CSTAR OPTICS GENERAL TELESCOPE INSTRUCTIONS (T-series/ GO-series)

Introduction

Your new Cstar telescope is a precision optical instrument that is certain to give you years of enjoyment. The more you use your telescope and learn about it, the more you will be able to appreciate its power to bring distant worlds to life. The following sections will introduce you to your telescope and give you some fundamentals of its care and use.

Caring For Your Telescope

Please pay very careful attention to the assembly instructions included with your Cstar telescope. Taking proper care of your telescope will ensure years of enjoyment and viewing pleasure.

The Objective Lens

The objective lens of your Cstar telescope has been very highly polished and ground. It must be cleaned as carefully and as infrequently as possible to avoid affecting it's accuracy and performance. An inexperienced person must never take the lenses out of their mount.

Cleaning the Lens

When it becomes necessary to clean the lenses, first remove the dust with a camel hairbrush or compressed air. Place a few drops of ether or isopropyl alcohol on a piece of very clean and soft cotton, and wipe the lenses very gently, avoiding a circular motion. If a telescope's dust cover is replaced after each viewing session, cleaning of the optics will rarely be required.

Sudden Temperature Changes

If at all possible, avoid taking your Cstar telescope from cold nighttime/outside air into a warm room. Doing so will cause the objective lens to be covered with condensation, which must be immediately corrected. To do this, place the objective lens at a safe distance from a heat source and let it heat slowly until the moisture disappears. Any stains left on the lens must be carefully wiped off after the lenses are thoroughly dry.

WARNING! *Do not,* under any circumstance attempt to view the sun through your telescope. Doing so will result in instant and permanent eye damage, as well as serious damage to your telescope.

Accessory Descriptions (Fig. 1)

*** Not all accessories listed are included with each model. Please check the box to see what your telescope comes with**.

Finder Scope- a small, low power scope with a wider field of view than a telescope. A finderscope allows the user to quickly and easily locate the object to be viewed by the higher magnification telescope.

Erecting Eyepiece- An auxiliary lens that increases the magnifying power by a specific factor--i.e. 1.5x or 2x the original magnification. Also orients upside-down images properly for terrestrial viewing

Barlow Lens- an auxiliary lens that increases the magnifying power by a specific factor--i.e. A 3x Barlow Lens would triple the magnification of a telescope.

Diagonal Mirror- orients images properly, meaning that the object is upright and correct from left to right. Also adjusts to 45-degree and 95-degree angles, allowing for more comfortable viewing.

Moon Filter- a moon filter reduces the bright glare from the moon, allowing the user to see more lunar detail and contrast. **NOTE: the moon filter is to be used for lunar observation ONLY!!**

Solar Projection Screen- Since observing the sun directly can be harmful to the eye; a white screen positioned directly in line with the eyepiece is used to capture the projected image of the sun for solar observation

Eyepiece- provides different viewing powers

Using Your Telescope

Here are a few suggestions for the best viewing:

- To align an object in the center of your telescope, you must first loosen the clamp screws on your telescope. Once you have done that, your telescope should turn in the direction that you want it to.

- Try not to touch the eyepiece when looking through your Cstar telescope. Vibrations from such an action will cause the image to move or cause your eyepiece to become unfocused. You should also avoid placing your tripod where it may be subject to movement.

- Before viewing astronomical objects, you should allow your eyes some time to adapt to nighttime viewing. Once your eyes have adapted to the darkness, use a red filtered flashlight to preserve your night vision.

- You should not use your telescope through a window or in a room. Your images may be very blurry and hard to see because of the difference in temperature inside and out. Allow your telescope at least half an hour to adjust to the outside temperature before use.

Celestial Observation

- Before viewing, make sure that the finder scope and telescope are in alignment. (See below under "Aligning your finder scope" if you are unsure how to do this.)

- Adjust the tripod to find the most comfortable viewing position. You may want to consider using a chair for various viewing positions.

- Locate the celestial body by using your finder scope.

