

 **ASTRONZ**

OWNER'S MANUAL
DOBSONIAN TELESCOPE

ASTRONZ GS680 200mm (8") F/6

ASTRONZ GS880 254mm (10") F/5

ASTRONZ GS980 303mm (12") F/5



Astronz (Astronomy NZ Ltd) is fully owned by the Auckland Astronomical Society and operated by its members.

Our mission is to supply quality telescopes and accessories at a reasonable price. By importing and selling direct from the manufacturer to the customer we can keep our prices down and give you the best value on the New Zealand market.

As passionate astronomers ourselves, we understand how important it is to have the highest quality, precision optics. Our speciality is in easy to use instruments that can be used for real astronomy, and not outgrown in a matter of months.

Astronz supports astronomy throughout New Zealand and continues to invest its profits back into the astronomical community nationwide.



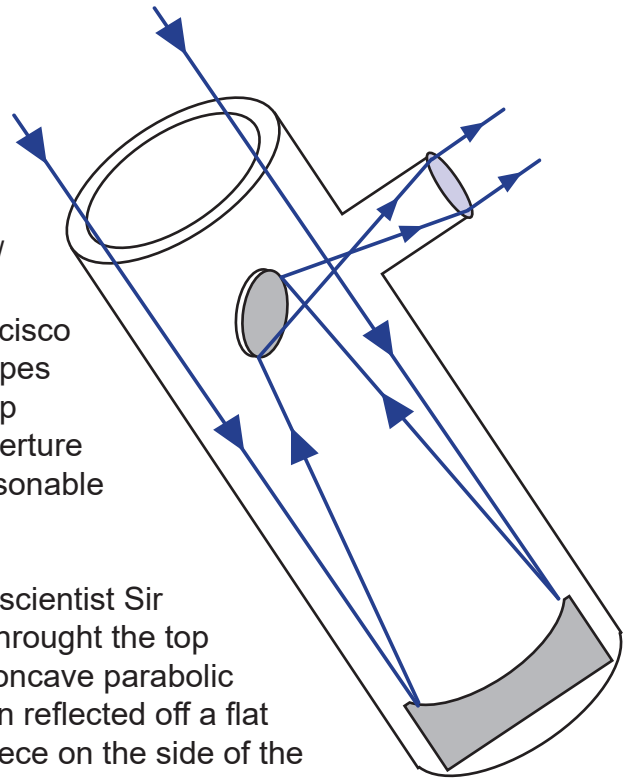
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Introduction

Thank you for purchasing an AstronZ Dobsonian telescope. This precision optical instrument is built with the highest quality materials and with proper care will provide many years of reliable service.

The Dobsonian telescope is an “alt-azimuth” (up-down/left-right) mounted Newtonian reflector type telescope. The design was popularised in the 1960’s by San Francisco astronomer John Dobson, who famously made telescopes from recycled “junk” such as cardboard tubes and scrap wood, and was largely responsible for making large aperture telescopes available to amateur astronomers for a reasonable cost.

In a Newtonian reflector telescope, invented by British scientist Sir Issac Newton (1642-1727), light enters the telescope through the top of the telescope (the open end) and is reflected off a concave parabolic curved mirror at the bottom of the tube. The light is then reflected off a flat mirror mounted at an angle of 45 degrees, into an eyepiece on the side of the telescope tube.



WARNING

DO NOT use the telescope or finderscope to look at the sun without an approved solar filter. Doing so will cause permanent damage and even blindness.

NEVER use a solar filter that attaches to the eyepiece. Only approved solar filters that completely cover the opening of the optical tube will provide adequate protection.



