

DIY Dobsonian Projects

The Skywatcher Dobsonian in its many forms is a truly wonderful telescope. Not as powerful as some, not as portable as others, and not the highest quality scope on the market. But, it is very powerful, portable and capable for its price point. It is very good value for money, and by spending a little more time and effort, and money you can improve it significantly..

Improvement 1: New eyepieces

The most costly but easiest to implement upgrade is new eyepieces. The standard 10mm and 25mm EPs supplied with the scope are adequate, but as soon as you can add a higher quality lens then you should.

I've added a 17mm Baader Hyperion, a 30mm Revelation and a new 10mm eyepiece to the mix. This lot cost about half as much as the scope did with 50% spent on the 17mm, 30% on the 30mm and 20% on the 10mm.

The new eyepieces bring a clarity to the image that I have never had before, I only wish I'd done this years ago.

Improvement 2a: Setting circles

The addition of setting circles to a Dobs is the easiest way of getting some form of GoTo capability, or more accurately a push-to capability. I added the setting circles and published

the [Dobs mods](#) project in this PDF some years ago. There are many variations on setting circles but I think my approach is one of the most convenient to use, even though it involves more work.

Being able to adjust the setting circle to align with Polaris (or any known easy to find object) saves a lot of time and frustration. It is inconvenient to have to shuffle the Dobs mount back and forth to get it aligned with North. With my system the setting circle is slewed around until the indicator reads zero. It takes less time to do than it took to type this sentence.

While I was happy with the mechanics of the adaptation I was less happy with the accuracy. Some nights it would work

perfectly and others less so. It dawned on me that those "not so good nights" were caused by the telescope base not being perfectly level. I realised this after seeing a timber base made by a fellow East Riding Astronomers ([ERA](#)) club member to raise his Dobs to a comfortable height.



Improvement 2b: A levelling table



Made from 18 mm marine ply (the local timber man had it on special for £5) the levelling table has 4 adjustable legs (£3 from Wicks or other DIY) set far enough apart so that the round base of the Dobs sits "within" their boundary. The Dobs has three rubber feet and on the setting table I have made enclosures for them to sit within. This aids when setting up in the dark.

There's a handy carry handle, a "this way is North" marker and a simple spirit level. The four plastic feet have metal tube extensions to raise the table a bit more, and to reduce wear when used on concrete. In the photos I have used another sheet of ply as a base on the lawn.

Set up procedure is easy:

1. Place the levelling table down facing north, adjust the legs to get it roughly level. Kneel on the table and adjust some more to get it as level as you can;



2. Put the Dobsonian base on the table, with the North markers aligned. Check that all is level.

3. With the scope in place find Polaris. Adjust the setting circle to zero it.

4. Pop the inclinometer onto the scope. If you swing the scope 360 degrees without changing the altitude then the inclinometer will confirm everything is level, or not.

5. Using a handy tablet or phone based app (Sky Eye works best for me) find the Alt/Az of your target and dial it in.

6. It seems to work best if you adjust Az first and the Alt.

This set up procedure takes around 10 mins. And if done correctly then you can find your target in less than a minute in a low power eyepiece.

Last night (20/3/20) in the 40 mins or so of cloud free sky I set up, located my targets and had time to photograph the scope for this article.

My targets were picked to test the push-to capability. They were in order:

Venus, Sirius, Andromeda Galaxy, Capella, Rigel, Pleiades, Castor, Crab Nebulae, and back to Venus. Each one was a significant distance from the other and each one appeared within the view from my 17mm EP.

Nothing remarkable perhaps in this as they are not hard to find objects, but even though I hadn't fitted a finderscope to the Dobs , I still found everything on the list without the need to hunt around.

My Next challenge is to find 10 hard to see objects in a single night. Suggestions anyone?

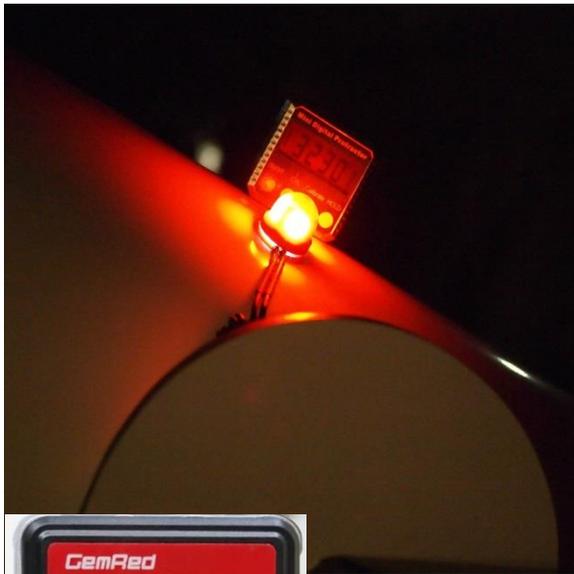


200mm Skywatcher Dobs with modified base on a levelling table.