- Begin viewing by using the eyepiece with the widest field of view and lowest power. Unless you have the optional Plossl 40 eyepiece, use the H20 or H12.5 (which eyepiece you have will depend on your model) that comes with your telescope. Once you have the object centered, try moving up in magnification. If the image begins to distort as you move up to higher magnifications, back down to a lower power, as the atmospheric conditions will not support a higher magnification at the time that you are viewing. You are better off with a bright, clearly defined and resolved image that is smaller in size than a poorly resolved larger image.

- If you are using the optional 1.25" format eyepiece (optional), remove the adaptor from the diagonal mirror eyepiece before you insert the eyepiece. Keep in mind that every time you change the eyepiece, you will need to re-focus the telescope.

- If images appear to "shimmer" while viewing, reduce the magnification of your eyepiece until the image steadies. This is caused by turbulence in the upper atmosphere.

- Try not to view objects low on the horizon. Objects will appear with greater contrast when viewed higher in the sky.

- As you observe an astronomical object, you will begin to notice that the object you are viewing (e.g. moon, planet, star) is moving in a slow and continuous path across the sky. This is caused by the rotation of the Earth on its axis, which results in the appearance that the celestial body is in motion. To keep astronomical objects centered in the field of view in your telescope, simply move the telescope on one or both of its axis' (vertical and/or horizontal) as needed. At higher powers, objects will appear to move more rapidly.

- Again, we repeat the warning stated earlier in the manual:

WARNING! *Do not,* under any circumstance attempt to view the sun through your telescope. Doing so will result in instant and permanent eye damage, as well as severe damage to your telescope.

FAQ's

Q. Are aluminum tripod legs better than wooden tripod legs?
A. Absolutely! Aluminum tripod legs are more sturdy and lightweight than wooden tripod legs, thus making your telescope lighter and more portable. Wooden tripod legs are very heavy, and if constantly exposed to damp night air, the wood will eventually warp.

Q. Why is everything upside down in my telescope? (Fig. 2)
A. You've probably noticed that everything you look at through your telescope is upside down, and inverted left to right—don't worry, that's the way the telescope is meant to be! For most astronomical viewing, there is no difference if an object is upside down or at a funny angle, because it doesn't really matter in space! Inverting the image the way we're used normally viewing objects will require additional lenses, which allows less light to filter through your telescope, which defeats its purpose completely. However, if you are planning on doing some terrestrial viewing (e.g. looking at the moon's surface or boat watching), the direction that everything is going suddenly becomes important! (Astronomical telescopes generally invert images top to bottom and left to right) Fortunately, there are correcting diagonals that solve the problem by inverting the objects in the correct direction. Also, the diagonal or erecting eyepiece that is included with your telescope will correct the problem of inverted images, however, you cannot use both in conjunction with one another-- you must use one or the other.

Q. How do I align my finder scope? (Fig.3)

A. Aligning your finder scope is very easy and can be done by following the steps below:

1. With the lowest power eyepiece in place (20mm or 12.5mm), point your telescope at a well-defined landmark approximately ¼ of a mile away (e.g. a telephone pole or streetlight). Lock your telescope in place by tightening the two clamp screws on the mount.
2. Loosen the three screws that hold your finder scope in place. Gently maneuver your finder scope until the same object, (e.g. telephone pole) is precisely centered within the cross hairs.
3. Once this has been accomplished, tighten the three screws on your finder scope so that it is locked firmly in place.
4. Now look through your telescope. If the same object that you originally selected is within the field of view, you have correctly aligned your finder scope and telescope with each other. If the telescope has shifted, and is no longer focused on the object you selected, repeat steps 1-4.

Q. What can I see with my Cstar telescope?
A. Keep in mind that the atmosphere has a lot to do with how much and how far you will be able to see on any given night. The earth's atmosphere is constantly in motion, and the continuous movement of its layers affects the images in your telescope. Even heat can cause instability in the atmosphere, and cause the atmosphere to shimmer. In addition, where you are has a lot to do with what you can see. The brightness of street and city lights can affect what you are able to view. Make sure that you get away from light pollution to ensure the best viewing conditions possible. Becoming familiar with, as well as actually using star charts, will enable you to more accurately track and find celestial bodies.

