



Sky Watcher Collapsible Dobsonian Reflector



Stock configuration.



Shroud is a Kendrick C14 dewcap, flexible, flocked and just the right diameter.



Modifications are complete.

Modifications:

Collimation Screws

Cooling Fan

Moonlite Focuser

Altitude Bearings

Tracking Platform

Altitude Slow motion

Putting it on Wheels

Specifications:

Optical Design Newtonian (Parabolic)

Diameter 305mm

Focal Length 1500mm

Secondary Mirror Diameter 70mm, 23% obstruction

F/ratio F/5

Highest Practical Power 610x

Faintest Steller Magnitude 14.9

Resolving Power 0.38

Focuser diameter 2" with 1.25" adapter

Ground Board Weight(s) 18.5Kgs

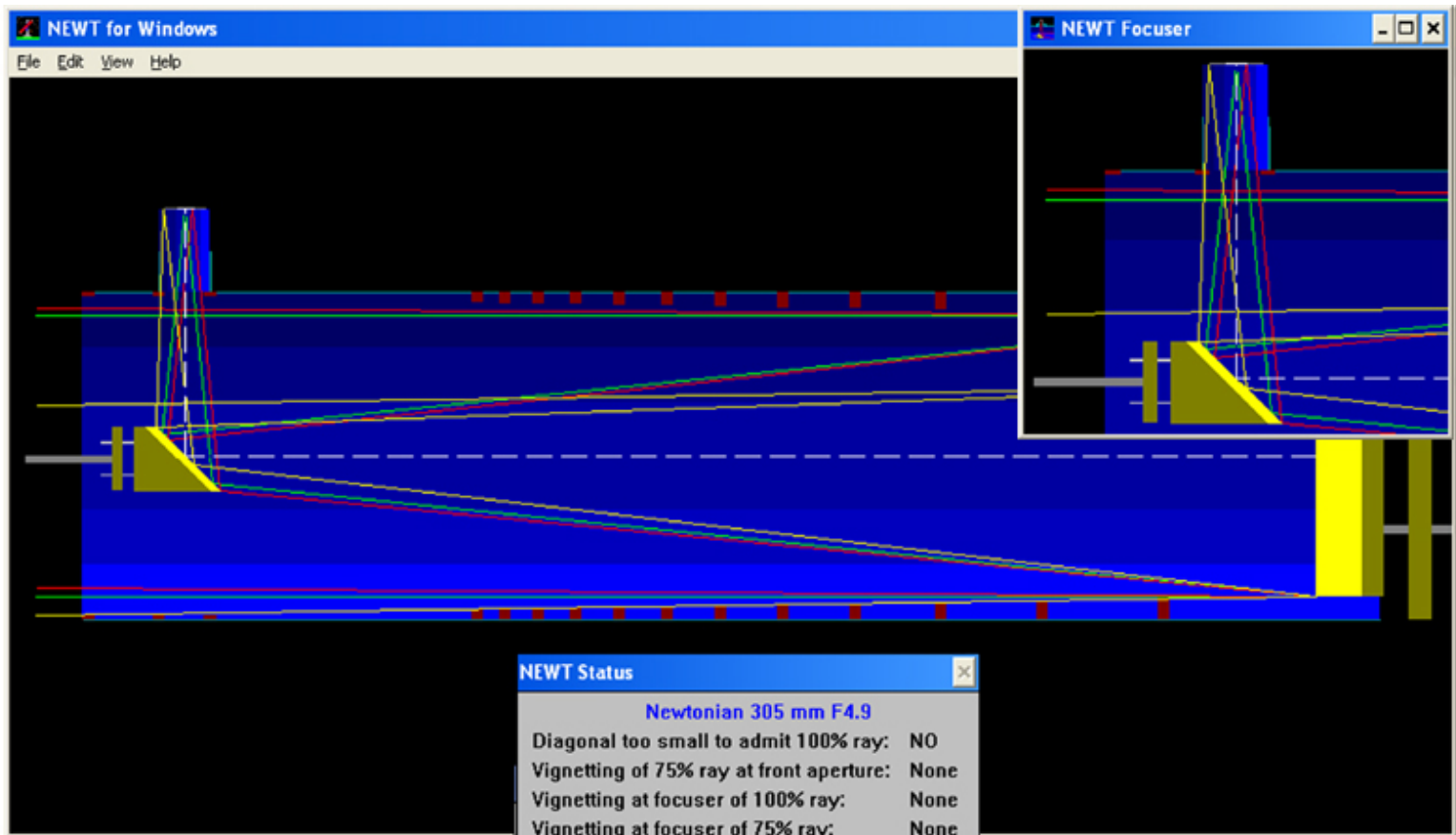
Tube Weight 21Kgs

Tube Dimension(dia. x length) 450×(920-1400)

Mirror Material Grade A annealed Glass

Finderscope 8X50 RA Viewfinder

Total weight 113 lbs.



