Zhumell

Eclipse 114

Warnings

- Do not use telescope or finderscope to look at the sun without an appropriate solar filter.
- Make sure no screws are loose before using telescope.
- Do not drop, shake, or throw your telescope as doing so may damage the telescope or people around you.
- Objects in telescope may be farther away than they appear.
- Eyepieces intended for external use only.
- Don't worry, be happy...

Introduction

Zhumell telescopes are precision astronomical instruments designed to be easy to use and versatile in their application. As with any telescope, Zhumell telescopes require some technical knowledge of stellar movement and optical properties. We have tried to provide the basics of telescope use and astronomical viewing in this manual. If, after reading through this manual, you still have questions regarding the setup and use of your telescope, please feel free to contact us at info@zhumell.com or at (800)922-2063. Our customer service representatives will be able to help address any problems you are having with your Zhumell telescope. We also have more information available on our website at www.zhumell.com. Please let us know about your experiences with your Zhumell telescope. We would like to hear your feedback and see your astrophotographs. Enjoy your Zhumell.

Specifications

Optical Tube Assembly

Type	Reflector
Objective (mm)	114
Focal Length (mm)	1000
Highest Useful Magnification	200x
Resolving Power	1.02
Limiting Magnitude (Visual)	12.8
Limiting Magnitude (Photographic)	10.8
Focal Ratio	F/8.8
Eyepiece Format	1.25"
Finder Scope	6x30
Mount Type	ET-7 Equitorial

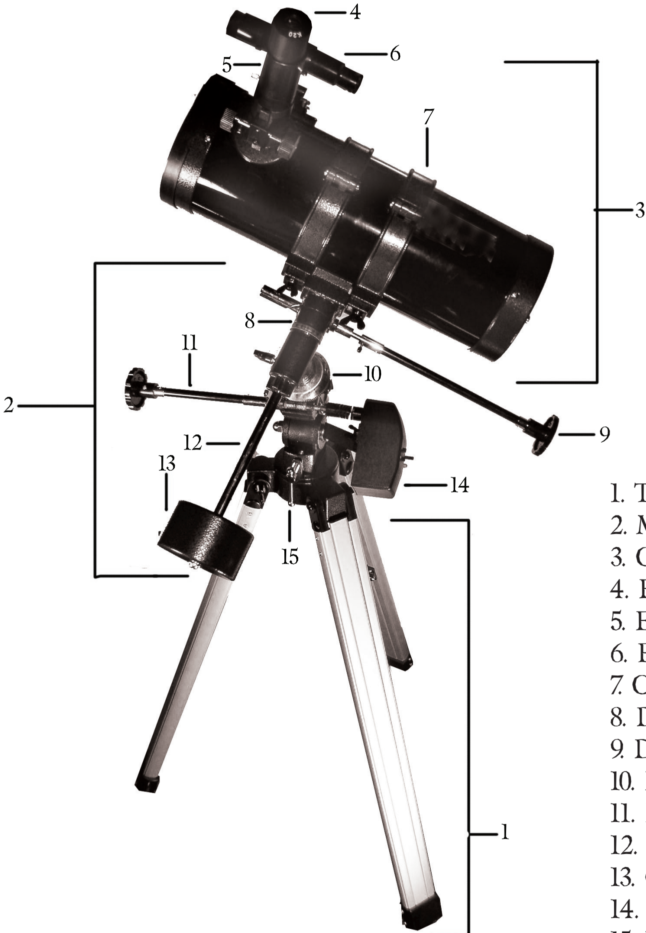
Mount

Materials	Aluminum
R.A. Adjustment	Manual Worm Gear
Dec. Adjustment	Manual Worm Gear
Clock Drive Axis	R.A.
Clock Drive Power	2 - 9V Batteries

Included Items

- Optical Tube Assembly
- 6x30 Finderscope
- ET-7 Equitorial Mount
- Adjustable Speed Clock Drive
- R.A. and Dec. Adjustment Cables
- Counterweight
- Aluminum Tripod
- Accessory Tray
- 6mm and 20mm Kellner Eyepieces