General Information About Your Equatorial Mount Telescope Model T-45375, T-6750

- Due to the earth's rotation**,** celestial bodies appear to move from east to west in a curved path through the skies. The path that celestial bodies appear to follow is known as their line of right ascension (R.A.). The angle of the path they follow is known as their line of declination (Dec.).

- The celestial poles are the two points on the celestial sphere where the sky appears to rotate daily. Their positions are the directions in space towards which the Earth's rotation axis points. The north celestial pole lies close to the star Polaris (the North Star), while the South Pole is in the constellation Octants.

- During a 24-hour period, stars make one complete revolution around the celestial pole. By lining up your Cstar telescope with the celestial poles, you can fully utilize the function of the equatorial mount to track the movement of celestial objects.

Assembly Instructions for Equatorial Mount Telescopes Model T-45375/T-6750

When opening the box, make sure that you check for all necessary parts. You will find a few major parts packaged in separate boxes:

A. Telescope body
B. Aluminum tripod legs (3)
C. Equatorial mount
D. Counter weights (very heavy)
E. 2 black control rods
F. Counterweight rod
G. Accessory tray
H. Finder scope
I. Barlow lens (not shown)
J. Erecting lens (not shown)
K. Eyepieces
L. Moon filter (T-6750 only)
M. Solar projection screen (T-6750 only)

The following are instructions to assemble your Cstar telescope:

1. Remove and extend each of the three tripod legs to their maximum length. Insert and tighten the thumbscrews onto the legs to secure the lower section of the tripod leg in position.

2. Place a 3" bolt with washer onto the top of the tripod and finish with a washer and wing nut. Attach the three legs to the equatorial mount and tighten the wing nuts. Loosen the declination, hour and polar axis clamp screws on the equatorial mount. Adjust its angle as shown and retighten the clamp screws.

3. Attach the accessory tray to each of the flanges on the tripod legs with the small machine screws and wing nuts, plus washer. Please note that the flange will fit under the accessory tray when attached.

   Note: The hinged flange on each tripod leg should face inwards so that the accessory tray can be attached when the telescope is fully assembled.

4. Place the telescope body on top of the equatorial mount where the screw fits on the "V-block" (top of the equatorial mount). Secure the

two components with the small washers and wing nuts. Attach the control cables to the hour and declination axis cable studs.

5. Loosen the counter weight clamp screw. Slide the rod through the weight to mid-length and thread the counterweight rod into the threaded hole under the declination axis.

6. Remove the two thumbscrews from the telescope main body (next to the focus wheel). Place the finder scope with bracket on the main body so the holes in the base of the bracket are in alignment with the exposed holes in the main body. Replace and tighten the two screws.

7. Place the eyepiece into the drawtube and secure by tightening the small retaining screws on the focus tube.

   Note: your telescope will produce an upside down image (for celestial observation). For occasional terrestrial observation, use the ERECTING EYEPIECE.

Lining Up Your T-45375/T-6750 Telescope With The Celestial Poles (EQ MOUTN ONLY)

1. Release the Azimuth lock on the base of the equatorial mount. (This allows the horizontal movement of the telescope with the equatorial mount)

2. Turn the telescope until the polar axis points towards the North Star (Polaris). A compass may help you find this bright star in the north sky.

3. If necessary, level the mount by adjusting the height of the tripod legs.

4. Release the latitude adjustment knob and tilt the telescope (with the mount) until the pointer (next to the knob) indicates the latitude of your observation location. You can find your latitude from any atlas or road map. Make sure that you re-tighten the latitude adjustment knob.

5. Once your telescope is polar-aligned, the latitude angle will stay the same unless you move to a different geographical location (e.g. latitude). The only polar alignment that you must do every time you use the telescope is to point the polar axis due North, as described in steps 1 and 2.