Closeup of the levelling table showing the metal extensions to the legs. The bottom sheet of plywood is not part of the table. It's used here as

the legs would sink into the lawn.

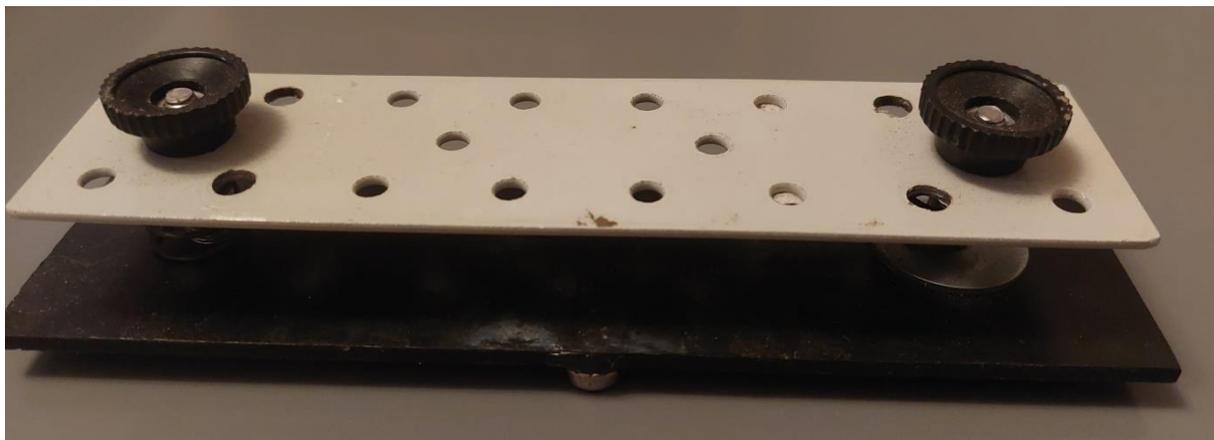


The Alt indicator is a magnetically attached, digital inclinometer, (this one reading 32.30 degrees). The light is also magnetic and made from a 12volt LED, a magnet and a red plastic bulb holder from a panel in a Vulcan Bomber, or so I was told.

These days most inclinometers have an illuminated display, making life simpler.

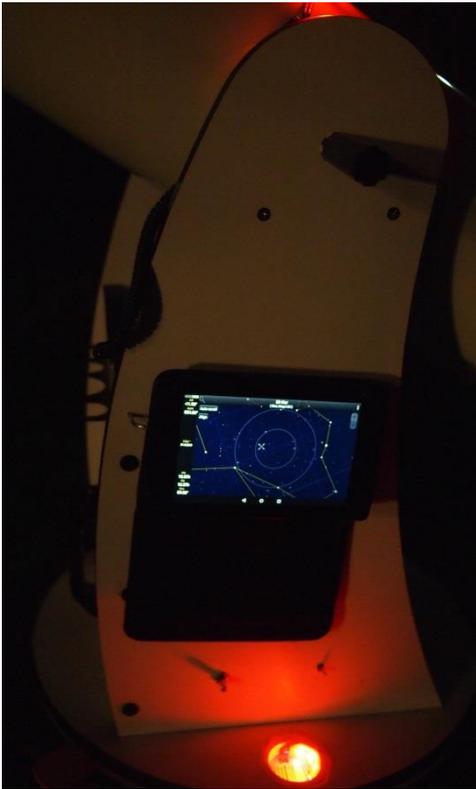


For greater accuracy assemble an adjuster for the inclinometer. The adjuster fixes to the Dobsonian tube (magnets, tape etc), has springs between the two plates and by tightening the bolts you can make very fine adjustments so that the inclinometer reads exactly what your app says it should be when looking at a known star.



The Az indicator is also illuminated, covered in clear plastic and reads 308 degrees. There's a fine wire glued in place to show where the reading is taken from.





And finally, a handy wire holder for the tablet I use.

Just below the tablet you can see the on/off switch for the lights and a potentiometer to adjust the brightness.

2026 Update:

My current 12" dobs has been modified with setting circles. It's about to be superseded by my new DIY 14" dobs, which will also have a setting circle installed.

Other scopes modified in this way include:

ERA's 20 Dobsonian.

Brough Astro's 8" and 10" Dobsonians.