Telescope Legend

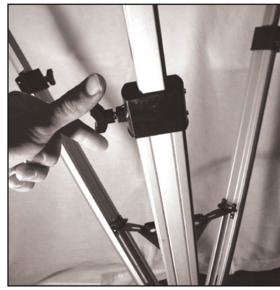


1. Tripod
2. Mount Assembly
3. Optical Tube Assembly
4. Eyepiece
5. Eyepiece Adapter
6. Finderscope
7. Optical Tube Mounting Belt
8. Declination Circle
9. Declination Adjustment Cable
10. Hour Circle (R.A. Scale)
11. R.A. Adjustment Cable
12. Balance Shaft
13. Counterweight
14. Clock Drive
15. Latiutude Adjustment Screw

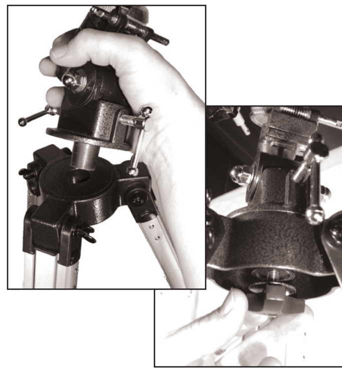
Care of your Telescope

A telescope is carefully aligned during construction and great care should be taken to maintain this alignment over the life of the telescope. Cleaning should be done as little as possible and then only with a mild soap solution and soft, lint-free cloth. Do not rub elements when cleaning. Blot optical components gently and allow telescope to air dry. Store telescope in box when not in use. Do not use alcohol or solvents to clean any parts of the telescope. Do not remove optical elements from telescope as doing so may affect the alignment of optical components when reassembled. If telescope needs realignment, contact Zhumell or another professional.

Telescope Assembly



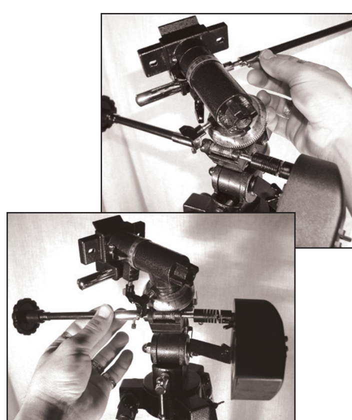
1. Extend tripod legs to comfortable working height and tighten wingnuts to ensure stability. Separate tripod legs and ensure that the legs are extended to equal heights. The top of the tripod should be level to ensure stability when mounting telescope.



2. Remove mount base screw. Insert bottom of mount assembly into tripod mounting hole. Replace mount base screw below tripod mounting plate and tighten to secure mount to tripod.

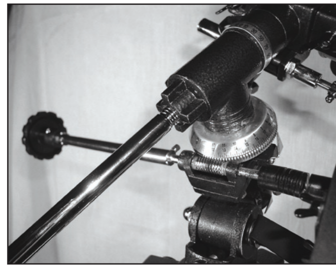
3. Loosen all setscrews on mount (except the base screw) and position mount so that you have access to all parts of the mount.

4. Find the latitude scale located on the side of the mount above the base of the mount. Remove the nut and washer located in the center of the latitude scale. Slide clock drive mounting bracket over the exposed bolt and onto the raised fitting. Line up clock drive so that the motor drive coil slides over the R.A. adjustment shaft. The thumbscrew will need to be loosened in order to ensure that the motor drive coil slides easily onto the shaft. Replace washer and nut to secure clock drive assembly and tighten.

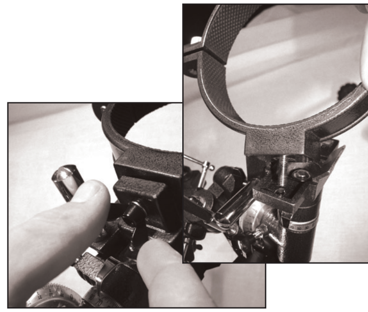


5. Loosen thumbscrews on R.A. and Dec. adjustment cables. Slide shorter adjustment cable over open end of the R.A. adjustment shaft (opposite the mounted clock drive) and tighten thumbscrew into notch on shaft. Slide longer adjustment cable onto the Dec. adjustment shaft (below telescope mounting brackets) and tighten thumbscrew into notch.

6. Tighten all setscrews on the mount assembly to prevent movement of mount. Tighten the set screw on the counterweight to prevent movement of weight on balance shaft. Screw threaded end of balance shaft into the threaded receptacle opposite the telescope mounting bracket on the upper part of the mount. Tighten balance shaft for stability.

