# Lunt 40mm Dedicated H-alpha Telescope



**Contents**: Lunt 40mm H-alpha Telescope with Lunt Blocking Filter
Integrated vixen style dovetail
TeleVue Sol Searcher
Warranty registration instruction card
(Eyepiece not included)

Lunt Solar Systems 2520 N. Coyote Dr. #111 Tucson, AZ 85745 (520) 344-7348 sales@luntsolarsystems.com

## Safety Information

There are inherent dangers when looking at the Sun through any instrument. Lunt Solar Systems has taken your safety very seriously in the design of our systems. With safety being the highest priority, we ask that you read and understand the operation of your telescope or filter system prior to use. NEVER attempt to disassemble the system. Do NOT use your system if it is in some way compromised due to mishandling or damage. Please contact the factory with ANY questions or concerns regarding the safe use of your instrument.

**Always check any telescope before use. Do not use any telescope or filter that appears to be damaged. Verify that all glass and filters are in place. Contact Lunt Solar with any questions before use.**

**The Blocking Filter diagonal must ALWAYS be used with the Lunt Telescope or Filter. Lunt Filters and Blocking Filters are NOT interchangeable with products from other manufactures.**

**Never look at the Sun with your naked eye or with a telescope that is not specifically designed to do so. Permanent and irreversible eye damage may result.**

**Check that all filters are installed correctly and are free of any surface contamination that may compromise performance and/or potentially damage the surface of the optic when exposed to the Sun. i.e.: fingerprints. Perform a routine safety check before each viewing session.**

**Never leave the solar telescope unsupervised while pointed at the Sun. People who are not familiar with the correct operating procedures of the system may inadvertently replace the diagonal or remove the filter itself not being aware of the integrated safety features of each.**

**The Lunt Solar filter/telescopes are NOT interchangeable with products from other manufactures.**

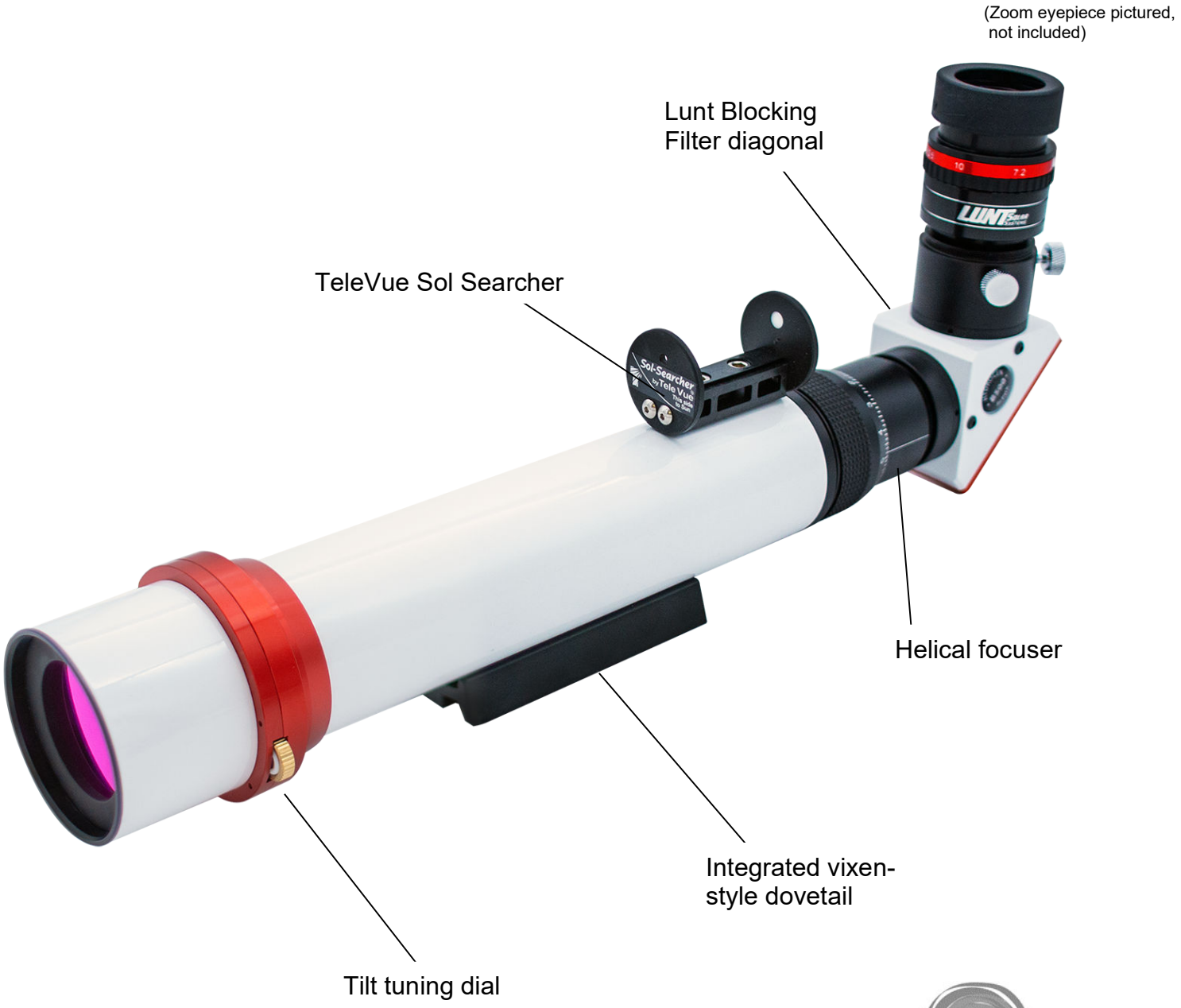
**Always be aware that you are viewing in direct sunlight. Take necessary precautions to protect yourself from sunburn and heat exposure.**

