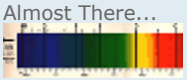
Concept model of new 12" Solar Newton

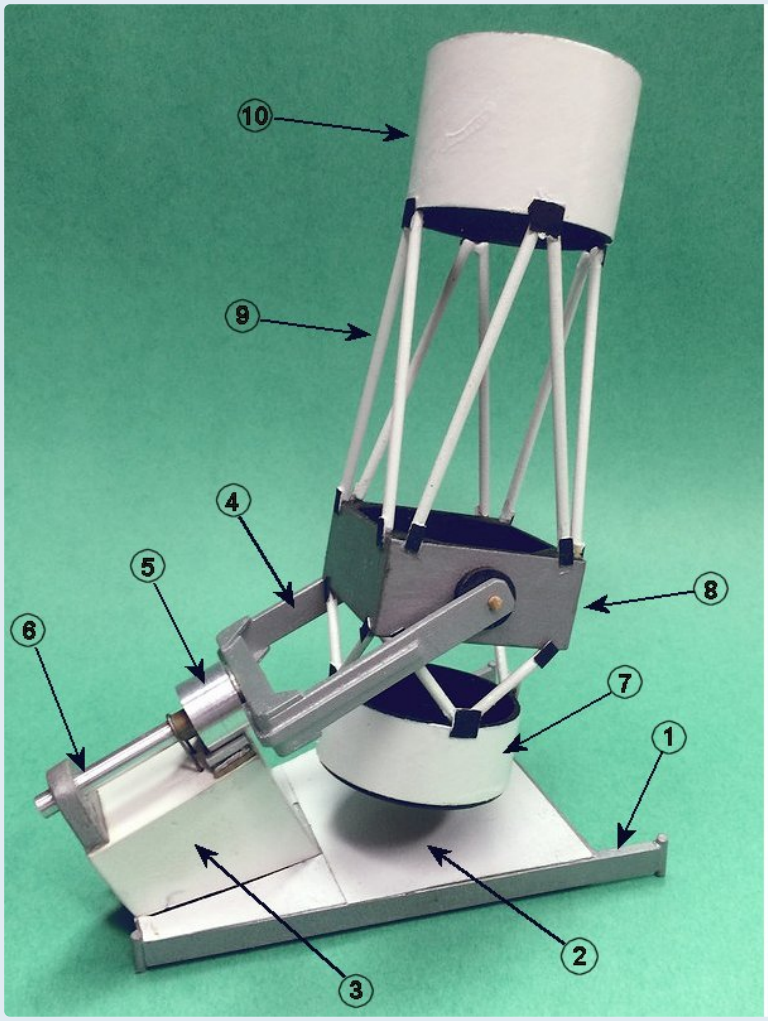
[whrudey]
Almost There...



Concept model of new 12" Solar Newton

Tue May 31, 2016 6:16 pm

For some time now, I've made reference to my proposed design for a new and larger Solar Newton scope given the success of the current 8" version. Here are two images of a concept model and a description of its design features.



New 12 inch Solar Newton model.jpg (161.17 KiB) Viewed 10303 times

Overall, I've chosen an open truss design for the OTA and a fork mount to keep the footprint small. This design will just fit into the existing Observatory deck when I remove the TS refractor.

Label description:
1. The base frame will be of 1" x 3" x 14 ga steel tube set out in a grid for rigidity. Each end will be fitted with an adjustable jack for leveling. Two inch steel castors will allow for movement prior to setting the jacks.
2. The base will be covered with 3/16" Diamond tread aluminum sheet.
3. The pedestal will be fabricated with welded steel 1.25" x 1/8" angle iron and covered with 1/8" aluminum sheet. Inside

the frame will reside the polar axis drive system using a stepper motor driven by a Raspberry Pi and Arduino controller card courtesy of my student intern's electronic genius. A gear train will reduce speed to a belted drive system. A remote control pad will allow for tracking speed and a variety of slewing speeds.
4. The fork arms will be of 1" x 3" x 14 ga steel tube welded to the base of 2" x 3" x 14 ga. steel tube and, the whole structure reinforced with straps and gussets. This item must be perfectly square and parallel so, during fabrication, multiple jigs will be used. The fork will bolted to the 1.75" polar axis shaft which will be centered within the 6.5" aluminum drum to follow.
5. This 6.5" x 3.5" x 1/4" wall drum will roll on a bed of two 1.125" steel rollers, each also supported by ball bearing chases. The face of the drum will be bolted to a matching 1/4" steel disc which has been welded to the base of the fork.
6. The lower end of the polar axis shaft will be held in a 1.75" Timkin tapered thrust bearing set in an adjustable frame to ensure that the drum rides squarely on its rollers.
7. The lower tube of the OTA will be 15.375" in diameter with 5/16 " thick walls. Both edges will be reinforced with slip rolled 1" x 1/8" aluminum rings inside and out. Here also, the 12" mirror cell will be mounted. Rather than machine the mirror cell, I was able to purchase a unit for US$110, which is less than the cost of materials and my time. The supplier is now out of stock - I must have bought the last one which is on its way:
http://agenaastro.com/gso-12-primary-mirror-cell.html
8. The centre frame of the OTA will be fabricated of 3/4" good quality birch plywood and its corners reinforced with large internal gussets. The Declination axis will be made of 1" solid steel shafts securely fitted to plates in the frame. They will then rest in 1" ball bearing chases in the ends of the fork arms.
9. The Serrurier truss arms will be 7/8" or 1" aluminum tubing with suitable end fittings for attachment to the centre frame and respective OTA tubing. This truss design is a time trusted method providing rigidity and, was first used in the Mt. Palomar 200" reflector telescope.
10. The top tube of the OTA will support the diagonal secondary mirror, the eyepiece holder/remote focuser/digital camera and Sol Finder.

So, there it is - just needs to be built, not a simple task. However, when completed, it will be one of the largest of its kind and theoretically, be able to resolve as little as 171 miles on the solar surface. Estimated total cost, not including the necessary skilled labour (mine), should be less than US$2,000.

Comments welcomed.

Bill

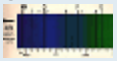
Derek Klepp
Way More Fun to Share It!!

Re: Concept model of new 12" Solar Newton

Thu Jun 02, 2016 7:23 am

It will be a labour of love Bill.It is a very solid design.

zorgdotnl
Ohhhhhh My!

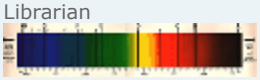


Re: Concept model of new 12" Solar Newton

Sat Jun 04, 2016 7:12 am

Nice project!!! Given your low latitude, why not using an equatorial plateform combined with Dobson mount? It's easy to make from wood, Footprint is less, weight also, no vibration from the fork,....

Merlin66
Librarian



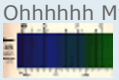
Re: Concept model of new 12" Solar Newton

Sat Jun 04, 2016 2:13 pm

Bill,
Looks good....
The Serrurier truss design is very specific; the top section is esigned to deflect exactly the same as the bottom section.
This demands some structural calculations to determine the correct sizes of the tubes and the "pin joints" at the ends.
What you have is a good "Truss" design.

"Astronomical Spectroscopy - The Final Frontier" - to boldly go where few amateurs have gone before
https://groups.io/g/astronomicalspectroscopy
http://astronomicalspectroscopy.com
"Astronomical Spectroscopy for Amateurs" and
"Imaging Sunlight - using a digital spectroheliograph" - Springer

Brendan
Ohhhhhh My!



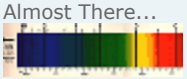
Re: Concept model of new 12" Solar Newton

Sat Jun 04, 2016 2:19 pm

I have just completed a 10" solar Newtonian and as I have a 10" dobs I made it to fit on that base, I also have an eq platform to place it on for imaging when I get a Continuum filter (I have a 2" one but the focuser on the Newt is a 1 1/4") will post photos soon.

Brendan
Lunt LS50THa with B600 b/f, W/O 72 Megrez, Lunt Herschel wedge, 6" F8 Herschel Newtonian, PGR Grasshopper 3, Opticstar pl131c,

[whrudey]
Almost There...



Re: Concept model of new 12" Solar Newton

Sun Jun 05, 2016 2:47 pm

Response to above comments:

Derek - yes , it will be a labour of love - only concern is the evolving solar minimum - may be no spots to image.

Zorgdotnl - interesting thought - a Dob is essentially a fork mount on a vertical axis thus, devoid of any cantilever. I think that the movement I get from air turbulence will outweigh any fork vibration. Although I have a petty complete woodworking shop, I also have a reasonable metal fabrication shop ie: metal lathe, milling head, MIG welder, etc. In this instance, I favour the fork given a solid design and, simply the fun of planning and doing.

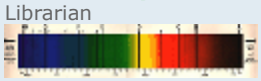
Merlin66 - yes, the Serrurier truss concept is a great design - very solid and fun to construct.

Brendon - really pleased that you're building a Solar Newton scope - they are tons of fun and, I think, the best and least expensive way to image granules. Look forward to you images including pics of the scope itself. Hope to encourage more folks to consider Solar Newtons.

Cheers to all,

Bill

marktownley
Librarian



Re: Concept model of new 12" Solar Newton

Mon Jun 06, 2016 7:47 pm

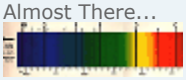
Looks good Bill! Keep us updated as it develops

http://brierleyhillsolar.blogspot.co.uk/

Solar images, a collection of all the most up to date live solar data on the web, imaging & processing tutorials - please take a look!

[whrudey]

Almost There...



Re: Concept model of new 12" Solar Newton

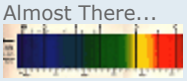
Thu Jul 14, 2016 2:45 pm

For what it's worth, here's an iPhone image of the 12" Solar Newton OTA almost completed. Still waiting for the mirror, which will have to be stripped, and the eyepiece focuser. Next, will order the necessary steel and begin fabrication of the mount. Please forgive the chaos in my shop - need a larger one. The standing tube on the left was from an older Meade 12" Dob which lent itself to the new scope. The yellow disc on the OTA centre box will be the DEC scale. The truss struts are 1" aluminum tubing.

Bill

[whrudey]

Almost There...



Re: Concept model of new 12" Solar Newton

Thu Jul 14, 2016 9:10 pm

Hi Ghost-fire;

Though I'd have preferred a 2" solid shaft, I just happened to have a 1.75" set of thrust bearings from a previous project. There, it had supported a much heavier scope and worked quite fine. Remember, there will be the 6.5" drum riding on a pair of 1.125" rollers with interior bearings (#5 in images above). As for the fork, I'll fabricate it form lengths of square/rectangular 14 Ga. tubing. The actual 1" DEC bearing cases will be set in machined blocks of aluminum fitted in the 1x3" rectangular tubing.

The OTA with mirror and focuser will weigh 40 lbs. total.

The drive system will use belts driven by a geared down stepper motor. Since the scope will be used solely for the sun, the DEC axis will be managed by a tangent arm as the range need not be great.

Cheers,

Bill

Derek Klepp

Way More Fun to Share It!!

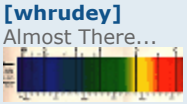
Re: Concept model of new 12" Solar Newton

Thu Jul 14, 2016 11:15 pm

Bill how do you prepare the mirrors ? Do you decoat them so to speak

[whrudey]

Almost There...



Re: Concept model of new 12" Solar Newton

Thu Jul 14, 2016 11:59 pm

Hi Derek;

The best way is to use Ferric Chloride - used as an etchant in printed circuit boards. Here's a link to Gordon Waite's excellent YouTube video on how to go about it:

https://www.youtube.com/watch?v=PdmwqrdDOMs Times vary but, a few of hours should be enough. Then rinse thoroughly. I only do the primary mirror - not the secondary. The native reflectivity of polished glass is about 4%, essentially the same as what my Baader Herschel wedge does. Then, of course, one needs the Baader Solar Continuum filter, an IR/UV cut filter and a medium ND filter eg: 1.8.

Hope that helps,

Bill

Derek Klepp
Way More Fun to Share It!!

Re: Concept model of new 12" Solar Newton

Fri Jul 15, 2016 2:40 am

Thanks Bill.

marktownley
Librarian

Re: Concept model of new 12" Solar Newton

Fri Jul 15, 2016 5:10 am

Progressing very well there Bill. Impressive!

http://brierleyhillsolar.blogspot.co.uk/
Solar images, a collection of all the most up to date live solar data on the web, imaging & processing tutorials - please take a look!

pedro

Way More Fun to Share It!!

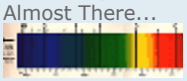
Re: Concept model of new 12" Solar Newton

Sat Aug 20, 2016 7:31 pm

impressive stuf

Pedro Re'
http://re.apaaweb.com/
http://pedroreastrophotography.com/
http://www.astrosurf.com/re/
http://pedromabre.wixsite.com/astrophotography
https://www.flickr.com/photos/pedro_re/
https://www.youtube.com/channel/UCx0jUO ... v9Q/videos
https://www.facebook.com/re.pedro.7

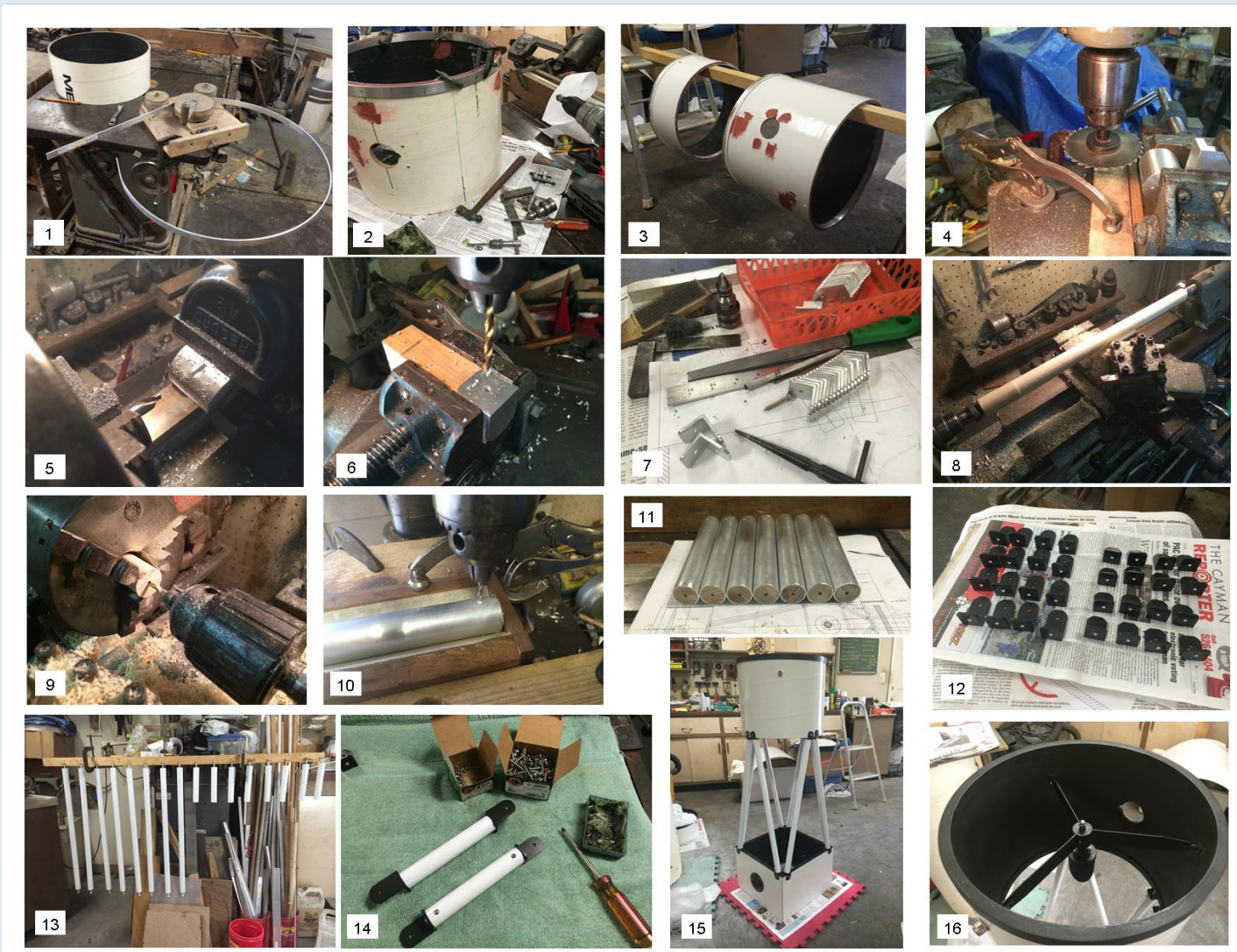
[whrudey]
Almost There...



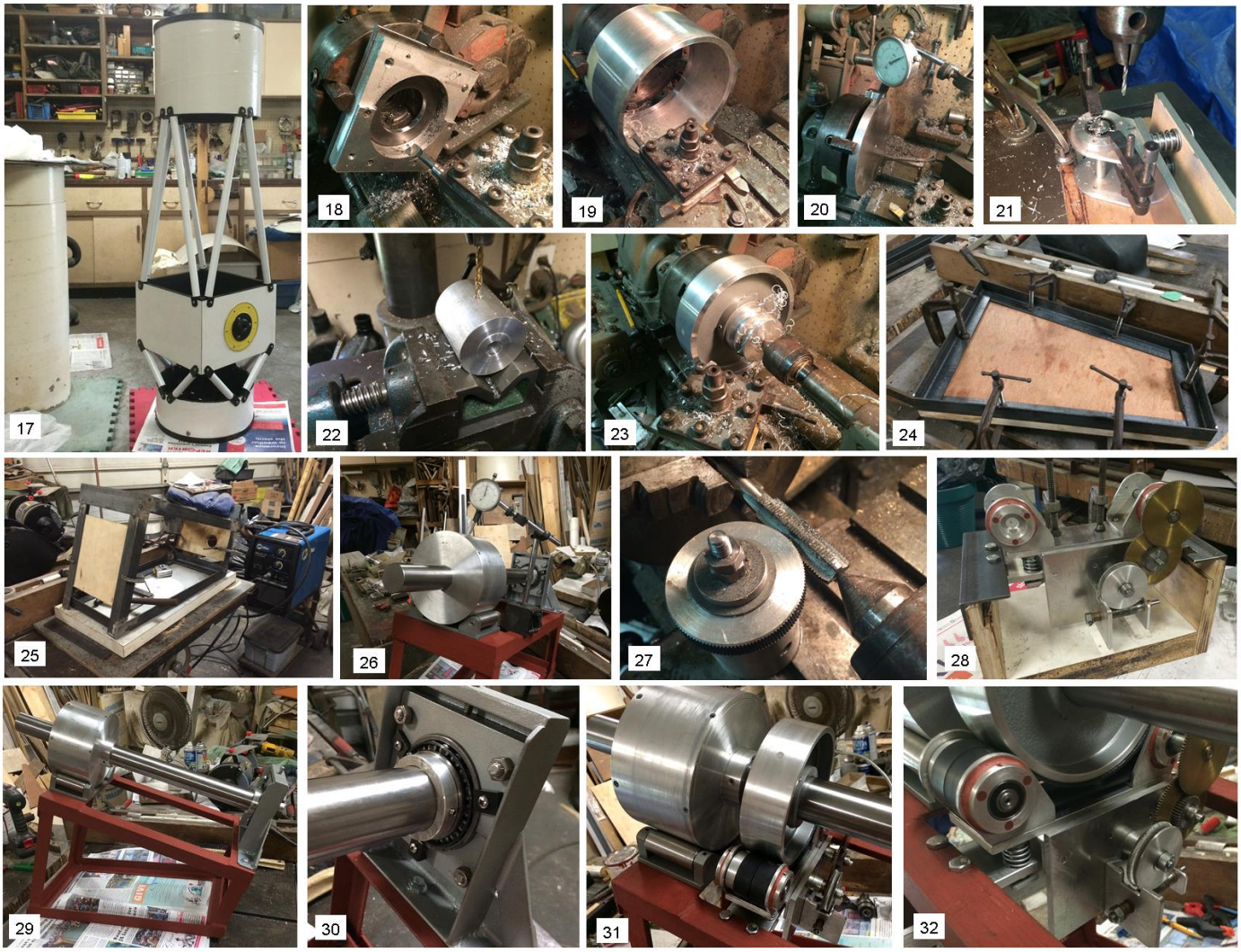
Re: Concept model of new 12" Solar Newton

Tue Sep 13, 2016 4:13 pm

Earlier this year, I'd posted details on my design for a fork mounted 12" Solar Newton. Despite the lack of further posts, work has been proceeding and I can now submit some iPhone images of progress to date. Those interested in the DIY aspect of this project may find them to be of interest. Those not interested, may be at least impressed with the amount of effort involved. For convenience, I've provided legends for each image below. More to come as things progress.



