasing reflectivity or poor scratch resistance.

An alternative to dielectric coatings are the *BBHS® First Surface Coatings*. BBHS® is an abbreviation for *Broad Band Hard Silver*. The BBHS® silver coating on the front of the mirror is ageing-stabilised by a protective hard dielectric coating. This is similar to the weather protection of an $AlSiO_2$-coating on the mirror of a Newtonian telescope.

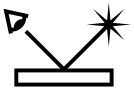
BBHS® provides a much wider spectral window than a dielectric coating, with 98-99% reflection from slightly above 390nm up to 2000nm. It also allows different viewing angles without a drop in reflectivity, and the silver coating does not produce any stray light. The trained eye will easily see more colours, especially with short focal length APO refractors. When observing planets at the highest magnification, a conspicuous colour intensification can be easily detected compared to all previous coating types. In addition, one will notice a significant increase in contrast due to the absence of any stray light. For the BBHS® coating, only glass-ceramic is used as a carrier material in order to ensure extremely fast temperature equalisation and image stability together with the CNC-milled aluminum housings.

It has been proven that silver in combination with the temperature resistant glass ceramic offers the absolute best viewing experience, with the complete absence of stray light. Try it out – the difference is impressive. In the future, you'll only want to observe planets without a star diagonal – or through these hard silver-coated mirrors.

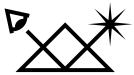
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The BBHS®-Technology on Prisms – Time-tested for over 30 Years

For decades, silver had the flaw that it corrodes very quickly if it is not thoroughly protected. Baader Planetarium has 30 years of experience with silver coatings and the necessary protection. The T-2 prism diagonal *#2456095*, the 90° T-2 *#2456130* and 2" *#2456120* astro-amici-prisms as well as the 2" BBHS® prism diagonal *#2456117* have always had an elaborately sealed silver coating on the hypotenuse or roof edge surfaces. This has resulted in these having a premium position in the market without the silver itself ever being noticed – only the better brilliance and richer colours compared to all current reflecting mirrors on the market were noticed (see the two test reports on star diagonals by William Paolini, published 2014 and 2016 on Cloudy Nights – these can be found on *www.baader-planetarium.com* for all BBHS® products under "Downloads").



Mirror or Prism?



Today, a good mirror diagonal is about equal to a prism, but both have their own advantages. In the past, prisms were state of the art because the mirror layers aged and lost their reflectivity over time – i.e. an uncoated prism was more stable in the long run. Since the light passes through a prism, it is influenced (refracted) by the prism, especially behind a telescope with a fast aperture ratio, which can in principle lead to colour aberrations. For this reason, such aberrations were included in the optical calculation in some telescopes (like Zeiss APQ) from the beginning, so that these telescopes provide a more colour-clean image with a prism diagonal than without. For fast telescopes which are designed for use without a prism, a mirror diagonal is the better choice; the limit for such use is in somewhere around f/6 and f/7.

Today, transmission and durability are no longer a problem: all Baader mirrors and all Baader prisms with mirrored backs will provide excellent transmission for decades. On the other hand, a simple aluminium-coated mirror (without "enhanced" coating, as supplied with many telescopes) will only have around 80% reflectivity after a few years and will tend to produce reflections whereas a good mirror (dielectric or BBHS® silver-plated) can permanently achieve 96-99% with no degradation in reflectivity. Experience shows that refraction in a prism produces less stray light than reflection on a mirror does, unless a very high effort was made in the manufacture of the mirror to bring it up to the stray light and contrast level of a prism. This is why many planetary observers still prefer a prism today. But don't forget that a prism must adapt to the ambient temperature just like the rest of the telescope optics!

A further advantage of prisms is their much shorter optical length, which is why we recommend Baader T-2 prisms diagonals with their compact body for observation with a binoviewer. Thus it is often still possible to come into focus when other mirror diagonals fail.

There can't be a general recommendation; if you want to go deeper into the matter, you will find a detailed test report of the different mirror types at *www.baader-planetarium.com/mirror-prism-comparison*.

Prism and Mirror Diagonals

The BBHS® Mirror Diagonals

- Provide greatest reflectance over large **spectral range from 390 to 2000 nm**
- BBHS® = *Broadband Hardsilver* coating with dielectric protective overcoating
- Perfect for visual and photographic observations with best brilliance, even in the infrared part of the spectrum
- Practice shows that silver, in combination with the temperature-resistant glass ceramics, offers the absolute best viewing experience, with the complete absence of stray light. Give it a try: The difference is impressive! You'll want to observe planets only in a straight line – or through these hard silver-coated Sitall mirrors.



