

Note: All Power Switch Diagonals Feature The New Sleek Design



## The Denkmeier 2" Power x Switch Diagonals



### The Denkmeier Power x Switch Star Diagonals™

Denkmeier Optical, Inc. presents a new breed of patent pending Power x Switch Star Diagonals. The diagonals are available with a choice of 97% reflective enhanced silver coatings or 99.4% dielectric coatings. The mirrors are 10mm thick and flat to 1/10<sup>th</sup> wave. All Power x Switches are made in America. All versions of our Power x Switch Diagonals feature compression ring gripping in the 2" eyepiece holder and the 1.25" adapter. The SCT versions include a compression ring visual back that threads onto any SCT. The SCT versions are available with short telescope side diagonal tubes that work with our Short-Tube SCT visual back adapters to provide clearance when used in 8" SCTs. Diagonals are shown with optional metal caps.

### Optical Quality

All optics are custom designed and feature our high efficiency broadband coatings, which are applied to all air-to-glass optical surfaces. All optical components contained in the Power x Switch assemblies have a clear aperture of 37mm and allow maximum illumination of even the most demanding 1.25" eyepieces used in a Denkmeier Binoviewer. For best performance, follow the eyepiece recommendations for focal reduction modes when used in SCTs (select "Eyepieces" on our Home Page). Available with 97% enhanced Silver coatings or the extremely durable 99.4% dielectric coatings (add \$120). If properly cared for, the Silver enhanced diagonal should retain outstanding reflectivity for years and is easily removed for re-coating which generally is available from a variety of coating services. We can also provide coating services or new replacement mirrors for Denkmeier Customers. We assemble and precision-collimate our Power Switch Diagonals in our Spectrum Thin Films Facility in Hauppauge NY.

### Which Power Switch Star Diagonal To Choose?

There are several versions of the Power x Switch Diagonals available. The information provided below should allow the proper diagonal to be selected. We also produce a diagonal with no Power x Switch (*Diagonal-Only*). Magnification factors were derived during testing with a C8 SCT and a Takahashi FS102 Refractor utilizing single eyepieces or a Denkmeier Binoviewer. These magnification factors may change with use of other binoviewer brands. Information indicating the amount of focuser travel for #R1 and #R2 is provided. This data will allow the refractor owner to select the diagonal that will work best in their telescope. Generally, #R1 should focus in all three magnification ranges when used with a binoviewer in almost all refractors. #R2 requires a larger range of focuser movement to cover the 6 magnification modes that are possible with a binoviewer. Weight may also be a consideration when choosing between #R1 and #R2 and such specifications are provided in this manual. Diagonals #S2, #R1 and #R2 include the Dovetail Connector. Information on the Dovetail Connector is also provided in this manual.



## Quick Reference For Choosing Proper Power Switch Diagonal

### **Diagonal #S1 Primarily For SCTs Using Single Eyepieces**

Designed specifically for single eyepiece use (non-binoviewer) in an SCT and allows focal reduction, normal and 2X magnifications instantly. It can be used for refractors but only allows normal power and a 1.8X Barlow effect. With the focal reducer implemented, focus will not be possible with typical refractors.

### **Diagonal #S2 Primarily For SCTs Using Binoviewers**

Designed for use with binoviewers in an SCT and will operate with single eyepieces as well although focal reduction is not as great when used with a single eyepiece in comparison to reduction with Diagonal #S1. #S2 allows 3 magnifications with your binoviewer and three magnifications with any single eyepiece. #S2 will not allow binoviewer use in refractors. Choose #R1 or #R2 for that purpose. For some SCTs, the Dovetail Connector (included) has been designed to connect all Denk Binoviewers directly to the Power x Switch mechanism and may be needed in order to reach focus in reduction mode. See the Dovetail Connector section for more details.

### **Diagonal #R1 Primarily For Refractors With Typical Focus Travel Capabilities**

#R1 has been designed to allow the Denk Binoviewer to reach low, mid, and high magnifications with a single pair of eyepieces. Single eyepieces also have a multi-magnification function. This diagonal includes our special Low Power S Cell that threads directly into the telescope-side diagonal housing. This cell allows the eyepiece-side Power x Switch to function when using a binoviewer. The Dovetail Connector is included and will allow the user to change the focusing range to suit a particular refractor when using a Denk Binoviewer.

### **Diagonal #R2 Primarily For Refractors Using Single Eyepieces or Binoviewers**

#R2 provides excellent versatility allowing a binoviewer to move through up to 6 different magnifications with a low 1.3X power factor to a high power of 3.4X and 4 magnifications in between. This is because it includes two Power x Switches: one on each side of the diagonal housing. Slide out the binoviewer and slide in a single eyepiece and move through 7 magnifications ranging from .75X reduction to 2.3X multiplication. This diagonal can also be used for F/10 SCTs allowing focal reduction normal and 2X with binoviewers and single eyepieces. The total range of focuser movement required is greater than that of #R1. See the focus-travel specifications showing the additional in-travel and out-travel required in comparison to using a single eyepiece with a 2" star diagonal in a refractor. Dovetail Connector is included.

