

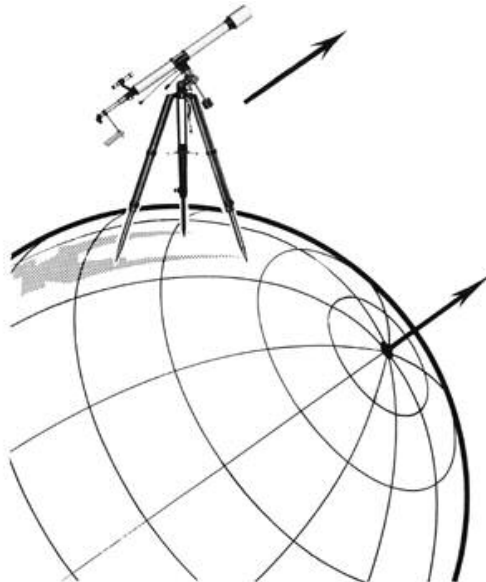
How to Set Up an Equatorial Telescope Mount In Polar Alignment.

Please note that these directions are for Australian users only. Readers in the Northern Hemisphere can substitute "North" wherever "South" is used.

This guide is designed for the novice astronomer to be able to get the most benefit and enjoyment from their new telescope.

As the Earth turns on its axis the stars in the night sky appear to move across the sky. An Equatorial mount is designed to allow the user to follow this apparent movement of the stars with ease, by rotating the telescope on a similar axis.

To be able to do this the equatorial mount of the telescope must be set up in alignment with the Earth's axis. This is called "Polar Alignment".



The procedure is relatively straight forward and will take only a few minutes. You will however need:

1. A compass or some other method of accurately determining south (which is the nearest of the Earth's two poles).
2. The latitude of your location. A table of the latitude and longitude of all major Australian and New Zealand cities is provided at the end of this guide.



This guide assumes that you have already assembled your telescope.

Step 1. Balancing the telescope and the mount.

This is necessary so that the telescope will not tend to fall away from any position that you may move it to.

Set your telescope tripod on a hard level surface.



Loosen all the locking nuts so that the mount can swing freely. Then with your telescope laid over in the position shown above:

1. Loosen the clamping collar on the telescope tube and slide the telescope left or right until it is balanced and will stay in this horizontal position.

2. Adjust the counter weight until the mount is balanced and will stay in this horizontal position.

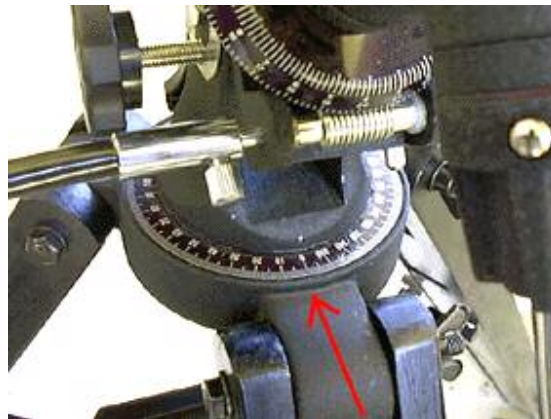
3. Re-tighten all the screws you loosened.

4. Lift the telescope back up to its usual upright position.

Congratulations your telescope is now balanced.

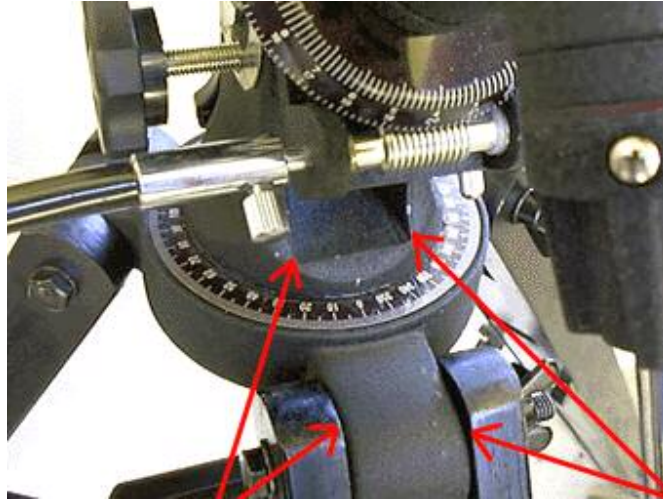
Step 2 Setting the tripod to face south.

At the base of the mount between the tops of the three tripod legs on most models is a graduated ring marked from 0 to 360. Find zero on the ring. This will be opposite one of the three tripod legs. (see picture below) If your telescope does not have this ring do not worry. Choose one of the three tripod legs and proceed straight to the next step and align the upright posts as shown in the next step.



