

## **M.A.L.T.A.™ Mount Manual ALTitude Azimuth**

Coronado has built a small, rugged, and portable Alt-azimuth mount, M.A.L.T.A.™, to be used with the P.S.T.™. The threads on the bottom of the P.S.T.™ will accept any standard 1/4 20 pitch photographic or astronomy mounting accessories. To use the M.A.L.T.A.™ attach it to the P.S.T.™ using the two screws included with the M.A.L.T.A.™. Then secure the mount head to the base using the tension screw going through the top down into the base. The individual legs then thread into their holes. By loosening the tension screw one can adjust the azimuth or horizontal axis, retighten the tension screw to freeze that axis. The silver tension screw on the mount head will adjust the altitude or vertical axis when loosened and hold the P.S.T.™ firm when tightened down. See the section on Sol Ranger™ for precise alignment.



## **Sol Ranger™**

The P.S.T.™ has been designed with an internal Sol Ranger™ Sun spotting device. There is a small pinhole on the front face of the P.S.T.™ body and a small opaque window on the top, near the eyepiece holder. When properly aligned on the Sun the pinhole will let in light that will be projected onto the opaque glass in the form of a small harmless ball. It is NOT necessary to put your eye up to the opaque glass. Best alignment will be found when this ball of light is near center but it is not always dead center. Adding a SM40/T-Max™ will obstruct the Sol Ranger™.

## **Cleaning**

Cleaning the P.S.T.™ should be done with a fine camel hair brush to remove any dirt from the objective. High quality lens cleaner and a soft cloth can also be used on the objective and the body itself. Take care of the P.S.T.™ as you would any high quality optical instrument and the views will last a lifetime.

## **What You Will See With The Coronado Personal Solar Telescope™.**

The narrowband filter within the P.S.T.™ isolates a specific bandwidth of light called Hydrogen Alpha. This allows one to view the Sun's Chromosphere. The image of the Sun will be a deep red across the entire disk. Be aware that it can take time to 'train' one's eye for H-Alpha viewing. This instrument was designed for single eyepiece visual use only. Coronado will not guarantee the performance of aftermarket products, including eyepieces, other than those built by Coronado for the P.S.T.™.

**Prominences** – H-Alpha emissions projecting beyond the limb of the Sun, consisting of complex clouds or streamers of gas above or in the chromosphere.

**Filaments** – Prominences seen against the face of the Sun, appearing as long narrow dark streamers or diffuse complex dark areas in H-Alpha light. Filaments often mark areas of magnetic shearing

**Active Region** - A localized, transient volume of the solar atmosphere in which plagues, Sunspots, and flares may be observed. Active regions are the result of enhanced magnetic fields and appear darker than the surrounding areas with a roughly circular shape.

**Plage** – patchy H-Alpha brightening on the solar disk, usually found in or near active regions, which can last for several days. Plage is irregular in shape and variable in brightness, marking areas of nearly vertical emerging or reconnecting magnetic field lines.

**Sunspots** – Moderate to large spots usually consisting of a darker central region (umbra) and a lighter halo consisting of many short fine fibrils (penumbra).

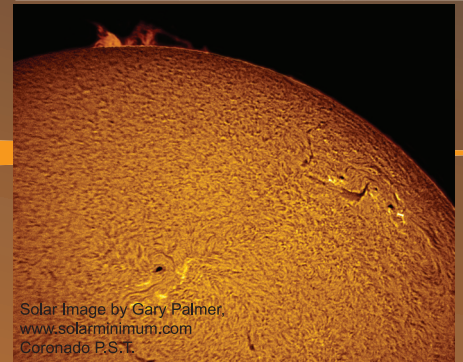
**Flares** - A sudden eruption of energy in the solar atmosphere lasting minutes to hours, from which radiation and particles are emitted.

# **CORONADO™**

## **P.S.T.™**

### **Personal Solar Telescope™**

#### **Instruction Manual**



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**Coronado Safety Warnings**

As with all of our solar viewing products the P.S.T.™ has been built with safety as the top priority. This instrument was tested and sealed at our facilities as a complete, safe, and working unit. Do not attempt to disassemble the P.S.T.™. Doing so will void your warranty and may compromise your safety.

Coronado is obsessed with safety and you should be too.

Details of our safety specifications can be found at [www.coronadofilters.com](http://www.coronadofilters.com). Never use a solar filter unless the manufacturer is able to provide such information. Before each use make sure the P.S.T.™ does not appear damaged in any way – if you have any questions please contact

Coronado or your dealer.

U.S. Patent No. 7,054,518.