Specifications

GS680

Focal Length: 1200mm
Focal Ratio: f/6
Aperture: 200mm
Weight: Telescope 13kg
 Base 10kg
Length: Telescope 1.25m
Magnification: 9mm EP 133x
 30mm EP 40x

GS880

Focal Length: 1250mm
Focal Ratio: f/5
Aperture: 254mm
Weight: Telescope 18kg
 Base 12kg
Length: Telescope 1.35m
Magnification: 9mm EP 139x
 30mm EP 42x

GS980

Focal Length: 1500mm
Focal Ratio: f/5
Aperture: 303mm
Weight: Telescope 22kg
 Base 14kg
Length: Telescope 1.45m
Magnification: 9mm EP 167x
 30mm EP 50x

Telescope: Newtonian Reflector Optical Tube Assembly.
Mirror: BK7 glass, parabolic, with mirror surface quality over 1/16 wave RMS. Cooling fan.
Mount: Dobsonian base with brake / tension system. Roller bearings for smooth movement.
Focuser: 2" Dual Speed 10:1 Crayford Focuser. 1.25" to 2" Adapter.

Supplied Accessories:

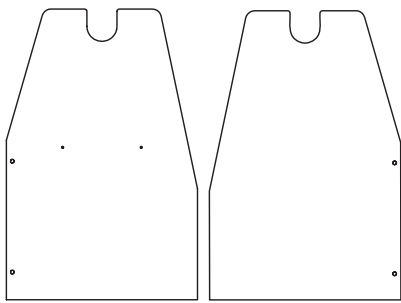
9mm Plossl 1.25" Eyepiece
 30mm Superview 2" Eyepiece
 2" Extension Tube



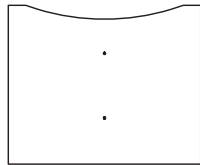
Base Assembly

Unbox all parts for the base assembly and identify all the parts below:

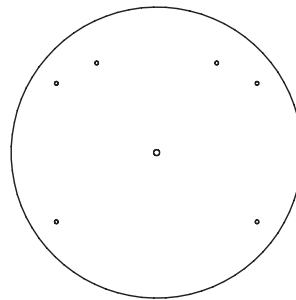
- | | | | |
|----|--------------------|----|--|
| A. | Base Sides (2) | F. | Handle (and screws) |
| B. | Base Front | G. | Feet (and screws) (3) |
| C. | Upper Base Plates | H. | Long Screws (10) |
| D. | Lower Base Plate | I. | Eye-piece Tray (and screws) |
| E. | Bearing Plates (3) | J. | Adjustment Bolt (with large and small washers, ball bearing and bushing) |



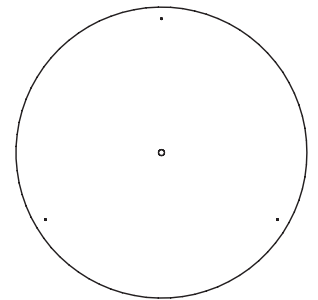
A



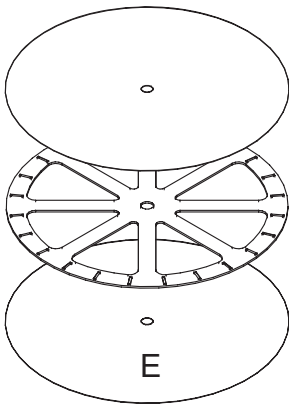
B



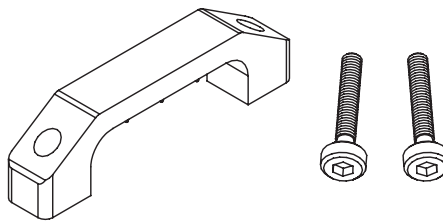
C



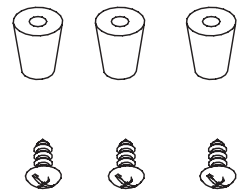
D



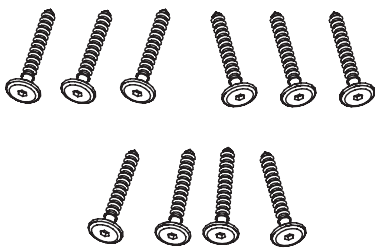
E



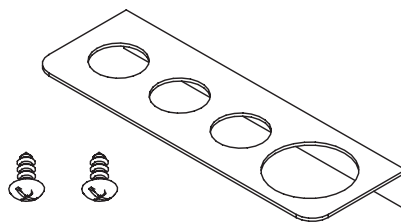
F



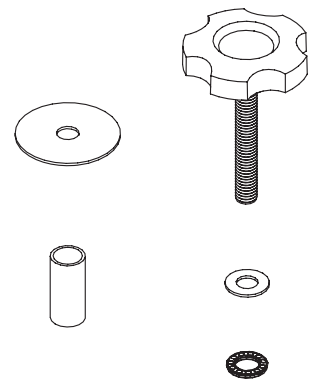
G



H



I



J

Step 1: Screw the handle (F) to the Base Front (B) using the provided screws into the pre-drilled holes.