2" BBHS® Mirror Diagonal: *# 2456105*



T-2 BBHS® Mirror Diagonal *# 2456103*

2" BBHS® Mirror Diagonal *# 2456105*

Nosepiece / Clamp	2" ClickLock®-Clamp and 2" Safety Kerf nosepiece
Connections	S58 dovetail on both ends, each with M55- and 2"-SC-threaded insert ring
Mirror Material	Glass-ceramic with a low co-efficient of thermal expansion, 1/10 lambda surface precision
Coating	BBHS® Reflection Layer
Body Material	CNC-milled aluminum housing with adjustable optical cell for stress-free optics
Clear aperture	47,5 mm
Optical length	112 mm

T-2 BBHS® Mirror Diagonal *# 2456103*

Connections	T-2 thread on both sides, very compact and adaptable to every telescope system
Mirror Material	Glass-ceramic with a low co-efficient of thermal expansion, 1/10 lambda surface precision
Coating	BBHS® Reflection Layer
Body Material	CNC-milled aluminum housing
Clear aperture	33 mm
Optical length	43 mm

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The Dielectrical Mirror Diagonals

- **Reflects only the visual part of the spectrum (400-700 nm),** so that no UV- or IR-radiation will reach the eye.
- Oversized, dielectrically coated 2"-mirror with a surface precision of λ/10
- Hard-coated mirror surface for easy cleaning, scratch-resistant even under extreme conditions
- Lasts a lifetime and – most of all – stays absolutely flat! It does not "yield" to the pressure of all the individual layers of coating



ClickLock® Mirror Diagonal with 2" nosepiece *#2956100*



Clicklock® Mirror Diagonal with M68 thread *#2956100Z*

2" ClickLock® Mirror Diagonal *#2956100*

Nosepiece / Clamp	2" ClickLock®-Clamp and 2" Safety Kerf nosepiece
Connections	S58 dovetail on both ends, each with M55- and 2"-SC-threaded insert ring
Mirror Material	Borosilikat, 1/10 lambda surface precision
Coating	Dielectric coating – 140 coating layers for 99% reflectivity
Body Material	Magnesium alloy, CNC-postprocessed
Clear aperture	47 mm (with 2" nosepiece)
Optical length	112 mm

M68 ClickLock® Mirror Diagonal *#2956100Z*

Same as *#2956100*, but with M68-thread instead of a 2" Safety Kerf nosepiece, to obtain the largest aperture at many telescopes. Additional differences:

Connections	Male M68 (Zeiss) male thread on the telescope side
Entry aperture	51 mm entry aperture – largest aperture of all 2" diagonals on the market
Optical length	109 mm

T-2 Maxbright® Mirror Diagonal *#2456100*

Connections	T-2 thread on both sides, very compact and adaptable to every telescope system
Mirror Material	Borosilikat, 1/10 lambda surface precision
Coating	Dielectric coating – 140 coating layers for 99% reflectivity
Body Material	CNC-milled aluminium
Clear aperture	34 mm
Optical length	43 mm



T-2 Maxbright Mirror Diagonal *#2456100*

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The BBHS® Prisms

- Provides greatest reflectance over large **spectral range from 390 to 2000 nm**
- BBHS® = *Broadband Hardsilver* coating with dielectric protective overcoating
- Perfect for visual and photographic observations with best image brightness, also in the infrared part of the spectrum



2" BBHS® Prism Diagonal:
#2456118

2" BBHS® Prism Diagonal *#2456118*

Nosepiece / Clamp	2" ClickLock®-Clamp and 2" Safety Kerf nosepiece
Connections	S58 dovetail on both ends, each with M55- and 2"-SC-threaded insert ring
Prism	50 mm / 90° Prism, BaK4 glass, 1/10 lambda surface precision
Coating	Phantom Coating® Group + BBHS® back surface coating, sealed
Body Material	CNC-milled aluminum housing with adjustable optical cell for stress-free optics
Clear aperture	47 mm
Optical length	100 mm



T-2 BBHS® Prism Diagonal
#2456095

T-2 / 90° Prism Diagonal with 36 mm Prism and BBHS® Coating *#2456095*

Especially suited for binoviewers with large prisms.

Not only provides a sturdier body and a larger prism, also has prism surfaces with ca. five times better planarity and equal angle than standard prisms in plastic bodies.

Connections	T-2 thread on both sides, very compact and adaptable to every telescope system
Prism	36 mm / 90° Prism, BaK4 glass, 1/10 lambda surface precision
Coating	Phantom Coating® Group + BBHS® back surface coating, sealed
Body Material	CNC-milled aluminum housing
Clear aperture	34 mm
Optical length	38,5 mm

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The 32 mm T-2-Prisms

- Prism with 32 mm clear aperture, especially suited e.g. for smaller binoviewers up to the MaxBright® II with 27-mm-prisms. For larger apertures (e.g. Mark V giant binoviewer) please chose the T-2 BBHS® Prism Diagonal *#2456095* with 36-mm-prism on the previous page.
- High-Transmission Multi-Coating (HT-MC)
- Much shorter optical length than mirror diagonals of comparable size, perfect for binoviewers



T-2 Prism Diagonal
#2456005



T-2 Prism Diagonal – Set
#2456005K

T-2 / 90° Prism Diagonal with 32 mm Prism *#2456005*

Especialy suited for the Baader MaxBright® II Binoviewer, no unnecessary eyepiece clamp included.