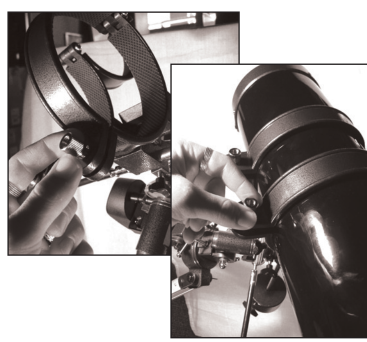


7. Remove wingnuts and washers from the bottom of telescope mounting belt. Insert exposed bolt into hole on top of mount. Replace washers and wingnuts and tighten to secure mounting belt. Repeat for each mounting belt.



8. Assemble optical tube assembly. Remove thumbscrews on finderscope mounting bolts. Slide finderscope mounting bracket onto mounting bolts so that bracket is angled toward front of telescope. Replace and tighten thumbscrews to secure bracket. Loosen thumbscrews at top of finderscope mounting bracket. Slide finderscope into mounting bracket with large end facing front of telescope. Tighten thumbscrews until snug.

9. Remove thumbscrews on top of telescope mounting belts. Pull mounting belts open. Place telescope in open belts so that the front end of telescope faces away from the clock drive unit. While holding the telescope in the mounting belt, close belts and replace thumbscrews. Hand tighten thumbscrews to secure optical tube assembly in mounting belts.



10. Screw eyepiece adapter onto the threaded end of rack and pinion focusing mechanism. Loosen thumbscrew on eyepiece adapter. Place desired eyepiece into eyepiece adapter. Tighten thumbscrew until snug to secure eyepiece.

Some notes on viewing

Never look at the sun without using a solar filter. When using a solar filter, do not remove the full lenscap, view only through the small opening in the lenscap. Looking at the sun without proper use of a solar filter can cause permanent eye damage.

When looking through the telescope, the image will appear to be upside-down and inverted. This results from the optical system design and is normal. This can be corrected by using a Schmidt or erecting prism when viewing.

Use of the finderscope will help locate celestial objects more quickly as the finderscope has a much wider field of view than the telescope. When viewing, start with the lowest power magnification and work up to the desired magnificaiton as this will simplify focusing greatly.

When viewing faint deep sky objects, images will not show color. The human eye is not able to distinguish the differences in color found in such dim images. The lack of color is due to human anatomy, not any limitations of telescope construction.

Finderscope Alignment

1. Insert the lowest power eyepiece into the eyepiece adapter. Focus eyepiece to view an easily recognizable distant object (car license plate, sign, table, etc.).

2. Look through finderscope being careful not to move the telescope in any way. Adjust finderscope focus by turning the eyepiece of the finderscope back and forth until image is in focus. Check to see if the object viewed through the eyepiece lines up at the center of the finderscope crosshairs. If not, then your finderscope needs to be realigned.

3. To align finderscope, loosen the thumbscrews which secure the finderscope slightly. Gently move finderscope to center crosshairs on object. Tighten thumbscrews to secure finderscope in new position. This may take some time, but will make finding astronomical objects much easier when using your telescope.

Using the Clock Drive

The clock drive included with your telescope is designed to track the movement of stars. It will help keep stars in your field of view during long periods of viewing as long as the telescope is properly polar aligned and the clock drive is properly used. Do not be alarmed if you turn on the clock drive and do not see the telescope moving. Stars appear to move very slowly and the telescope may not apear to move over a short period of time. To see if your clock drive is working, aim the telescope at a stationary terrestrial object and engage the clock drive. Let the clock drive run for 10 to 15 minutes. If the object you had originally aimed the telescope at appears to have moved when looking through the eyepiece of the telescope, the clock drive is working.

Clock Drive Settings

The clock drive features two controls which can be set depending on your viewing location. The N-S switch is the hemisphere setting. If you are using the telescope in the Northern Hemisphere, the switch should be set to N, in the Southern Hemisphere, the switch should be set to S. The speed setting should be adjusted while viewing to help keep stars centered in the field of view. You may have to increase or decrease your speed setting if stars appear to drift in your field of view. You will need to adjust the clock drive based on what you are looking at while viewing. As a general rule, the farther away from the celestial pole (closer to the horizon) an object that you are viewing is, the faster it will appear to move and the faster the clock drive speed will need to be set.