SCSN12 Const A.jpg (365.9 KiB) Viewed 9571 times



SCSN12 Const B.jpg (401.37 KiB) Viewed 9571 times

Legend:

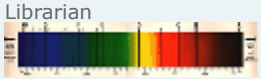
1. Aluminum (1/8" x ¾") flats were "slip rolled" in my DIY rolling device to fit and reinforce the tube ends – both outside and inside at the outer ends and, just inside for the inner ends.
2. Here the rolled straps have been fitted and flat head screws through tapped holes used to hold them in place. The screws are countersunk and their heads covered with autobody Glazing Putty – the red stuff. Since the tubing was salvaged from an old 12" Dob. Some patching was required prior to painting.
3. Tubes are now positioned for painting – an oil based semi-gloss paint which is rolled on.
4. Turning to the spider, here 3 slots are made in the spider base to receive the wings.
5. Holes are positioned perpendicular to the slots for fastening screws.
6. Some 32 angled pieces were needed for the strut ends – here one is being drilled. All had to be exactly the same – often a challenge unless one uses jigs.
7. Here are the 32 angled ends ready for painting.
8. For the struts, hardwood plugs (about 2" long) were made from a carefully turned dowel – store bought dowels were either too large or too small.
9. The ends of each dowel plug are centre drilled for accurate assembly.
10. With the plugs epoxied in place, locking screws will fit into these holes.
11. Now the finished 1" aluminum tubes with their plugs.
12. The angle ends are painted with an oil based semi-gloss spray paint.
13. The struts both long and short were also sprayed with an oil based semi-gloss paint and hung out to dry.
14. Now, all the strut parts can be assembled. Believe it or not, making the struts is quite a tedious task but, worth it in the end as the Surrurier truss design is a winner.
15. Assembling the top tube and centre box with struts.

16. A peak at the installed spider.
17. Here's the completed OTA. Note the Declination scale in yellow.
18. Work now begins on the base. Here the plate to receive the thrust bearing at the RA lower end is being bored out on the lathe. The smaller hole at the back will allow passage of the 1.75" precision ground steel shaft (+/- 0.0005") – U$60 for a 24" length.
19. The main RA bearing drum was turned from as 6.5" aluminum tube with .25" walls. Here a shoulder is being bored to receive a .5" aluminum disc in the next image. Once assembled, it will be fitted on a mandrel and turned true.
20. The 6.5" disc is being centered in a four jaw chuck so as to bore out a perfect 1.75" passage for the main shaft.
21. Work now begins on the belt drive arrangement – bearing flanges are being fitted for tapped FH screws – this will make more sense in later images.
22. One of two drums for the belt drivee has been turned true and is now being drilled for a setscrew.
23. The belt drive "pulley" has now been fabricated and is being trued upon the lathe.
24. The base pedestal is of welded 1.25" x 1/8" steel angle and, is positioned on an appropriately shaped jig for welding. Two will be made – mirror images of each other.
25. Here the two side frames are fitted in a jig for final welding. Perfect sizing and square is essential.
26. The RA axis and its two end bearings are positioned on the pedestal frame and, using a dial indicator, checked for run-out. This turned out to be +/- 0.002" - not bad.
27. Now, since they are expensive and hard to get on a Caribbean Island, one resorts to making their own worm wheel using an ordinary tap between lathe centres and a positioning jig.
28. In a mock up frame, the elements of the belt drive system are fitted. A NEMA 17 stepper motor will drive the worm gear from its position on the lower left of the frame and will be controlled by Raspberry Pi and Arduino.
29. Here's a view of the pedestal with the RA axis and bearings fitted.
30. This image shows the lower (rear) RA thrust bearing.
31. The drive and driven pulley have now been installed with temporary vacuum cleaner belts – the final belt will be an 1/8" x 1.25" Urethane belt.
32. The drive rollers are spring mounted for even pressure on the drum. A release lever (not shown) drops the assembly for free slewing.

Enjoy,

Bill

marktownley
Librarian



Re: Concept model of new 12" Solar Newton

Tue Sep 13, 2016 5:12 pm

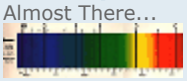
Really impressive stuff Bill. I do like a good build story! I like all the engineering detail, much appreciated thanks

http://brierleyhillsolar.blogspot.co.uk/

Solar images, a collection of all the most up to date live solar data on the web, imaging & processing tutorials - please take a look!

[whrudey]

Almost There...



Re: Concept model of new 12" Solar Newton

Tue Sep 13, 2016 9:29 pm

Thanks Mark - pleased that you enjoyed the post. So much of the fun comes from the designing and construction process. Yet in today's world, so few of the folks ever get to enjoy this aspect. A while ago, I taught an ATM course where we built a number of 6" Dobsonians. Since the most tools anyone had-might have been a hammer or screw driver, I wound up spending hours machining all the parts to the level of kits for simple assembly and painting. This made the course totally impractical and had to be scrapped. Though missing two students, the following mage shows some of the resulting scopes.

ATM2.jpg (185.78 KiB) Viewed 9517 times

Bill

kohamher1

The Sun?

Re: Concept model of new 12" Solar Newton

Wed Sep 14, 2016 12:57 am

Great job!!!

A few years ago I read David Groski's article and followed his instructions to desilver both the primary and secondary mirror

on my 8" Newt.

I've never been able to bring it to focus. I think I'm getting a ghost image from the back side of one or both the mirrors.

Question. Anyone else have this problem?
Does the configuration you use have any special baffles or shielding or anything behind the primary to eliminate reflections?

[whrudey]
Almost There...

Re: Concept model of new 12" Solar Newton

Wed Sep 14, 2016 2:23 am

Hi kohamher1;

Not familiar with the Groski method but, it is likely the same as my reference from Gordon Waite: https://www.youtube.com/watch?v=PdmwqrdDOMs which worked very well for me.

The focusing issue is interesting and, there are arguments for and against grinding vs. polishing the rear mirror surface as well as painting it flat black vs. leaving it clear. Christian Viladrich has written on this subject - his writings are well worth looking up: http://www.astrosurf.com/viladrich/astr ... /N300.html for starters.

This prepossesses that there is not an issue with focal point - had everything been fine prior to the stripping ? Was the mirror of good quality - was it polished out completely - this can be determined with a laser pointer: https://stellafane.org/tm/atm/polish/polish.html

Finally, I think it is unnecessary to strip the secondary. Stripping the primary reduces reflectivity of incident light to about 4%. This is comparable to the reduction obtained with an Herschel wedge which is 4.6%. All that remains is the addition of a Baader Solar Continuum filter, an IR/UV cut filter and a ND2 filter. It might be worthwhile trying your setup with an aluminized secondary. With the latter, you should also be able to image the moon as an alternative target.

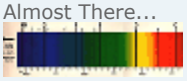
Another reference is the following thread outlining some of my initial trials and tribulations with an 8" solar Newton: https://www.solarchatforum.com/viewtopi ... =9&t=18204

Hope the above thoughts are helpful. Pleased to see that more folks are giving solar Newtons a try - I think a very practical way for w/l solar imaging without breaking the bank. Also the larger optics improve resolution (Dawe's limit) if you're into granules.

Cheers,

Bill

[whrudey]
Almost There...



Re: Concept model of new 12" Solar Newton

Wed Oct 26, 2016 2:11 am

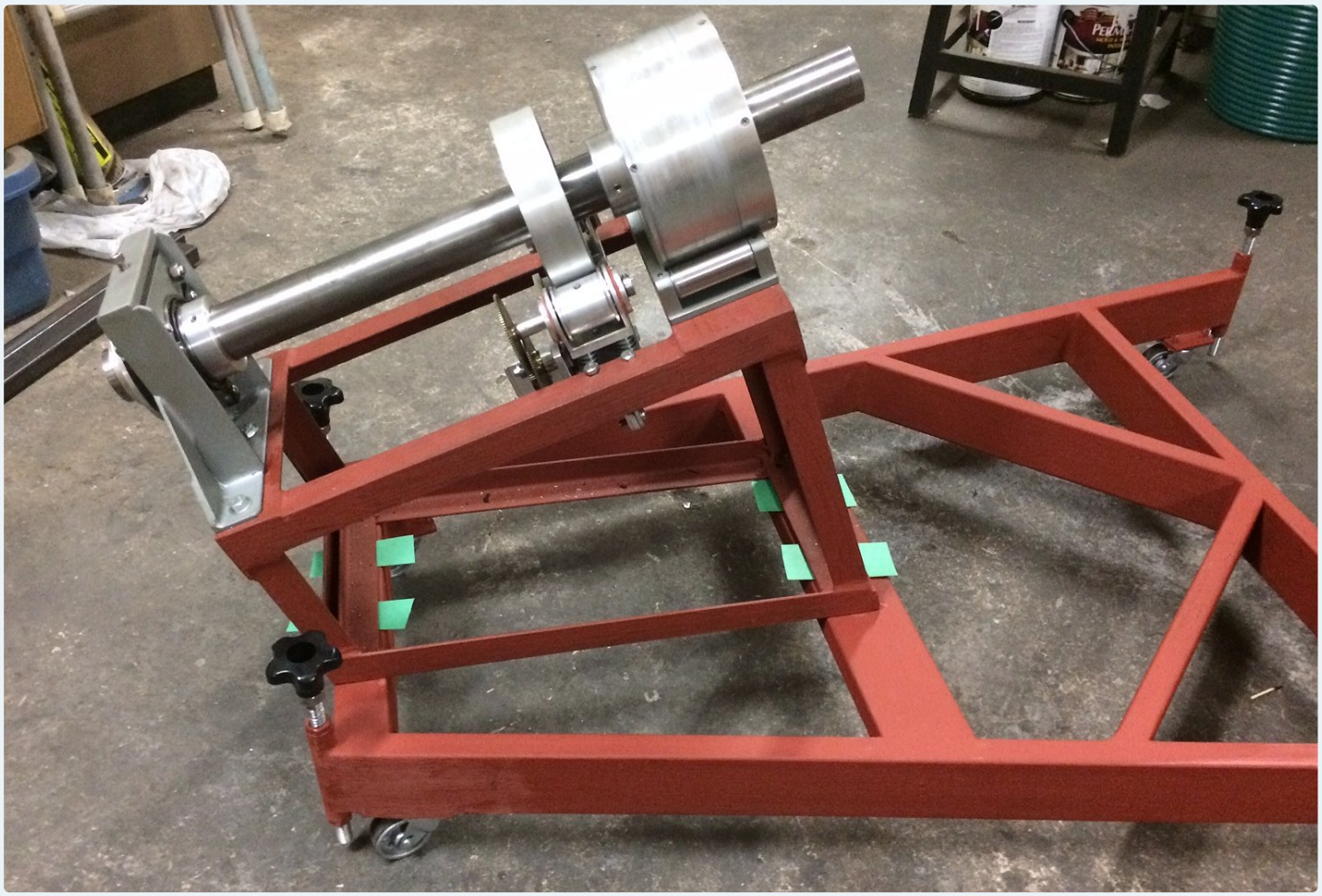
Now that our STEM Carib 2016 Conference is over, attention can be directed to my 12" Solar Newton. Last week I was able to cut and weld pieces for the base using 14 ga. 1" x 3" rectangular steel tube. Ignore the green cardboard strips under the pedestal which is being centred on the base prior to being bolted in place. Note the four steel castors and the adjacent screw jacks awaiting their foot pads. All steel surfaces have been coated with red oxide primer given the propensity for rust in the tropics. 3/32" aluminum panels will cover the pedestal sides but, will be easily removed for servicing. 1/2" plywood covered with plastic laminate will cover most of the base.

Yet to be done are the fork made of 1" x 3" steel tube (see concept model for design); fitting the Raspberry Pi/Arduino controller for the stepper motor RA drive; constructing the DEC tangent arm drive with a smaller stepper motor; stripping the 12" mirror; fitting the secondary mirror and focuser; etc.

The urethane belt is a little problematic in that the welds come apart. I'll likely make my own reinforced continuous belts using vacuum cleaner belts as a starting point.

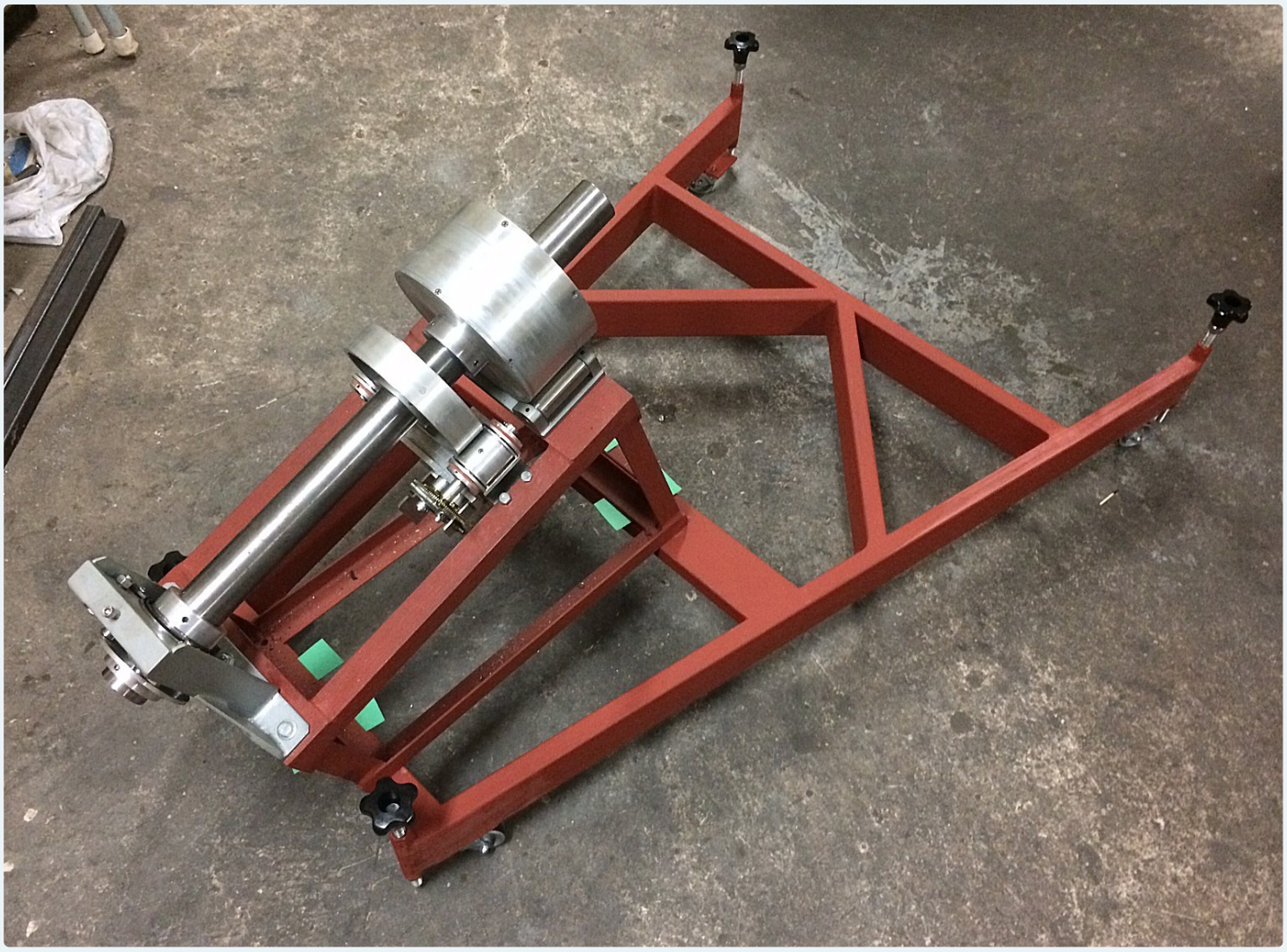
Overall the base length is 48" and the base front width 32". The RA shaft as it exits the front of the drum, is 24" above ground. When the OTA is installed and in its home position, the total height will be 49" above the floor.

Img_0707.jpg (807.89 KiB) Viewed 9253 times



Img_0708.jpg (304.87 KiB) Viewed 9253 times

Img_0709.jpg (277.51 KiB) Viewed 9253 times

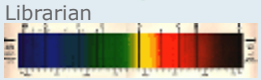


Img_0706.jpg (390.55 KiB) Viewed 9253 times

Enjoy,

Bill

marktownley
Librarian



Re: Concept model of new 12" Solar Newton

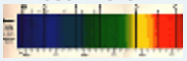
Thu Oct 27, 2016 8:52 pm

Seriously impressive Bill! Much respect Sir!

http://brierleyhillsolar.blogspot.co.uk/

Solar images, a collection of all the most up to date live solar data on the web, imaging & processing tutorials - please take a look!

[whrudey]
Almost There...



Re: Concept model of new 12" Solar Newton

Thu Oct 27, 2016 9:25 pm

Thank you Mark - do hope it works when completed.