Connections	T-2 thread on both sides (male/female)
Prism	32 mm / 90° Prism, BK7 glass
Coating	Phantom Coating® Group
Body Material	Aluminum die casting, CNC-postprocessed
Clear aperture	32 mm
Optical length	35 mm

T-2 / 90° Prism Diagonal with 32 mm Prism and focussing 1¼" Eyepiece Clamp *#2456005K*

Same as T-2 / 90° Prism Diagonal *#2456005*, but with these differences:

Nosepiece / Clamp	1¼" nosepiece *#2458105* and fine focussing (height-adjustable) 1¼" eyepiece clamp *#2458125*
Optical length	64 - 70,5 mm

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BBHS®-Astro-Amici-Diagonals

The Baader Astro-Amici-Diagonals are made for highest magnification and astronomical purposes.

2" / 90° Astro Amici-Prism wit BBHS® Coating *#2456120*

- High-end 2"/90° Astro Amici-Prism (with roof prism) with sealed BBHS® coating
- Permanently protected against ageing. The silver coating on the glass protects against dirt on the reflective surface
- The only erect-image 2" prism worldwide suitable for highest magnifications because of a precise angle of the roof-surfaces

Nosepiece / Clamp	2" ClickLock®-Clamp and 2" Safety Kerf nosepiece
Connections	S58 dovetail on both ends, each with M55- and 2"-SC-threaded insert ring
Amici / Roof-Prism	45 mm Amici-Prism, BaK4 glass, 1/10 lambda surface precision
Coating	Phantom Coating® Group + BBHS® back surface coating, sealed
Body Material	CNC-milled aluminum housing with adjustable optical cell for stress-free optics
Clear aperture	44 mm
Optical length	85 mm



2" Astro Amici-Prism
#2456120



T-2 90° Astro Amici-Prism
#2456130

Baader T-2 / 90° Astro Amici-Prism with BBHS® Coating *#2456130*

- T-2/ 90° Baader Astro-Amici roof-prism with sealed BBHS® coating, very compact and highly customisable
- Multi-coated, astro-quality for highes magnifications, manufactured according to Zeiss-standard

Connections	T-2 thread on both sides (male/female)
Amici / Roof-Prism	32 mm Amici-Prism, BaK4 glass, 1/10 lambda surface precision
Coating	Phantom Coating® Group + BBHS® back surface coating, sealed
Body Material	CNC-milled aluminum from solid material
Clear aperture	31 mm
Optical length	47,5 mm

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Amici-Prisms for terrestrical use

These Amici-Prisms are made for terrestrial observations at lower magnifications (up to 60-100x), similar to spotting scopes. Eyepiece clamps and nosepieces are usually fixed to the housing and not designed to be replaced with other adapters.



1¼" Amici-Prism, 24mm
#2956150

Baader 1¼" Amici-Prism 45° with 24 mm Clear Aperture *#2956150*

- Much larger prism than in the so-called "Erecting prisms" of many telescope-sets
- Many other erect-image prisms provide only a clear aperture of 19 mm and are not suited for wide-field observations at low magnifications, because the small prism would block the field-of-view of the eyepiece.

Baader 2" Amici-Prisma 90°, with 2" on both ends *#2956152*

- 90° Amici-Prism with 2" eyepiece clamp and 2" nosepiece
- Includes reducer from 2" to 1¼"
- Perfectly suited for terrestrial observations with 2" eyepieces



2" Amici-Prism 90°
#2956152



2" Amici-Prism 45°
with SC-thread
#2956151

Baader 2" Amici-Prism 45° with 2" SC-Thread *#2956151*

- 45°-Prism with 2" SC-(Celestron) thread to attach directly to the SC-thread e.g. of Schmidt-Cassegrain-telescopes
- Includes reducer from 2" to 1¼"

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FlipMirror II Star Diagonal

The Baader FlipMirror II (BFM II) is much more than a standard flip mirror: You can easily switch between a camera (or a spectrograph) at the straight-through direct output port and an eyepiece at the upper port, and you can also permanently mount e.g. an autoguiding camera at the bottom – no more need for reattaching accessories!

The many purposes of the BFM II are presented on www.baader-planetarium.com/en/flipmirror and in the comprehensive manual which you will find there.