Using the Setting Circles

Setting the circles of a polar-aligned equatorial mount can facilitate the location of very faint celestial objects not easily found by direct visual observation. To use setting circles, do as follows:

1. Use a star chart or atlas and look up the celestial co-ordinates (which are the R.A. and Dec.) of an easy to find bright star that is within the general vicinity of the faint object you wish to locate.

2. Center the determined bright star in the telescope's field of view.

3. Manually turn the R.A. setting circle to read the R.A. of the object now in the telescope eyepiece.

4. The setting circles are now calibrated. (The Dec. setting circle is factory calibrated)

5. To locate a nearby faint object using the setting circles, determine the faint object's celestial co-ordinates from a star chart and move the telescope in R.A. and Dec. until the setting circles read the R.A. and Dec. of the object you are attempting to locate. If the above procedure has been carefully performed, the faint object will be in the field of a low power eyepiece.

6. The R.A. setting circle must now be manually re-calibrated on the current R.A. of a star every time your telescope is set up, and reset to the centered object's R.A. co-ordinate before moving it to a new R.A. co-ordinate setting.

7. The R.A. has two sets of numbers: the inner and outer sets. The inner set is for southern hemisphere use, while the outer set of numbers (the set closest to the R.A. gear), is for use by observers located north of the Earth's equator (e.g. North America).

REFLECTOR TELESCOPE ONLY
Alignment of Reflector Telescope Mirrors
Model T-45375/UB-3700 /UB-4500

All Cstar telescopes are properly aligned before shipment. You should not have to align or collimate your telescope. However, if your telescope received rough handling during shipment, it is possible that you may need to re-align the optics for the very best optical performance.

Primary Mirror Adjustments
If the diagonal mirror and the reflection of the primary mirror appear centered within the drawtube but the reflection of your eye and of the diagonal mirror appears off-center, you will need to adjust the primary mirror tilt Philips head screws of the primary cell.

1. The primary tilt screws are located behind the primary mirror, at the lower end of the main tube.

2. To adjust the primary tilt screws, unscrew the three hex head primary mirror cell locking screws that are next to each primary mirror tilt Philips head screw.

3. Then, by trial and error, turn the primary mirror tilt Philips head screw until you develop a feel for which way to turn each screw to the center of the reflection of your eye.

4. Once centered, turn the three hex head primary mirror cell locking screws to re-lock the tilt angle adjustment.

Correct Collimation
The properly collimated mirror system in your T-45375 or T-3350 telescope gives the sharpest image possible. The way that your telescope's mirror system works is by sending a focused image directly through the center of your telescope focuser drawtube. Your telescope's primary and diagonal mirrors are tilted, and it is possible for these mirrors to become misaligned, as discussed above.

- To inspect the view of the mirror collimation, look down the focuser drawtube with the eyepiece removed.

- The edge of the focuser drawtube will frame the reflections of the primary mirror with the three mirror clips, the diagonal mirror, the

spider vanes, and your eye. When properly aligned, all of these reflections will appear concentric.

- Any deviations from the concentric reflections will require adjustments to the diagonal assembly and/or the primary mirror cell.

Star Testing The Collimation

With the collimation performed, you will want to test the accuracy of your telescope's alignment with the stars. Point your telescope at a moderately bright (second or third magnitude) star, and center the star's image in the telescope's field of view. With the star centered, follow the procedures below:

1. Bring the star image slowly out of focus until one or more rings are visible around the central disk. If the collimation was performed correctly, the central star disk and rings will be concentric circles, with a dark spot dead center within the out of focus star disk (this is the shadow of the secondary mirror). An improperly aligned telescope will reveal elongated circles with an off-center dark shadow.

2. If the out of focus star disk appears elongated, you will need to adjust the primary mirror Philips head tilt screws of the primary mirror cell.

3. To adjust the primary mirror tilt screws, first unscrew the three hex-head primary mirror cell locking screws to allow free turning movement of the tilt knobs.

4. Using the flexible cable controls, move the telescope until the star image is at the edge of the field of view in the eyepiece.