### **The Dovetail Connector (see page 7)**

After measuring the amount of in-travel remaining in your refractor when a single eyepiece has been brought to focus (using a typical 2" star diagonal + 1.25" adapter), the amounts of additional in/out travel required when using the various magnification modes of #R1 and #R2 are listed in the magnification charts. When used, the Dovetail Connector changes the focus position but may reduce edge illumination in refractors depending on eyepiece designs. Experimentation is encouraged. The Dovetail Connector allows the eyepiece holder to be removed and a Denk Binoviewer can then be attached in seconds. No tools are required. This not only creates additional back-focus for SCTs that might not reach focus in the reduction mode when using #S2, but also allows the telescope focus position to be adjusted when using Refractors. While some other brands of binoviewers can be used with Denkmeier Power x Switch Star Diagonals, the Dovetail Connector is designed to fit our Denk Binoviewers only. Without use of the Dovetail Connector, some SCTs will not achieve focal reduction with a binoviewer. With some refractors, use of the Dovetail Connector is important if all magnification modes are to be accommodated by the travel range of the focuser mechanism. There is a section in this manual devoted to using the Dovetail Connector.

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**Diagonal #R1 For Refractors** \$499 + \$10 S/H USA (Add \$120 for Dielectric)

Allows any Denkmeier Binoviewer to be loaded into the eyepiece receptacle for 3 magnifications with a single pair of eyepieces. The Special Low Power S Cell included with this diagonal must be threaded into the Power x Switch Diagonal housing or Diagonal Nosepiece on telescope-side for focus to be reached. Our Dovetail Connector is included and this allows any Denk Binoviewer to be quickly connected directly to the star diagonal housing eliminating the eyepiece holder. No tools are required and this exchange can be done in seconds. Remember that all Power x Switch Diagonals can be used like any regular 2" star diagonal as well. While a slight Barlow and also a reduction effect is possible with single eyepieces, #R1 is primarily designed for the purpose of allowing focus at three magnifications with a binoviewer while using one pair of eyepieces. The Dovetail Connector changes focus positions and primarily produces more back focus in the low power mode (less in-travel required when it is used).



#R1 With Low Power S Cell

**Important:** In-Travel and out-Travel are in comparison to **to focus position of the same eyepiece used in a typical 2" star Diagonal with a normal profile 1.25" adapter.**

**#R1 & Binoviewer (In Eyepiece Holder / OCS Cell In Housing)**

1.3X	"A" IN	1 1/4" In-Travel
2X:	"A/B" OUT	1/4" Out-Travel
3X:	"B" IN	1 1/8" Out-Travel

**#R1 & Binoviewer (Dovetail Connector / OCS Cell In Housing)**

1.3X	"A" IN	5/8" In-Travel
1.9X	"A/B" OUT	1/2" Out-Travel

**Nosepiece On Cell**

2.8X	"B" IN	1 1/4" Out-travel
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LPS Cell In Housing



LPS Cell In Nosepiece

**#R1 & Binoviewer (In Eyepiece Holder / OCS Cell In Diagonal Nosepiece)**

1.3X	"A" IN	1/2" In-Travel
2X	"A/B" OUT	7/8" Out-Travel
3X	"B" IN	1 1/2" Out-Travel

**#R1 & Binoviewer (Dovetail Connector / OCS Cell In Diagonal Nosepiece)**

1.3X	"A" IN"	1/8" Out-Travel
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**Nosepiece In Diag**

2X	"A/B" OUT	1 1/8" Out-Travel
3X	"B" IN	1 5/8" Out-Travel

**#R1 With Single Eyepieces (No OCS Cell Used In Diagonal)**

1X	"A/B" OUT	1" In-Travel
.77X	"A" IN	1 5/8" In-Travel
1.4X	"B" IN	1/4" In-Travel

Note:R1 is always shipped with The Shorty Telescope-Side Nosepiece In order to operate ideally with the Low Power S Cell



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## Diagonal #R2 For Refractors \$599 + \$10 S/H USA (Add \$120 for Dielectric)

Allows any Denkmeier Binoviewer to be loaded into the eyepiece receptacle for 6 magnifications. No additional corrector is required. Load any single eyepiece into the diagonal and achieve 7 magnifications, instantly in many refractors. Focus requirements are indicated along with magnification factors. Other binoviewer brands may work though magnifications and focuser position will be different from the data provided in the charts.

### Uses of Diagonal #R2

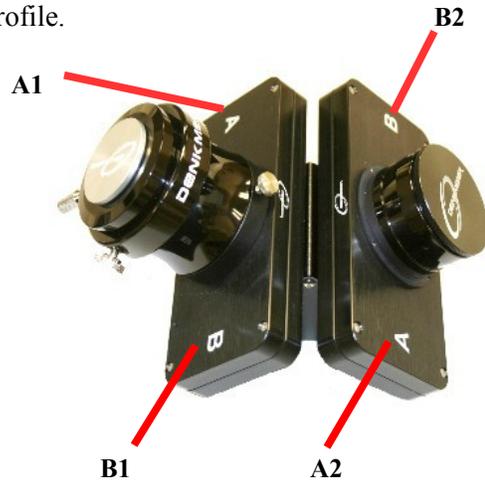
The R2 Diagonal has been designed to allow the use Denk binoviewers or 1.25"/2" single eyepieces. The observer may change from Binoviewer to single eyepiece without removing the diagonal from the telescope. #R2 provides up to 7 varying magnifications when using a single eyepiece and 6 varying magnifications when using a binoviewer. Any Denkmeier Binoviewer can be loaded into the eyepiece tube of the star diagonal and no additional corrector system or Power x Switch needs to be used. Changing magnifications takes seconds. The change in focuser position is indicated to the right. This is in comparison to the same single eyepiece used in a typical 2" star diagonal with a 1.25" adapter of average profile.