Step 2: Screw the two Base Sides (A) to the Base Front (B) using the Long Screws (H) Ensure the sides are firmly attached, but do not overtighten.

Step 3: Flip the assembled sides upside down and secure to the Upper Base Plate (C) using Long Screws (H) (note: the Upper Base Plate has a center hole and six predrilled holes. Ensure that the recessed holes are facing away from the housing so screw heads can be flush)

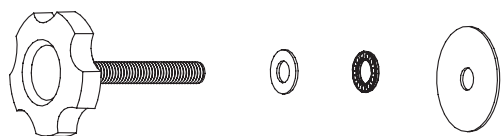
Step 4: Attach feet (G) to the Lower Base Plate (D) (note: this is the one with the brass insert in the centre and three pre-drilled holes for the feet.)

Step 5: Flip the Lower Base Plate over onto its feet and insert the metal bushing (sleeve) from the Adjustment Bolt into the centre hole

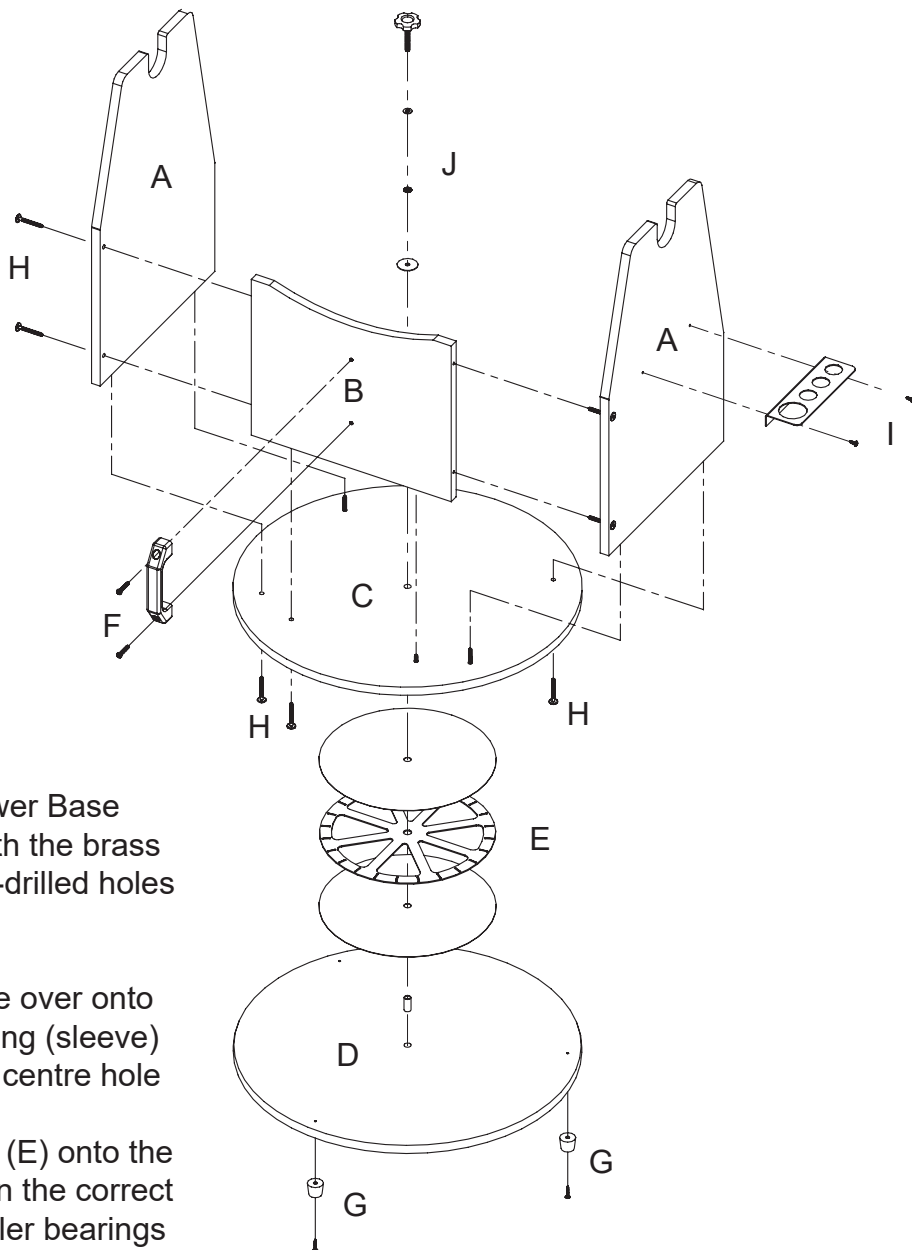
Step 6: Place the Bearing Plates (E) onto the bushing ensuring they are kept in the correct order (the plate with the metal roller bearings sandwiched between the other two plates