5. As you make adjustments to the primary mirror tilt screws, you will notice that the out of focus star disk image will move across the eyepiece field. Choose one of the primary tilt screws that will move the star disk image to the center of the eyepiece field.
6. Repeat this process as many times as necessary until the out of focus star disk appears in the center of the eyepiece field.

7. With the star testing complete, tighten the three hex-head primary mirror-locking screws.

Assembly Instructions For Yoke Mount Telescopes
Model T-3350, T-6525, T-6402

When opening the box, make sure that you check for all necessary parts. You will find a few major parts packaged in separate boxes:

A. Telescope body (aluminum tube with optical mirrors or lenses)
B. Aluminum tripod legs (3)
C. Yoke mount
D. Accessory tray
E. Finder scope
F. Barlow lens (not shown)
G. Erecting lens (not shown)
H. Diagonal mirror
I. Eyepieces

The following are instructions to assemble your Cstar telescope:

1. Remove and extend each of the three tripod legs to their maximum length. Insert and tighten the thumbscrews onto the legs to secure the lower section of the tripod leg in position

2. Place a 3" bolt with washer onto the top of the tripod and finish with a washer and wing nut. Attach the three legs to the yoke mount and tighten the wing nuts

3. Place the telescope body on top of the yoke mount. Align the holes in the telescope body with the ones in the yoke. Screw and tighten the yoke-locking knob through both holes in the body.

4. Attach the accessory tray to each of the flanges on the tripod legs with the small machine screws and wing nuts, plus washer.

   Note: The hinged flange on each tripod leg should face inwards so that the accessory tray can be attached when the telescope is fully assembled.

5. Remove the two thumbscrews from the telescope's main body. Place the finder scope with bracket on the main body so that the holes in the base of the bracket are in alignment with the holes on the telescopes main body. Replace and re-tighten the two thumbscrews.

6. Place the eyepiece into the drawtube and secure by tightening the small retaining screws on the focus tube.

7. Place the diagonal into the focus tube and secure by tightening the small retaining screw on the focus tube.

8. Place an eyepiece into the diagonal and tighten the small retaining screw within the diagonal. Your telescope will produce an erected image.

9. Look through the eyepiece and turn the focus knob until the desired object is in focus. Locate the object in question through the finder scope and use the adjustment screw to center the object.

10. Use of the Barlow lens requires that the diagonal be removed from the focus tube and Barlow lens inserted in its place. The eyepiece can then be inserted into the Barlow lens for a higher magnification (2x or 3x).

Assembly Instructions for 50mm Telescopes
Model T-5200A / UB-300

When opening the box, make sure that you check for all necessary parts, which are listed below.

A. Finder scope
B. Eyepiece
C. Diagonal mirror
D. Focus knob
E. Telescope body
F. Mounting bolt
G. Tripod mount
H. Altitude control knob
I. Tripod legs

The following are instructions to assemble your Cstar telescope:

1. Loosen the leg clamps and adjust the legs to a convenient height.

2. Unscrew the mounting bolt from the telescope body. Place the telescope body onto the tripod mount and secure by inserting and tightening the bolt through the tripod mount.

3. Remove the two thumbscrews from the telescope's main body. Place the finder scope with bracket on the main body so that the holes in the base of the bracket are in alignment with the holes on the telescopes main body. Replace and re-tighten the two thumbscrews.

4. Place the eyepiece into the drawtube and secure by tightening the small retaining screws on the focus tube.

5. Place the diagonal into the focus tube and secure by tightening the small retaining screw on the focus tube.

6. Place an eyepiece into the diagonal and tighten the small retaining screw within the diagonal. Your telescope will produce an erected image.

7. Use of the Barlow lens requires that the diagonal be removed from the focus tube and Barlow lens inserted in its place. The eyepiece can then be inserted into the Barlow lens for a higher magnification (2x or 3x)

8. To use the Erecting Eyepiece to get a different magnification, remove the diagonal and the eyepiece from the focus tube and replaced it with the Erecting Eyepiece. (The eyepiece is built-in) The image will be right side up for terrestrial viewing.