Manual Adjustment with Clock Drive

The clock drive included with your telescope should only be used to follow stars. When you would like to point your telescope at a different celestial object, you must disengage the clock drive. By loosening the thumbscrew on the clock drive R.A. axis, you will disengage the clock drive, protecting the clock drive and making manual adjustment easier. Manually adjusting the R.A. axis with the clock drive engaged may cause the coil which attaches to the R.A. axis to bend, compromising the operation of the clock drive. When you would like to reengage the clock drive, simply tighten the thumbscrew and turn the clock drive on to begin tracking stars.

Beginning Observation

For beginning observation, the moon is one of the easiest and most enjoyable objects to view. You can acquaint yourself with the movements of the telescope by simply pointing the telescope at the moon and using the various adjustments to move the telescope.

To point the telescope at the moon, loosen the R.A. and Dec. clamps (the thumbscrews located nearest the Hour Circle and Declination Circle on the mount), then gently move the optical tube assembly until it points at the moon. Retighten the R.A. and Dec. clamps before viewing.

While viewing, use the R.A. and Dec. adjustment cables to move the telescope. Before using the R.A. cable, loosen the thumbscrew on the clock drive to free the R.A. axis and prevent damage to the clock drive. The adjustment cables feature stops which allow a limited degree of adjustment. To move past a stop, loosen the clamp for the axis you would like to move and rotate the optical tube assembly past the stop. Be sure to retighten clamps before viewing to provide a steady image.

If you notice resistance while moving the optical tube assembly, try adjusting the counterweight position up or down to properly balance the telescope. The optical tube assembly should move very easily. Do not force the optical tube assembly, as you may cause damage to the telescope.

Intermediate Observation

Once you are familiar with the basic movements and adjustments of the telescope, expand your exploration to other easy to find objects. Venus is one of the easiest to find planets as it is one of the brightest objects in the night sky. Local newspapers and planetariums are excellent resources for finding what planets should be visible in your area on any given night. Other resources are mentioned at the end of this manual.

To find a planet, look around the sky to locate the planet with your naked eye first. Once you have located a planet, point the telescope at the planet. Center the planet in the finderscope by using the crosshairs. Once the planet is lined up in the finderscope, view the planet through the telescope using the lowest power (longest focal length) eyepiece. You may need to make slight adjustments to your aiming of the telescope and you will need to focus your eyepiece to properly view the planet.

For a closer look at the planet, replace the low powered eyepiec with a higher powered one and refocus the telescope.

Advanced Observation

Star Charts and Setting Circles

Star charts and setting circles will allow you to find the location of any known celestial objects viewable by your telescope. By using the measurements listed on the mount and the coordinates provided in a star chart, you will be able to find stars, planets, nebulae, and galaxies for exploration with your telescope. In order to ensure that you can use the declination and right ascension coordinate system, you will need to first polar align your telescope for your viewing location.

Before Getting Started

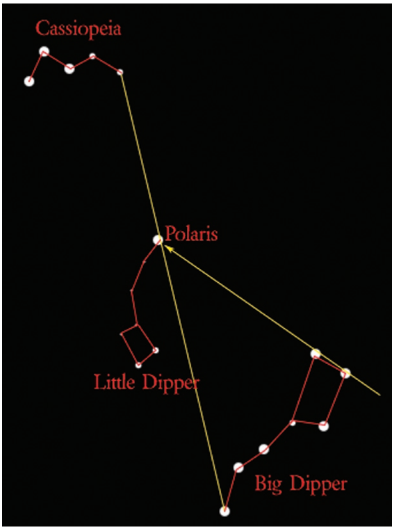
Before you begin aligning your telescope, look at the mount and familiarize yourself with the various scales used in aligning your scope. The topmost scale on the mount is the declination scale, which shows the declination angle (between 0° and 90° each way) of what you are viewing. Slightly below the declination scale is the hour circle, which shows the right ascension (from 0 to 24 hours) of what you are viewing. The bottommost scale, located just above the base of the mount, is the latitude scale which shows latitude measurements from 0 to 90 degrees. In order to ensure that your measurements are correct when aligning your telescope, it is important to make sure that the base of your mount is level. If the base of the mount is not level, your measurements will be off and aligning will be much more difficult.

