Mounting Heavyweight Binoculars on a Camera Tripod

Introduction

Binoculars are a wonderful way to observe the night sky. In addition to a handheld pair of 15x50 Canon IS, I have a pair of relatively large 100mm APM binoculars with (second hand) 19mm panoptics. This offers fantastic views, akin to looking through a porthole of a spaceship. I can quite happily get lost scanning the Milky Way.

APM Binoculars with Red Dot Finder Looking Skywards

Parallelogram Mount – Effective but Heavy

For the past few years, I used a homemade heavy duty parallelogram mount to carry the binoculars. The hinge at the top and the base section were kindly welded from stainless steel off cuts by a friend (for free!) who works in a nearby engineering workshop. They pivot about 5mm thick, 12mm diameter PTFE discs. The arms are aluminium box section (reclaimed for free from the tip) and each joint uses 5mm thick, 50mm diameter PTFE discs.

The parallelogram sits atop a Meade field tripod (purchased second hand from UK Astro Buy Sell) and is counterbalanced by weight lifting weights at the other. This is a fantastic mount that, with the hinge at the binocular end, allows observations of a whole swathe of sky from a seated position. It is

really bloody heavy though! This makes it excellent in a static observatory but not easily transported to a nearby dark sky site or a different part of the garden.

Parallelogram Mount Set Up in Run Off Shed at my Old House

Hinge that allows binoculars to pivot – this allows a swathe of the sky to be observed without moving

Base Section – the central post is welded to a disc on top of a Meade Field Tripod

The APM Binoculars and Parallelogram Mount under the Milky Way – transporting the tripod, mount and counterweights is an effort

Using a Camera Tripod – A Portable Solution

Looking for a portable solution, I explored various heavy duty camera tripods. Not only must they be capable of carrying the weight of the 7kg binos, they must have the ability to raise or lower the binos. This is important because, as the binos tilt from horizon to zenith, the eyepiece height changes. Although this is helped by having an adjustable observing chair, turning the handle to raise and lower the binos is far easier than resetting the chair seat.

After an internet, I settled on a Triton tripod from Telescope Express in Germany. This was a bargain at E149, far cheaper although heavier, than the more Gucci brands. It is rated to 8.5kg and has an adjustable central column that rises and lowers by means of a simple handle. A friend machined a large diameter base plate that can screw onto the tripod's 3/8 UNC stud with an M10 machine screw that can secure an altaz mount.

The altaz mount was knocked up in an afternoon from scrap wood around the garage. It is meant to be a prototype to see if I have the dimensions correct before making a smarter looking version. To my surprise, it works very effectively and will probably end up in service for longer than I originally planned. It is simply thick bits of pine butt jointed together with triangular bracing. Both the altitude and azimuth axis rotate on PTFE pads and the whole thing is held on with an M10 wingnut.

Binocular Mount on Triton Tripod

I was worried that, when the binoculars are raised that the central column would not be stable. Tightening up the locking screws on the column and tripod spreader seems to take care of this. The setup is nicely stable and, with the binoculars always above the tripod and not cantilevered to one side, any lateral movement is well contained.

Aluminium Base Plate Screws onto the Tripod's 3/8 Stud

The Mount Rotates on PTFE Pads


Observing near the Horizon and the Zenith – note the central column and spreader screws need to be fully tightened when the binoculars are raised

First Light

This mount was first used in anger at my club's Perseid Star-BQ on Saturday 15 August. It performed admirably giving excellent views across the night sky – including tracking a space station pass. The binoculars were raised and lowered for a number of observers ranging from >6' tall to just over 5' as we observed objects that were just rising to those overhead at the zenith.

Using the PTFE pads allows for smooth movements in both axes. This allows objects to be centred in the eyepiece with ease. It was a pleasure to scan the summer Milky Way through Cygnus and Scutum hoovering up nebulae, clusters and star clouds. In addition to meteor watching and enjoying the bbq, the binoculars were chiefly used to observe the classics:

- The Double Cluster in Perseus – unbelievable view
- The Andromeda Galaxy M31 (plus M32 and M110)
- NGC 457 a wonderful open cluster in Cassiopeia
- M15 - globular cluster in Pegasus
- North American Nebula - Cygnus
- M39 (open cluster) and nearby Barnard 168 (dust cloud) both in Cygnus
- Albireo – beautifully coloured double star in Cygnus
- Epsilon Lyrae – the double-double star in Lyra

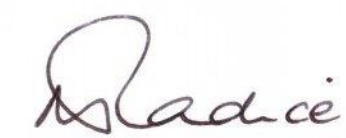
Conclusions

Using a camera tripod is clearly a much lighter and more portable solution than a parallelogram mount. This new approach saves kilograms of weight making the binoculars far more attractive as a

grab and go in the garden when I can't be bothered to use the 14" dob and for visiting our dark sky site on Salisbury Plain.

This approach was also very cost effective. The tripod was E149 + E16 shipping, the base plate was machined by a friend from scrap at work as a Homer and the alt-azimuth mount was put together for free using old parts left over from around the garage. Even if the parts (PTFE, base plate etc) were purchased, it is still far cheaper than purchasing a commercial alt-azimuth mount.

The next job is to make a more attractive mount but, as it seems to work just fine, that may take a while! In the meantime, I shall continue to enjoy the ease of transporting the binoculars in the garden and further afield.



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