Step 7: The whole assembly from Step 3 should now also be carefully lifted onto the bushing, and should rotate freely

Step 8: Assemble the Adjustment Bolt (J) in the following order: Bolt -Small Washer - Ball Bearing - Large Washer and insert into the bushing to secure all the base plate parts together



Step 9: The final step is to install the Eyepiece Tray (I) to the side of the base assembly with the screws provided.



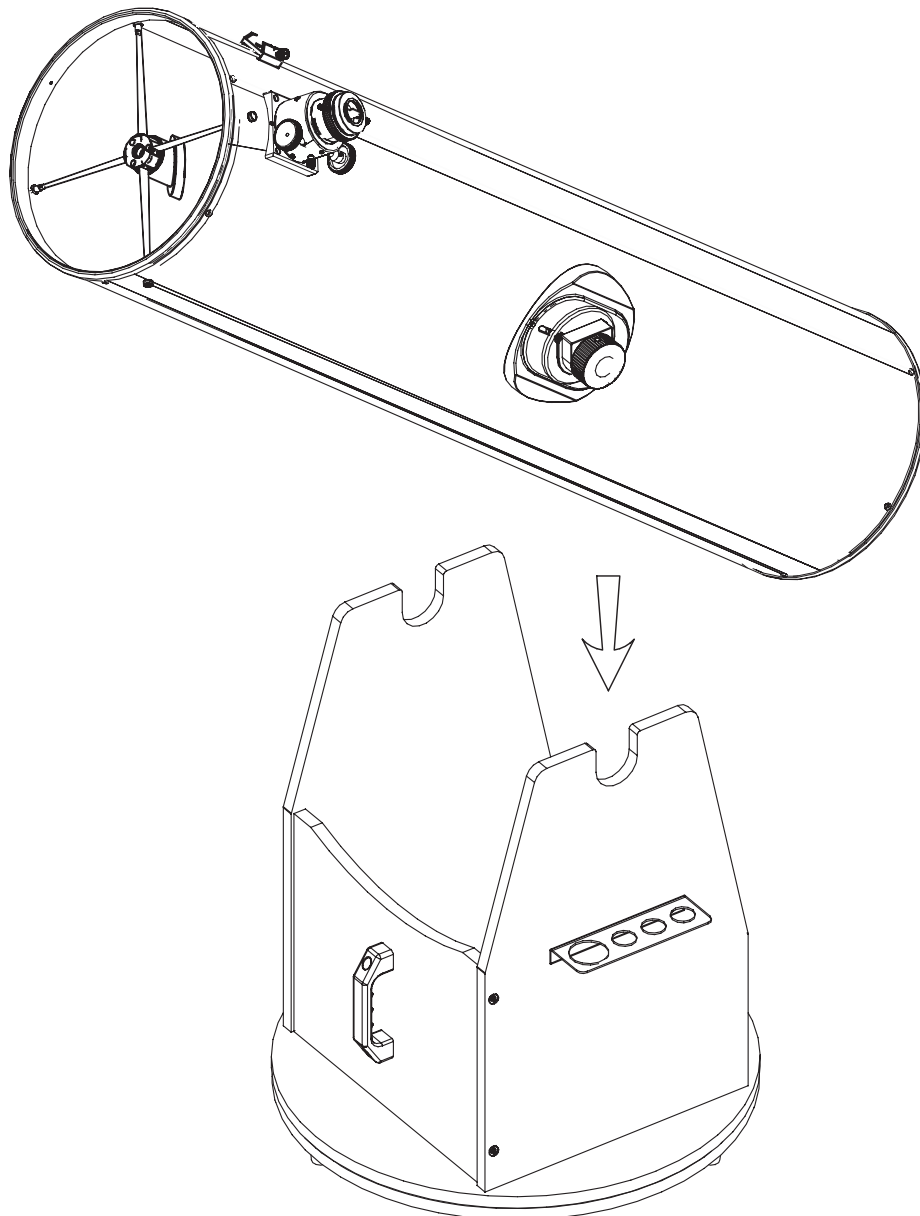
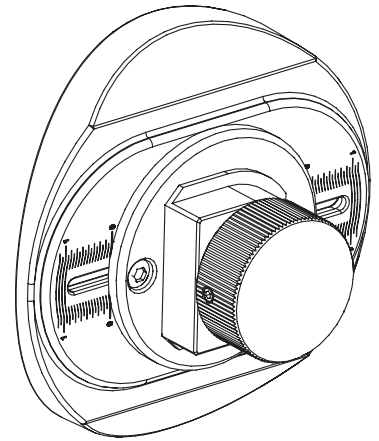
Your Dobsonian base is now completed. The adjustment knob on the base controls how easy it is to move the base (and telescope) in the Azimuth (left/right) direction.