Performance

The theoretical limiting magnitude for a **305 MM** objective is **14.2**.

The obstruction of the primary surface area by the diagonal is **5%** which results in a reduction in light gathering ability.

The theoretical resolution (Dawes limit) for a **305 MM** objective is **0.38** arc seconds.

The obstruction of the diameter of the primary by the diagonal is **23%**, which affects image quality by increasing diffraction and lowering contrast.

Maximum useful power is about **600 ×**
(for 50× per inch of aperture).

Minimum useful power is about **43.6 ×**
(for a 7mm exit pupil).

Angular field of view for the 100% illuminated area is **0.7132** degrees. The diameter is **18.5** inch.

Angular field of view for the 75% illuminated area is **1.79** degrees. The diameter is **46.45** inch.

OK

Output from Newt.exe on this telescope.

[Newt.zip download for newt.exe](#)

Using the SEC program downloaded from Sky & Telescope, as recommended by Gary Seronik, the plot shows some illumination fall off at the edges of the field, which for the eyepieces I use is almost negligible or imperceptible in the field of view.

[SEC program download for sec.exe here.](#)

[Gary Seronik's Website](#)





*** First Light Report ***

Motions smooth with adjustable altazimuth tensioning.

Focuser is serviceable and on closer inspection has leveling & tension adjustments.

Collimation was quick and easy by eye with a centering eyepiece.

Resolution with the Ethos 13mm eyepiece(115X)...superb!

*** First light Objects Viewed...Saskatchewan Summer Star Party 2008 ***

M8 Lagoon...full field of nebulosity with outer regions well defined

M20 Trifid...Dark lanes visible with extensive nebulosity.

M17 Swan...almost a three dimensional effect with billows of nebula.

M16 Eagle... Sharp 'V' and a view of the pillars.

Veil...like someone painted it with oils across the sky, shredded with an OIII

North American... full fields of thousands of stars floating in a sea of gas & dust.

M57 Ring... bright cyan color with the center filled with gauzy nebulosity.

M27 Dumbell... full on with reddish outer regions and blue inner with knots of denser material.

M11 wild duck.. a mass of tiny bright stars densely packed.

M31 and M110 Andromeda... Huge, with dust lanes, knots and wisps, M110 fills a field by itself.

M33...spiral arms with brightness variations fills half the field.

M101...Easily seen with sprial arms, several other smaller galaxies in the field.

M51...Cores, spiral arms and connecting bridge all visible.

M81 and M82...wispy spiral and core and the edge on dust and dark areas stunning.

M1...Fills a third of the field with delicate details, streamers and streaks seen with an OIII.

Several globulars in Ophiuchus resolved entirely.

I had wished the night was twice as long but I simply ran out of darkness and time as I observed each object for extended periods. as they say aperture is #1.

Second time out at home in the backyard, slight recollimation of primary needed, and accomplished in 5 minutes with just a sight tube, star images perfectly round after 1 hour cool down in 7C. The amount of light pollution as opposed to the dark site really obvious, M13 and M56 were still easily resolved.

Third time out at home in the backyard, collimation needed the faintest tweak on one primary knob. Added a Telrad and adjusted it while having a very nice view of Polaris and companion. Sky conditions good at first, but deteriorating with cirrus bands, observed Jupiter and Io occultation using the Radians, very nice detail even in crappy sky conditions.

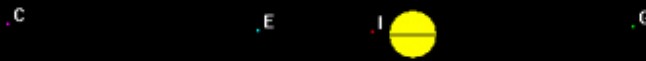
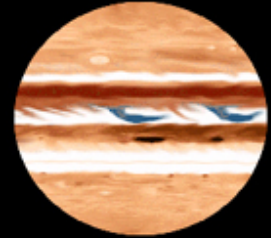
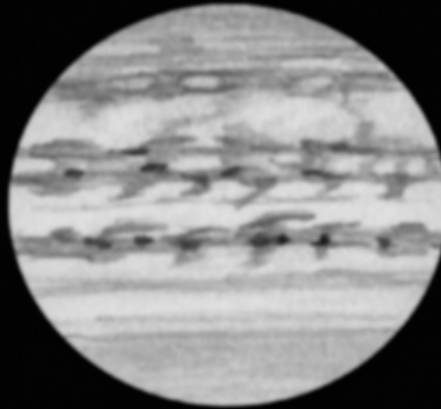
A cooling fan for the mirror cell allows faster cool down for less tube currents and improved mirror figure, providing sharper images through the eyepiece.