**Important:** In-Travel and out-Travel are in comparison to focus position of the same eyepiece used in a typical 2" star diagonal with a normal profile 1.25" adapter.

### Using Single Eyepieces With #R2 In A Refractor

Load any 1.25" eyepiece or 2" eyepiece into the diagonal and obtain the following magnifications:

1X :	All OUT	1 5/8" In-Travel
.75X (reduction):	"A1" IN	2" In-Travel
1.3X:	"B1" IN	7/8" In-Travel
1.6X:	"A2" IN	3/4" Out-Travel
1.85X :	"B2" IN	1 1/4" Out-Travel
2.2X:	"B1" / "A2" IN	1 1/4" Out-Travel
2.3X:	"B1" / "B2" IN	1 3/8" Out-Travel



### Using Binoviewers With #R2 In A Refractor Without The Dovetail Connector

The #R2 Power x Switch Diagonal has been designed to allow a Denkmeier Binoviewer and many other binoviewers to reach focus in 6 different magnification positions. No additional corrector is needed. Just load the binoviewer into the eyepiece receptacle of the diagonal and start Power x Switching. All magnification factors were measured in a Denkmeier Binoviewer and these may change depending on what brand of binoviewer is being used. Please check on our "Binoviewer Only" pricing to see how easy it is to own a Denkmeier.

1.3X:	"A1" / "A2" IN	1 3/4" In-Travel
1.6X :	"A2" / "B2" IN	7/8" In-Travel
2X:	"B1" IN	3/8" In-Travel
2.4X:	"B2" IN	3/8" Out-Travel
3X:	"B1" / "A2" IN	1/2" Out-Travel
3.4X:	"B1" / "B2" IN	1" Out-Travel

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### Using Binoviewers With #R2 In A Refractor With The Dovetail Connector

Using the included Dovetail Connector requires no tools and takes seconds. This allows the Denk Binoviewer to be coupled directly to #R2, bypassing the eyepiece holder. Most importantly, use of this connector eliminates the need for 5/8" in-travel in the lowest power mode of the Power x Switch. The Dovetail Connector is made specifically for Denkmeier Binoviewer usage. Please check on our "Binoviewer Only" pricing to see how easy it is to own a Denkmeier.

1.3X:	"A1/A2" IN	1 1/8" In-Travel
1.6X :	"A1/B2" IN	1/4" In-Travel
1.9X:	"B1" IN	1/8" In-Travel
2.2X:	"B2" IN	1/2" Out-Travel
2.8X:	"B1/A2" IN	5/8" Out-Travel
3.X:	"B1/B2" IN	1 1/8" Out-Travel

### Using #R2 With An SCT (As A Second Telescope)

While R2 has essentially been designed for use with Refractors, it certainly can be used with many SCTs. It will allow focal reduction when using a binoviewer as well as single eyepieces. R2 also allows normal and higher magnifications using both single eyepieces and binoviewers. Since some of the binoviewer magnification factors may be too great for practical use in an F/10 SCT, those using SCTs as their sole telescopes, should choose Diagonal #S1 when only single eyepieces are used, or #S2 when both single eyepieces and binoviewers will be used. The Dovetail Connector may be necessary for focal reduction to occur when using a Denk Binoviewer with #R2 in an SCT. Some SCTs may not have the capability of reaching focus in the reduction mode even when using the Dovetail Connector. This is because the amount of back-focus in SCTs can vary.

### #R2 In An SCT With Single Eyepieces

.83X (Reduction):	"A1" IN
1X:	All OUT
1.25X:	"B1" IN
1.3X:	"A2" IN
1.5X:	"B2" IN
2.5X:	"B1/A2" IN
3X:	"B1/B2" IN



### #R2 In An SCT With Binoviewers

.66X (Reduction):	"A1" IN
1.15X (Denk Binoviewers):	All OUT
2.5X:	"B1" IN
Relay 1.25X*:	"A1/A2" IN

\*When using the Relay Setting, binoviewer focus position will be approximately par focal with single eyepiece focus position. This negates the need for extensive refocusing when changing from single eyepieces to binoviewers.

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## The Dovetail Connector (DC)

The Dovetail Connector With #R1 & #R2

Illumination of many eyepieces is superior when not using the advantages to connecting the Binoviewer to these diagonals via the DC rather than loading into the eyepiece holder. The most basic advantage is that the diagonal becomes lighter in weight. The eyepiece holder weighs 3.5 oz. Since the Dovetail Connector weighs .8 oz., the net loss in weight through the use of the DC rather than the eyepiece holder is

2.7 oz. This will make balancing the refractor a bit easier. The DC also gives the refractor user a choice in how the focuser mechanism is positioned. Using the tables for #R1 and #R2 supplied in this manual, it will be possible to determine whether a particular refractor's focusing range is more compatible with eyepiece holder usage, or DC usage. When using #R1, the position of the Low Power S Cell can be varied as well (in diagonal nosepiece or in diagonal housing) and this also effects how the focuser of the refractor must be positioned for focus in the various Power x Switch modes.