Telescope Assembly

Locate the two Altitude bearings and install onto the sides of the optical tube using the screws already fitted in the slots on each side of the optical tube and hex wrench provided.

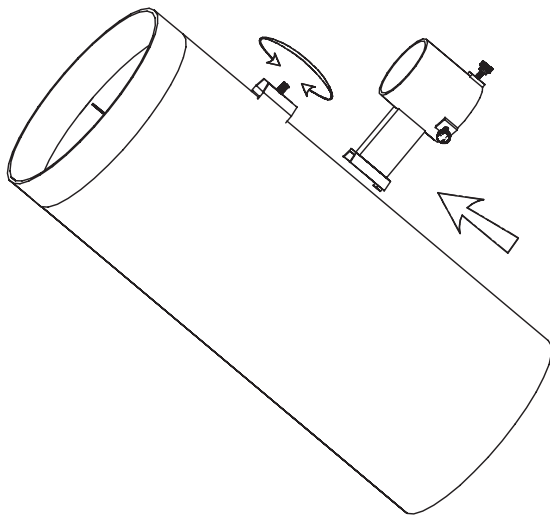
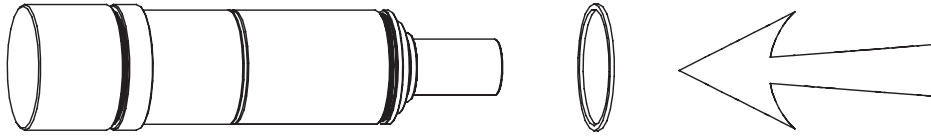
The graduated scale allows you to make adjustments to balance the optical tube (particularly if you use any heavy accessories). Normally these should be in the centre, taking care that the bearings on each side should be adjusted the same.