JUPITER

SkyWatcher 12" Newtonian f/5

Visual observation
first planetary
through the 12"
much very fine detail
held up to 150X
Mags 90X, 115X, 150X



Date: 14009/2008 0230 to 0245

CM: Svs I: 75.5 Svs II: 279.3

Svs I: 84.7 Svs II: 288.3

Seeing: A II (Antoniadi)

Transparency: 3-4/5 cirrus bands increasing

Phase: 99.2%

Diameter: 41.8"

Observer: Denis Fell (www.spacealberta.com)

Location: Wetaskiwin, Alberta, Canada

52.59 north 113.29 west 761 M -7 UT

The best deep sky eyepiece for reflectors.



Scopestuff secondary collimating screw replacement



Collimate your Reflector



Recently I acquired a Catseye Blackcat XL cheshire and this has allowed me to fine tune my collimation even more as these tools are VERY accurate. As the mirror required cleaning, it was pulled and re center spotted with the red triangles using the supplied template.

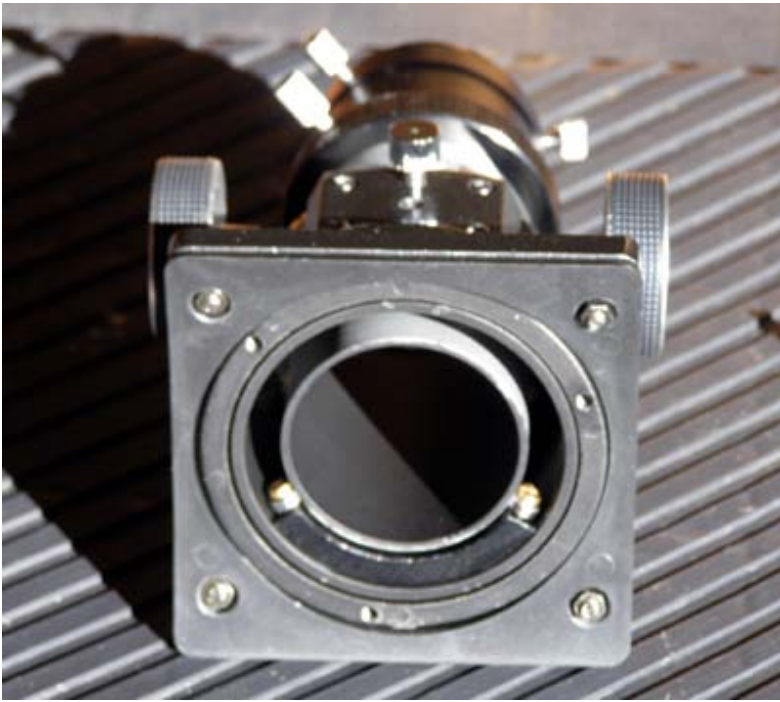
[Catseye Collimators.](#)

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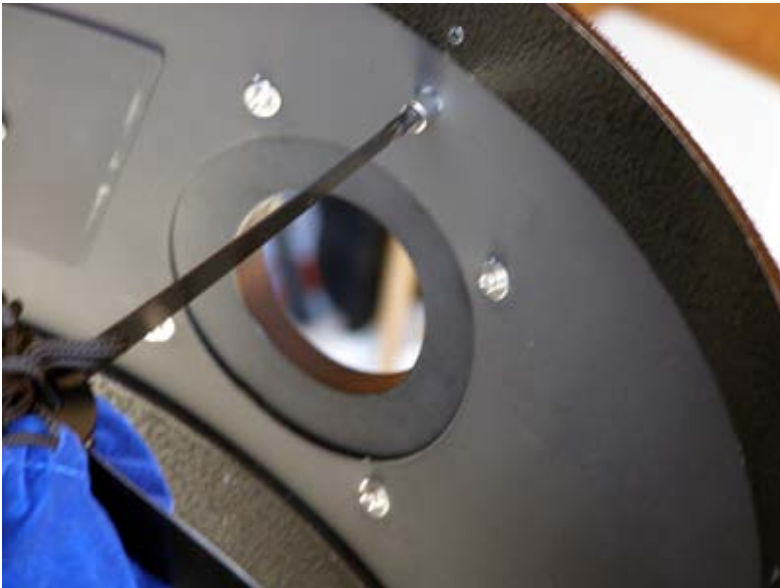
Changing Focuser To A Moonlite 2-Stage