### Using The Dovetail Connector With #S2

When using some SCTs, the focal reduction mode of the Power x Switch may not reach focus because there are no more turns of the knob remaining before focus is reached. By removing the eyepiece holder from the diagonal and using the DC instead, 4-5 fewer turns of the focuser knob are required because back-focus is increased. This can certainly make a big difference between not reaching focus with the reduction mode and reaching focus. The DC is provided with all #S2 Diagonals for this reason. When weight is a consideration, the DC allows the elimination of 2.7 oz.

### Instructions

There are two hex screws that can attach the eyepiece holder to the Power x Switch.

These hex screws are backed out when the diagonal is shipped and the two thumbscrews are retaining the eyepiece holder to the Power x Switch. The hex screws and a tool are included if the user feels that they are ever needed. Even the use of one thumbscrew firmly fastens the eyepiece holder or DC to the Power x Switch,

though using both thumbscrews is more secure. To remove the eyepiece

holder, rotate the thumbscrews outward a few turns and pull away the eyepiece holder. Sometimes, a jiggling motion allows a properly square position to be established. If the holder is not easily removed, it is likely being tilted and

“locking”. The DC is threaded directly to the binoviewer after the binoviewer's nosepiece has been removed. The binoviewer is then attached to the Power x Switch with the thumbscrews. If the binoviewer needs to be rotated, loosen the thumbscrews a bit and rotate, then tighten the thumbscrews once again. Over-tightening is unnecessary. If the DC has been tightened to the binoviewer threads and removal is difficult, a loosening turn of the binoviewer may be applied before the thumbscrews are backed out from the Power x Switch. This loosens the DC from the Binoviewer.



#S2 Using DC

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## Diagonal #S1 For SCTs

\$389 Includes SCT Visual back adapter (Add \$120 For Dielectric). Choose the “Shorty” Version for all SCTs under 10” in aperture. #S1 allows single eyepieces to be used in an SCT for focal reduction, normal and 2X magnifications. The Power x Switch is labeled “A” and “B”.

Note: S1 does not have adequate clearance for the 8” LX90, and some other new smaller SCTs. #S2 has more clearance for fork mounted SCTs because the Power Switch is on the eyepiece side of the star diagonal so even those using only single eyepieces with certain SCTs should choose #S2. **Note that S1 and S2 cannot be used in combination with a separate focal reducer.**

## #S1 Magnification Factors

### #S1 In An SCT With Single Eyepieces

.66X\* (Reduction): “A” IN  
1X: “A / B” OUT  
2X: “B” IN

\*This reduction factor may be increased by placing an extension tube between eyepiece and diagonal.



#S1 Dielectric Version With Carbon Side Plates

### #S1 In An SCT With Binoviewers

High Power mode may exceed maximum magnification recommendations. Focal reduction mode is non-functional. Only the A/B OUT setting is operational. Always choose Diagonal #S2 if planning to use binoviewers in an SCT.

### #S1 in a Refractor With Single Eyepieces

1X: “OUT”  
1.8X: “B” IN

In A Refractor, Focal Reduction is non-functional ( “A” IN)

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**Diagonal #S2 For SCTs** \$389 includes Dovetail Connector, SCT Visual Back Adapter, 1.25" adapter (add \$120 for Dielectric) Allows Binoviewers to be used in SCTs for reduction and multiplication factors. Single eyepieces can also be used though reduction and multiplication factors are minimized somewhat. Choose Diagonal #S1 if using single eyepieces only and no binoviewer. **Note that S1 and S2 cannot be used in combination with a separate focal reducer.**

#### #S2 in an SCT With Binoviewers

.59X\* (Reduction): "A" IN  
1.1X: "A / B" OUT  
1.7X: "B" IN

\*Reduction can be increased by withdrawing the Binoviewer from the eyepiece holder. This requires additional focuser turning and the amount available for the particular SCT will be the limiting factor in the amount of reduction obtainable. Also increases Multiplication when used.



**Diagonal #S2**

#### #S2 used with single eyepieces

.83X-.66X "A" IN (Moving the eyepiece outward from the diagonal makes reduction more extreme)  
1X "A/B" OUT  
1.5X-2X "B" IN (Moving eyepiece outward from the diagonal increases magnification factor.)

#### SCTs With Less Back-focus

Certain SCT tube assemblies have less back focus than others. What is back-focus? This term describes the location of the focal plane created by the telescope system. With a telescope having less back focus, the image formed by the telescope would be located closer in toward the telescope tube. Since the reduction mode of the Power x Switch requires *more* back-focus, some tube assemblies may fall short of allowing an in-focus image to occur when using the reduction mode of the Power x Switch Diagonal #S2. We have produced the Dovetail Connector that allows a Denkmeier Binoviewer to couple directly to #S2. The eyepiece holder of #S2 is quickly removed and the binoviewer can be attached in it's place, directly to the #S2 Power x Switch. This configuration requires less back focus and most SCTs should then reach focus in reduction mode. No tools are required and removing the eyepiece holder and adding the binoviewer takes only seconds. It should also be noted that individual SCT tube assemblies often vary in back-focus with specifications stated for some models as +/- 5" (10" spread!). The reduction factor is somewhat diminished when using the Dovetail Connector and F/6.6 should be expected. When testing on an 8" SCT, the Dovetail Connector provided 5 additional turns of the focuser knob.