If ever in doubt, please contact our customer service team: sales@luntsolarsystems.com



**Congratulations** and thank you for your purchase of the new **Lunt 40mm Dedicated H-alpha telescope**! The Lunt 40mm is a complete Solar Telescope. The refractor-based system has a precision doublet lens with a 40mm aperture that is optimized at 656nm. The focal length is 400mm providing a ~3.67 mm image thru a 5 mm blocking filter. For imaging purposes a B600 and B1200 blocking filter upgrade is available. Focus adjustment is achieved with a helical style focuser. (Upgradeable to a 1.25" FeatherTouch if desired.) This system has an external, front mounted, etalon with tilt-tune adjustment that allows for a ~0.65 Angstrom bandpass. This is a portable system great for beginners and enthusiasts alike!

Here is an overview of the components of your new solar viewing telescope:

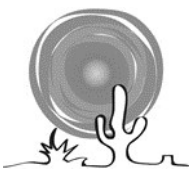


## Let's Get Started

Your new Lunt 40mm Dedicated H-alpha telescope comes with an integrated vixen-style dovetail to make attachment to your mount an easy process. Once your telescope is firmly in place following the appropriate steps for your mount, you will be ready to get started!

- Place a ~18-21mm eyepiece in the Lunt Blocking Filter so you have the largest field of view to look at. This makes finding the Sun on the first attempt a little easier.
- Pull the nose of the B500 diagonal out about 20mm (~.75").
- Once you have centered the Sun in the field align the Sol Searcher. It is adjustable if it does not arrive aligned. (Instructions from TeleVue included)
- Look thru the eyepiece. Do you see a fuzzy red ball? If not, make sure you have removed the dust cap from the front. Try to re-align the Sol Searcher and look again. After some trial and error the Sun should appear in the eyepiece.
- Focus: Coarse focus is achieved by moving the diagonal drawtube out as stated above. Fine focus is achieved using the helical style focuser. Focus so that the edge of the Sun is as sharp as possible. You may have to re-adjust the drawtube if the eyepiece focuser runs out of travel.
- Tuning: Here is where the magic begins. On the front middle of the front mounted filter assembly is a small brass wheel recessed into the filter housing. Move the knob all the way to the left when at the eyepiece end. Do NOT force the wheel at the end as may stick. While looking thru the instrument SLOWLY move the wheel to the right. After about 2-3 turns you should have seen the edge detail of the Sun come into view and then fade away again. Move the wheel back in the other direction until the prominences are most vivid. Personal preference will specify where the tuning point is dependent upon what you like to observe. Once tuned, there should be no reason to re-tune during an observing session. The tilt adjustment of the Lunt 40mm is fairly coarse and will allow the user to shift thru the "wings" of Ha quickly. Very small adjustments are required and if you move the tilt too fast you may miss the tuning point.
- Re-Focus. When you feel you have tuned effectively, re-focus the telescope. The finer details should come into view. Try to relax the eye while observing and let the details come to you.
- Change the eyepiece. When you have a good feel for observing at lower magnifications try to increase the magnifications in small steps. Place an interesting artifact in the center of the field. Replace the 25mm with a 10-12mm eyepiece. Look thru the eyepiece and re-focus carefully. The image has dimmed slightly due to higher magnification but the details should be easier to see. You can push the magnification as seeing conditions allow. At any point you can return to the 25mm, re-align the system and try again.

**Keep In Mind:** Seeing conditions can affect the performance of your telescope. Cloud cover, wind, humidity and heat can all play a factor.



# Handling and Equipment Care

**Handling**
A Lunt Solar Systems solar filter or telescope houses many optical elements that are all pre-aligned and fixed at the factory. There are no user serviceable parts inside the scope. The telescope or filter should NEVER be taken apart. This will not only void your warranty leading to costly repairs, it can only serve to further damage the instrument and compromise its safety.