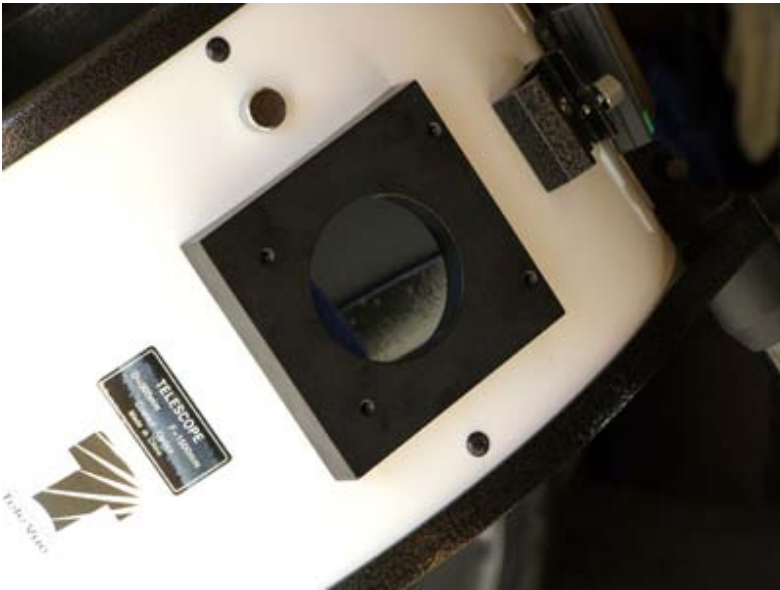
Purchased a Moonlight 2" crayford focuser with the newtonian installation kit and a 2.75" rise, compression ring drawtube.





Step 1 is to remove the stock focuser.

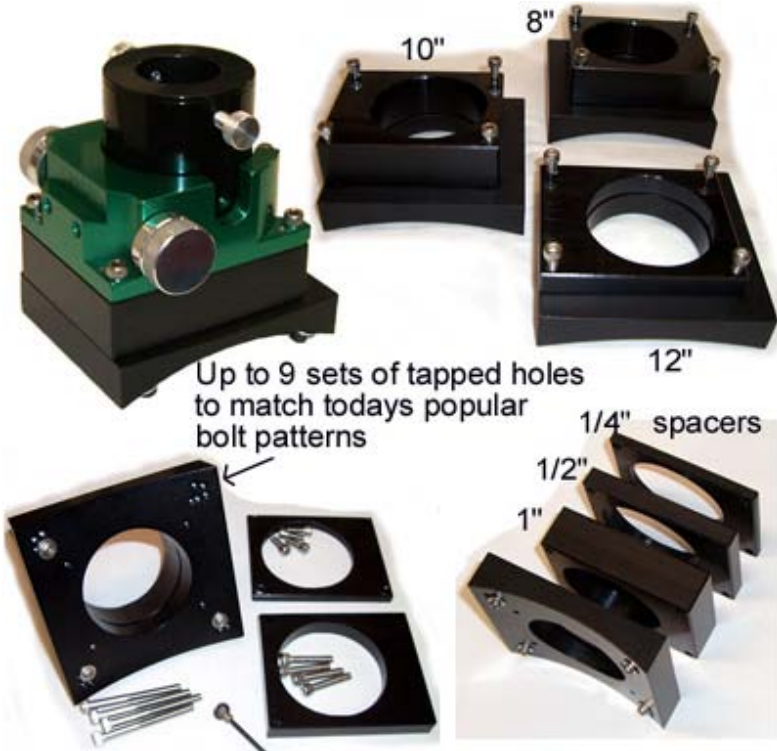
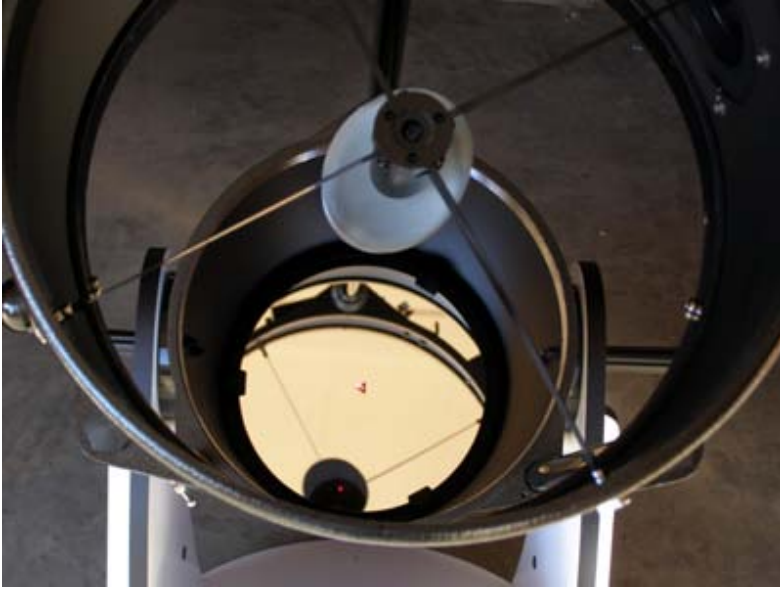




Step 2 is to install the base plate ensuring the drawtube hole is centered.