## How To Adjust The Tuning And Focus On The P.S.T.

The Coronado P.S.T.<sup>™</sup> is equipped with a tuning mechanism which allows the user to adjust performance of the solar filter. The purpose of this adjustment is to compensate for possible detuning of the filter due to the change in operating conditions (such as barometric pressure that can change with elevation changes.) The adjustable tuner is located right at the end of the optical tube assembly where it merges to the rectangular body of the P.S.T.<sup>™</sup>, and is easily recognized by the knurled rubber ring (see Fig. 1). The minute spectral adjustment of the etalon filter is accomplished by simply rotating this knurled ring in either direction. In most instances the filter adjustment will not be required – the P.S.T.<sup>™</sup> is delivered properly tuned by Coronado engineers. The judgment about occasional adjustment is made based on overall image quality and the ability to see the image details with a satisfactory contrast. NOTE: The maximum possible extent of a (relatively tight) rotation of the adjustable tuner is approximately 130°. No excessive force should be applied in an attempt to rotate the knurled ring further than mechanically allowed. The best achievable contrast of the image will be found within the limits of adjustment, and, once such image is obtained, no further improvement of the image quality can be gained by forcing the tuner. In search for a better solar image, the astronomer should first find the “sweet spot” by appropriately focusing the telescope using the focusing knob (see fig 1). Once the P.S.T.<sup>™</sup> is appropriately focused, the edge of the solar disk will appear sharp. However, if, for example, the prominences are not seen after the telescope has been focused, the filter adjustment may be of help. In this case the knurled ring of the adjustable tuner should be appropriately turned until the sought contrast of the Sun’s chromosphere is apparent.



We would like to mention one more convenient operational feature provided by the adjustable tuner of the P.S.T.<sup>™</sup>. Should the user decide to double-stack their P.S.T.<sup>™</sup> with a SolarMax40<sup>™</sup>, there will be no need to send the P.S.T.<sup>™</sup> back to Coronado for spectral matching of the filters. The user will be able to properly spectrally match almost any SolarMax 40<sup>™</sup> to the filter of the P.S.T.<sup>™</sup> by using the adjustable tuner of the P.S.T.<sup>™</sup> once the telescope has been double-stacked.

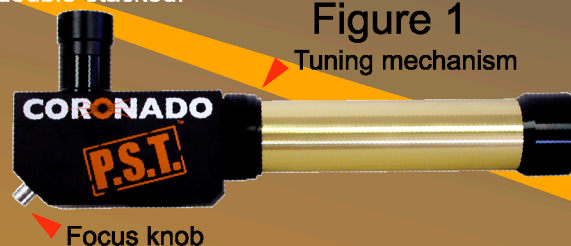


Figure 1  
Tuning mechanism

The advantage of double stacking is the resulting bandpass of <math><0.6\text{\AA}</math>. This will dramatically increase the amount of surface detail that one can see with the P.S.T.<sup>™</sup>. This module does not change any other performance specs other than the bandpass. Because the T-Max<sup>™</sup> blocks the input for the Sol Ranger<sup>™</sup> Coronado recommends aligning the P.S.T.<sup>™</sup> before attaching the SolarMax 40<sup>™</sup> unit.

### Product Specifications





Aperture – 40mm  
Focal Length – 400mm  
F/ Ratio – F/10  
Bandwidth – <math><1.0\text{\AA}</math>  
Thermal Stability – 0.005 $\text{\AA}/\text{C}$   
Blocking – Full blocking >math>10^{-5}</math> from EUV to far IR

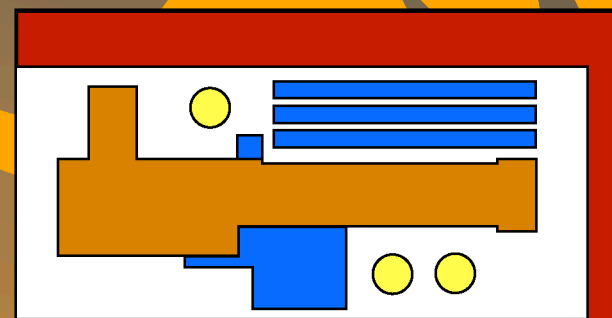
### Storage

If you have not purchased the optional travel case for the Coronado P.S.T.<sup>™</sup> you may skip this section. Coronado has designed the packaging for your P.S.T.<sup>™</sup> to fit directly into the optional carrying case. Simply remove the telescope and accessories and lift out the foam, a section from the top and right hand side will have to be removed as shown in figure 2 on the following page.

Slide the foam into the travel case with the cutouts facing up and replace the P.S.T.<sup>™</sup> and accessories. Follow the color key and diagram.

Figure 2

-  P.S.T.<sup>™</sup> storage
-  Remove for use with optional hard case.
-  Remove for storing MALTA<sup>™</sup> mount
-  Eyepiece storage.



Please visit our website for a look at our image gallery, useful observing and imaging tips in ‘Solar Chat’, and our complete product catalog. As you become more involved in solar viewing we have several accessories you can purchase to enhance your enjoyment. Pictures and pricing can be found at [www.coronadofilters.com](http://www.coronadofilters.com) or call us 800-626-3233

- CEMAX<sup>™</sup> Eyepieces & Barlow – Optically enhanced with fully multi-coated lenses to have their peak transmittance at H $\alpha$ . Better contrast with less scattered light.
- Ultimate Solar Observers Hat – Made of a UV reflective material to keep you cool while observing. Also serves as a dark cloth for reducing incidental light.