9. Adjustments:

    - **UP/DOWN-** Place one hand on the focus knob while securing the telescope body with the other. Make finer adjustments by rotating the altitude control knob.

    - **LEFT/RIGHT-** Loosen the azimuth clamp screw and rotate the necessary azimuth control knob.

    - **FOCUS-** Look through the eyepiece and turn the focus knob until the desired object is in focus. Locate the object in question through the finder scope and use the adjustment screw to center the object.

Assembly Instructions for Go Series Telescopes

Go-6450

When opening the box, make sure that you check for all necessary parts, which are listed below.

A. Eyepiece
B. Finder scope
C. Body of telescope
D. Diagonal mirror
E. Focusing wheel
F. Slow motion control rod
G. Altazimuth lock
H. Foldable tripod
I. Bubble eye plane
J. Carrying case

The following are instructions to assemble your Cstar telescope:

1. Remove your telescope from the carrying case.

2. Extend the tripod legs.

3. Fasten the yoke mount clock wise onto the connector on top of the tripod. ***NOTE**-do not over tighten the screw. You can adjust the height of the tripod by adjusting the ring on the yoke

4. Align the holes on the telescope's main tube with the holes on the mount. Loosen the locking knob located on the yoke mount and insert the slow motion control rod into the receptor. Insert and tighten the clamping screws and locking knob.

5. Remove the two finder scope screws from the telescope's main body. Place the finder scope and bracket on the main body so the holes in the base of the bracket are in alignment with the exposed holes in the main body. Replace and tighten the two screws.

6. Place the diagonal into the focus tube and secure by tightening the small retaining screw on the focus tube. Use the pinion gear to focus when viewing.

7. Place the eyepiece into the diagonal and secure by tightening the small retaining screw on the focus tube.

8. Use of the Barlow lens requires the diagonal mirror to be removed from the focus tube and the Barlow inserted in its place. The eyepiece can then be inserted into the Barlow. ***NOTE**- the Barlow lens will reduce the field of view and brightness of the image you are viewing.

9. When using the erecting eyepiece for terrestrial viewing, simply remove the diagonal mirror from the focusing tube and slide the eyepiece in its place.

Assembly Instructions for Go Series Telescopes

Go-5000

When opening the box, make sure that you check for all necessary parts, which are listed below.

A. Eyepiece
B. Finder scope
C. Body of telescope
D. Diagonal mirror
E. Focusing wheel
F. Lever
G. Foldable tripod
H. Carrying case

The following are instructions to assemble your Cstar telescope:

1. Remove your telescope from the carrying case.

2. Extend the tripod legs.

3. Thread the lever onto the tripod mount.

4. Lever adjustments:
   Up/down- loosen the pan head lever; tilt up or down as desired and retighten
   Left/right- use the pan head lever to rotate the telescope to the left or right

5. Remove the two finder scope screws from the telescope's main body. Place the finder scope and bracket on the main body so the holes in the base of the bracket are in alignment with the exposed holes in the main body. Replace and tighten the two screws.

6. Place the diagonal into the focus tube and secure by tightening the small retaining screw on the focus tube.

7. Focusing your telescope- look through the eyepiece and turn the focus knob until the desired object is in focus

8. Use of the Barlow lens requires the diagonal mirror to be removed from the focus tube and the Barlow inserted in its place. The eyepiece can then be inserted into the Barlow. ***NOTE**- the Barlow lens will reduce the field of view and brightness of the image you are viewing.

9. When using the erecting eyepiece for terrestrial viewing, simply remove the diagonal mirror from the focusing tube and slide the eyepiece in its place.

The Power Of Your Telescope

To determine the power of your telescope, use the focal length divided by the eyepiece you are using.

For example: 900 mm / 20 mm = 45x power

In other words, your telescope will enable you to see an object 45 times closer than you could with the naked eye. Every increase in magnification has a trade off with other optical qualities, namely brightness, field of view, and resolution. Therefore, your lowest power eyepiece magnifies the image the least, and in turn, provides the widest field of view. The image will also appear brighter and sharper. It is in your best interest to try to view astronomical objects at the lowest power possible to preserve image quality. There is a limit to how much magnification a telescope is capable of, without the image becoming too dark and obscure to see.