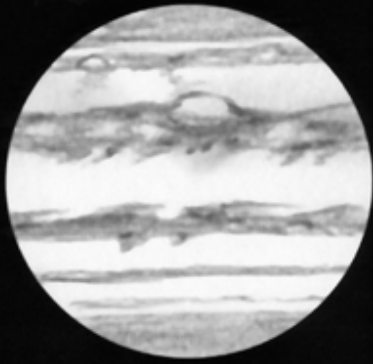
Step 3 is to install the new focuser using the 1" riser block to ensure the same focuser height as the stock focuser with this drawtube length. A 1/2" block is also included for further adjustment. Then the collimation begins, I used the cheshire eyepiece, checked with the laser and rechecked final adjustments with the cheshire.



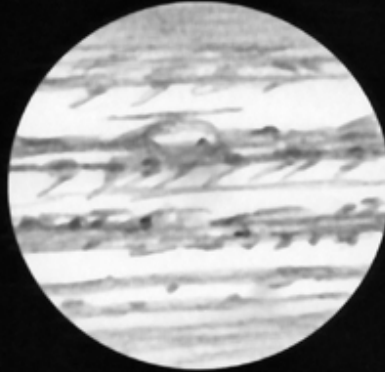
The result is buttery smooth focusing with fine focusing for high power. Two things immediately became apparent on using the scope that night, very sharp focus was easily achieved and more contrast through the eyepiece was markedly better probably due to the drawtube baffling.

JUPITER

Tele Vue tv102 apochromatic refractor 102mm f/8.6
Skywatcher 12" reflector 305mm f/5



TV102
88 - 100X
0145 - 0150



SW 12"
115X - 150X
0155 - 0210

TV102 f/45 700 frames 15 fps



0231 UT



0235 UT

Satellites:

Europa Ganymede Callisto
C



.E

.G

Date: 30 Sept. 2008

CM: Svs I: 52.6 Svs II: 134.5

Svs I: 67.8 Svs II: 149.6

Seeing: A II (Antoniadi)

Transparency: Clear, only light pollution

Phase: 99.1% **Diameter:** 39.8"

Observer: Denis Fell (www.spacealberta.com)