BFM II
#2458055



The many uses of the BFM II

2" Baader-FlipMirror II Diagonal (BFM II) *#2458055*

- With three ports:
  - Straight-through (S52, M48 and T-2 on both sides) for full-frame camera, spectrograph, or other instruments
  - Adjustable T-2 thread on top for eyepiece clamps, video modules (up to 32 mm image circle) or even a binoviewer
  - Bottom flange for the optional Off Axis Guider for Baader FlipMirror II (BFM-OAG) *#2956951* or for an optional calibration lamp for quick calibration of spectra without removing the spectrograph
- Precise surface-mirrored flip mirror with multi-layer Aluminum coating, for high-resolution images with cameras with small pixels
- The back of the flip mirror is also Aluminum-coated and masked to direct the light of an optional calibration lamp onto the slit of a spectrograph
- Enables precise adjustment of all light paths
- Shortest possible overall length for any application – compatible with a large number of adapters from the Baader Astro T-2 system, the M48 system and the UFC system (Universal Filter Changer)
- Rotatable M48 connection rings made of hardened, stainless steel on front and rear, backlash-free adapted to the BFM housing. Can be fixed in the optimum position to rotate any accessory around the optical axis.
- Prepared for an optional toothed belt for motorisation (e.g. by Steeldrive II Motor Focuser with Controller *#2957165*) – basic requirement for image acquisition, guiding and spectroscopy in remote observatories

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Connecting to a Telescope



ClickLock® Mirror at a 2" focuser

The 2" Star Diagonals

The 2" star diagonals and the 2" Astro Amici prism can be easily inserted and clamped into the 2" eyepiece socket of a telescope like any standard star diagonal. The groove system of the ***Safety Kerf*** nosepiece provides excellent grip, just like a classic safety groove. In addition, the star diagonal cannot tilt if the telescope's clamping mechanism is in an unfortunate position. With a simple safety groove, the clamping screws may just miss the groove or sit on the edge.

In you unscrew the 2" nosepiece, you can access two more useful connections: A 2" SC thread for direct connection to a Schmidt-Cassegrain, and a S58 ring dovetail.

Direct Connection to Schmidt-Cassegrain-Threads

The SC-thread can be used to attach a star diagonal directly to a Schmidt-Cassegrain telescope and to reduce overall length. You can use the seperately available 2" Locking Ring *#2458270* as counter locking nut to fix the diagonal in any rotational position, which is especially helpful with azimuthal mounts: Then you can attach the diagonal permanently to the telescope, and it can easily point to the zenith without hitting the mount.



For installation on a Schmidt-Cassegrain you usually have to remove the ClickLock® eyepiece clamp, as it will otherwise hit the focusing knob of the telescope when screwing it on. To do so, loosen the six small screws as described later in the chapter on eyepiece connection. Now you can screw on the zenith mirror, lock it in a comfortable position with the Locking Ring, and reattach the ClickLock®. In this way, the star diagonal can also remain firmly attached to the telescope if required – so that it can't get lost during public events or transport.

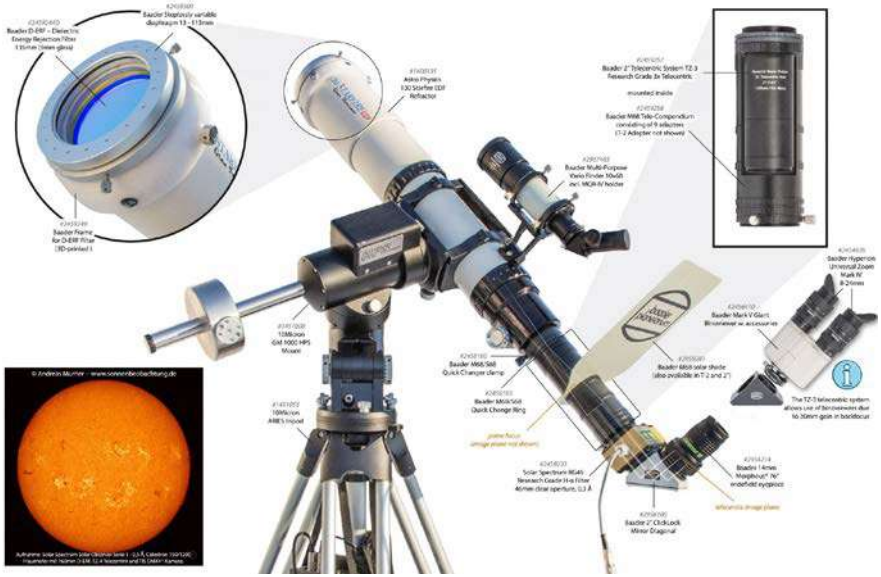


The SC-thread can also be used for a very short adaption of focus-critical accessories such as an H-alpha filter from SolarSpectrum. The eyepiece clamp, with which a star diagonal is normally attached to the telescope, is no longer required.



The Locking Ring *#2458270* (right) permits a very short adaption to a telescope (left). So even azimuth-mounted telescopes reach the zenith (above).