Polar Alignment of your Telescope

Polar alignment of your telescope uses easy to find stars to help you find the center of the celestial sphere. Before aligning your telescope, you must familiarize yourself with some of the major constellations in the night sky. For viewing in the Northern Hemisphere, knowing the locations of Polaris (the North Star) and the constellations Ursa Major (the Big Dipper) and Cassiopeia (the Queen) will allow you to properly align your telescope. In the Southern Hemisphere, you will need to use a star chart to find stars near the meridian and the celestial equator so that you can use the star-drift method to polar align your telescope. Both Northern and Southern Hemisphere alignment are described here.

Northern Hemisphere Polar Alignment

1. To align your telescope in the Northern Hemisphere, first find the location of Polaris in the night sky. You can easily find polaris by using the Big Dipper to "point" at Polaris. The two stars which make up the edge of the dipper in the Big Dipper will roughly "point" at Polaris. You can also use the star at the end of the handle of the Big Dipper and the star on the edge of the shallower end of Cassiopeia to draw a line through Polaris. The illustration shows this.



2. Loosen the declination axis by turning the declination thumbscrew. Turn the optical tube assembly so that the arrow on the declination scale points at 0°. Once the arrow points at 0°, the optical tube assembly is aligned with the mount's polar axis.

3. Loosen the mount base screw enough to enable turning the mount assembly. Turn the mount and optical tube assemblies together so that the front of the telescope faces north. You can use a compass to find magnetic north and then line up with Polaris (celestial north) or line up the front of the telescope in line with Polaris by imagining a straight line running from Polaris down to the horizon.

4. Loosen the latitude adjustment screws. As you loosen the screws, you will notice the number on the latitude scale change. Adjust the latitude scale until Polaris is in the center of the viewfinder. Check that Polaris is in the center of the telescope's field of view by looking through the focused eyepiece of the telescope. The number on the latitude scale should match the latitude of your viewing location. If there is a difference between the latitude of your viewing location and the number shown on the latitude scale, check to make sure that your tripod is level and realign.

Southern Hemisphere & Star Drift Polar Alignment

Polar alignment in the Southern Hemisphere is more difficult that in the Northern Hemisphere because there is no corresponding pole star to use for alignment in the Southern Hemisphere. Polar aligning in the Southern Hemishpere is a two part process because of this. A rough alignment must first be made based on your viewing location. Then, a star drift alignment should be made to fine tune your alignment.

Rough Alignment

Begin by roughly aligning your telescope to the pole by using the mount's latitude scale. Set the declination scale to 0° to align the optical tube asssembly with the mount's polar axis. Check the latitude of your viewing location and set the latitude scale to the same number. For example, if you were viewing from Sydney, Australia, you would point your telescope due south and set your latitude adjustment to 34°, since Sydney lies at 34°S latitude. this will point you roughly at the southern celestial pole.

Star Drift Alignment

Star Drift alignment is more precise than polar star alignment, but may also prove to be more difficult to those not used to aligning a telescope. Once you polar align using the star drift method a few times, it becomes easier, but the first few times may take a considerable amount of time. For general viewing uses, the rough alignment described above may prove to be sufficient. The alignment procedure described below can be used to acheive more accurate alignment when needed. The alignment is described using a standard eyepiece without an erecting prism.

1. Having already roughly aligned your telescope, loosen the declination clamp and swivel telescope until scale reads 90°, then retighten clamp. Loosen the right ascension clamp and rotate telescope so that it points 6 hours away from the celestial pole and retighten clamp. The R.A. and Dec. adjustment cables may need to be temporarily removed in order to swivel the telescope freely. The telescope should now be pointing roughly where the meridian and celestial equator intersect.

2. Find a bright star in the viewfinder of your telescope and use the R.A. and Dec. adjustment cables to center it in the crosshairs. Work up to your most powerful eyepiece, centering the star in the viewfinder each time you replace the eyepiece.

3. Engage the clock drive by tightening the thumbscrew which connects it to the R.A. axis of the mount. Turn on the clock drive, ensuring that it is set to the correct hemisphere setting. Let the clock drive run for about 5 minutes.

4. Look into the eyepiece after the clock drive has run for about 5 minutes to see which direction the star has drifted. If the star has drifted to the right (left in the Northern Hemisphere) in the eyepiece, the mount is pointed too far to the west. If the star has drifted to the left (right in the Northern Hemisphere), the mount is pointing too far to the east. To correct this, loosen the mount base screw and center the star in the eyepiece. Any drifting up or down in the eyepiece is a result of your clock drive speed setting and can be corrected by adjusting the clock drive speed.