Bill

[whrudey]
Almost There...

Re: Concept model of new 12" Solar Newton

Sun Nov 20, 2016 2:06 am

Notwithstanding the lengthy period since my last update, progress has continued on my 12" Solar Newton. The pedestal frame has been painted (black), the base frame painted (Hammerlite silver), the 12 V regulated power supply is in place, the screw jacks now have feet and, the base panels (1/2" plywood covered with plastic laminate) have been installed as shown below:

Image5.jpg (98.53 KiB) Viewed 9014 times

The more daunting task was the fabrication of the fork. Given that both arms had to be parallel in two planes and, perpendicular to the base plate such that everything lined up in a coaxial manner with the RA axis shaft, the challenge was clear. For those who have had any experience with welding (MIG or otherwise), appreciation will be had for the effects of heat distortion/warping despite the best laid plans of jigs, clamps and careful tack welds. The fork was fabricated from 14 ga. steel tubing with dimensions of 1"x3", 2"x3" and 1" square. These were carefully cut to size and positioned on a flat layout pattern prior to welding as shown below:

Image1.jpg (132.62 KiB) Viewed 9014 times

Image7.jpg (100.68 KiB) Viewed 9014 times

Image2.jpg (159.1 KiB) Viewed 9014 times

A 6 3/4" diameter disc of 1/4" steel plate was machined and bored to fit the 1 3/4" RA shaft. Here the shaft opening is being bored out and, eventually this plate will be welded to the base of the fork frame. Holes are positioned such that the plate/fork assembly can be bolted to the face of the drum bearing (1/2" aluminum plate) and the shaft itself. Here the disc being machined on my Myford 7 lathe.

Image6.jpg (104.91 KiB) Viewed 9014 times

The following images show the completed fork in its primer coat yet to meet the Hammerlite Silver final finish. Autobody filler was used to fillet all inside corners for cosmetic purposes. In total, the fork weighs 18 lbs. (8 kg.) and is incredibly stiff/rigid.

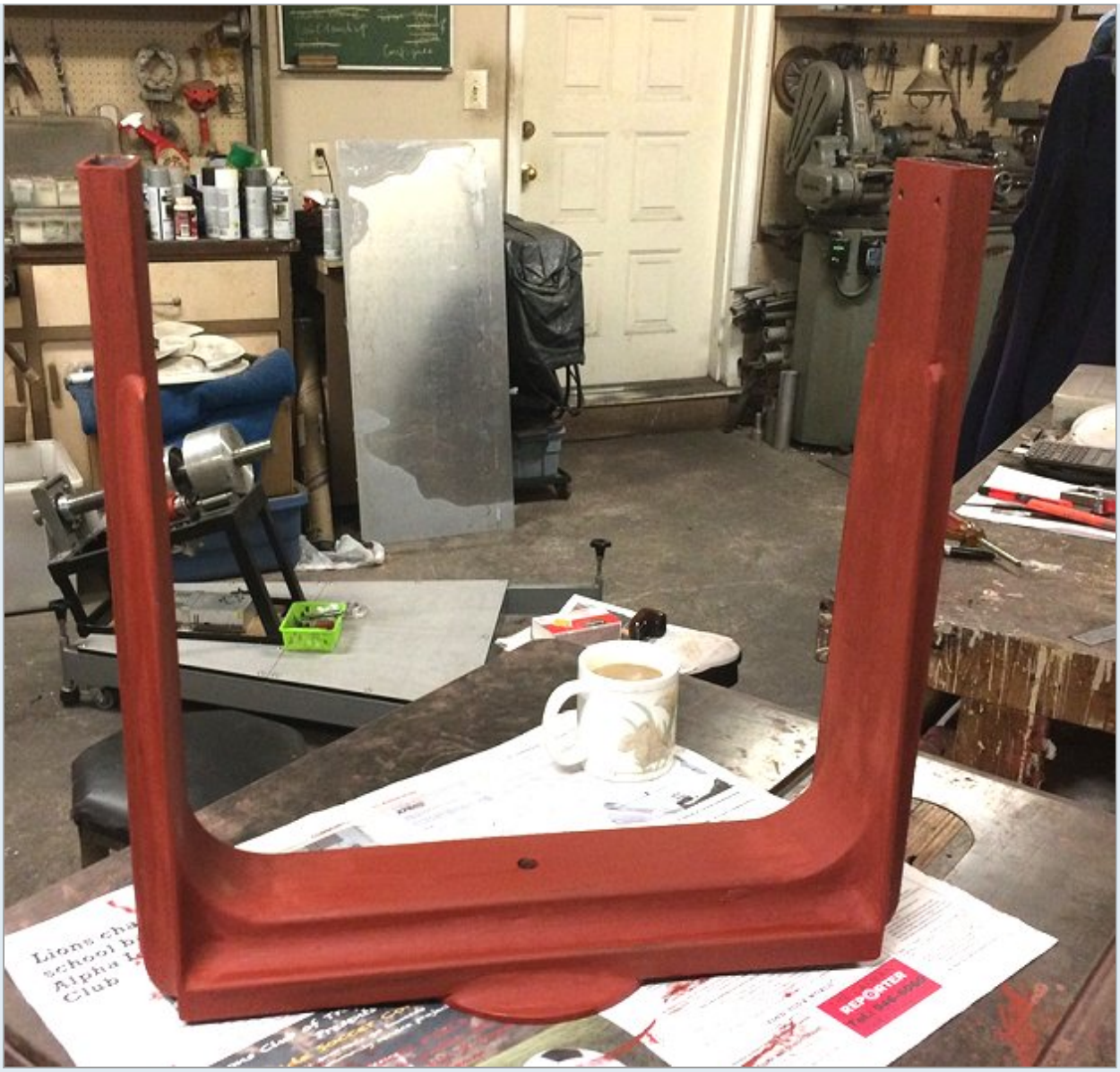


Image3.jpg (92.61 KiB) Viewed 9014 times

Image4.jpg (54.14 KiB) Viewed 9014 times

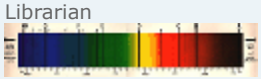
When the fork assembly is fitted to the RA shaft, concentricity is essential. Although distortion/warping of the welded fork was fortunately minimal, allowance has been made for shims to be placed between the drum face and the steel base disk during assembly using a laser alignment setup to be described later.

So, that's where we are at present - more to come including fitting 0.09" aluminum panels over the pedestal, slip rolling an aluminum arch over the pedestal, machining of the aluminum bearing blocks for the fork arms and, installing the stepper motor system and remote control. Lots yet to do.

Enjoy,

Bill

marktownley
Librarian



Re: Concept model of new 12" Solar Newton

Sun Nov 20, 2016 8:52 am

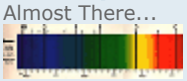
A superb project! This is exactly the sort of thing I like to do myself, but don't have the time with work. Love the updates Bill

http://brierleyhillsolar.blogspot.co.uk/

Solar images, a collection of all the most up to date live solar data on the web, imaging & processing tutorials - please take a look!

[whrudey]

Almost There...



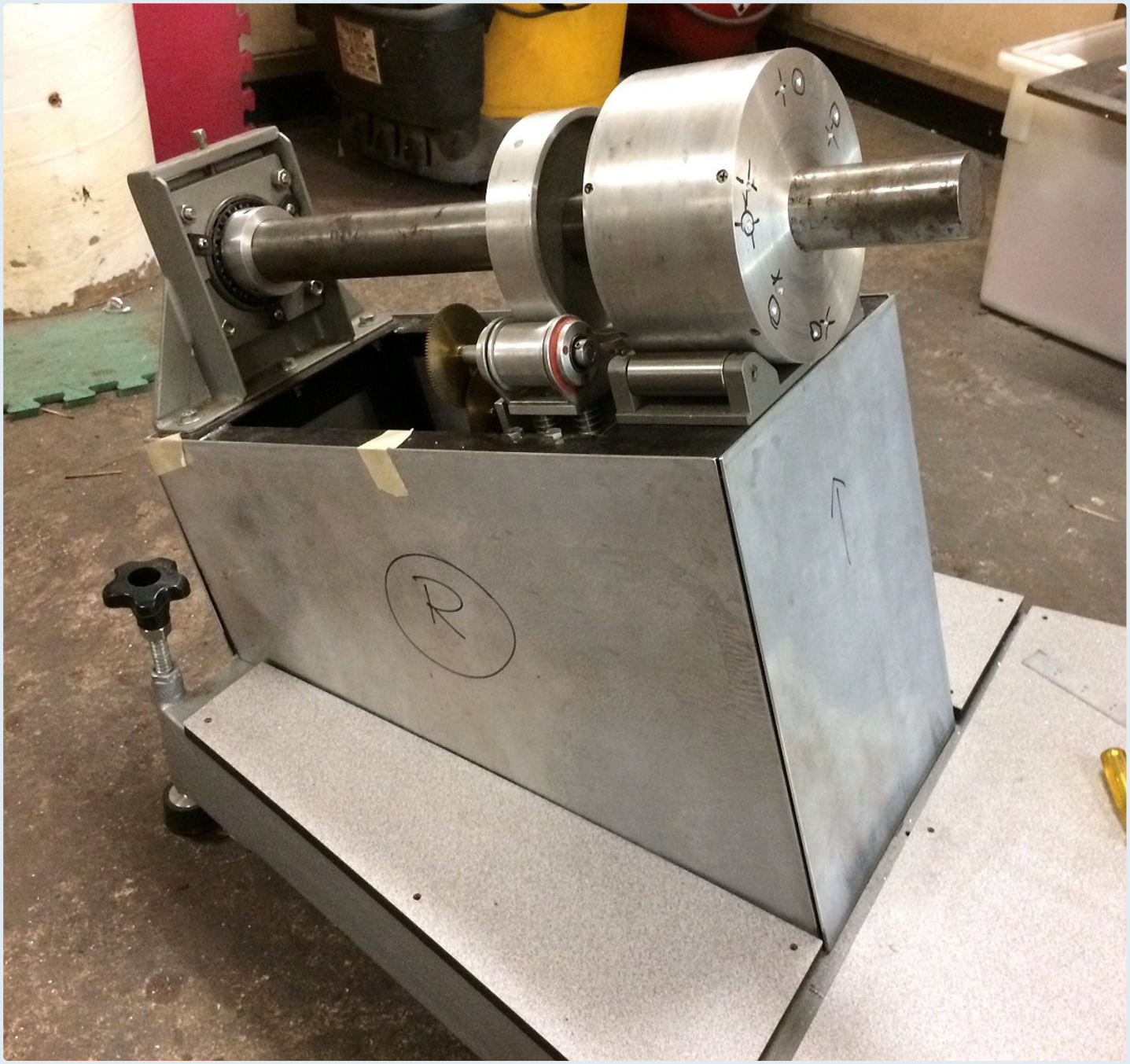
Re: Concept model of new 12" Solar Newton

Sun Dec 04, 2016 1:14 am

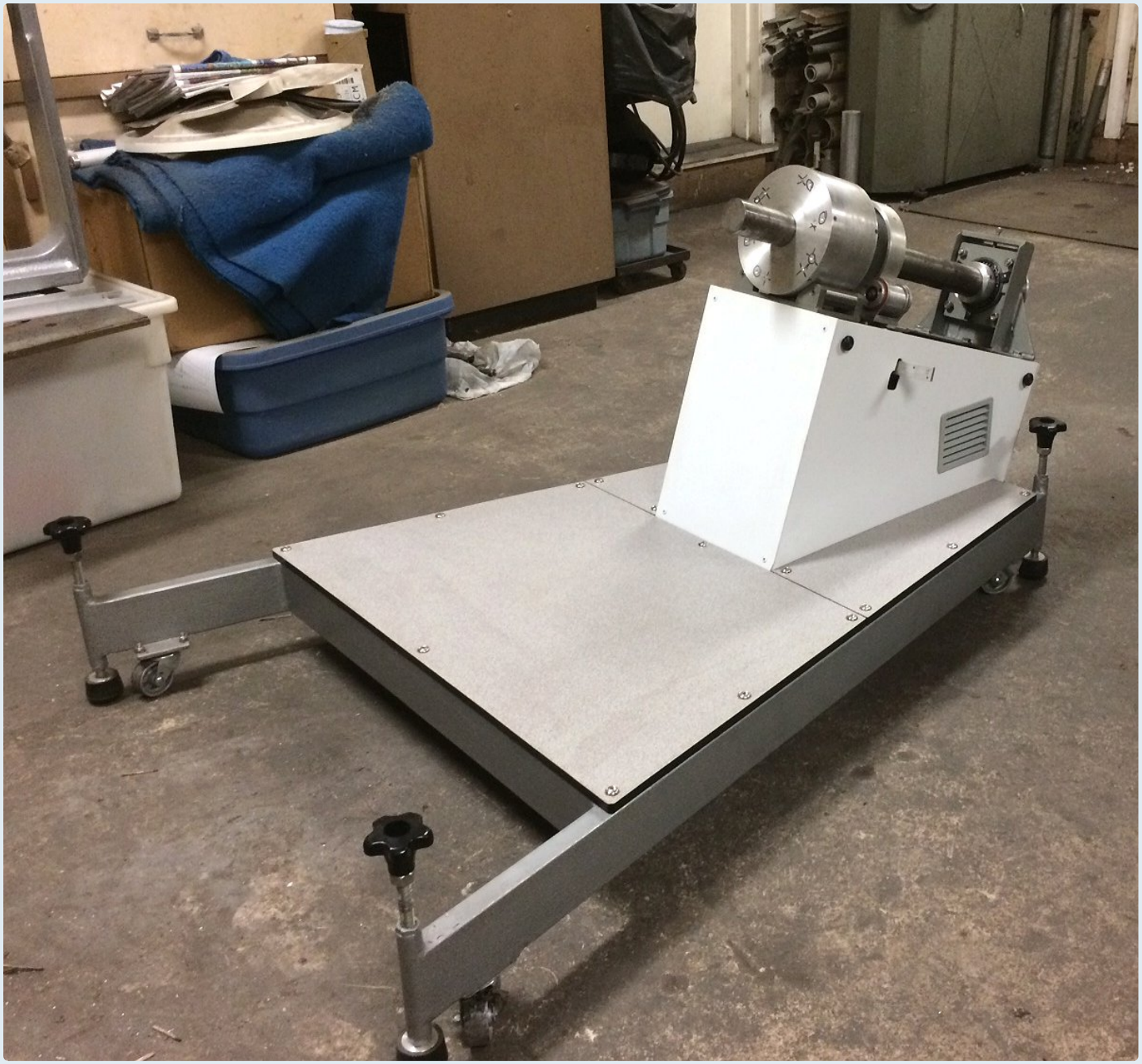
Given poor viewing conditions, more time has been spent in the shop working the new scope. In the first image, one can see that the pedestal and base frame have been painted and, a 1/2" plywood/plastic laminate deck fitted.

Image5.jpg (150.01 KiB) Viewed 8811 times

Next, 0.09" aluminum sheet was fitted to the pedestal sides and eventually painted. One image shows the almost completed fork whilst others show the removable West panel exposing the electronics within. The last image in this series shows the South end of the pedestal with a 4" fan, neon On/Off switch and power socket. Eventually, a DB25 F/F gender changer will be fitted between the two to accept the remote cable. Using a gender changer avoids the tedious soldering to small pins. Rather, a 15 foot DB25 M/M cable can be purchased and 12-15" removed from one end. The raw end of the longer section goes to the remote control box. The shorter length plugs into the gender changer on the inside of the pedestal with sufficient wires to the Arduino board.