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The 2"-ClickLock®- Star Diagonal can be attached directly to e.g. SolarSpectrum H-alpha-filters through the SC-thread.

Direct Connection to Baader Diamond Steeltrack® Focusers

The S58 dovetail on the diagonal body allows direct connection to the Baader Diamond Steeltrack® focusers. For this purpose, the standard 2" eyepiece clamp of the Steeltrack® can easily be replaced by the star diagonal as shown in the illustrations on the right. The star diagonal can be aligned with the eyepiece extension using the fastening screws.

This way you can extend the available backfocus and reach focus with long accessories like binoviewers easier. As the Diamond Steeltrack® focuser can be rotated, you can always bring the eyepiece into a comfortable viewing position.



All 2" Baader star diagonals (as in this example the 2" ClickLock® Mirror) can be attached directly to the end of a Baader Diamond Steeltrack® focuser.

The M68 ClickLock® Star Diagonal *#2956110Z*

The M68-Version of the ClickLock® Mirror Diagonal provides the largest clear entry aperture of all 2" star diagonals currently available on the market. Instead of the connections for the 2" nosepiece and S58 dovetail, it has got a male M68-thread on the telescope side.

The M68 thread ("Zeiss thread") is used whenever heavy accessories are needed to be held securely. It is widely used on large telescopes. For example, screw connections such as the M68 Tele-Compendium *#2459258* allow heavy accessories to be mounted without tilting or flexing.



Adaption with M68 quick-changer

The large and solid M68 quick release clamp consisting of S68 / M68 Zeiss Change Ring *#2458185* and M68 / S68 Zeiss Changer *#2458180* offers a much better grip than smaller 2" or T-2 quick release clamps, but still allows you to mount the mirror quickly and in any desired position on appropriate telescopes.

Please note: With the Baader M55a/M68a (Zeiss) Adapter for all Baader 2" Diagonals *#2956110,* the 2" ClickLock® mirror *#2956100* as well as the 2" BBHS® mirrors and prisms can be converted to the Zeiss system (with M68 male thread telescopic side). This adapter is already built into the M68 mirror. To remove the black threaded ring from the housing and expose the M55 thread, you need the adjustable face spanner ø 2 mm *#2450062*.

On the other hand, the M68-mirror can't be reconfigured to be used with a 2" nosepiece, because the required M55/2" SC-adapter is not available separately.

You can use the M55a / M68i adapter *#2458234* also to equip all 2" Baader star diagonals with a female M68 thread on the eyepiece side, e.g. for the M68 quick changer (see image on the right).



M55a/M68i adapter on the eyepiece side
#2458234 to attach M68-accessories



Connecting the M68 star diagonal: 1 The M68-thread 2 The attached M68/S68 Zeiss Changer *#2458180* 3 The S68/M68-Zeiss-Quick Changer added *#2458185* 4 Attached to a Zeiss APQ telescope.
With the adapter *#2458234*, the ClickLock® on the eyepiece side can also be replaced by a M68-Quick-Changer.

The T-2 Star Diagonals

The Baader T-2 star diagonals can be combined with the parts of the T-2-system in many ways. The most important adapters can be found below.

On Both Sides

Standard T-2 Changer System *#2456321* and TQC/TCR Heavy Duty T-2 Quick Changing System *#2456322*

- Quick changing system with T-2-threads on both sides, e.g. for compact connection and rotation of heavy accessories like binoviewers
- Can be used on both telescope and eyepiece side
- Both systems feature a ring dovetail made of steel with Zeiss pressure block
- The Standard T-2 Changer System uses a M4 screw clamp, suited for normal loads
- The TQC/TCR Heavy Duty quickchanger provides a Zeiss clamping system with brass pressure pad for heavy loads
- All parts are also available separately



Standard T-2 Changer System *#2456321*



TQC/TCR Heavy duty T-2 Quick Changing System *#2456322*

On the Telescope Side

Baader Reducing-Ring 2"i / T-2a *#2958244*

- Changes a 2" SC (50,8mm) male thread into a T-2 (M42x0.75) male thread
- Low profile adapter, featuring just 1.5 mm optical length



Reducing Ring 2"i/T-2a *#2958244*

Nosepiece 1¼" to T-2 *#2458105*

- Fits into all 1¼" eyepiece clamps
- With 1¼" (M28.5) filterholder



Nosepiece 1¼" to T-2 *#2458105*

Nosepiece 2" to T-2 *#2408150*

- Fits into all 2" eyepiece clamps
- On the telescope-side with 2" (M48) filter thread and additional T-2-thread on the inside
- On the star-diagonal-side with male T-2 thread and additional male M48-thread (under a removable M48 stopping ring)