The “U-Shaped” blocks on the bearings are designed to fit perfectly into the “U-shaped” cutouts on the dsonian base. The knobs on the altitude bearings can be used to adjust how easy it is to move the telescope in the altitude (up/down) direction



Finderscope Assembly

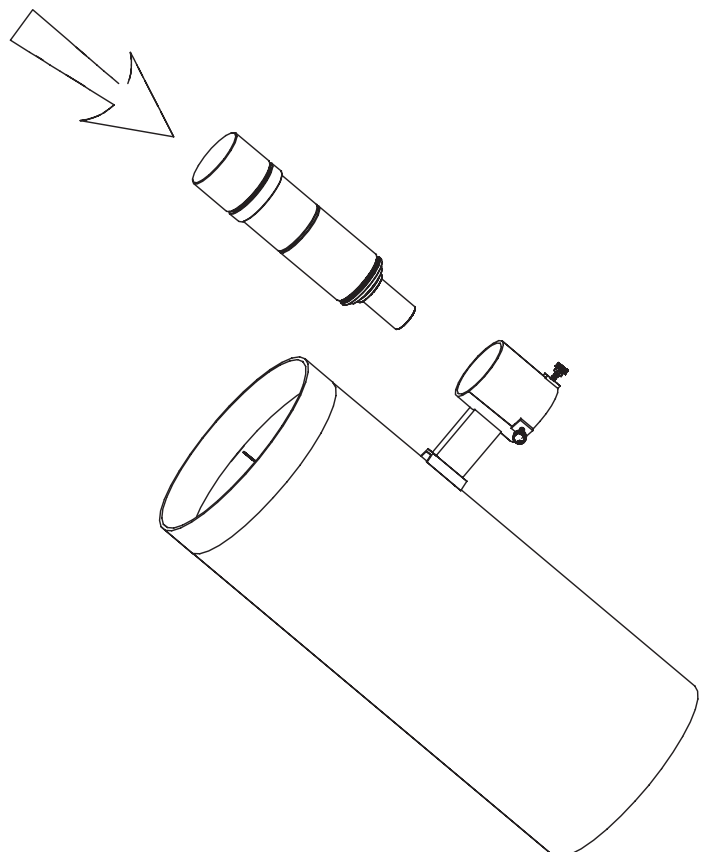
Locate the finder scope and the rubber O-ring, position the O-ring in the groove on the finder scope body.



Loosen the thumbscrew on the “dovetail” finder scope base on the optical tube, and install the finderscope bracket, tightening the screw to hold it in place.

Loosen the two plastic adjusting screws on the finder scope base and slide the finder scope, eyepiece first, into the bracket until the O-ring seats.

Your Dobsonian telescope is now fully assembled and ready for finder alignment and observing



Using Your Telescope

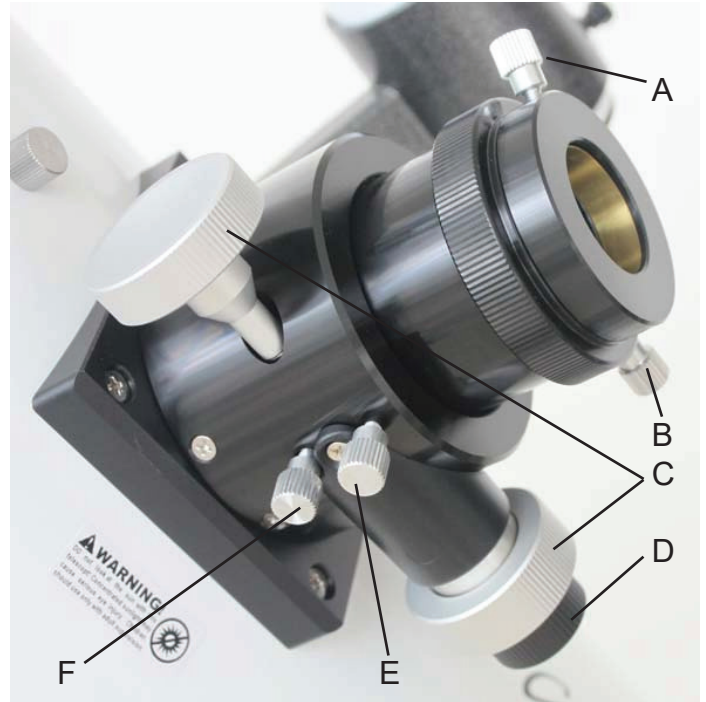
Focuser

Your telescope is equipped with a high quality Crayford type focuser that can take both 1.25 inch and 2 inch eyepieces.