IMG_0756.JPG (239.46 KiB) Viewed 8811 times



IMG_0761.JPG (246.05 KiB) Viewed 8811 times

IMG_0766.JPG (241.19 KiB) Viewed 8811 times

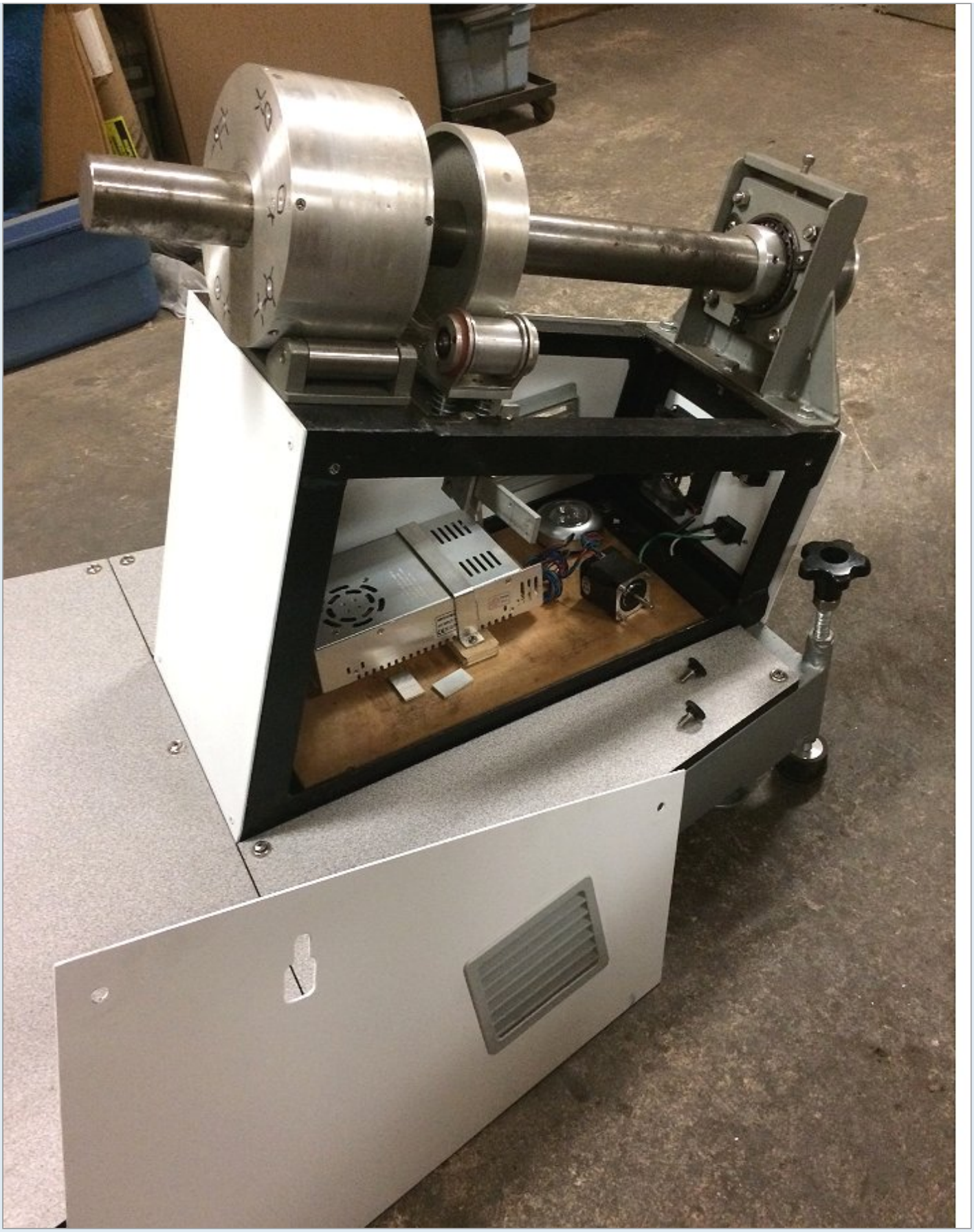
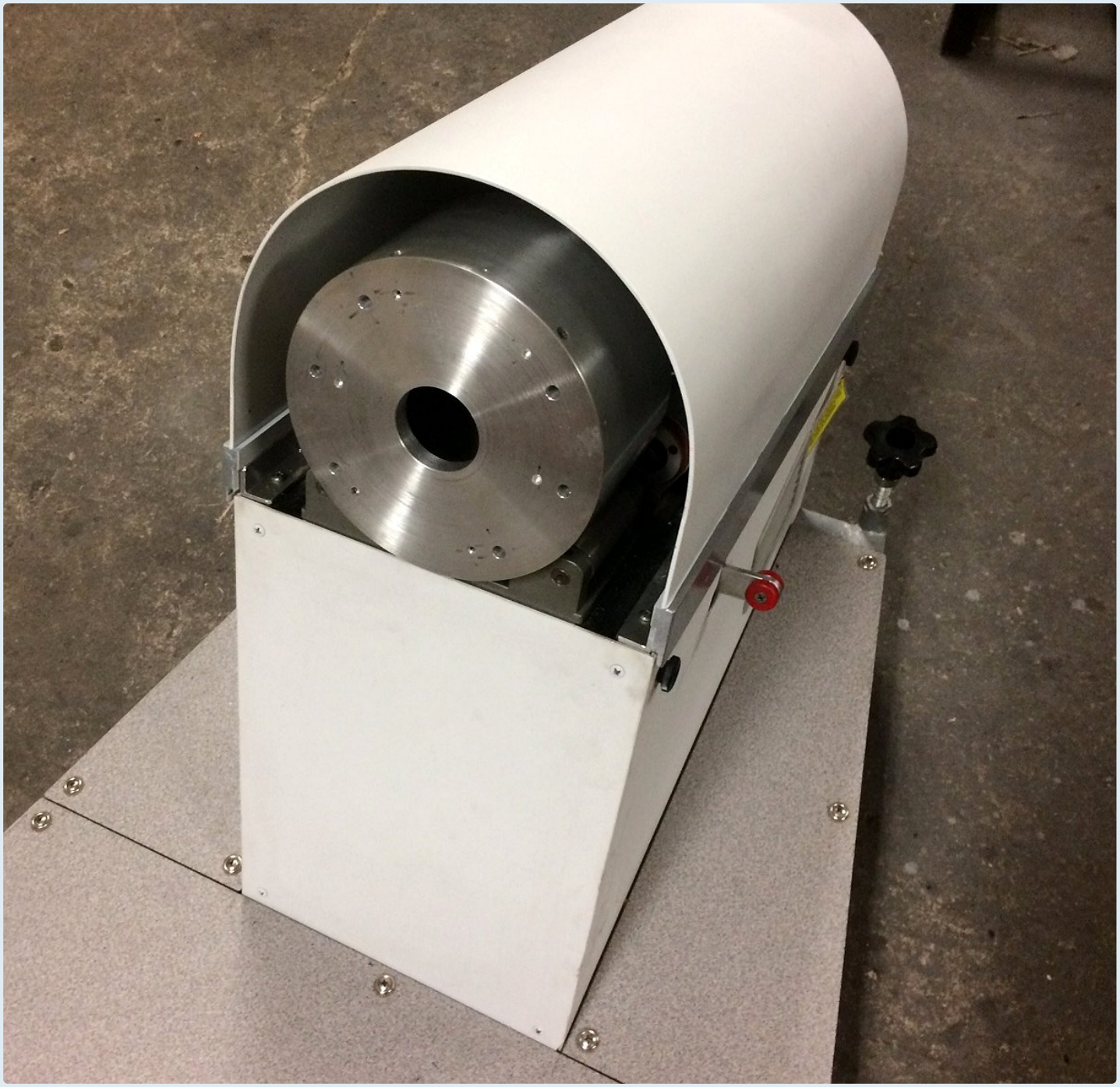


Image1a.jpg (133.29 KiB) Viewed 8811 times

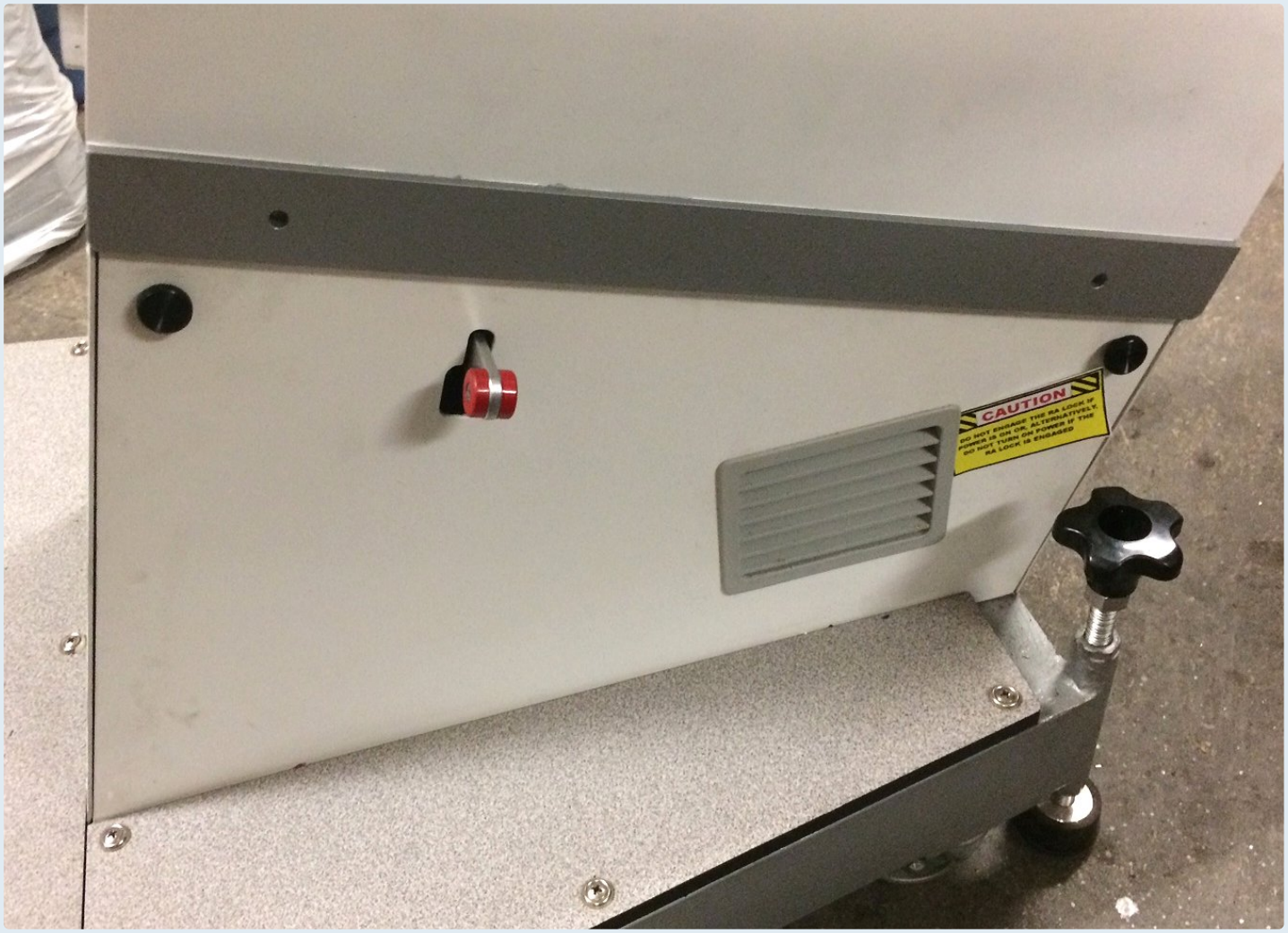
IMG_0767.JPG (104.55 KiB) Viewed 8811 times

Finally, I had a sheet metal shop slip-roll the arched hood over the pedestal. It wasn't inexpensive but, I don't have a large slip-roller in my shop (yet). This was fitted with guides and trim then painted. Four knobs secure it in place but, also allow for removal to service the inside of the pedestal. The last image shows a red knob on a lever - no, it does not lower the landing gear but, rather disengages the RA drive belt. Also, one can see the holes in the North surface of the bearing drum to which the base plate of the fork will be bolted. Meanwhile, the 1.75" RA shaft is being centre bored/tapped to accept a stainless steel 1/2" bolt - also in a local machine shop since the piece was too large for my lathe.



IMG_0773.JPG (238.29 KiB) Viewed 8811 times

IMG_0772.JPG (249.57 KiB) Viewed 8811 times



IMG_0774.JPG (208.21 KiB) Viewed 8811 times

Still a ton of stuff yet to do but it's getting closer to completion - perhaps early spring 2017. Constructing the OTA was the easy part - constructing a suitable base is another story.

Final words of advice. Years ago when I was building my sailboats, a wise old shipwright/joiner told me that the most important tool in one's shop is the following:

IMG_0777.JPG (146.3 KiB) Viewed 8811 times

He advised spending a lot of time sitting on it and thinking before cutting a piece or, making an irreversible step. I've had that very stool since 1974 and it has served me well. The match sticks are from my pipe.

Enjoy,

Bill

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52 posts 1 2 3

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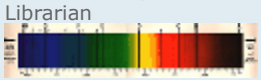
Concept model of new 12" Solar Newton

marktownley
Librarian



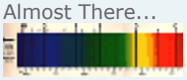
Re: Concept model of new 12" Solar Newton

Sun Dec 04, 2016 9:54 am

It's looking very tidy Bill!

http://brierleyhillsolar.blogspot.co.uk/
Solar images, a collection of all the most up to date live solar data on the web, imaging & processing tutorials - please take a look!

[whrudey]
Almost There...

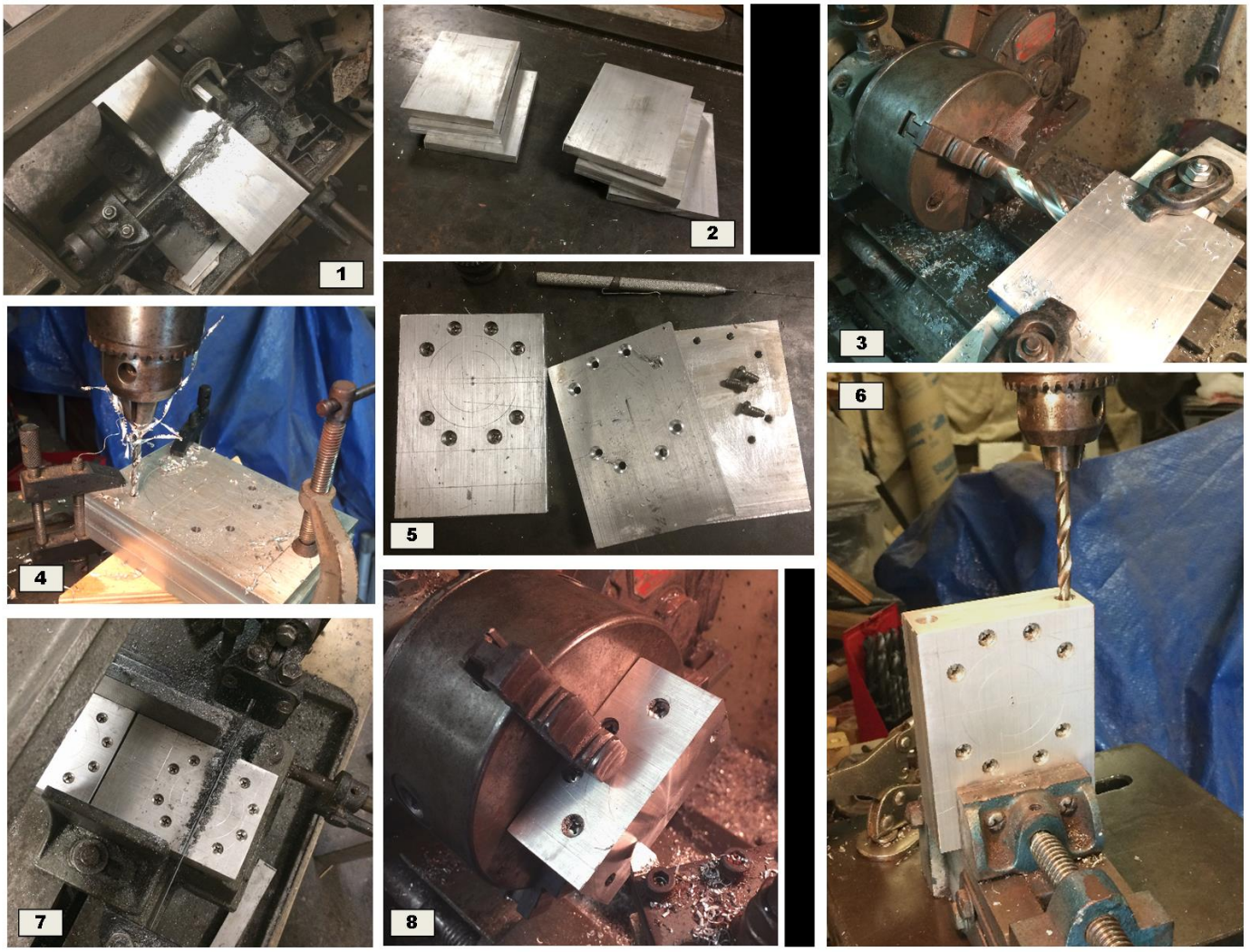


Re: Concept model of new 12" Solar Newton

Thu Dec 22, 2016 4:15 pm

With recent viewing conditions only fair and, the scarcity of sunspots, more time was directed towards construction as detailed here.
An enjoyable, yet tedious task in this project, was the construction of the DEC bearing blocks. Commercial pillow or flange blocks are ugly and often bulky. For both cosmetic and functional reasons, I chose to make my own as shown in the following images. Those with an interest in machining may find them to be of interest.
Image 1: lengths of 3.5” aluminum flat were cut in both ½ inch and 3/8 inch thickness.
Image 2: these pieces allow for a “sandwich” block where the ½” piece is in the middle - total thickness is 1.25”
Image 3: the sides and ends of all six pieces were milled square and to precise dimensions.
Image 4: the “stack” of plates were clamped together and a series of holes drilled in a semi-circular array.
Image 5: here, one can see the scribed layout on the left plate, the countersunk holes on the back plate and, the middle plate in which the holes have been tapped #10 x 24. Note the extra space (1/8”) between the two halves to allow for the band saw kerf and some final facing off.
Image 6: with the plates screwed together, ¼” holes were drilled to serve as clamping screws for the eventual two halves of the block.
Image 7: here the plates combined into a block, are divided into two parts.
Image 8: the mating surfaces of the the two halves are faced off to a perfectly flat surface.
Image 9: the bottom half of the assembly has its holes tapped to ¼ x 20

Image 10: the two halves are now bolted together (refer image 6) and centered on a 4 jaw chuck using a “wobbler”. Noteworthy was the placement of 0.020” shim between the block halves such that following boring for the bearing, the bearing can be firmly clamped in place.
Image 11: starting with a pilot bit, a series of holes are drilled with increasing sizes up to 1: diameter. Though not shown, the hole is bored out full depth to 1.25”.
Image 12: with the outer plate removed, a 2” diameter hole is bored in the ½” plate to receive the 1” bearing which has a 2” outer diameter.
Image 13: also not shown, was the milling of a shoulder on the block base with the final result shown here. This will allow for the block to fit in the end of the rectangular steel tube of the fork arm. Here, a grove is milled in the base since the rectangular tubing has a small welding bead on the inside.
Image 14: here, a 1” end mill is used to champher the top corner of the block.
Image 15: now, it should all make sense. The two block halves can be seen with the seat for the 1” bearing.
Image 16: this image shows dry fitting of the block in the fork arm end as well as the 1” diameter shaft which fitted in both ends without any binding – thus nicely aligned.
Image 17: the close-up view shows the finished block installed in the fork arm as well as the bearing in place.



SN12bearing - fork 1.jpg (309.13 KiB) Viewed 7301 times

SN12bearing - fork 2.pub.jpg (308.94 KiB) Viewed 7301 times

I hope my description was not too confusing.

Enjoy,

Bill

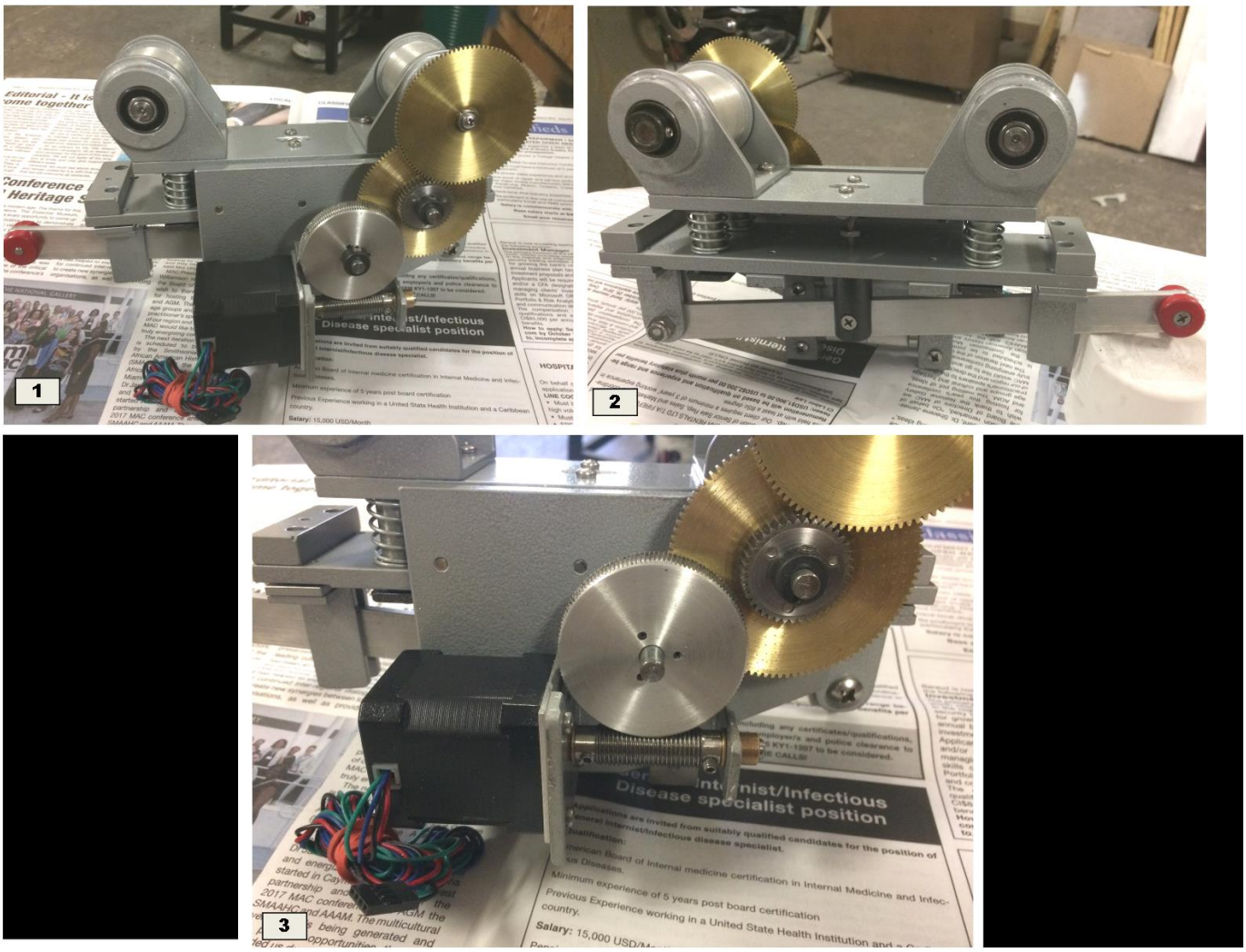
[whrudey]
Almost There...