5. Unengage the clock drive. Loosen the right ascension clamp and rotate the telescope back 6 hours (opposite the direction you rotated it in step 1). Find a bright star in the viewfinder and center the star in the viewfinder. Center this star in the highest power eyepiece as you did with the previous star. Reengage the clock drive and turn it on, letting it run for another five minutes.

6. Check to see which way this new star has drifted. If the star has drifted to the left (right in the Northern Hemisphere) in the eyepiece, the mount latitude setting is too low. If the star drifts to the right (left in the Northern Hemisphere) in the eyepiece, the mount latitude setting is too high. Adjust the latitude setting until the star is centered in the field of view. Again, any drifting up or down in the eyepiece is a result of your clock drive speed setting and can be corrected by adjusting the clock drive speed.

7. Repeat this process as needed until you are satisfied with the alignment of the telescope. The more closely polar aligned your telescope is, the more accurate it will track stars.

Finding Celestial Objects

Once your telescope is polar aligned, you must set the hour circle in order to use the measurements listed on the mount to find celestial objects. Once the hour circle is properly set, you will be able to use the coordinates listed on star charts to find objects for viewing in the night sky. Setting the hour circle will require that you recognize and be able to find a star other than the ones used for alignment of the telescope.

Setting the Hour Circle

To set the hour circle, use a star which you are able to easily identify and have the coordinates for. In the Northern Hemisphere, Dubhe is a recognizable star which can be used for this. Dubhe is the pointer star in the Big Dipper closest to Polaris and lies at 58°42' Dec., 11h23m R.A.. In the Southern Hemisphere, Acrux is an easy to find star for setting the hour circle. Acrux is the closest star to the southern celestial pole in the Southern Cross and lies at -63°15' Dec., 12h33m R.A..

1. Loosen the declination clamp and rotate the telescope to the nearest degree of declination to the star you will be viewing (58° for Dubhe, -63° for Acrux). Retighten the clamp to lock the declination in place.

2. Loosen the right ascension clamp and rotate the telescope on the R.A. axis until the star you are using to set the hour circle is near the center of the finderscope. Retighten the clamp to lock in the R.A. axis.

3. Center the star in the eyepiece using the R.A. and Dec. adjustment cables. Once it is centered, turn the hour circle until the arrow points at the appropriate measurement for the star you are looking at (11h23m for Dubhe, 12h33m for Acrux). This sets the hour circle to the appropriate setting for your viewing location and time.

Using Setting Circles

With the telescope polar aligned and the hour circle set, you can find celestial objects using star charts available in books or on the web. A star chart will normally consist of a map and an ephemeris. The ephemeris will tell you the celestial coordinates of an object. By using the hour circle and the declination circle, you can point your telescope at the objects you see on the star chart quickly and easily. You will probably need to fine tune your aiming with the adjustment cables when you view a new star, but the use of celestial coordinates will make finding the objects you would like to look at considerably easier.

Astronomy Fomulae

Magnification

To determine the magnification of a telescope and eyepiece combination, divide the telescope focal length be the eyepiece focal length.

Magnification (x) = Telescope Focal Length (mm)/Eyepiece Focal Length (mm)

Ex: 6.3mm Eyepiece with a 114x1000mm telescope.
Magnification = 1000mm/20mm
Magnification = 50x

Focal Ratio

To determine the focal ratio of a telescope, divide the focal length of the telescope by the aperture.

Focal Ratio (F/x)= Telescope Focal Length (mm)/Aperture (mm)

Ex: Focal Ratio of a 114x1000mm telescope.
Focal Ratio (F/x)= 1000mm/114mm
Focal Ratio (F/x)= F/8.8

Limiting Magnitude

To determine the limiting magnitude of a telescope, use the aperture in the following formula for an approximation.

Limiting Magnitude = 7.5 + 5LOG(Aperture in cm)

Ex: Limiting Magnitude of a 114x1000mm telescope.
Limiting Magnitude = 7.5 + 5LOG(11.4cm)
Limiting Magnitude = 7.5 + (5 x 1.057)
Limiting Magnitude = 12.785

Resolving Power

To determine the resolving power of a telescope under ideal conditions, divide the aperture into 4.56.

Resolving Power = 4.56/Aperture (in.)