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## Add The Optional Filter Switch & Denk Hi Def Filters

Our Denkmeier Filter Switch allows instant introduction of either of two filters or a non-filtered view. That's three instant choices always available at the touch of your fingertips. Add Carriers for more filters. They can be inserted or removed with no tools at anytime. Keep all of your filters loaded in the carriers and ready for use in the field. The operation of this Filter Switch is so smooth that "blinking" star fields while searching for that elusive sub-stellar planetary nebula is a snap.



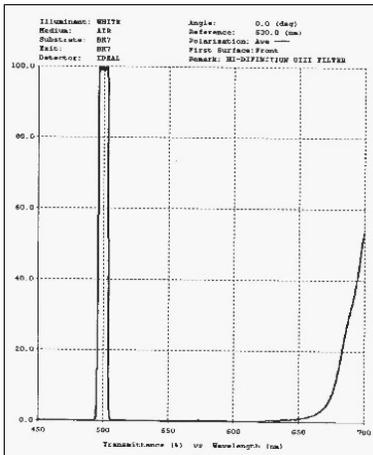
### The Filter Switch Option

The Carriers load into each side of the Filter switch where they be moved in and out of the light path at anytime. The illustration at right shows the two inch carrier with an optional 1.25" insert that is carrying a smaller format filter. In this way, your two inch and 1.25" filters can all be used quickly and conveniently with the Denk Filter Switch System.

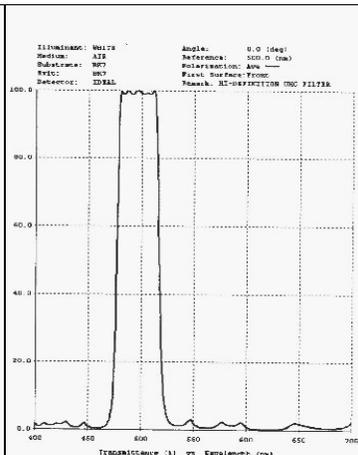


Our new Hi Def OIII, UHC, and Special Dual Band Planetary Filters are now available and coated at our Spectrum Thin Films Facility in Hauppauge NY. Our state of the art "Ion Beam Sputtering Chamber" (IBS) produces exacting spectral characteristics of the coating in order to pass only the desired bandpass of the spectrum emitted by the object being observed to your eyes.

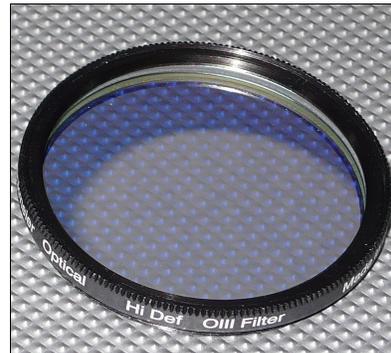
Choose between our new Two Inch or 1.25" Hi Def OIII, UHC and Planetary Filters. Special Discounts are available for Binoviewer Packages when adding our new filters.



Hi Def OIII Spectral Curve



Hi Def UHC Spectral Curve



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### Pricing For Diagonals Without Power x Switch



Regular

Shorty

**2" Star Diagonal Only (Regular Version with no Power x Switch):** \$140 includes Silver Enhanced 97% reflective mirror, 1.25" adapter. Regular tube length on telescope side for 10" and larger SCTs. Available with 99% Dielectric Coating \$260

97% Enhanced: Choose Code # Diag97-REG    99% Dielectric Version: Choose Code # Diagdie-REG

**2" Star Diagonal Only (Shorty Version with no Power x Switch):** \$140 includes Silver Enhanced 97% reflective mirror, 1.25" adapter. Shorty tube length on telescope side recommended for SCTs that are smaller than 10". Available with 99% Dielectric Coating \$260

97% Enhanced: Choose Code # Diag97-Short    99% Dielectric Version Choose Code # Diagdie-Short

### Prices For Thread-On Visual backs For Your SCT

These adapters threads to the rear of your SCT and allow our diagonals to slip in and be retained by the adapter's double thumbscrew/compression system. Be sure to match the adapter to the diagonal by selecting the Shorty Adapter for a Shorty Diagonal or a Regular Adapter for a Regular Diagonal.

**Shorty SCT Visual Back Adapter:** \$39 for Low Profile SCT Adapter for use on any SCT accepting a typical SCT thread-on diagonal. Diagonal must have a Short Tube on Telescope Side (Diag-Short) to properly take advantage of decreased profile of adapter. Code # SCTAPT-SHORT

**Regular SCT Visual Back Adapter:** \$39 for Diag-Long. Use with 10" or larger SCTs where swing-through clearance is not an issue. Code# SCTAPT-REG



Shorty Adapter

Regular Adapter

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### Which One: Power x Switch On Diagonal or On Binoviewer?

Many astronomy enthusiasts will wonder if they should buy a complete Denkmeier Power x Switch Package with Power x Switch located on the Binoviewer, or just a Denk Binoviewer that operates in combination with a Power x Switch Star Diagonal. It should be pointed out immediately that Newtonian telescope users **must** have the Power x Switch installed on the Binoviewer. A Newtonian Power x Switch Package or Universal Power x Switch Package is the only choice if focus is to be achieved. But what is the best strategy for SCT and Refractor users?