Re: Concept model of new 12" Solar Newton

Thu Dec 22, 2016 4:20 pm

The following images show the completed, though without its drive belt, drive mechanism. It seems that the standard un-reinforced polyurethane belts die in the tropical climate so, am now working on a system to make my own custom fibre reinforced rubber belts.

Image 1: this is the South end of the mechanism showing the stepper motor, worm gear, gear train and finally the driving roller on the right with passive roller on the left. The release lever on the left, with its red knob, passes through an opening in the West pedestal panel and, allows for hand slewing. Image 3 provides a little more detail.
Image 2: this image shows the North end of the drive mechanism and in particular, the spring float mechanism for the roller base. With the belt installed, these will engage a machined flat pulley on the 1.75” precision ground RA shaft.



SN12 drive.jpg (223.82 KiB) Viewed 7300 times

Hope the above was of interest to some.

Bill

[whrudey]
Almost There...

Re: Concept model of new 12" Solar Newton

Thu Dec 22, 2016 4:28 pm

Having completed the welded steel fork, painted it and machined the DEC bearing blocks, it was time to put it all together. Although the OTA has yet to add its contribution to the cantilevered weight (estimated to be 55 to 60 lbs.), the 18 lb. fork and 5 lbs. of bearing blocks performed superbly. There is sufficient inertia in the system to counter vibrations yet, smoothness of rotation in both axes. Ultimately when properly balanced, I expect everything to move well with minimal effort via the stepper motor belt drive system

Image 1: this shows the completed fork assembly with a 1” diameter precision ground steel rod passing through both DEC bearing blocks. No problem with alignment as the rod spun effortlessly.

Image 2: here one can see inside the pedestal which contains the power supply and, eventually the Arduino stepper controller, etc. A stick-on/battery operated LED lite is attached to the inside East pedestal panel. The painted belt drive system can be seen with its NEMA 17 stepper motor installed. It has a holding torque of 83.6 oz/inches and, with the subsequent gear reduction will provide more than enough driving torque. The stainless steel roller bearings supporting the RA axis drum can be seen beyond the drive system and each roller is fitted with a pair of bearings at each end for a total of four each.

Image 3: the fork has been bolted to the RA shaft with a ½” stainless steel bolt as well as 6 additional ¼” bolts from the inside of the drum into the steel base plate which was welded to the fork base. The potential space between these surfaces will allow for shims during the final laser beam guided alignment – more on that later.

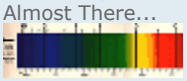
Images 4 & 5: these images simply show the whole structure from either end. The plastic wrap and red elastic bands on the fork arms are there to prevent my leaving grubby finger prints/smears on the painted surface.

SN12bearing - fork .jpg (296.77 KiB) Viewed 7299 times

Overall, the fork is free of any play, moves easily and, has a feeling of solidness. Just needs to be aligned now.

Enjoy,
Bill

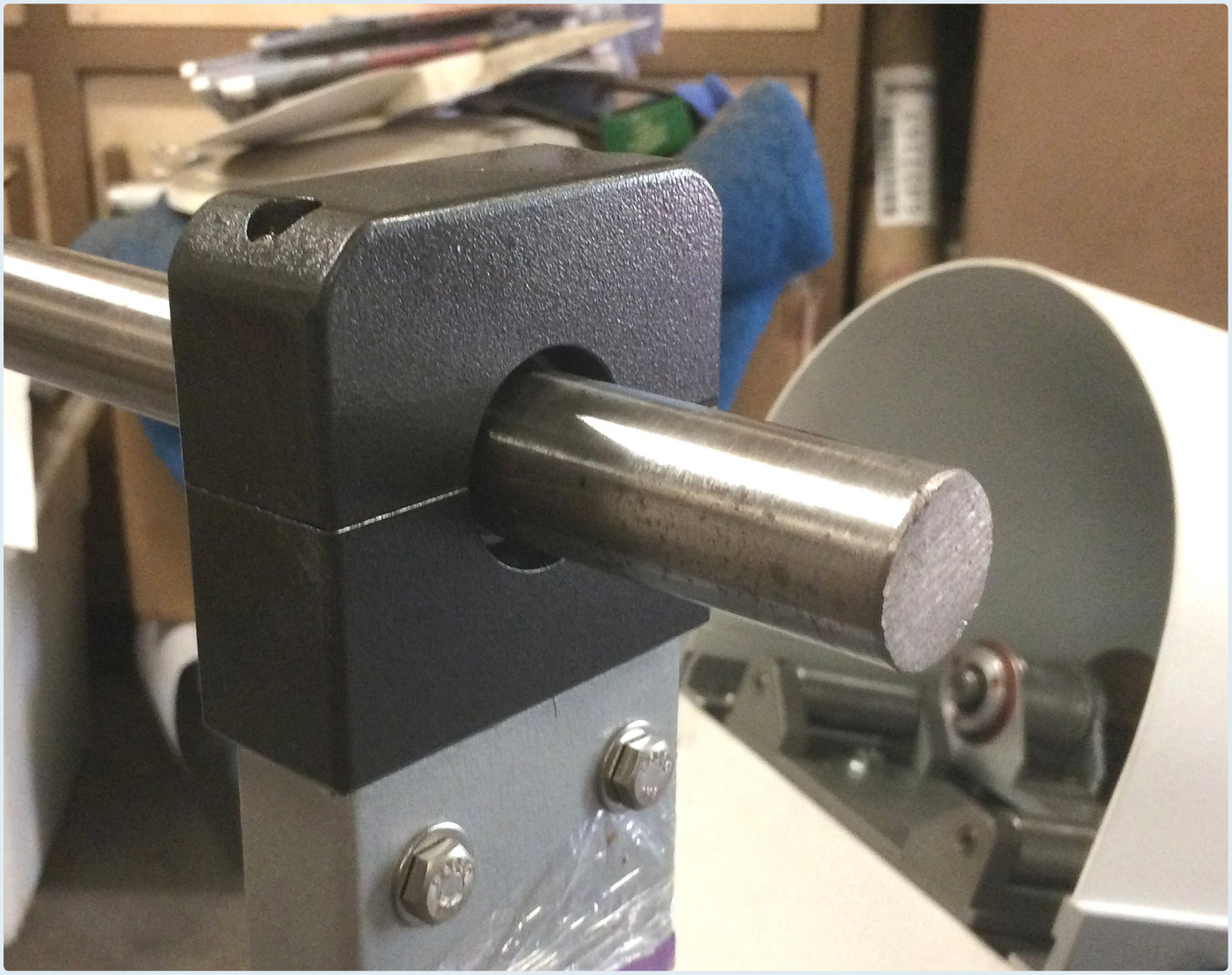
[whrudey]
Almost There...



Re: Concept model of new 12" Solar Newton

Thu Dec 22, 2016 4:42 pm

Sorry, forgot one close-up image of the completed bearing block. The holes for the screws joining the plates have been covered with auto body filler and glazing putty.

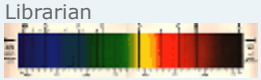


DEC block.jpg (450.68 KiB) Viewed 7297 times

Enjoy,

Bill

marktownley
Librarian



Re: Concept model of new 12" Solar Newton

Thu Dec 22, 2016 4:55 pm

This is a superb piece of engineering Bill, and a pleasure to watch and read it's well documented build Really looking forward to the granulation you'll get with with the finished project when you get it pointing at the sun.

http://brierleyhillsolar.blogspot.co.uk/
Solar images, a collection of all the most up to date live solar data on the web, imaging & processing tutorials - please take a look!

[whrudey]
Almost There...

Re: Concept model of new 12" Solar Newton

Thu Dec 22, 2016 6:32 pm

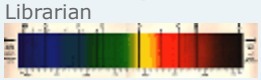
Thanks Mark - comments appreciated.

Incidentally, do you have any information on the whereabouts of Art Whipple ? He had built a 14" Solar Newton in, I believe, the early 2000's. I'd corresponded with Christian Viladrich, who has a 12" Solar Newton, to see if any other such similar sized scopes exist. As such, Christian and I would share second place for the largest Solar Newton's in the world.

Why do I raise this question ? Our fledgling University will want to get some local media publicity on my scope and, media folks seem obsessed with such questions as, "Is it the biggest in the World ?" I'll need some answers.

Bill

marktownley
Librarian



Re: Concept model of new 12" Solar Newton

Sat Dec 24, 2016 9:19 am

Hi Bill, I don't personally have any contact details for Art, maybe message Christian, he may be able to help. I did have a quick google for him to see if could find any details, but to no avail!

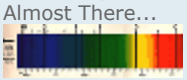
There are not many large aperture solar newtons around that i'm aware of, so I think your 2nd place crown would be fine for the local press.

http://brierleyhillsolar.blogspot.co.uk/

Solar images, a collection of all the most up to date live solar data on the web, imaging & processing tutorials - please take a look!

[whrudey]

Almost There...



Re: Concept model of new 12" Solar Newton

Thu Dec 29, 2016 2:27 am

Now, for some creative fun. Notwithstanding the best efforts to carefully measure twice, to check diagonals for square or set up pieces in jigs, errors will occur and, often compound rather than cancelling each other out. With the fork mounted on the North drum roller and RA shaft, the question remains – “Is everything concentric ?". Probably not.

To deal with this, one needs a poor man’s “theodolite” as shown below. This “device” allows for mounting a standard laser collimator on a frame such that it can tilt up or down, slide up or down and rotate upon a vertical axis.

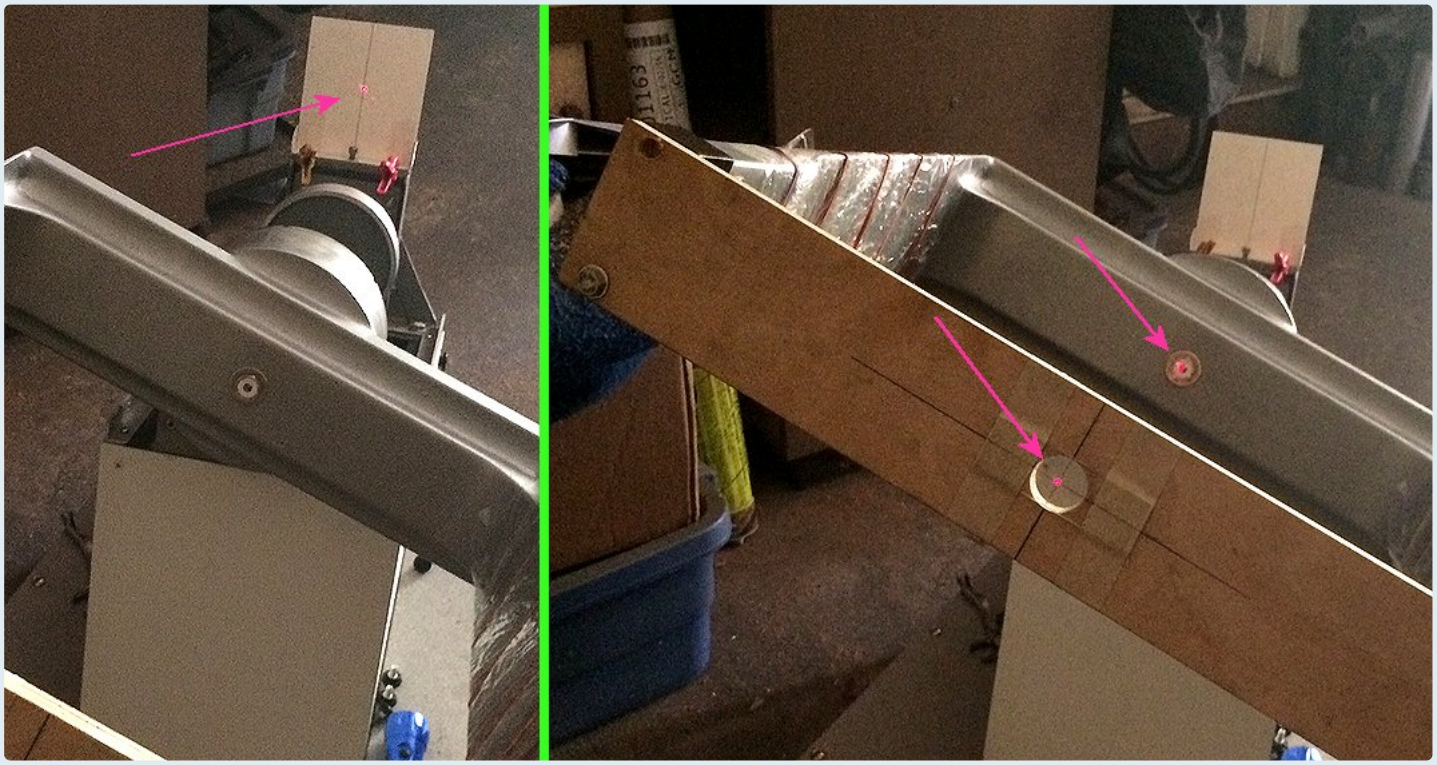
Align1 2.jpg (584.21 KiB) Viewed 7133 times

The “device” was then mounted on a sturdy tripod from a previous telescope build and, lined up in front of the new Solar Newtonian fork. Note also the white cardboard square mounted on the rear RA shaft bearing mount. It has a vertical line on it and works on the same principle as marine navigation using range lights or lights-in-line.

Align2.jpg (248.57 KiB) Viewed 7133 times

The tripod bearing the device is positioned such that laser beam rests on the line. Then the laser is tilted downwards such that the laser spot lands on the ½" hex bolt at the fork base which has a center mark. With a little fiddling and moving about, a tripod position can be found where the laser spot will intersect both the line and the center of the hex bolt. This now defines a vertical plane representative of the middle of the RA shaft. Knowing the angle of the RA shaft to horizontal, the laser collimator can be tilted to an equivalent angle and moved down to center on the hex bolt center. With a length of ½" plywood attached to the front of the DEC bearing blocks, one can mark out the center, drill a 1" hole and cover it with a small piece of glass with cross hairs inscribed. We have thus created 3 points in space on the laser beam.

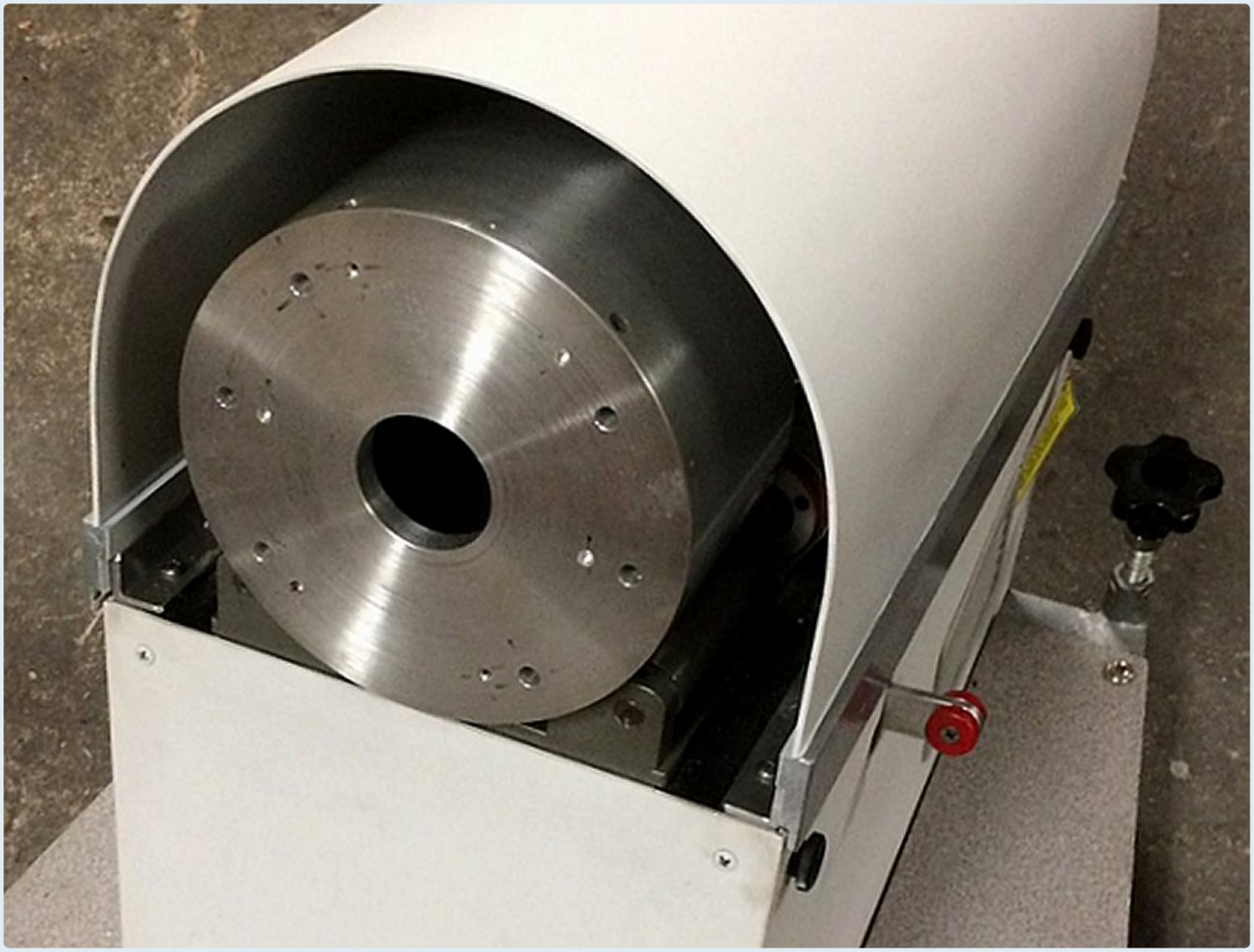
If all is well, the laser spot should intersect the cross hairs as well as the center of the hex bolt in the next image. As luck would have it, they intersected perfectly. However, when the fork was turned on the RA axis, the spot wandered about within a 3/16" circle. Not bad for a first try but simple trigonometric calculations will demonstrate that a 1/8" error translates into 0.3672 degrees off-axis. Given the solar disc subtended angle of 0.53 degrees, further refinement is needed.