Ex: Resolving Power of a 114x1000mm telescope.
Aperture (in.) = 114mm/25.4 = 4.49
Resolving Power = 4.56/4.49in.
Resolving Power = 1.02

Astronomy Terminology

Declination (Dec.) - The astronomical equivalent of latitude. Declination describes the angle of a celestial object above or below the celestial equator. The sky over the northern hemisphere has a positive declination. The sky over the Southern hemisphere has a negative declination. For example, Polaris (the North Star) which lies nearly directly over the North Pole, has a declination value of 90°.

Right Ascension (R.A.) - The astronomical equivalent of longitude. Right Ascension measures the degree of distance of a star to the east of where the ecliptic crosses the celestial equator. R.A. is measured in hours, minutes, and seconds as opposed to degrees. As oposed to the term meridian which is used in referring to lines of longitude, right ascension is referred to as hour circles. There are 24 hour circles of right ascension which run from the north to south celestial poles.

Celestial Equator - The celestial equator is the line of declination which lies directly above the Earth's equator. The celestial equator lies halfway between the north and south celestial poles and serves as the 0° point in measuring declination.

Ecliptic - The ecliptic is the apparent path of the sun through the sky over the course of the year. Since we view the sun from different angles throughout the year, it appears to move in relation to other stars. The vernal (spring) and autumnal (fall) equinoxes lie at the points where the ecliptic intersects the celestial equator. The vernal equinox is where right ascension is at 0 h (hours). The autumnal equinox can be found at 12 h R.A..

Zenith - The zenith is the point in the celestial sphere directly above your head. The zenith varies depending upon your location. In general, the declination point of your zenith is equal to the latitude at which you are standing on Earth.

Ephemeris - The ephemeris of a planet or the sun or the moon is a table giving the coordinates of the object at regular intervals of time. The coordinates will be listed using declination and right ascension. Other information such as distance and magnitude may be listed in ephemerides (plural of ephemeris).

Altitude - The altitude of a celestial object is the angular distance of that object above the horizon. The maximum possible altitude is the altitude of an object at the zenith, 90°. The altitude of an object on the horizon is 0°. Altitude is measured from your point of observation and does not directly correlate to points on the celestial sphere.

Azimuth - Azimuth is the angular distance around the horizon measured eastward in degrees from the North Horizon Point. Thus the North Horizon Point lies at an azimuth of 0°, while the East Horizon Point lies at 90°, and the South Horizon Point at 180°. Azimuth is measured from the point of observation and does not directly correspond to points on the celestial sphere.

Angular Distance - Angular distance is the size of the angle through which a telescope tube aiming at one object must be turned in order to aim at the another object. If you must rotate the telescope from the zenith to the horizon, the angular distance between the two points would be 90°.

Telescope Terminology

Objective - The objective is the front lens of a telescope. The measurement listed for objective lenses is the diameter of the lens. A larger objective allows more light to enter a telescope and provides a brighter image. The objective diameter is also sometimes referred to as the aperature of a telescope.

Focal Length - The focal length of a telescope is the distance from the point where light enters a telescope (the objective) to the point where the image is in focus. In telescopes with the same size objective, a longer focal length will provide higher magnification and a smaller field of view.

Magnification - The magnification of a telescope is determined by the relationship between the focal length of the telescope and the focal length of the eyepiece used. The greater the difference in focal lengths, the greater the magnification. A telescope has a maximum useful magnification of about 60 times the diameter of the objective in inches. Magnification beyond the maximum useful magnification will provide dim, low-contrast images.

Focal Ratio - The focal ratio of a telescope describes the ratio between the focal length and objective size of a telescope. Visually, the smaller the focal ratio (also called f-stop) of a telescope, the wider the field of view. Photographically, the lower the f-stop, the shorter the exposure time needed to capture an object on film.

Limiting Magnitude - The limiting magnitude of a telescope describes the faintest object you can see with a telescope. The magnitude of a star describes its brightness. The larger the magnitude of an object, the fainter it appears to be. The brightest stars have a magnitude of 0 or less.

Resolving Power - The resolving power, or Dawes' Limit, of a telescope is the ability to view closely spaced objects through a telescope. The resolving power of a telescope is measured in seconds of arc. The smaller the resolving power, the better you will be able to separate binary stars when viewing through your telescope.

Aberration - Aberrations are degradations in image which may occur due to optical system design or improper alignment of optical system components. The most common types of aberration are chromatic aberration, spherical abberation, coma, astigmatism, and field curvature.