- If you use the 3x Barlow lens, it will triple your 45x power to 135x power
- If you use the 1.5x erecting eyepiece, your 45x power will become 67.5x power

See the chart below to determine the power of your telescope with the following attachments:

900mm Focal Length Telescope (6750, 6450)

Accessories Used	T-6750	T-6450
H 20mm eyepiece+ Diagonal	45 x	45 x

H 12.5mm eyepiece + Diagonal	72 x	72 x
SR 4mm eyepiece + Diagonal	225 x	225 x
H 20mm eyepiece + 2x Barlow lens	90x	90x
H12.5mm eyepiece + 2x Barlow lens	144x	144x
SR 4mm eyepiece + 2x Barlow lens	450x	450x
H 20mm eyepiece + 3x Barlow lens*	135x	-
H12.5mm eyepiece + 3x Barlow lens*	216x	-
SR 4mm eyepiece + 3x Barlow lens*	675x	-
H 12.5mm eyepiece + 1.5x Erecting lens	108 x	108 x
H 20mm eyepiece + 1.5x Erecting lens	67 x	67 x

700mm Focal Length Telescope (6402, 6525)

Accessories Used	**T-6525**	**T-6402**
H 12.5mm eyepiece + Diagonal	56x	56x
SR 4mm eyepiece + Diagonal	175x	175x
H 12.5mm eyepiece + Barlow lens	168x	128x
SR 4mm eyepiece + Barlow lens	525x	402x
H 12.5mm eyepiece + 1.5x Erecting lens	84x	84x
SR 4mm eyepiece + 1.5x Erecting lens	260x	260x

600mm / 630mm Focal Length Telescope (5200A, 5150, 5100, 550)

Accessories Used	**T-5200A T-5100 /TT-550** FL=600mm	**T-5150 TT-5150** FL=630mm
H 12.5mm eyepiece + Diagonal	48x	50x

SR4mm eyepiece + Diagonal	-	157x
SR6mm eyepiece + Diagonal	100x	-
H 12.5mm eyepiece + 3x Barlow lens	-	150x
H 12.5mm eyepiece + 2x Barlow lens	96x	-
SR 4mm eyepiece + 2x Barlow lens	-	-
SR6mm eyepiece + 2x Barlow lens	200x	-
Erecting Eyepiece 18mm / Microscope	33x	35x

Reflector Telescopes (45375, 3350)

Accessories Used	**T-45375** FL=500mm	**T-3350** FL=700mm
H 20mm eyepiece	25x	35 x
SR 4mm eyepiece	125x	175 x
H 20mm eyepiece + 3x Barlow lens	75x	-
SR 4mm eyepiece + 3x Barlow lens	375x	-
H 20mm eyepiece + 2x Barlow lens	-	70x
SR 4mm eyepiece + 2x Barlow lens	-	350x
H 20mm eyepiece + 1.5x Erecting lens	37x	52x

What can you see?

Astronomy can be an educational and exciting hobby. To get you started on your journey, we have provided you with some basic information about our galaxy and beyond.

THE MOON, which is the closest heavenly body to Earth, is the easiest to view and should be your first target. It is only one fourth of the size of Earth and it shines by reflecting light from the sun. It is best viewed at low power and when it is waxing or waning, so that details are more apparent. The brightness of a full moon tends to flatten some surface details and hide others. Each night the moon seems to change its shape because we see different amounts of its sunlit surface as the moon circles around the Earth. You may purchase the optional moon filter from Cstar to minimize distortion from the varying degrees of light. A good lunar map may help when exploring the moon's surface. Lastly, none of the equipment left behind by the Apollo mission can be seen with an earth based telescope, regardless of its power!!