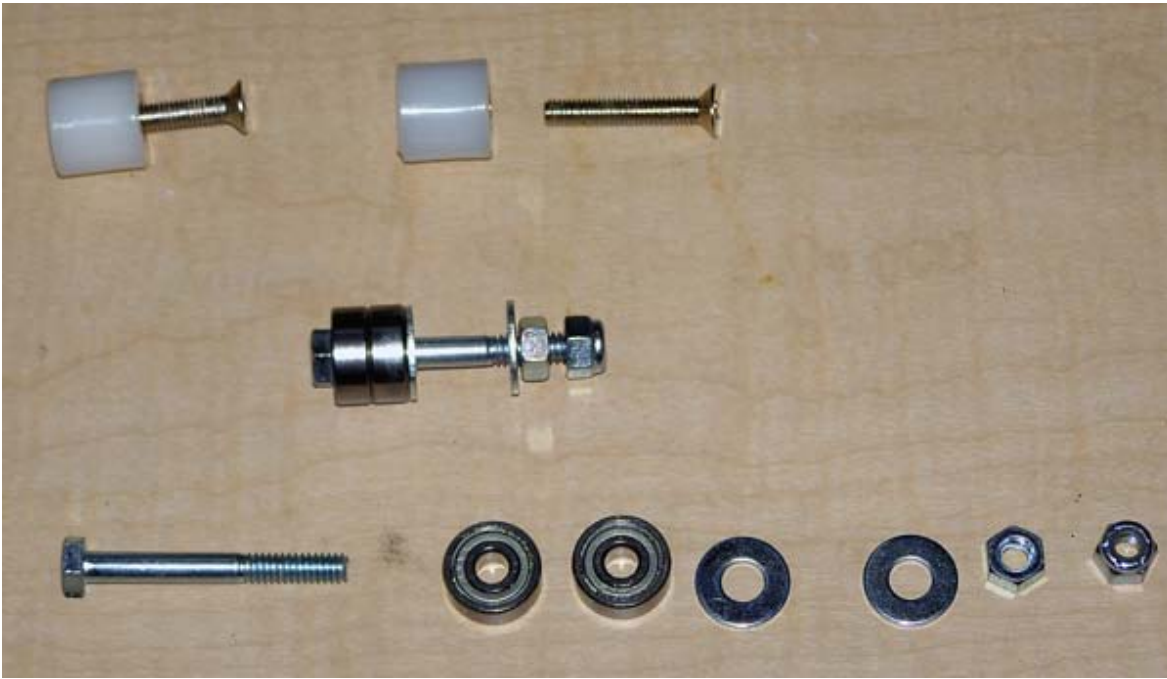
Location: Wetaskiwin, Alberta, Canada

52.59 north 113.29 west 761 M -7 UT

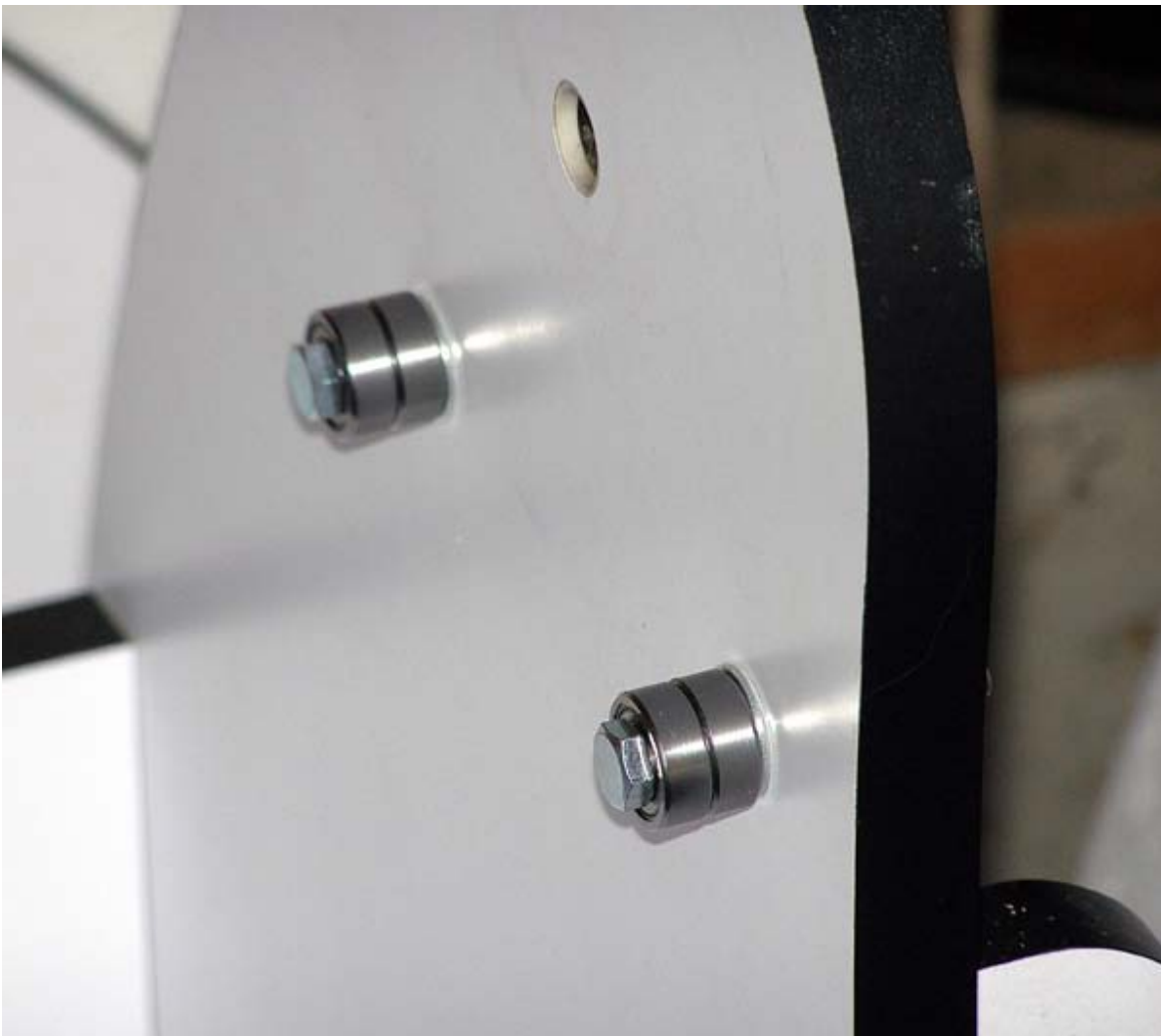
[Moonlight Focusers](#)

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Replacing Altitude Bearings.