Collimation - Collimation is the alignment of optical components within an optical system. Improper collimation will distort an image and may result in abberations present in the image. Most reflector telescopes have collimation adjustments which can be made in order to reduce aberrations and image distortion.

Zhumell

The Zhumell Warranty

We have designed Zhumell products to be durable and to offer excellent value. Because we think it is important to stand behind that statement what follows are the details of our warranty, one of the best warranties in the industry.

Your Zhumell has a 3-year warranty. For the warranty to be valid, the Zhumell must be registered. This can be done quickly and easily at www.zhumell.com or by calling: 800.922.2063.

To obtain warranty service the damaged Zhumell must be returned to Zhumell along with $25 to cover shipping and handling.

When you return your Zhumell to us please send a letter that explains the problem. This is important. Sometimes the problem is obvious as when we open a box and the pieces fall out. However, sometimes Zhumell owners are particular (that is why we love you) and a flaw that you have noticed may be hard to find by our technician. A letter will speed up the warranty process and save a phone call. (Oh, yes, please include your phone number and an address!)

Since we are constantly searching for the best products, we may have improved or changed our Zhumell products from the time you first obtained yours, therefore it is our option to repair or replace the Zhumells you sent us. (Please note that the maximum limit of liability for losses or damage from any cause shall be the price paid for the Zhumell.)

Repair Checklist

I. Box your Zhumell securely.

II. Include a note explaining the reason the Zhumell needs repair.

III. Include your daytime phone number.

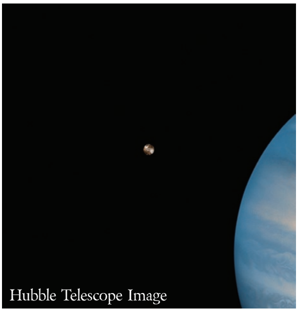
IV. Include an address for returning your Zhumell to you.

V. Include a check or money order for $25, made out to Zhumell.

We recommend that you send your unit to us by way of UPS or FedEx. This provides a tracking number should your unit become lost or damaged.

Our address is on the back...

Zhumell Astronomical Products



Hubble Telescope Image

Refractor Telescopes

60x350 Ion
60x600 Zenith

Reflector Telescopes

Eclipse 114

Astronomical Binoculars

20x80 Super Giant
25x100 Tachyon

Telescope Eyepieces

Plossl

0.965“ 6.3mm Plössl
0.965“ 7.5mm Plössl
0.965“ 10mm Plössl
0.965“ 12.5mm Plössl
0.965“ 17mm Plössl
0.965“ 20mm Plössl
0.965“ 25mm Plössl
1.25“ 6.3mm Plössl
1.25“ 7.5mm Plössl
1.25“ 10mm Plössl
1.25“ 12.5mm Plössl
1.25“ 17mm Plössl
1.25“ 20mm Plössl
1.25“ 25mm Plössl
1.25“ 32mm Plössl
1.25“ 40mm Plössl

Super Plossl

1.25“ 3.6mm Super Plössl
1.25“ 6.3mm Super Plössl
1.25“ 10mm Super Plössl
1.25“ 20mm Super Plössl
1.25“ 25mm Super Plössl

Zoom

1.25“ 7-21mm Plössl Zoom
1.25“ 8-24mm Plössl Zoom

Image Diagonals

1.25“ to 1.25“ 90° Diagonal Prism

Erect Image Prisms

0.965“ to 0.965“ 45° Erect Image Prism
1.25“ to 0.965“ 45° Erect Image Prism
1.25“ to 1.25“ 45° Erect Image Prism

Barlow Lenses

1.25“ 2x Barlow

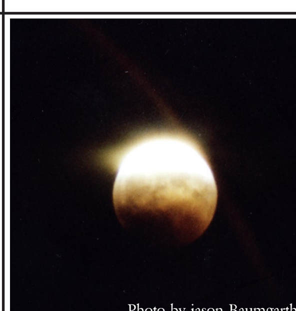


Photo by jason Baumgarth

WWW.ZHUMELL.COM

BUY ONLINE

Please enjoy your Zhumell telescope. If you have any questions, comments, or stories about experiences with your Zhumell telescope, we would like to hear them. We are confident that you will be pleased with your new Zhumells and hope to hear from you soon.

Zhumell
Sport Optics

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