Zero degrees

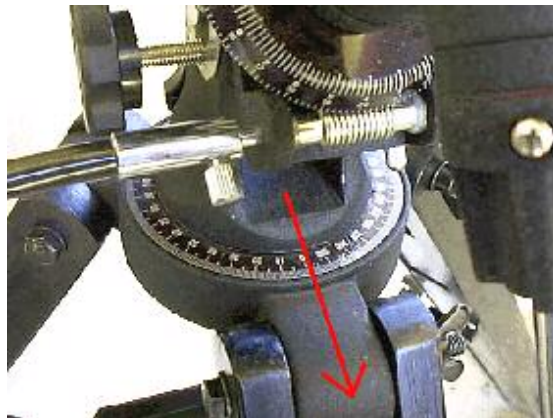
Now loosen the locking nut so that the whole base can turn around this ring. Turn the whole base (including the telescope) so that a line drawn through the middle of the "tunnel" in the middle of the of the base points to the zero mark. At this point the two upright posts that come up from the base which sits on this graduated ring will be evenly aligned with the bracket that attaches to tripod leg.



Align these edges

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Tighten the locking nut so that this part of the mount cannot turn anymore. Take your compass and turn the whole tripod and telescope assembly (by lifting and moving the tripod legs) until a line drawn through the exact centre of the mount and the zero degree marking on the ring - faces south.



South

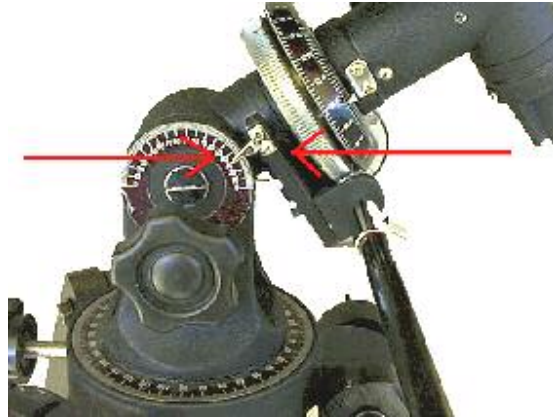
Step 3. Setting your Latitude.

The angle from the surface of the earth to the axis of the Earth's rotation varies with your latitude - at the Equator the Earth's surface is parallel and at the North and South Poles it is at 90 degrees.

The second dial from the bottom is used for setting the latitude for your location.

Loosen the clamp and lift the mount until the pointer is at the number

corresponding to your latitude (there is a table at the end of this guide). The nearest whole number will suffice. Eg Sydney will be 34 degrees.



Set this pointer to your latitude

Please note sometimes the mount will need to be rotated through 180 degrees when it is first unpacked as some models are packed this way to save space. Check your telescope to the picture above.

Also, some telescopes are fitted with a small screw which is designed to take the weight of the mount when setting the latitude and ease the strain on the clamping nut. Adjustments are made by screwing the screw in or out.

Tighten the clamping screw and you are finished. Your telescope is now in "polar alignment". This means that the axis of the telescope's mount is parallel to a straight line drawn from the Earth's North Pole through the centre of the Earth to the South Pole. You will now be able to easily adjust for the apparent movement of the stars with small adjustments of the cable adjusters.

Step 4 - Optional - Mark your positions.

Many people now choose to mark the positions of the tripod legs with small paint circles or similar on the ground. This means that in future they will only have to walk outside and set the three tripod legs in the circles and their telescope is correctly aligned. Whether or not you choose to do this is entirely up to you.

Final Note. - The other two graduated rings.

You will note that there are two other graduated rings on your telescope which have not been used. These are for the Right Ascension and Declination settings which are for more advanced users, (and yes, one of them is designed to rotate freely!).

These rings allow advanced users to locate objects which are invisible to the naked eye with the use of star charts.

If you wish to learn more about using these controls we suggest that you read a more detailed guide book such as "**Southern Skies**" or "**Astronomy 98**" both of which are available from your Tasco stockist. A brief guide is on page 9 of "[How to use your Astronomical telescope for the first time](#)". The link will take you to page 1 because we recommend that you read the whole guide.

Table of Latitude and Longitude for major Australian and New Zealand cities

	Latitude South	Longitude East
Brisbane	27d 30s	153d 00e
Sydney	33d 55s	151d 10e
Melbourne	37d 45s	144d 58e
Adelaide	34d 56s	133d 52e
Perth	31d 58s	115d 49e
Darwin	12d 23s	130d 44e
Cairns	16d 51s	145d 43e
Hobart	42d 54s	147d 18e
Canberra	35d 18s	149d 08e
Alice Springs	23d 42s	133d 52e
Auckland	36d 55s	174d 47e
Christchurch	43d 33s	172d 40e
Dunedin	45d 52s	170d 30e
Wellington	41d 17s	174d 47e
Kaitaia	35d 08s	173d 18e