Align3.jpg (178.36 KiB) Viewed 7133 times

Align4.jpg (183.65 KiB) Viewed 7133 times

Recall that the ½" thick aluminum face of the front bearing drum has 6 - ¼" holes which register with ¼ X 20 tapped holes in the 1/4" steel plate which is welded to the base of the fork. Screws in these holes can be accessed from the rear as shown. Thus, with loosening and placement of shims in the potential space between the steel plate and drum face, minor adjustment in alignment can be had guided by the position of the laser spot.



Align5 3.jpg (111.38 KiB) Viewed 7133 times

Align5 2.jpg (234.29 KiB) Viewed 7133 times

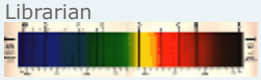
A more sophisticated option is to drill holes near the other six in the aluminum front bearing plate. These would be tapped 10 X 24 but no matching holes would be drilled in the steel plate. With ¾" - 10 X 24 screws fitted in these holes and accessible from the rear, one could play them against the ¼" screws ie: tightening the 10 X 24 screw would widen the gap and tightening the ¼ X 20 screw would lock the position, to allow for very fine adjustment. For example, a ¼ turn would result in advancing the plate 0.0104" This is the course I plan to follow tomorrow.

Do hope that my description is not too confusing. It all makes sense to me but, I'd be interested on constructive commentary in case I've gone astray in my logic.

Enjoy,

Bill

marktownley
Librarian



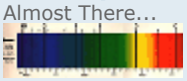
Re: Concept model of new 12" Solar Newton

Thu Dec 29, 2016 9:51 am

Good logic there Bill. After contemplating over 2 cups of coffee this morning, the only thing I could think of is how do you know the plywood used is completely square / true? The plywood we have in our workshop can be bowed sometimes. Not saying yours is, just thinking out loud. Saying that, you have adjustment so even if there is small error it can be counteracted.

http://brierleyhillsolar.blogspot.co.uk/
Solar images, a collection of all the most up to date live solar data on the web, imaging & processing tutorials - please take a look!

[whrudey]
Almost There...



Re: Concept model of new 12" Solar Newton

Thu Dec 29, 2016 1:51 pm

Hi Mark;

Thanks for your response. True, they don't make plywood like they used to do - most of the current crop is warped/twisted and full of voids. Fortunately for this project, I had some good quality 12mm 8 ply birch plywood. Not quite marine grade but, close.

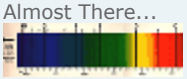
One issue that I've yet to resolve is whether the fine tuning will be preserved once the OTA and its weight are added to the fork. Will then need an alternative method to confirm concentricity. Likely, with DEC set to 90 degrees ie: parallel to RA axis, and focused on an object, simply rotating on the RA axis should work.

Still no information on Art Whipple I guess ?

Cheers,

Bill

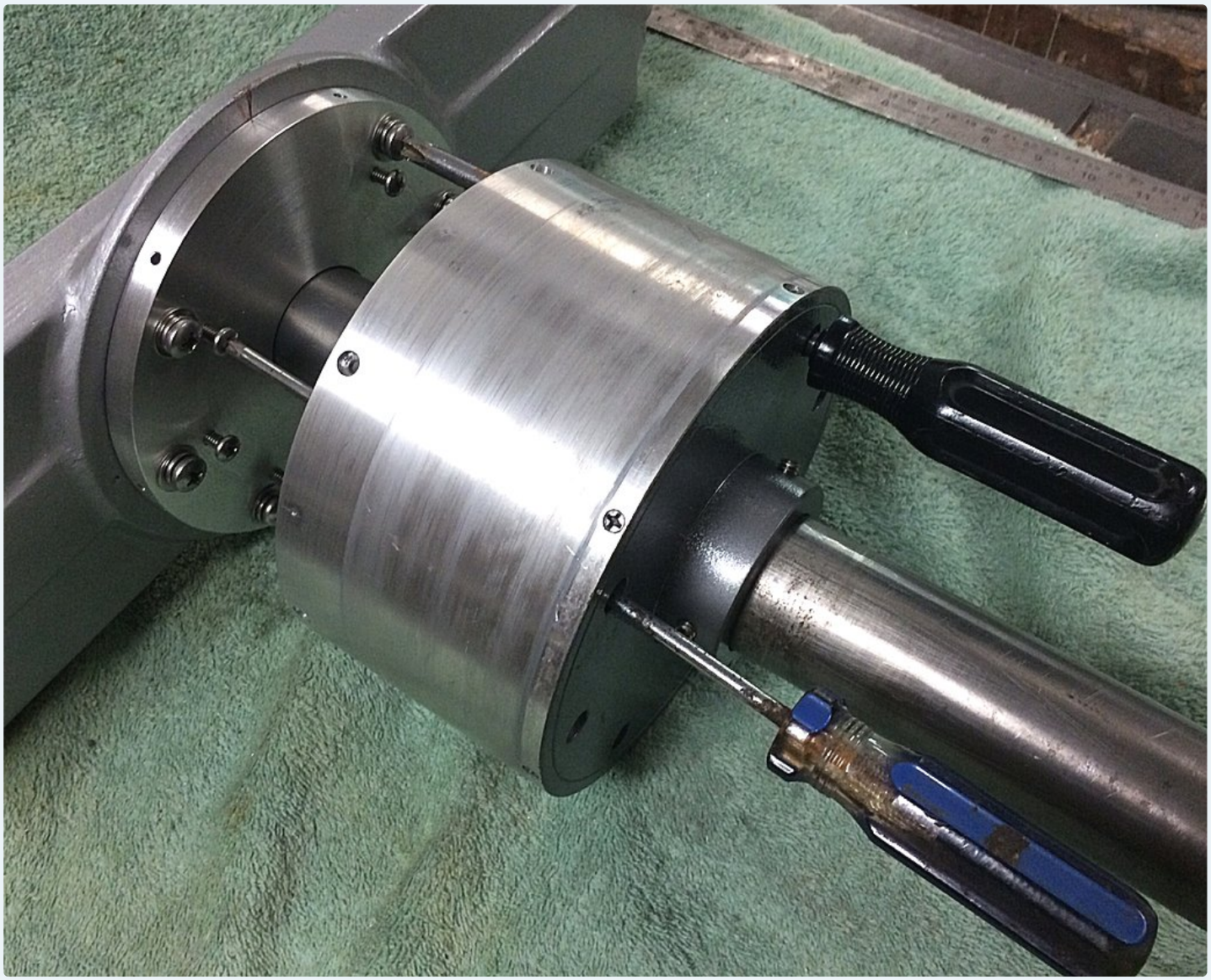
[whrudey]
Almost There...



Re: Concept model of new 12" Solar Newton

Thu Dec 29, 2016 5:38 pm

Since there may have been some confusion in my last post regarding alignment with push/pull screws in the drum, here's an exploded image to clarify. The 1/4" steel plate welded to the fork base has six 1/4 X 20 tapped holes for the larger screws passing through the 1/2" aluminum front plate. Smaller 10 X 24 screws pass through tapped holes in the 1/2" aluminum plate but, there are no matching holes in the 1/4" steel plate.



Explode.jpg (222.62 KiB) Viewed 7096 times

Thus, when assembled, one has access to all of the screw through the rear of the drum. The smaller screws can be used to make fine adjustments in the space between the plates and, the larger screw will lock all in place. Finally, a 1/2" hex bolt passes through the fork base into the RA shaft.

Hope that helps.

Bill

[whrudey]
Almost There...

Re: Concept model of new 12" Solar Newton

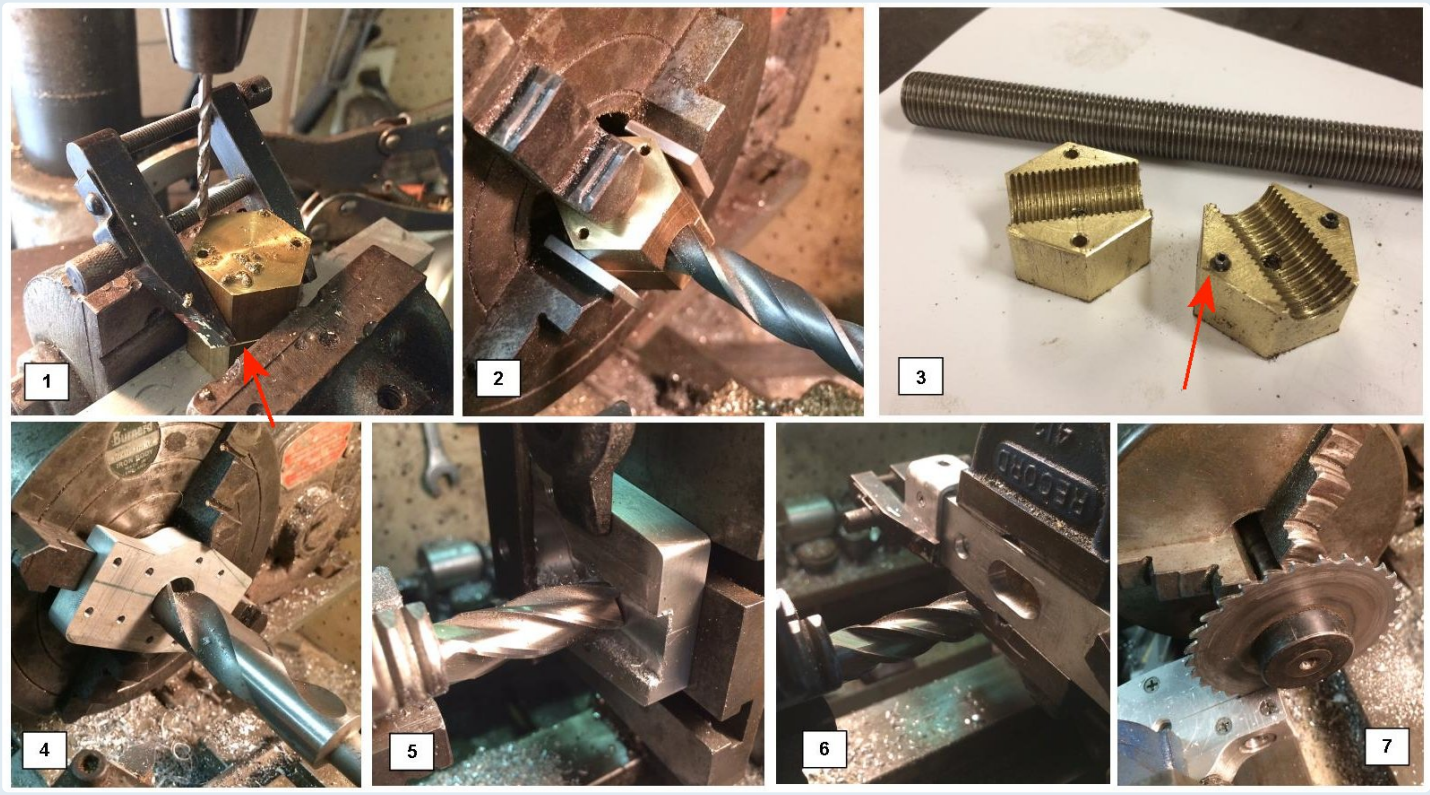
Tue Jan 17, 2017 2:26 am

With the paucity of sunspots until recently, more time was spent in the shop making bits'n'pieces. Here, attention was directed towards the DEC drive system where, I chose a tangent arm design. Since the scope is exclusively for solar imaging, the range of movement through the celestial sphere is quite narrow. A tangent arm would be less complicated and less expensive to build. The first image panel shows the completed device and some close up details. It will be mounted on the West arm of the fork with the clamping end fitted to the DEC axis trunnion and, the motor/leadscrew portion fixed the the fork arm. It won't be installed until the OTA is added to the mount. Here are some comments on the numbered images: - apologies for starting with the larger numbers first - it's been a long day.

TArm2.jpg (340.97 KiB) Viewed 6828 times

8> this image shows the entire tangent arm with the DEC axis clamp on the left and the motorized leadscrew on the left.
9> this is the clamp end where the knurled knob compresses the head - best seen in the following image. The black plastic knob screws into a 1/2" X 20 tpi threads in the trunnion end. With both loosened, one can hand slew the OTA. When both are tightened, the tangent arm takes over.
10> this is the inside portion showing the socket for the the 1" DEC trunnion.
11> at the fixed motorized/leadscrew end, one can see the bronze half nuts which move up/down in the arm to allow for the changing radius when in use. The leadscrew is a stainless steel 1/2" X 20 tpi threaded rod seated in bronze bearings at either end.
12> in this image, the half nuts are opened for quick change of position.
13> the opposite end shows the cover over the gear train driven by a NEMA 17 size stepper motor. The motor will be driven by an Arduino and Adafruit motor shield v2.3
14> with the cover removed, one can see the gear train with a reduction of 0.42 X's.

The following panel shows some of the machining steps - described as follow:



TArm1.jpg (305.45 KiB) Viewed 6828 times

1> here 2 pieces of hexagonal bronze material are clamped together and registration holes drilled.
2> the next step was to bore an opening for the eventual leadscrew prior to threading.
3> completed and separated, one can see the 2 small roll pins for registration and the 1/2 X 20 tpi threads cut with the leadscrew in the background.
4> here the DEC axis clamping end is being bored to 1".
5> a slot is now being milled into the clamp for fitting of the arm itself.
6> here, a slot is being milled into the arms at the leadscrew end to capture the bronze half nuts and allow them to move in/out. (refer images 11-14 above)
7> finally, a slot was made in the clamp end for locking. (refer image 10 above)

Often, I'm asked, "when will it be finished ?" This project is not unlike building an house. With the walls, roof up and windows, doors installed, one might think it is almost finished. "Nyet", remember the house still needs wiring, fixtures, plumbing, interior walls, painting, flooring, cabinets, etc. Much the same here as the "yet to do" list includes the following: install, the OTA, install the tangent arm, fit eyepiece holder and filters in draw tube, fit secondary mirror, strip primary mirror, machine and install an RA locking mechanism, install and wire electronics with lead to remote pad, install mirror, align, balance amongst other miscellaneous tasks.

One significant issue is that of the belts for the RA axis drive. Originally deigned to use endless polyurethane belts, I discovered that they fall apart in the tropics when under any load. The alternative will be fabric reinforced rubber belts but custom sizes are hard to come by. Thus, I'll have to set up a process to make my own - quite doable with a little effort.

So, that's where we are at the moment,

Bill

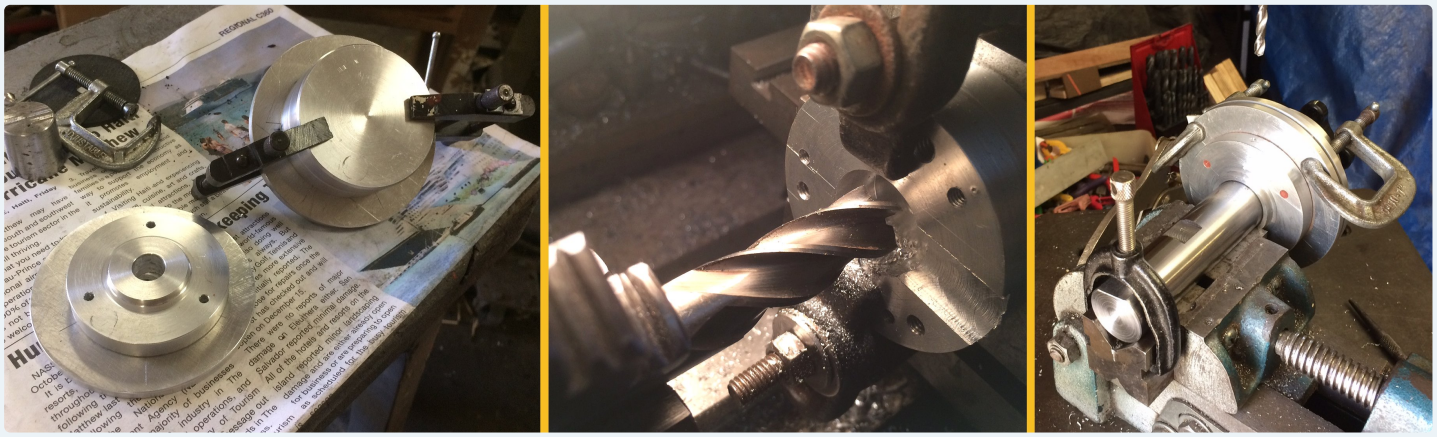
[whrudey]
Almost There...