Exploded view of new and old assemblies.



New bearings in place, the one nut adjusts tension, the second is a lock nut.

The nylon mount bearings that the trunnions ride on have been replaced with sealed ball bearings two to each location, for

silky smooth altitude adjustments at high powers. Bearings were R4AZZ type, 1/4" x 3/4" x 9/32" from VXB in California.

Under the stars, observing Venus, this modification produces fingertip control of altitude, which was the goal.

[VXB Bearings](#)

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Equatorial Platform.



I purchased an equatorial platform (50 degree) from North Star Systems (as advertised in Sky & Telescope) for \$216 plus \$47 freight and it arrived within 2 weeks. This platform uses a roller drive with a SW EQ-1 drive and claims over 1 hour tracking time. As is out of the box, the platform is put together out of reasonable quality components and baltic birch and would more than suffice for a 6" to 10" dobsonian telescope.

Ultimately this platform proved unstable with an instrument this large and heavy and has been sold.

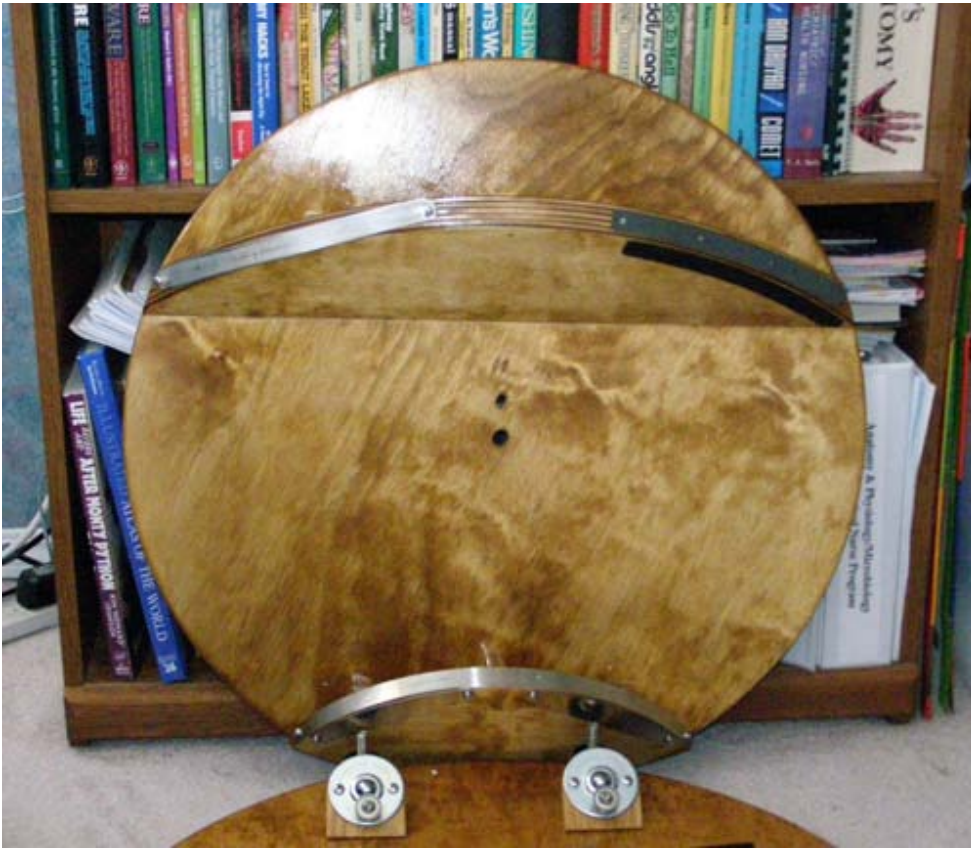
I am presently ordering a Roundtable platform which I hope will be more stable and give smoother tracking for webcam imaging.

Round Table Equatorial Platform (d'Autume).

Brian Reed of Round Table Platforms has supplied me with one very well built and finished platform that will more than handle the 12" and is very smooth, easily adjustable and runs quietly with no vibration. The platform has replaced the ground board on the mount and been roughly adjusted to latitude. I now wait for a break in the Arctic weather to fine align and use it for sketching and webcamming.



Assembled out of the box.



Detail of upper platform.



Detail of base with bearings motor, compass etc.



Platform prepared to receive the dob base with bearing and felt pads.



Test run, measuring angle tilt, time and wobble....no wobble, runs for 52 minutes before motor is automatically stopped. Lever is engaged, and platform rolled back, lever engaged and tracking is resumed.

Full dress test with all equipment on board.