### Advantages of the Diagonal Power Switch vs. the Binoviewer Power x Switch

The #R1 and #R2 Power Switch Diagonals allow superior illumination of some eyepieces like 24 Panoptics® and 30mm Ultimas® when used in a Denkmeier Binoviewer. They also allow some other binoviewers to be used in combination with Denkmeier's Power x Switching technology. Switching from binoviewing to single eyepieces is as simple as removing the binoviewer, and placing any 2" or 1.25" eyepiece into the star diagonal (a 1.25" adapter is always included). The Dovetail Connector provides a means to choose where a refractor will focus. Many customers happen to need a high quality 2" star diagonal anyway.

### Disadvantages of Diagonal Power X Switch vs. Power x Switch on the Binoviewer:

Adds some extra weight. May add cost to the Binoviewer system depending on which Package the Power x Diagonal/Binoviewer is being compared with. Many binoviewer customers already own high quality 2" Star Diagonals. Additional focuser travel is required when using #R1 and #R2 (Check Magnification Charts). Note: Newtonian Telescopes **must** have a Power x Switch installed directly on the Binoviewer if focus is to be achieved.

### Why Not Add A Denk Binoviewer To A Power x Switch Diagonal?

SCT and Refractor Owners can now experience two-eyed views of impeccable quality with magnification changing ability at their fingertips. Purchase an #R1, #R2 or #S2 Diagonal featuring our versatile Power x Switch technology and add a top rated Denkmeier Binoviewer.



Denk II

### The Price of Adding a Binoviewer To Any Power x Switch Diagonal

Standard Binoviewer with 2 SCD Holders: \$499

Denk II Binoviewer with 2 SCD Holders: \$899



Standard

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## Denk Star Diagonal Specifications

Weight:

2" Diagonal with no Power x Switch: 18 oz

#S1 with Telescope-side Power x Switch: 23 oz

#S2 with eyepiece-side Power x Switch: 23 oz

#R2 with telescope-side and eyepiece-side Power x Switches: 28 oz

Deduct 2.7 oz when using the Dovetail Connector instead of the eyepiece holder.

Add 2.9 oz when using the 2"/1.25" adapter

Mirrors:

10mm thick

Lambda/10 (10<sup>th</sup> Wave flatness)

Enhanced Silver: 97% Reflective

Dielectric : 99.4% Reflective

SCT Visual Back Adapters: Threads match all Meade® and Celestron® visual backs.

Inner Compression ring design with dual thumb-screws

All Diagonals feature a compression style eyepiece holder design with dual thumbscrews and a 2"/1.25" adapter with compression ring gripping design. Note that Dielectric Versions now come with Carbon Fiber Side Covers.



**New Carbon Side Plates with the Dielectric Models**

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## Should I Choose The Standard or Premium Denk II Binoviewer? Standard Binoviewer & Denk II Binoviewer Comparison Chart

Category	STD Binoviewer	Denk II
<b>Weight</b>	20 oz.	20 oz.
<b>Coatings</b>	MgF2 Magnesium Flouride	Multi-coated Broadband Dielectric
<b>Glass types</b>	Grade A Schott BK7	Grade A Schott BK7
<b>Surface Accuracy</b>	1/4 ~	1/8 ~
<b>Clear Aperture</b>	26mm	26mm
<b>Eyepiece Holders</b>	Focusing SCD Holders	Focusing SCD Holders
<b>Dust Caps</b>	Plastic plugs and nose cap	Laser Engraved aluminum plugs and cap
<b>Protective Case</b>	Aluminum/Die-Cut Foam	Aluminum/Die-Cut Foam
<b>Price for Binoviewer (Add To A Power x Switch Diagonal)</b>	<b>\$499</b>	<b>\$899</b>
<b>Price for Power X Switch Package</b>	Single Arm Power x Switch Includes 1.25" format optical components \$695	Dual Arm Power x Switch Includes some 2" format optical components \$1295

### Should I Choose The Standard or Premium Denk II Binoviewer?

This is perhaps the most often asked question that we field from soon-to-be Denkmeier owners. Both binoviewer versions have 26mm clear aperture prisms made from Grade A BK7 glass. The Standard Binoviewer prism surfaces are polished to ¼ wave and include an expertly applied MgF2 coating on all air to glass optical surfaces. The Premium Denk II Prisms are polished to 1/8 wave and feature very high efficiency multi-coatings. Generally, the transmission of The Standard Binoviewer is 89% and the transmission of The Denk II is 97%. This is very analogous to comparing an 89% reflective mirror to a 97% reflective mirror. Without mincing words, The Premium Denk II is the best binoviewer that we can make. The Standard Binoviewer represents a truly fantastic binoviewer system with 26mm aperture prisms at a very economical price. Both versions feature quality machining throughout.