- Most Lunt Solar Systems filters and telescopes house a delicate optical element referred to as an Etalon. These etalons are suspended in the filter housing in an effort to both protect it and isolate it from outside influences, which could de-tune the etalon filter. Extensive research has been done to assure the best performance of what is essentially the "heart" of the system while protecting it from the day-to-day bumps, jarring, and vibrations of normal use.

- The instrument should NEVER be subjected to shock due to being dropped. Mishandling of the filters system will cause the etalon to de-contact (not covered under warranty) and will render the instrument nonfunctional until repaired.

- The instrument should be stored in its original case. As with any precision optical instrument it should be kept in as low a humidity area as possible.

- With proper handling and care the filter should last a lifetime.

**Equipment Care**
As with most telescopes and optical equipment there can be a buildup of dust and debris on the lens and exterior components after sitting out all day. Here are some guidelines for the care of your new Lunt Solar Systems Telescope:

- Blow off loose dust and dirt using a clean dry air source at low volume. Do NOT use shop compressed air, which contains oil and will further contaminate the instrument.

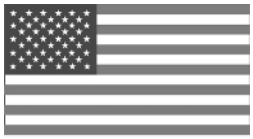
- Stubborn particulates can be brushed from the surface with a static free lens brush. Use gentle sweeping motions.

- Fingerprints and smudges can be removed using lens tissue or a Kleenex type tissue product. Fold the tissue or cloth to make a "pad", apply a cleaning product to the end of the pad dampening it evenly (do not apply solution to the lens), wipe in circular motion starting at the center and working around the edge and off in one complete motion. Be firm, but do NOT rub. Blow lightly once the lens is clean to help remove residual solution. Residual dust from the cloth can be blown off.

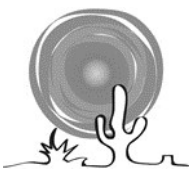
- Do NOT use Acetone or strong degreaser type products, household cleaning agents, paper towels, tissues with added scent or color (plain tissues only), or bleach or acidic products which will damage the anodized surfaces.

If ever in doubt, consult your local dealer or call Lunt Solar Systems at 877-344-7348 with any questions or concerns. We are happy to assist you!

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## Interesting and Helpful Terms

The Sun is active on a daily basis. During solar maximum the Sun will put on awe-inspiring displays that include solar flares, prominences, surface granulation and surface filaments. Here is a brief overview of those terms to help you understand what you are seeing.

- **Prominences**: These look like eruptions from the disk (edge) of the Sun. Prominences can be small spiky looking details, or large cloud like detail with fine feather-like features. They are, in fact, Ionized hydrogen emissions being projected from the limb. Prominences are anchored to the Sun's surface in the mesosphere and extend outwards into the Sun's troposphere.

- **Filaments**: These are string like features on the surface of the Sun. At high resolution they take on a 3D effect due to the cooler aspect of the filament contrasted against the bright, hotter, Sun. They are actually prominences being viewed against the surface.

- **Spicules**: A spicule is a dynamic jet of about 500km diameter on the Sun. It moves upwards at about 20 km/s from the photosphere. Father Angelo Secchi of the Vatican Observatory in Rome discovered them in 1877. The chromosphere is entirely composed of spicules. These features can be seen as "fur" around the edge of the disk.

- **Plage**: This is a bright region in the chromosphere of the Sun, typically found in regions of the chromosphere near sunspots. The plage regions map closely to the faculae in the photosphere below, but the latter have much smaller spatial scales. Accordingly, plage occurs most visibly near a sunspot region. Faculae have a strong influence on the solar constant, and the more readily detectable because chromospheric plage areas traditionally are used to monitor this influence. In this context "active network" consists of plage-like brightening extending away from active regions, as their magnetism appears to diffuse into the quiet Sun but constrained to follow the network boundaries.

- **Solar Flares**: A solar flare is a violent explosion in the Sun's atmosphere. Solar flares take place in the solar corona and chromospheres, heating plasma to tens of millions of Kelvin and accelerating electron, protons, and heavier ions to near the speed of light. They produce electromagnetic radiation across the electromagnetic spectrum at all wavelengths from long-wave radio to the shortest wavelength gamma rays. Most flares occur in active regions around sunspots, where intense magnetic fields emerge from the Sun's surface into the corona. Flares are powered by the sudden (timescales of minutes to tens of minutes) release of magnetic energy stored in the corona.

- **Chromosphere**: The chromosphere is a thin layer of the Sun's atmosphere just above the photosphere, roughly 10,000 kilometers deep (approximating to, if a little less than, the diameter of the Earth). The chromosphere is more visually transparent than the photosphere. The name comes from the fact that it has a reddish color, as the visual spectrum of the chromosphere is dominated by the deep red H-alpha spectral line of hydrogen.