1.25 inch eyepieces are fitted by loosening the thumbscrew on the 1.25 - 2-inch adapter (A) and installing the metal barrel of the eyepiece into the hole (after removing all plastic dust caps. Tighten to thumbscrew to secure the eyepiece (do not overtighten)

To use 2 inch eyepieces, loosen the thumbscrew on the focuser (B), remove the 1.25 - 2-inch adapter and install the 2-inch eyepiece as above but in the larger 2-inch diameter opening.

Adjust the Tension Screw (E) so that the eyepiece/focuser moves smoothly in and out when the focus knob (C) is turned. The Lock Screw (F) will prevent the eyepiece focussing (ie turning the focus knobs (C & D) will not move the focuser).



In operation, the silver focus knob (C) will allow you to roughly focus the eyepiece, whilst the black knob (D) moves more slowly and will allow fine focus (approximately 10:1 ratio).

Eyepieces

Your telescope is supplied with two high quality eyepieces; a 1.25" 9mm Plossl and a 2" 30mm Superview wide angle eyepiece. Calculating the magnification of an eyepiece is simple and uses the following formula:

$$\text{Power (or Magnification)} = \frac{\text{Focal length of telescope}}{\text{Focal length of eyepiece}}$$

So for an AstronZ 200mm Dobsonian: $1200\text{mm}/9\text{mm} = 133$ and $1200\text{mm}/30\text{mm} = 40$

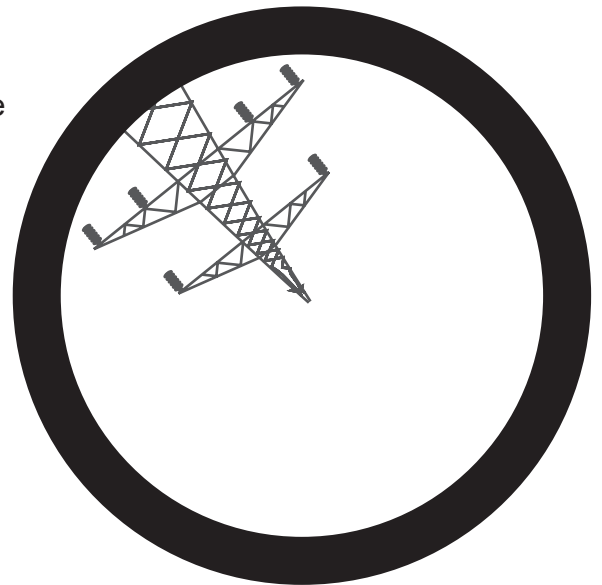
The basic rule of thumb to remember is that an eyepiece with a larger number has a lower power and will show a greater area of sky. When using your telescope you will generally start off using the lowest power eyepiece you have and switching to a higher power if required only once you have located the object you are interested in.

Finderscope Alignment

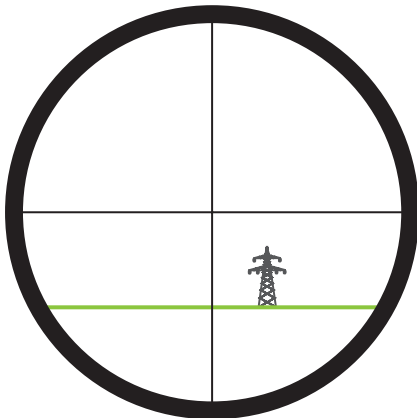
In order to use the finder scope to locate objects, it first needs to be aligned so that objects in the “crosshairs” of the finder are visible through the eyepiece of the main telescope.

This process is easiest during the day (though take care not to point either the finder or the main scope anywhere near the sun) by pointing the main telescope toward a distant object (such as a tree, mast or power pylon).