Note: All Power Switch Diagonals Feature The New Sleek Design

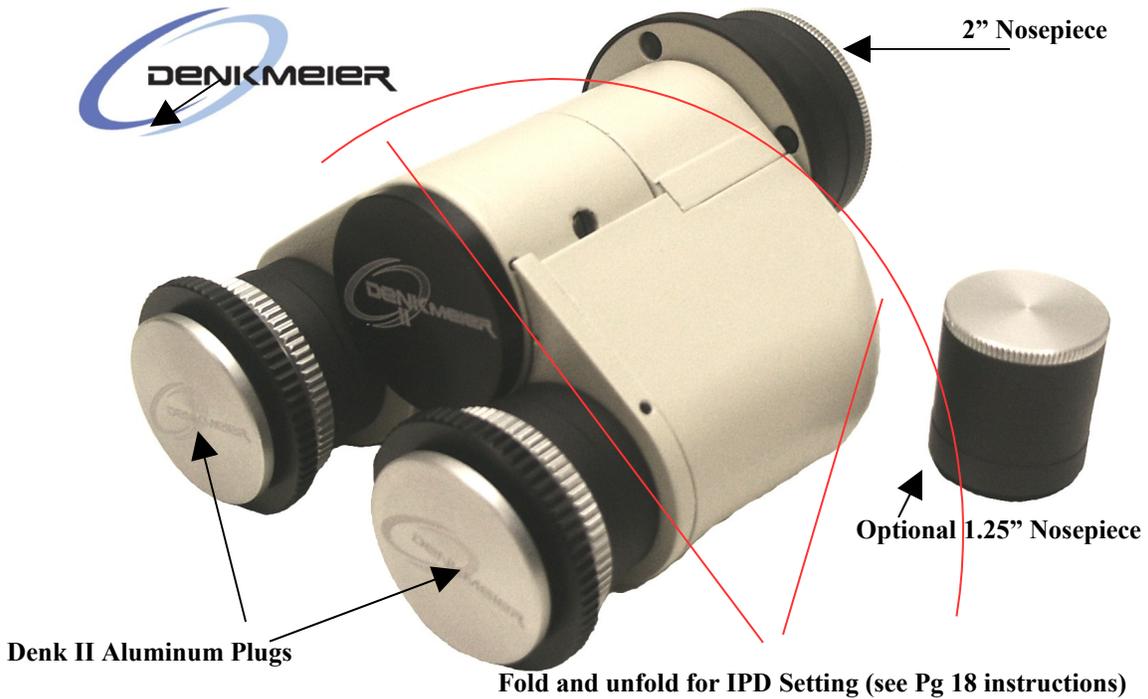


## The Denkmeier Binoviewer

This section covers Denkmeier Standard or Denk II Binoviewer operation. Basically, the magnification factors are outlined in the section covering the particular Power x Switch Diagonal that you have ordered. Some information about the Denkmeier Binoviewer is provided in this section.

### Binoviewer Operation

The Denk II and Standard Binoviewers include a 2" nosepiece when ordered with a Power x Switch Star Diagonal. The Binoviewers are shipped with this nosepiece already threaded to the binoviewer. The binoviewer is loaded into the star diagonal like any 2" eyepiece would be. Then, the diagonal instructions for #S2, #R1, and #R2 should be followed depending on the diagonal that has been ordered. A 1.25" nosepiece is also shipped with The Denk II Binoviewer.





# Binoviewer Basics

## The Diopter Holders



The Illustration above shows the basic parts of the Denk Self Centering Diopter Holders (SCD Holders). Self Centering refers to the action of the internal split ring within the interior of the holder. When the eyepiece is inserted and the black rings are turned clock-wise to hold the eyepiece firmly, an internal split ring is closed around the eyepiece barrel and contacts the barrel on the entire circumference. Unlike set screws which will create a tilt each eyepiece, this split internal ring will center the eyepiece and at the same time, retain it.

**Step 1:** Remove the eyepiece metal plugs that the binoviewer was shipped with by rotating the Black Rings counter-clockwise.

**Step 2:** Insert the eyepieces and rotate the Black Rings clock-wise so that the eyepieces are held snugly. There is no need to over tighten the black rings. The eyepieces may still be slid with some effort and this is normal.

**Step 3:** Rotate the Silver Rings counter-clockwise but only a small amount so that they move upward creating a small gap between the Silver Ring and the black base of the holders that attach the holders to the binoviewer body.

**Step 4:** After the binoviewer is loaded into the telescope being used and a rough focus with both eyes is obtained using the main telescope focuser, each diopter may be slightly rotated upward or downward for ultra-fine focus tuning for each individual eye (counter-clockwise moves them upward, clock-wise moves them downward).

Note: All Power Switch Diagonals Feature The New Sleek Design



## Inserting The Eyepieces Properly

The illustration on the right shows D21 eyepieces installed within the Diopter Holders. The right eyepiece has not been fully seated in the diopter holder. This will create a differential in focus between the eyepieces. Make sure that both eyepieces are fully inserted within the diopter holder and that the black rings have been turned clock-wise for a fairly snug fit. Again, the Silver Rings have been rotated upward only a very small amount. This is all that is necessary so that they each may be moved up or down once the main telescope focuser has been adjusted for rough focus while viewing with two eyes. Only then should individual super-fine focus for each eye be produced through using the diopters by slight rotation of the silver rings.