Nosepiece 2" to T-2 *#2408150*

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On the Eyepiece Side



Ultrashort 1¼" / T-2 clamp #*2458121*

Ultrashort 1¼" / T-2 Clamp #*2458121*

- Ultrashort 1¼" eyepiece-clamp (with brass locking ring)
- Optical length 20 mm
- With three set screws for utmost stability and for centering of undersized camera-nosepieces

Focusing Eyepiece Holder 1¼" / T-2 #*2458125*

- 1¼"/T-2 eyepiece with fine focus (6,5 mm focus travel)
- With three eyepiece clamping screws for fine centering of eyepiece or planetary camera – as well as rotation locking screw to secure the exact focus position



Focusing Eyepiece Holder 1¼" / T-2 with Fine Focus #*2458125*



ClickLock® 1¼" / T-2 Eyepiece Clamp #*2458100*

ClickLock® Eyepiece Clamp 1¼" / T-2 #*2458100*

- Precision-built, very sturdy 1¼" eyepiece clamp
- Eyepiece-side T-2 thread – transforms your eyepiece clamp into an eyepiece projection holder!
- Focusing thread with 5 mm stroke and 0,5 mm fine thread
- Resolves all adjustment problems – every 1¼" eyepiece or measuring device (e.g. LaserColli Mark III #*2450343*) is adjusted automatically parallel to the axis – even with diameter deviations.

Expansion Ring 2"a/T-2i with 1 mm optical path length #*2958242*

- Changes a male T-2-thread to a male 2" SC-thread



Expanding Ring 2"a/T-2i #*2958242*



ClickLock® 2" / T-2 Eyepiece Clamp #*2956242*

2" ClickLock® T-2 Eyepiece Clamp #*2956242*

- T-2 ClickLock®-clamp for 2" eyepieces
- Includes removable S52/M48 (#*2958552*) and M48/ T-2 (#*2958553*) reducer rings, making it very versatile

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Using Filters

Filter Threads of 2" Star Diagonals



Standard-method for using a 2" filter in front of a 2" star diagonal

There are two ways to mount 2" filters in front of all 2" Baader star diagonals (shown here in the example on the 2" ClickLock® mirror diagonal). Both the 2" Safety-Kerf nosepiece *#2408156* and the classic 2" nosepiece with safety groove *#2408155* provide a standard 2" (M48) filter thread as usual. In addition, these nosepieces also have a second M48 internal female thread in order to mount a 2" filter permanently inside the body – whether as dust protection or to keep a deep-sky/light pollution filter always in the light path.

Please remember that the demands on the optical quality of a filter increase the further away it is mounted from the focal point. Only filters with a high-quality, plane-parallel surface do not impair the image, even if they are mounted far away from the eyepiece in front of a zenith mirror (or binoviewer).

Filters can not be mounted in front of the ***M68 Star Diagonal***, because the 2"-filter would limit the clear aperture. Unlike the 2" classic and Safety-Kerf nosepieces, the ***1¼" and 2" T-2-nosepieces*** provide only one filter thread on the telescope-side, just like most eyepieces and diagonals.



Baader 2" Safety Kerf nosepiece with 2" (M48) female thread on both ends

2" Baader filter is mounted permanently inside of the 2" nosepiece, without adding to the length

UFC Universal Filter Changer

A space-saving and user-friendly alternative to screwing the filters into a nosepiece is the UFC (Universal Filter Changer) system.

2" Star Diagonals: The UFC Base *#2459110* with telescope-sided SC-adapter *#2459128* and camera-sided S58 dovetail *#2459125* gets attached on the telescope side between the 2" nosepiece and the housing of the diagonal and can be placed in a convenient position. By using the various filter sliders, all common astronomical filters (with or without filter cell) can easily be inserted into the beam of light. For older diagonals which provide only an SC-thread, you need the SC camera-adapter *#2459120* instead of the S58 adapter *#2459125*.



The UFC-system on the telescope-side of a 2" star diagonal

To attach the UFC to a **T-2 Star Diagonal** (as on the image on the following page), you will require parts *#2459115*, *#2459110* and *#2459130*. With them, you can place the UFC-system in front of or behind a T-2 star diagonal, whichever you prefer.

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There are many more options to use the UFC by attaching other adapters for telescope or camera/eyepiece with the UFC base unit. You can find more information about the whole system at

www.baader-planetarium.com/ufc.



The UFC-system at a T-2 star diagonal

The ClickLock® Eyepiece Clamps

The Baader ClickLock® (1¼" / 2") is a precisely fitting, very massive eyepiece clamp without clamping screws (!). Inserted eyepieces, CCD cameras and similar accessories are securely held in place, locked against rotation and won't be scratched in any way! With a small turn of 20°, each eyepiece is firmly clamped. You will never have to handle small locking screws again – instead, just rotate the top of the eyepiece clamp for a few degrees, and the eyepiece will be firmly fixed. This is also no problem with gloves on!