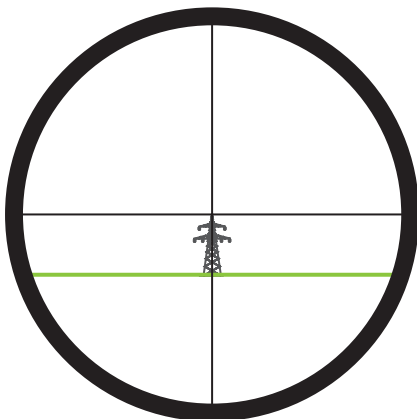
Note the image through the eyepiece will appear inverted (and at an angle). Try to get something recognisable in the centre of the field of view (such as the top of the pylon in the image to the right)



Next use the finder and see if the same object is in the centre of the field of view.



In the case of the finder scope image to the left, the pylons is slightly offcentre (in this case the crosshairs are showing slightly up and to the left of the image in the main eyepiece.) Correct the alignment by adjusting the two thumbscrews on the finder until the object is centred on the crosshairs



Once the crosshairs are perfectly over the object in the main eyepiece, your finder scope is aligned correctly, and images in the centre of the finder should be visible through the main eyepiece, even at high magnifications.

Observing

Selecting a site

The ideal site for observing with your AstronZ Dobsonian telescope, is a dark outdoor site far away from city lights or other sources of “light pollution”. Whilst this may be impractical for most people, try to choose a location where there is as little light as possible (such as street lighting, security lighting, lights from windows etc). It’s also worth noting that heat from chimneys and rooftops may also have a negative impact on your viewing. Don’t try observing from indoors, or through window glass

Cooling

Until all the parts of your telescope (mirror, tube, eyepieces etc) are at the same temperature as the surrounding ambient temperature (known as “thermal equilibrium”), even minor temperature differences will affect the quality of the image.

Before viewing with your telescope, set it up in the area you plan to view for at least 30-60 minutes to allow all components to come to equilibrium. Using the supplied battery holder to power the fan on the base of the mirror can help cool the mirror faster.

If the image appears distorted, hard to focus, or is rapidly moving (“boiling”), these could be signs that your telescope needs more time to cool.

Seeing

Astronomers refer to the condition, stability and transparency of the atmosphere as “seeing”. High altitude jet streams, turbulent air and convection currents from cooling ground objects all cause blurring, distortion and/or scintillation (or “twinkling”), and provide one of the biggest challenges for earth based astronomers.

If your telescope has had plenty of time to cool down, and you are still unable to get a sharp image, then it is probably the atmospheric conditions (or seeing) that is to blame (particularly if the stars are seeming to “twinkle” to the naked eye).

Often the seeing will improve later in the evening, but on occasions the only course of action is to try again another night.

Storage & Maintenance

Storing your AstronZ Dobsonian Telescope

For maximum life, your telescope should be stored in a cool, dry and dust free environment. It is recommended that you store the optical tube (OTA) in the original box, or a purpose designed case when not in use. The base should be stored assembled, but away from moisture.

Before packing the telescope away, ensure that it is thoroughly dry (the outside of the tube may be gently dried with a towel or cloth, and allow to fully air dry), and that all dust covers are in place.

Storing, particularly if assembled on the base, it is recommended that the telescope be stored slightly "nose down" (ie with the open end pointing just below the horizontal) this will help prevent dust buildup on the mirror

Cleaning and Maintenance

As your AstronZ Dobsonian Telescope is a precision scientific instrument, great care should be taken in order to maintain the optics and alignment. Cleaning of any part of the telescope should be undertaken a little as possible.

The outside of the optical tube and base can be very gently cleaned with a soft lint-free cloth and mild soap solution - do not use solvents on any part of the instrument,

Eyepieces can be cleaned by blowing off dust with a bulb-type (not aerosol) air duster, or with very gentle strokes of a camelhair brush. Fingerprints can be removed using a blotting action with soft, white, unscented/unimpregnated tissue paper and a solution of 3-4:1 distilled water to isopropyl alcohol. Do not use photographic lens wipes/pens.

In general cleaning of the mirrors in your telescope rarely required, even if they appear to have a film of dust. Mirror cleaning is a specialised job as it is very easy to damage or scratch the surface, and should be undertaken by a professional.