## Adjusting The Interpupillary Distance

Each Standard and Denk II Binoviewer is capable of being “folded to accommodate the users eyes. This is done by narrowing or widening the eyepiece spacing to match the user’s eye width. This individual eye-width is called “inter-pupillary distance” (IPD) and The Denk II and Standard can be set to a minimum of 48mm and a maximum of 75mm. This will accommodate the eye spacing of most adults and children. Provisions can be made by Denkmeier Optical to increase the maximum IPD if this is required though this is very seldom a requirement. It is very important to fold the Binoviewer after a rough focus is achieved until the user can see one circle representing the eyepiece field when using two eyes. Practicing with the binoviewer held up to a light source may be helpful before beginning actual night observations through a telescope. Load in eyepieces and view a light source or illuminated ceiling indoors. You will notice that when the IPD has been adjusted by folding the binoviewers in or out, a point will occur when the illuminated circle becomes one field and no dark division in the center is seen. When this is observed, the ideal IPD setting for your eyes has been found. After using the Binoviewer a few times, this process will become second nature. It will not be necessary to lock this position into place.

### The Narrowest IPD Position is 48mm

Note that the Binoviewer will fold closed to the point where the flat areas of each half of the binoviewer fully contact each other. If you are not able to close the binoviewer to your minimum width in the field, you are almost surely not closing the binoviewer halves until they touch. Use enough pressure to accomplish this, The binoviewer will not break! Then you will likely open the binoviewer until you see a complete single field while using both eyes.

Note: All Power Switch Diagonals Feature The New Sleek Design



## #R1 Magnification Chart

### #R1 With Binoviewer (In Eyepiece Holder / OCS Cell In Housing)

1.3X	“A” “IN”	1 1/4” In-Travel
2X:	A/B “OUT”	1/4” Out-Travel
3X:	“B” “IN”	1 1/8” Out-Travel

### #R1 With Binoviewer (Dovetail Connector / OCS Cell In Housing)

1.3X	“A” “IN”	5/8” In-Travel
1.9X	“A/B” “OUT”	1/2” Out-Travel
2.8X	“B” “IN”	1 1/4” Out-travel

### #R1 With Binoviewer (In Eyepiece Holder / OCS Cell In Diagonal Nosepiece)

1.3X	“A” “IN”	1/2” In-Travel
2X	“A/B” “OUT”	7/8” Out-Travel
3X	“B” “IN”	1 1/2” Out-Travel

### #R1 With Binoviewer (Dovetail Connector / OCS Cell In Diagonal Nosepiece)

1.3X	“A” “IN”	1/8” Out-Travel
2X	“A/B” “OUT”	1 1/8” Out-Travel
3X	“B” “IN”	1 5/8” Out-Travel

### #R1 With Single Eyepieces (No OCS Cell Used In Diagonal)

1X	Both Arms “OUT”	1” In-Travel
.77X	“A” “IN”	1 5/8” In-Travel
1.4X	“B” “IN”	1/4” In-Travel

**Important:** In-Travel and Out-Travel are in comparison to to focus position of the same eyepiece used in a typical 2” Star Diagonal with a normal profile 1.25” adapter.



## #R2 Magnification Chart

### #R2 In A Refractor With Single Eyepieces

1X :	All "OUT"	1 5/8" In-Travel
.75X (reduction):	"A1" "IN"	2" In-Travel
1.3X:	"B1" "IN"	7/8" In-Travel
1.6X:	"A2" "IN"	3/4" Out-Travel
1.85X :	"B2" "IN"	1 1/4" Out-Travel
2.2X:	"B1" / "A2" "IN"	1 1/4" Out-Travel
2.3X:	"B1" / "B2" "IN"	1 3/8" Out-Travel

### Using Binoviewers With #R2 In A Refractor Without The Dovetail Connector

1.3X:	"A1" / "A2" "IN"	1 3/4" In-Travel
1.6X :	"A1" / "B2" "IN"	7/8" In-Travel
2X:	"A2" "IN"	3/8" In-Travel
2.4X:	"B2" "IN"	3/8" Out-Travel
3X:	"B1" / "A2" "IN"	1/2 " Out-Travel
3.4X:	"B1" / "B2" "IN"	1 " Out-Travel

### Using Binoviewers With #R2 In A Refractor With The Dovetail Connector

1.3X:	"A1" / "A2" "IN"	1 1/8" In-Travel
1.6X :	"A1" / "B2" "IN"	1/4" In-Travel
1.9X:	"A2" "IN"	1/8" In-Travel
2.2X:	"B2" "IN"	1/2" Out-Travel
2.8X:	"B1" / "A2" "IN"	5/8" Out-Travel
3.X:	"B1" / "B2" "IN"	1 1/8" Out-Travel

### #R2 In An SCT With Single Eyepieces

.83X (Reduction):	"A1" "IN"
1X:	All "OUT"
1.25X:	"B1" "IN"
1.3X:	"A2" "IN"
1.5X:	"B2" "IN"
2.5X:	"B1" / "A2" "IN"
3X:	"B1" / "B2" "IN"

### #R2 In An SCT With Binoviewers

.66X (Reduction):	"A" "IN"
1.15X (Denk Binoviewers):	All "OUT"
2.5X:	"B1" "IN"
Relay 1.25X*:	"A1" / "A2" "IN"

\*When using the Relay Setting, binoviewer focus position will be near par focal with single eyepiece focus position. This negates the need for extensive refocusing when changing from single eyepieces to binoviewers. **Important:** In-Travel and Out-Travel are in comparison to the focuser position of a refractor using the same eyepiece used in a typical 2" Star Diagonal with a normal profile 1.25" adapter.