Our various ClickLock® clamps are made of seven precision-machined components which provide a highly effective retention mechanism that securely holds any 1¼" or 2" eyepiece. The clamp is very expensive to assemble, the price therefore may appear high for "nothing more than" a clamping device at the first glance. But if you think about the comfort, precision and stability, it's well worth the money.

You do not have to tighten the ClickLock® clamps with brutal force. This is because the same mechanical principle that is employed in a modern CNC tool holder in professional mechanical engineering is utilised in the ClickLock® clamps. The inserted object is held on three sides similar to a quick-action chuck, and clever use of leverage multiplies the torque, meaning the item is securely held in position.

Also available: ClickLock® 2" to 1¼" Reducer

The 2" star diagonals are shipped without a reducer to 1¼" because such adapters may already be in your possession or may not be required – depending on your existing accessories. If you do need an adapter, the ClickLock® 2" to 1¼" reducer *#2956214* is a good choice. It provides not only a 1¼" ClickLock® with brass compression ring as well as a T-2 and a 2" filter thread. Its optical length is only 9,5 mm.



ClickLock 2" to 1¼" reducer
#2956214

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Detailed Information about the 2" ClickLock® System

The effectivness and stability of the ClickLock® mechanism has been tried and tested for many years with the 1¼" ClickLock® clamp. The 2" ClickLock® system is designed to be much more mechanically solid.



- Even a 20° turn with light pressure of the rotary lever is enough to hold all 2" accessories absolutely securely and firmly.
- Ratchet function – indicates the position of the clamp acoustically and haptically. So you can know if the clamp is open or closed in the dark and without looking.
- Massive tension ring – keeps even the most expensive accessories absolutely safe, without causing scratches and bruises
- The position of the rotary lever is adjustable for left-hand / right-hand use either by six slotted camera-screws or by six Allen screws with a hexagonal wrench (depending on the model)
- The heaviest tested load to date is a complete C14 with an SCL-clamp and a 2" ClickLock® star diagonal with a Scopos 30mm extreme eyepiece. The C14 has been lifted on the eyepiece. We emphasise that this test setup is not is recommended for imitation.
- Resolves all adjustment problems – every eyepiece or measuring device (e.g. LaserColli Mark III *#2450343*) is adjusted automatically parallel to the axis – even with diameter deviations.

The extensive range of ClickLock® clamps makes it possible to retrofit the Baader 2" ClickLock clamp on many telescopes

You can find all 2" ClickLock® clamps on *www.baader-planetarium.com/en/clicklock*



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Using Eyepieces

At the Example of the 2" ClickLock® Star Diagonal



2"-ClickLock® star diagonal with 2"-eyepiece. The required backfokus is 112 mm.

You can use all 2" eyepieces with the ClickLock® clamp as with any other clamp. The optical length of a star diagonal is then about 11 cm, depending on the model – in the image to the right, that is the path from A to C.

If you need more backfocus or want to attach an accessory in such a way to a star diagonal that it "can't get lost", you can remove the ClickLock®, which saves you about 4 cm of optical length. To do so, remove the six M2.5-screws at the side, to access the S58 dovetail and the female SC-thread

Both 2" SC-threads which are integrated into the body now offer several options to attach accessories

You can use the 2"/T-2-adapter *# 1508035* (available separately) to equip the star diagonal with a low-profile male T-2 thread. Depending on the available backfocus, you can then even attach a binoviewer directly to a 2" star diagonal, without the need for an additional, shorter T-2 star diagonal or a glasspath corrector with high magnification.



The required backfokus can be reduced from 112 mm with ClickLock® (A-C) to ca. 71,5 mm without ClickLock® (A-B).

Instead, you can also use the 2" inverter ring *# 1508020* to get a male SC-thread. This way, you can e.g. screw the Hyperion® Universal Zoom Mark IV eyepiece directly onto the star diagonal and gain 47 mm of backfocus.



2"/T-2-adapter *#1508035*

Short and sturdy adaptation e.g. of the Mark V binoviewer with the 2"/T-2-adapter *#1508035* directly behind a 2" star diagonal.



The Hyperion Mark IV Universal Zoom Eyepiece can be attached directly to s star diagonal with a 2" inverter ring *# 1508020*

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Overview of the Optional Accessories

ClickLock® 2" to 1¼" Reducer – *#2956214*

- 2" to 1¼" reducer, optical length only 9,5 mm
- M48-thread for 2" filters, T-2 (M42x0,75) inner photo-thread, Click-Lock® compression ring made of hardened bronze





#2458270

2" Locking Ring for SC-telescopes *#2458270*

- For direct connection to Schmidt-Cassegrain-telescopes; acts as counter-nut to adjust the orientation of a 2" star diagonal.
- For space-efficient connection of 2" accessories to large SC-telescopes – just screw the diagonal onto the telescope. This way you gain up to 20% field of view.