Start position 0 minutes.



Mid tracking at 28 minutes.



End of tracking with auto motor stop at 56 minutes.

This platform will easily handle up to an 18" dob, all parts are sturdy and well crafted. Kudos to Brian Reed for such an excellent job at a reasonable price!

First platform use on Saturn March 18, very nice solid tracking with no bounce or vibration, settle time maybe a little more than a second, even with a rough polar alignment, I was able to track well enough to image with the NexImage.

[d'Autume platform description](#)

[Equatorial Platform Overview](#)

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Altitude slow motion for high magnification and imaging.



I selected 3/8" thread as a compromise between stiffness and fine adjustment, anything too small was too flexible and larger was too coarse an adjustment.



A turnbuckle, ready-rod and some parts from the bin to complete the project, works smoothly and helps to accurately center objects and move them around the ccd chip as desired.



The rod was sheathed with tubing, the sliding section was trimmed to length and coated with silicone, the setscrew 'T' was from an old tripod base reamed, drilled and tapped, lined with polyethylene. Threads lightly lubed with lithium grease and neoprene for cold temps. UTA mount was cut 1/4" ready-rod with tubing cover to length and a bronze bushing cut to size between two washers.

Full dobsonian mount freedom is retained from horizon to zenith with locking and fine adjustment in any position.

JMI Wheelie Bars mating to platform base.



Adapting the tracking platform to the cart base was relatively easy and the whole was assembled and bolted together in 2 hours. Now setup is about 5 minutes and collimation seldom needs to be adjusted. Polar alignment is easier and better levelling is achieved, making for more accurate tracking. The base can quickly be removed to make the scope transportable to a dark site or star party. The two leveling bolts on the south facing end were trimmed by 3" to facilitate the range of motion of the tracking platform.



Storage mode.



Ready to move to observing spot.





Set up and collimation check.



Base detail, stable with leveling screws extended.

Total set up time 6 minutes, a run in and out of the garage, setup showed no change in collimation.



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Object: Lunar 'X' 12" reflector photographic 1st light, 305mm f/5 dobsonian reflector



Date: (UT) 07 Oct 2008

Observer: Denis Fell (www.spacealberta.com)

Transparency: 4/5

Location: Wetaskiwin, Alberta, Canada

Seeing: A III only 12 degrees
above horizon

ISO: 100

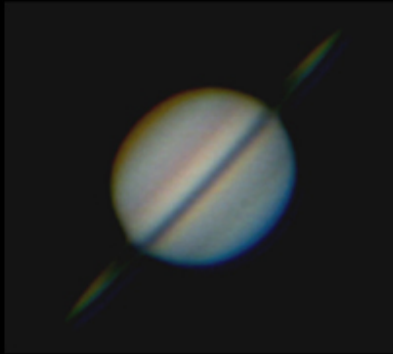
Exposure: 1/125 sec stack 2

SATURN



12" Newtonian Reflector f/5

0357 UT



0402 UT



0406 UT



Red



Green



Blue

Channels:

Date: 05 April 2009

Phase: 99.9%

Diameter: 19.6"

CM: Sys I: 250 degrees

Filters: Baader UV/IR cut.

Seeing: I - II (Antoniadi)

Observer: Denis Fell (www.spacealberta.com)

Transparency: 4.8/5 -7C clear

Location: Wetaskiwin Alberta Canada

52.59 north 113.29 west 761 M -7 UT

Object: Rima Hadley/Apollo 15

12" newtonian reflector f/5

A15 LM
just N. of
Mt.
Hadley



Date: (UT) 03 May 2009 0120 UT

Observer: Denis Fell (www.spacealberta.com)

Transparency: 5/5

Location: Wetaskiwin, Alberta, Canada

Seeing: AII

NexImage barlowed f/10 121 frames

JUPITER

300mm f/5 Newtonian Reflector

0813 UT

0818 UT

0820 UT

0821 UT

0822 UT

0824 UT



--Callisto

Red

--Ganymede

Blue



--Jupiter
--Io

--Europa



--Jupiter
--Io

Neximage at 10 fps, prime focus, 590 - 600 frames

Processed in Registax ver 5 The Gimp ver 2 NEB disruption continues, GRS pale.

Date: 25 July 2009

CM: Svs I: 146.4 Svs II: 112.5

Svs I: 153.1 Svs II: 119.1

Seeing: AII - AIII (Antoniadi)

Transparency: 5/5 clouding over

Phase: 99.8%

Diameter: 48"

Observer: Denis Fell (www.spacealberta.com)

Location: Wetaskiwin, Alberta, Canada

52.59 north 113.29 west 761 M -7 UT

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