MERCURY, though a "visible" planet, it is not an easy target for the novice. Because it lies so close to the sun, Mercury can only be seen in the early morning or early evening hours, when it is low on the horizon. It only appears in phases, in the western sky 20-degrees above the horizon. The best months to observe reddish Mercury are March, April, August, and September. This planet is closest to the sun.

VENUS, the second planet of the solar system, it is one of the terrestrial planets-primarily composed of rocky, stony matter. This planet comes closer to Earth than any other planet, and can be the brightest object in the sky. (Other than the sun and moon!) Venus also appears in phases.

MARS appears reddish in the sky-even to the naked eye. About every two years, Mars and Earth are the closest that they ever get to one another. At those times, Mars appears brighter than the brightest star, and to a telescope, relatively large.

JUPITER, the largest planet in the solar system is a giant ball of gas, and can easily be observed. If you see a bright object shining steadily in the southern half of the night sky far from where the sun will set or rise, you are probably looking at Jupiter. Through your telescope, Jupiter will appear as though it is striped.

SATURN, the sixth planet of the solar system normally appears dull yellow in the night sky. The most striking feature of this planet is its spectacular ring system. They are easily visible with your telescope. As the relative positions of the earth and Saturn change, the rings are presented at different angles-sometimes appearing open, at other times, the edges appear to completely disappear from view! The rings have the appearance of a series of zones of differing brightness, separated by dark divisions.

URANUS is not an easy target for beginners, as it is not bright enough to be seen with the naked eye. However, as you practice more with your telescope, you locating unseen objects possible. You will be able to find Uranus with a star chart. Uranus appears green and looks like a small disk.

NEPTUNE is a blue planet that is just about impossible to see through your telescope.

PLUTO is beyond the range of most telescopes, except for those in professional observatories.

Find more detailed information about these and the billions of other celestial bodies in books, magazines, and the World Wide Web.

Major Astronomical Events Throughout the Year

Meteor Showers

Name	Peak Activity	Estimated Hourly Count
Quadrantid	January 3	50
Lyrid	April 21	30
Eta Aquarid	May 4	25
Beta Taurid	June 30	25
Persid	August 12	50+
Draconid	October 8-9	500+
Orionid	October 21	25
Leonid	November 16-17	10
Geminid	December 11-17	50-75

Total Lunar Eclipses:

- July 16, 2000
- January 9, 2001
- May 16, 2003
- November 9, 2003
- May 4, 2004
- October 28, 2004
- March 3, 2007
- August 28, 2007
- February 21, 2008

Cstar Warranty

Congratulations on your purchase of a Cstar product. Cstar Optics is dedicated to and confident in the quality and craftsmanship of our products, therefore, Cstar warrants this product to be free from defects in materials and workmanship for a period of one year from original date of purchase. This warranty is limited to the original purchaser and is non transferable. In addition, this warranty does not apply to products purchased outside the United States of America.

Should it become necessary to repair or replace your Cstar product, return it prepaid to:

Cstar Optics, Inc.
Customer Service Dept.
15352 S. Keeler St. Unit-E
Olathe, Kansas 66062

Please include a check for $15 (for shipping the product back to you) and a brief note detailing the nature of the defect and a copy of the original sales invoice. A customer service agent will contact you before any parts have been replaced, if the nature of the damage is not covered by warranty. The sole obligation of Cstar Optics, Inc. under this limited warranty is to replace or repair parts on the covered product, under the terms set forth.

This warranty is not valid and Cstar Optics, Inc. is not liable for any consequential, incidental or contingent damages whatsoever. In addition,

this warranty becomes void if the covered product has been modified in design or function, or has been subjected to abuse, mishandling, or unauthorized repair. Furthermore, product malfunction or deterioration due to normal wear is not covered by this warranty.

The exclusion of incidental or consequential damages does not apply in all states. This warranty gives you specific rights, and you may have other rights, which vary from state to state.

For customer service, please call:

CUSTOMER SERVICE: 913-829-1004
service@cstaroptics.com
Monday-Friday 8AM-5PM CST

Or visit us online, at:

www.cstaroptics.com