Re: Concept model of new 12" Solar Newton

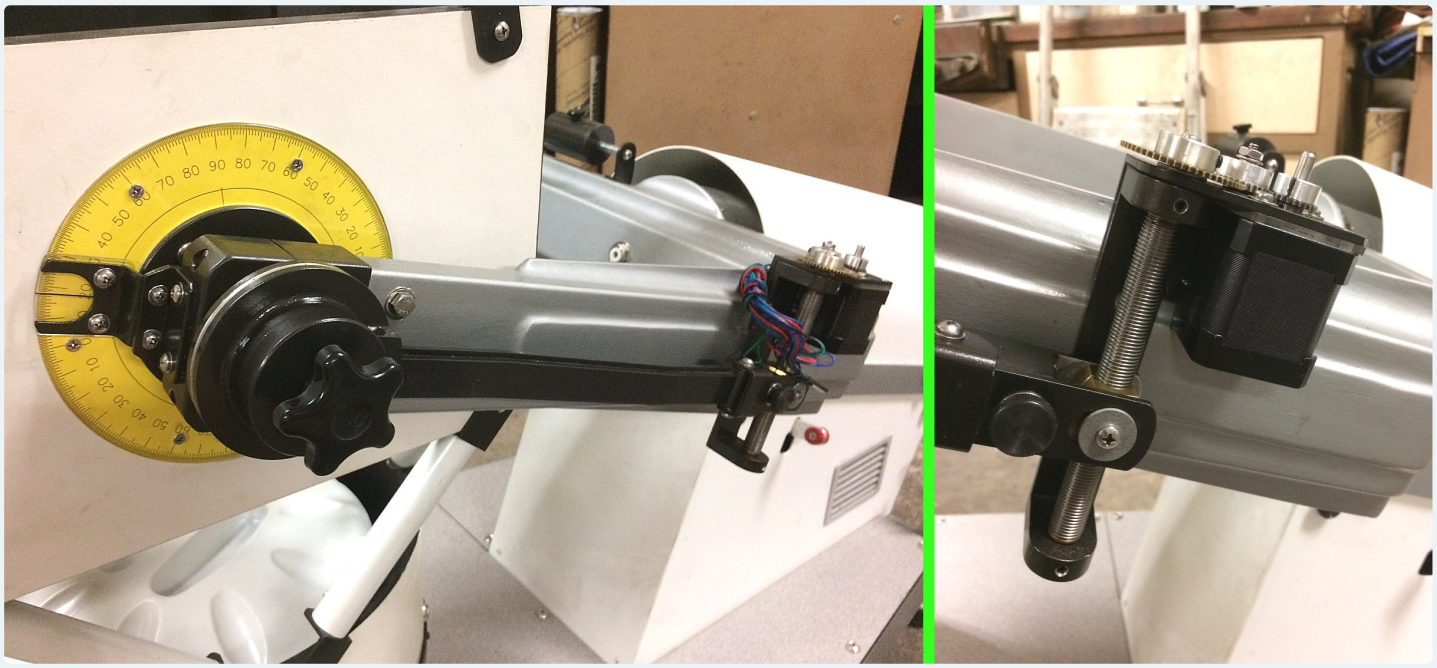
Sat Mar 18, 2017 2:13 pm

Finally found some time to resume work on my 12" Solar Newton.

The first order of the day was to revise the tangent arm mechanism on the DEC axis. The original design failed to grip the trunnion adequately so, a revised version consisting of two 3 ½ inch plates were machined for the trunnion. The inner one was fixed to the trunnion whilst, the outer plate (also part of the arm) would be clamped to the trunnion/plate system with a sandwich of special rubber disc used by studios to lock boom lights in place. The first panel shows some of the machining involved whilst, the second shows the finished system with a close-up of the stepper motor driven lead screw.



DEC brake.jpg (673.78 KiB) Viewed 6413 times



Tang drive.jpg (408.03 KiB) Viewed 6413 times

Next, it was time to take the plunge and strip the mirror. I used Gordon Waite's method referred to earlier as a YouTube video. The following panel shows the untreated mirror in a plastic lined tray since the ferric chloride used as an etchant stains everything in sight. Duck Tape is placed around the mirror's circumference with ½" proud above. The ferric chloride is poured over the mirror which is then gently rocked/agitated much as one would do when developing a print in the darkroom. Within 10 minutes, one could see the etchant eating away the aluminized coating (as well as the quartz over-coating) . Within 30 minutes the stripping was completed though, I allowed another 15 minutes for good luck. In the last frame, one can see right through the mirror. The ferric chloride was removed and the mirror thoroughly rinsed in clean water.

Mirror strip.jpg (713.13 KiB) Viewed 6413 times

The mirror was then fitted into its mirror cell (also provided by Agena Astro as part of their GSO mirror and mirror cell products – for U$110, it was cheaper to buy then make. With the protective cover applied, the whole assembly was then carefully mounted in the OTA.

Mirror done.jpg (136.5 KiB) Viewed 6413 times

The next panel provides 3 views of the whole scope with the OTA mounted. Everything moves smoothly with minimal vibration. The GSO focuser has yet to be added and will require more weight at the bottom for balance. Pointed to the Zenith, the maximum height is 71".

SN12 scpe.jpg (1.06 MiB) Viewed 6413 times

The scope's home position is seen in the next panel. Maximum height is 49". The final image shows the RA axis locking mechanism withe locking knob indicated by the arrow.

Scope home.jpg (481.43 KiB) Viewed 6413 times

RA lock.jpg (237.39 KiB) Viewed 6413 times

What's next ? Balancing the scope, completing the Arduino electronics and remote control and, making the drive belt. So,

not quite finished yet. Lots yet to do. It has seem a fun project though.

Enjoy,

Bill

Derek Klepp
Way More Fun to Share It!!

Re: Concept model of new 12" Solar Newton

Sun Apr 02, 2017 10:43 pm

Very much enjoyed Bill with such precision to detail.Not only a great piece of engineering but I would go as far to say an artistic masterpiece in many respects.I also found your adjustment setup for the drum roller very informative as I am often performing various adjustments on bits and pieces in my Honey extraction plant so always good to see something that may be helpful in future adjustments.
Regards Derek.

marktownley
Librarian

Re: Concept model of new 12" Solar Newton

Mon Apr 03, 2017 5:20 am

I seem to have missed the last couple of updates here Bill, very impressive indeed! Very much looking forward to first light.

http://brierleyhillsolar.blogspot.co.uk/
Solar images, a collection of all the most up to date live solar data on the web, imaging & processing tutorials - please take a look!

[whrudey]

Almost There...

Re: Concept model of new 12" Solar Newton

Tue Apr 04, 2017 5:17 pm

Thanks Derek and Mark. Progress had slowed a bit recently but, hope to carry on. Aside from final balancing, have yet to fabricate a suitable belt for the drive system and complete the Arduino electronics/remote when my student Intern returns in May.

Cheers,

Bill

[whrudey]
Almost There...

Re: Concept model of new 12" Solar Newton

Mon Aug 14, 2017 2:25 pm

My 12” Solar Newton found itself on the back burner during the last few months owing to several other commitments. Nonetheless, some progress has been made as will be seen in this post. Apologies for the quality of the images - they were simple snaps with my iPhone

First, the GSO focuser has been installed complete with one of my DIY remote focusers which drives the fine focus knob.

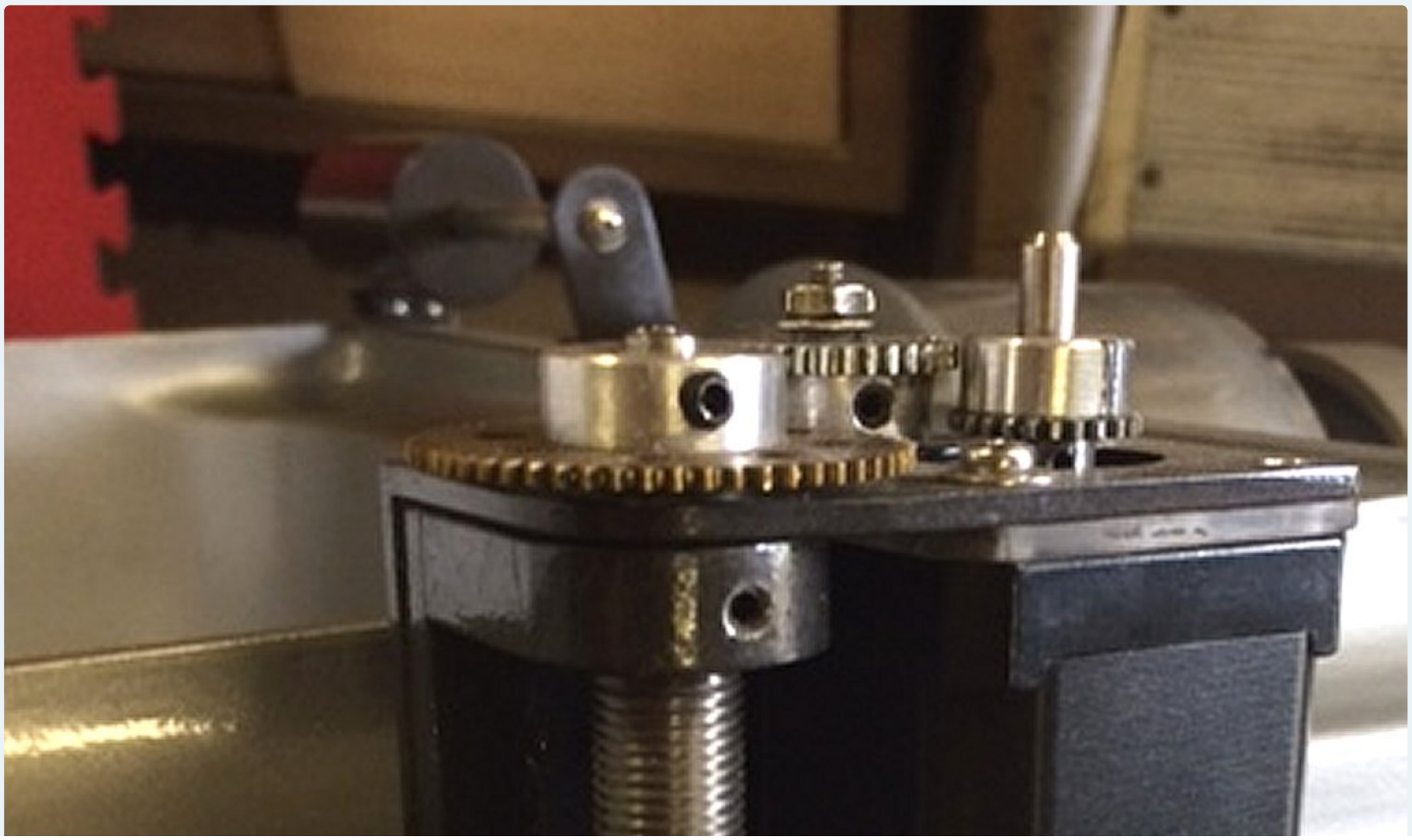
12SN1.jpg (174.67 KiB) Viewed 5074 times

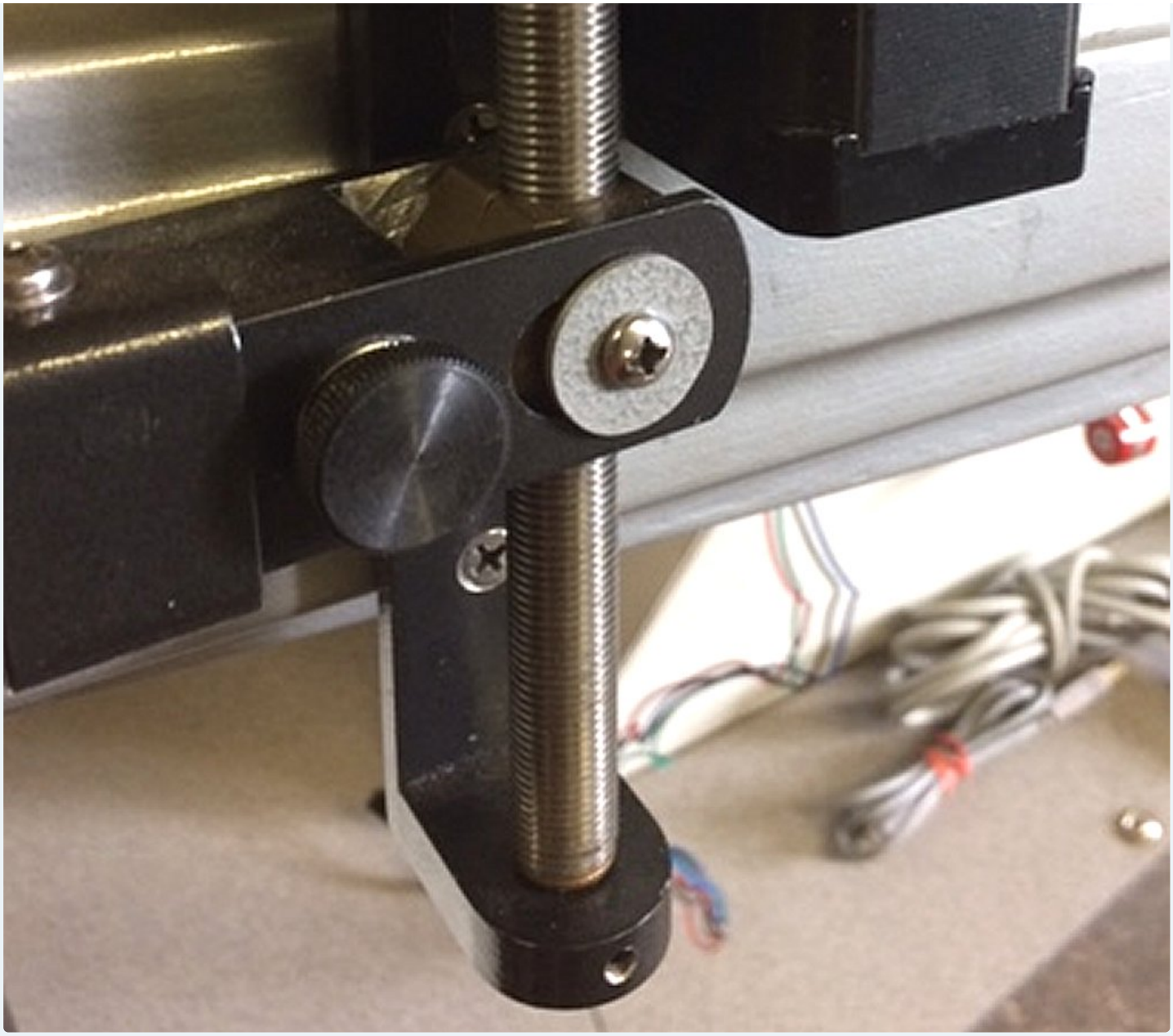
Balancing came next and, a 7lb. lead casting was made for the OTA bottom end. By casting, I mean that lead shot was obtained, mixed into a “soup” of fibre glass resin and cast in a premade, disposable mold. It was positioned on the opposite side of the focuser given the focuser weight plus the 2” 4X TeleVue Power Mate which weighs a ton.

12SN2.jpg (79.68 KiB) Viewed 5074 times

The DEC axis uses a tangent arm driven by a stepper motor through a ½” x 10 tpi lead screw. The arm has been reinforced with a steel 3/8” rod bent in a tight “V”. The gear train off the stepper motor has been disengaged.

12SN3.jpg (128.02 KiB) Viewed 5074 times

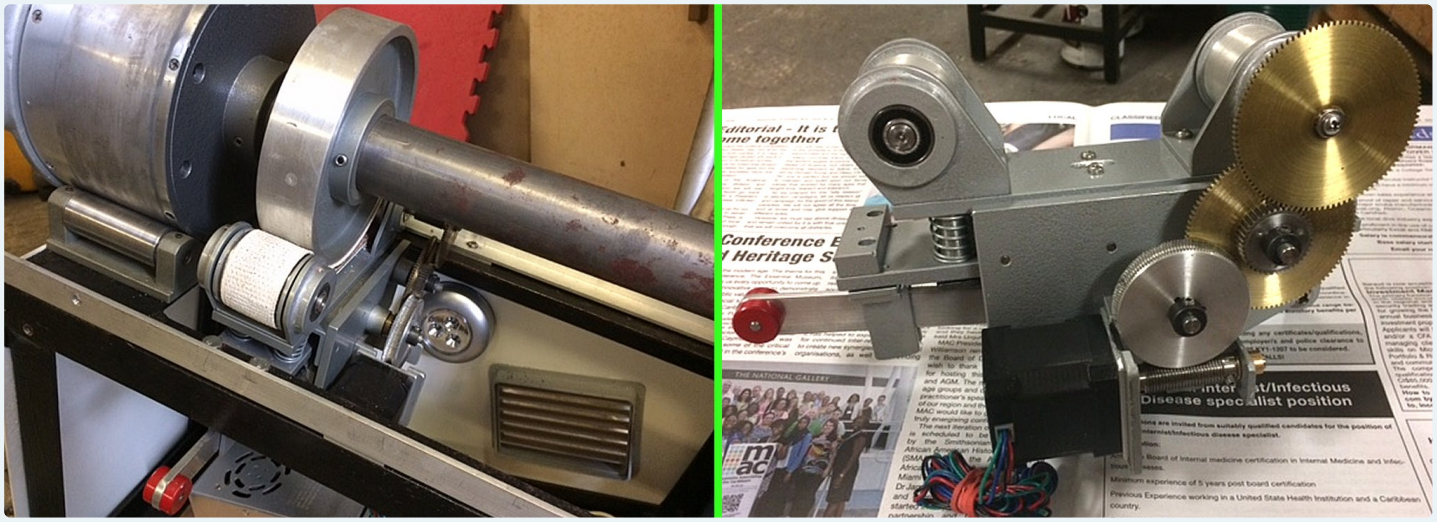




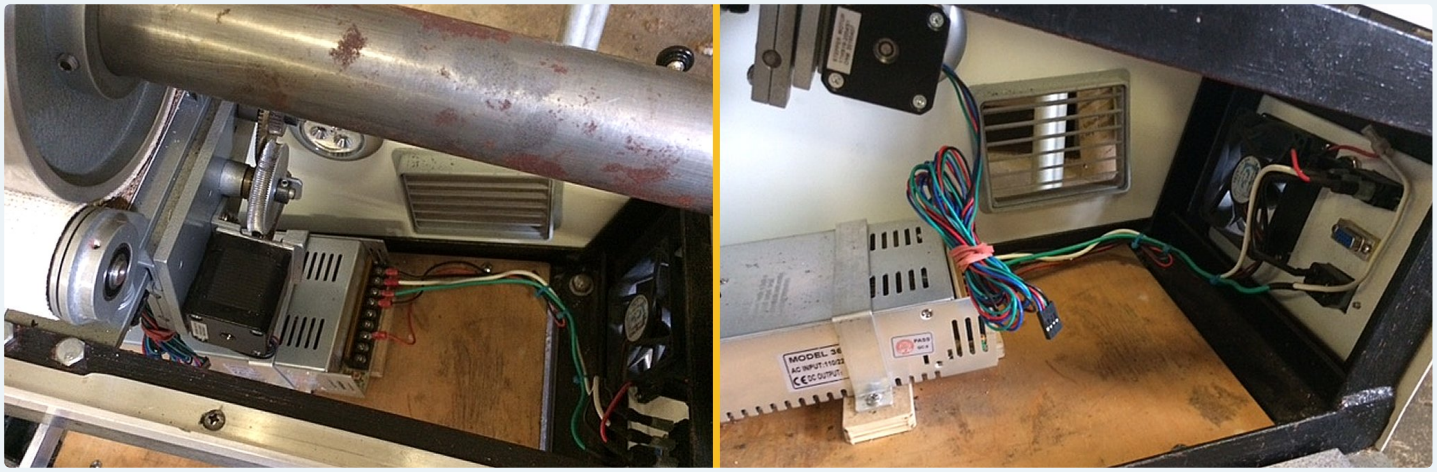
12SN4.jpg (177.44 KiB) Viewed 5074 times

The polar axis is driven by second stepper motor through a gear train and belt system. The gear/belt ratio works out to 1:2429 – a little less than the ideal 1:1440 going from 1 rpm to 1 rev/day. Thus, the input speed of the stepper works out to 2429/1440 = 1.687 rpm. With ½ stepping, this will require 11.247 pulses/sec. The rust on the PA shaft is part of living in the tropics - it will be cleaned off and oiled in the future.