S68 / M68 Zeiss Change Ring – *#2458185* **and M68 / S68 Zeiss Changer** – *#2458180*

Zeiss quickchange system to attach the M68 star diagonal fast to telescopes with M68-thread.



#2458180 and #2458185



#1508035

2"/T-2-Adapter – *#1508035*

Very low-profile adapter to attach long accessories with T-2-thread to 2" star diagonals – e.g. binoviewers or DSLR-cameras. Optical length only 0.5 mm.

2"/2" Inverter Ring – *#1508020*

Turns Baader 2" star diagonals into a diagonal with male 2" (SC) thread on the eyepiece side – the same thread which is used on all Celestron Schmidt-Cassegrains. For a sturdy, tilt-free connection even of heavy accessories, or for theft-proof connection of Baader-eyepieces with 2" thread (e.g. Hyperion® Zoom MK IV or Hyperion® Aspheric 31 and 36 mm).



#1508020



#2956110



#2458234

M55/M68 (Zeiss) Adapter *#2956110* **(telescope side) and** *#2458234* **(eyepiece side)**

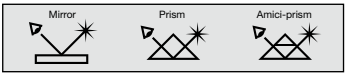
Retrofits Baader 2" star diagonals with a male M68 (Zeiss) thread (*#2458234*) or a female M68 thread (*#2956110*). With the adapter *#2458234*, the M68-diagonal can also be equipped with a Zeiss quickchanger on the eyepiece side. For installation, we recommend the adjustable pin type face wrench ø 2mm *#2450062*.



#2450062

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Technical Data



Model *) only #2956100Z telescope side: M68-thread, 51 mm clear aperture; eyepiece side 46,6 mm (2" nosepiece) **) For 2"; 1¼"-Reducer adds 10 mm of length	Type	Properties	Clear Aperture [mm]	Optical Length [mm]	Connections							
					T-2i/a	1¼" Nosepiece	2" Nosepiece	2" ClickLock®	2" Clamp	1¼" Clamp	M68 male	SC female
#2456105(B) Baader 2" BBHS® Mirror Star Diagonal	BBHS®	2" body, with Sitall glassceramic and BBHS®-Hard-Silvercoating	47,5	112			✓	✓				✓
#2456103 Baader T-2 BBHS® Mirror Star Diagonal	BBHS®	T-2 body, with Sitall glassceramic and BBHS®-Hard-Silvercoating	33	43	✓							
#2956100 (Z)* Baader 2" (M68*) Click-Lock® Mirror Diagonal		2" body, dielectric coating with UV/IR cut effect	47,5 (Z: 51*)	112 (Z: 109)			✓	✓			✓ (Z)*	✓
#2456100 T-2 / 90° Maxbright Mirror Star Diagonal		T-2 body, dielectric coating with UV/IR cut effect	34	43	✓							
#2458055 Baader FlipMirror II Star Diagonal		Flip mirror with three ports and multi-Al-coated mirror	32	59	✓ Straight light path additional with S52 und M48							
#2456118(B) Baader 2" BBHS® Prism Star Diagonal	BBHS®	2" prism by Zeiss-standard. Short optical length, ultra-premium BBHS®-prism	47,5	100			✓	✓				✓
#2456095 Baader T-2 / 90° Star Diagonal with 36 mm prism	BBHS®	T-2 body, extra large BBHS®-prism by Zeiss-standard, short optical length	34	38,5	✓							
#2456005 T-2 / 90° Star Diagonal with 32 mm prism		T-2 body with BaK4 prism, very short optical length	32	35	✓							
#2456005K T-2 / 90° Star Diagonal with 32 mm prism, eyepiece clamp & nosepiece		T-2 body with prism (same as *#2456005*), plus fokusing 1¼" eyepiece clamp and 1¼" nosepiece	32	64-70,5	✓	✓				✓		
#2456120 Baader 2" / 90° Astro Amici-Prism	BBHS®	2" body with 90° roof-prism by Zeiss-standard, BBHS®-coating, for highest magnifications	44	85			✓	✓				
#2456130 Baader T-2 / 90° Astro Amici-Prism	BBHS®	T-2 body with 90° roof-prism by Zeiss-standard, BBHS®-coating, for highest magnifications	31	47,5	✓							
#2956150 1¼" Amici-prisma 45° with 24mm clear aperture		1¼" 45° Amici-prism, with larger clear aperture than many cheaper Amici-prisms	24	99		✓				✓		
#2956151 2" Amici-prism 45° with 2" SC-thread		2" 45° Amici-prism with low-profile thread connection to Schmidt-Cassegrains	26	121**					✓			✓
#2956152 2" Amici-prisma 90°, with 2" sleeve		2" body with 90°-prism, for low and medium magnifications (terrestric)	38	99**			✓		✓			

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