The white drive belt can be clearly seen as well as the gear train. The idler roller in the drive has a small crown to keep the belt inline. The lever with the red knob on the drive mechanism allows for disengaging the drive so that the OTA can be hand slewed.

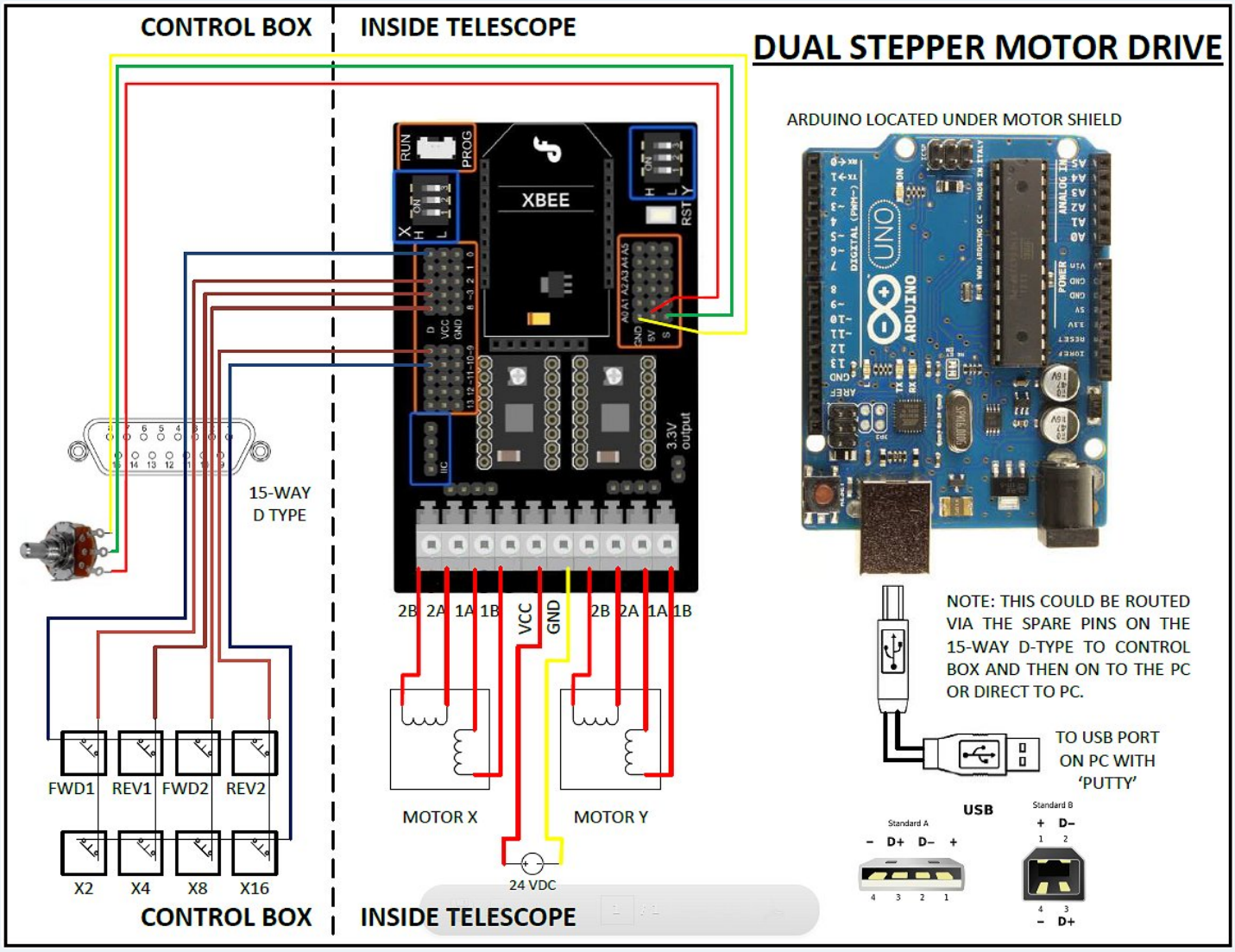


12SN56.jpg (281.15 KiB) Viewed 5074 times



12SN78.jpg (256.84 KiB) Viewed 5074 times

I make no claim to proficiency in electronics but fortunately, have an electronics engineer friend (David Brown) and a very bright student intern (Shannon Williams) who have been a very helpful. Using an Arduino uno R3 and Adafruit stepper motor shield, they created the circuit below.as well as the C++ code. The boards will sit adjacent to the 12 volt regulated power supply in the base. The rear plate of the base enclosure has a female/female gender changer installed. The control box cable is a 16 ft. SVGA cable male/male. Thus, rather than driving one's self nuts by attempting to solder 24 ga. wire into the pin cups of the plug, I simply took the SVGA cable and cut one end off by 15" such that both plugs would mate with the panel female/female gender changer and the other wire ends could be tinned and fitted to a breadboard and connections in the control box. Still debating whether to leave the breadboard in place rather than hard-wire all the connections. The smaller CB with DRO is a voltage converter allowing for lower output if needed. The red/green LED's in the breadboard represent the stepper motor coils.



12SN9.jpg (222.77 KiB) Viewed 5074 times

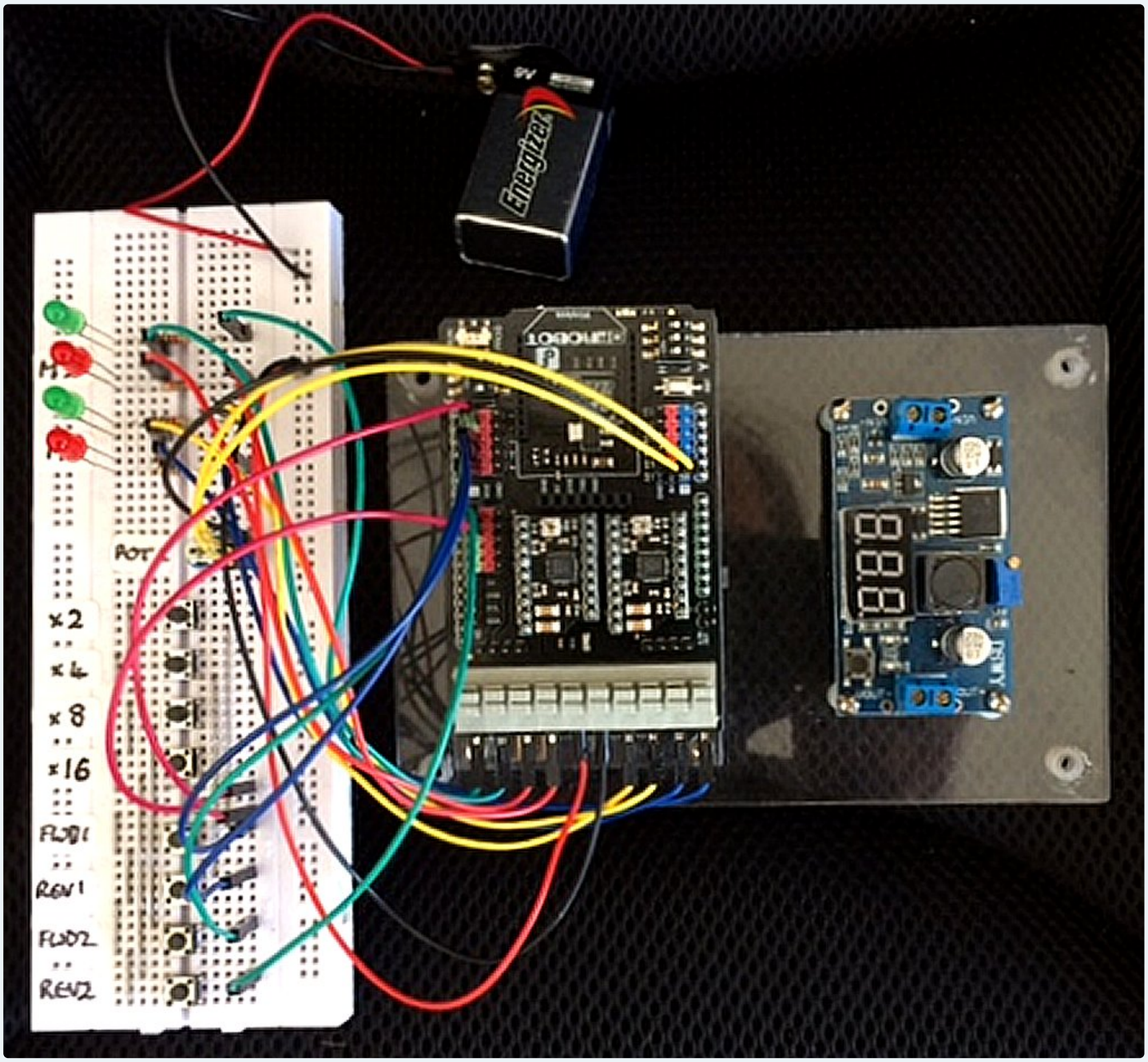


Image10.jpg (209.94 KiB) Viewed 5074 times

The Control box separates DEC and RA controls. Each is bidirectional and, for DEC speed a potentiometer is used for speed control whilst for the RA speed, the default is one rev/day with several multiples of higher speed for positioning. The yellow gender changer will be fitted on the base rear plate.

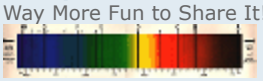
12SN11.jpg (225.1 KiB) Viewed 5074 times

The soldering will begin soon and hopefully, it will run as designed. By the time I get this all finished, there may be no sunspots.

Enjoy,

Bill

Valery
Way More Fun to Share It!!



Re: Concept model of new 12" Solar Newton

Mon Aug 14, 2017 2:38 pm

Whoa!!!

I am quite impressed with this truly ATM project. Good oldschool project.

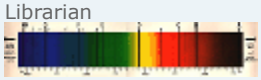
Wish you, Bill, a full success!

Valery

"Solar H alpha activity is the most dynamic and compelling thing you can see in a telescope, so spend accordingly." (c) Bob Yoesle.

Largest full size 185 - 356mm Dielectric Energy Rejection Filters (D-ERF) by ARIES Instruments.

marktownley
Librarian



Re: Concept model of new 12" Solar Newton

Mon Aug 14, 2017 7:11 pm

Love the updates Bill! Very impressed!

http://brierleyhillsolar.blogspot.co.uk/
Solar images, a collection of all the most up to date live solar data on the web, imaging & processing tutorials - please take a look!

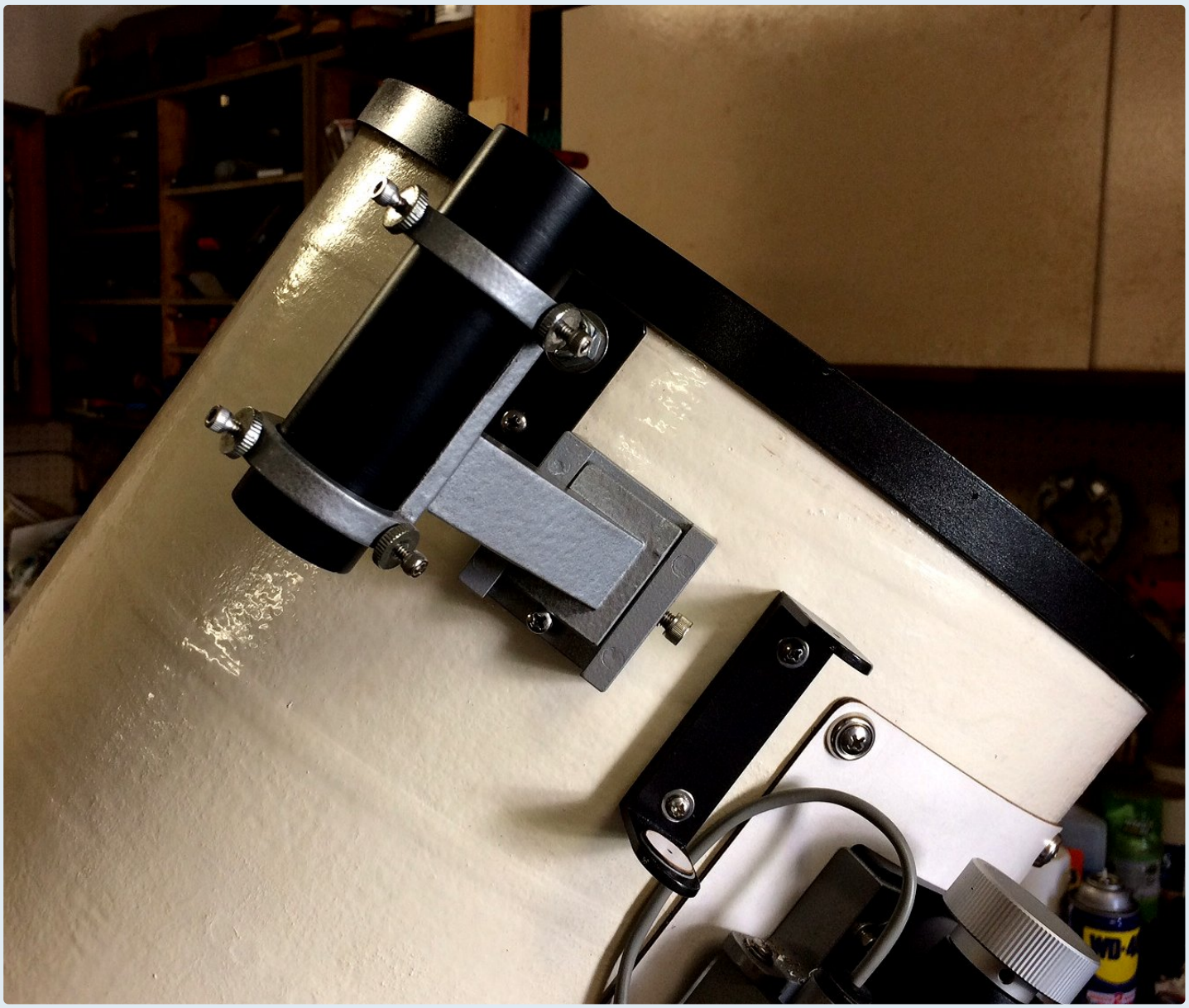
[whrudey]
Almost There...

Re: Concept model of new 12" Solar Newton

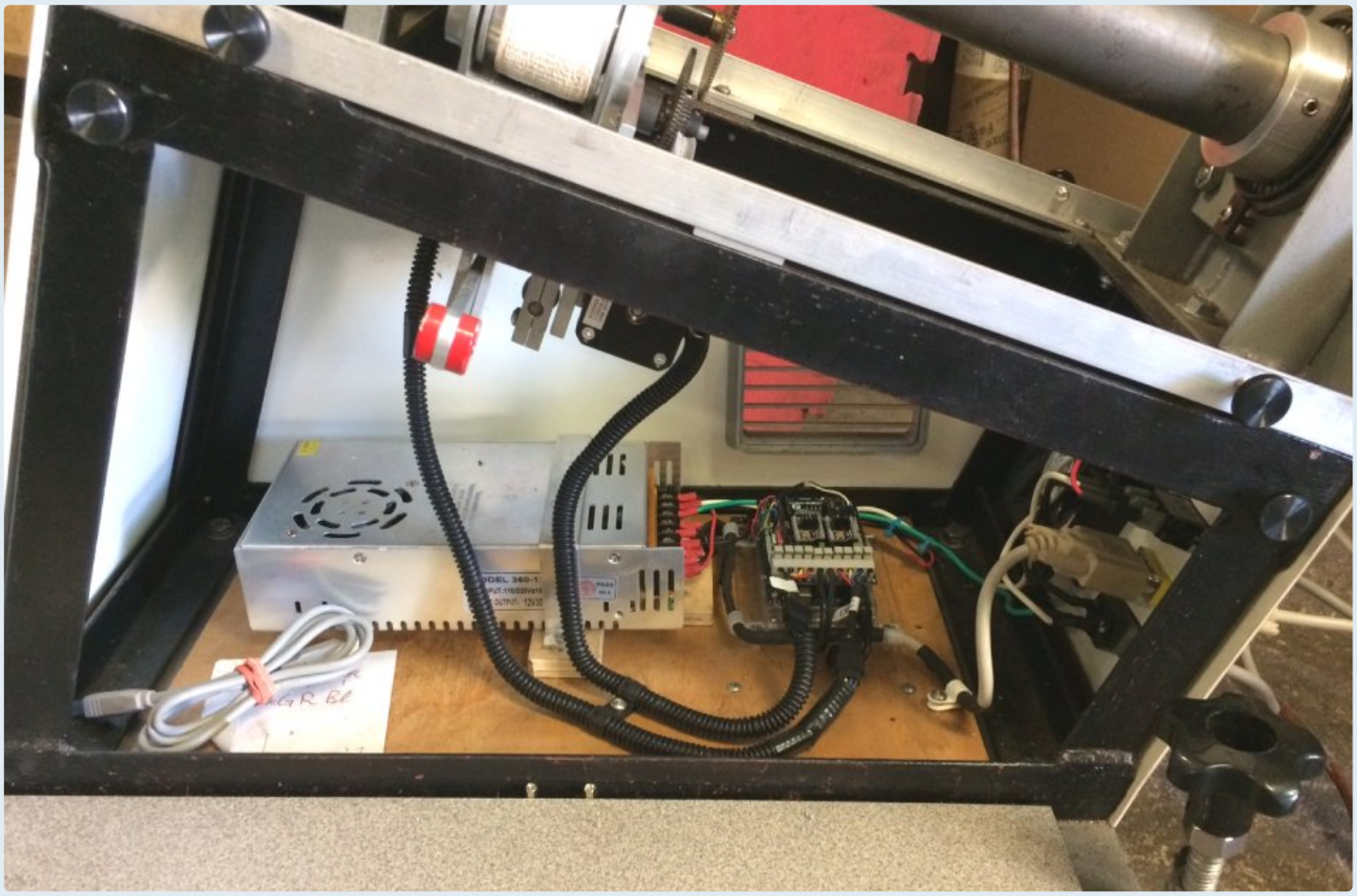
Sun Dec 03, 2017 3:22 pm

My 12" Solar Newton has fallen behind given a number of circumstances. Although the finders have been fabricated and attached, the Arduino /stepper motors setup, the Arduino code needs some tweaking and calibration.

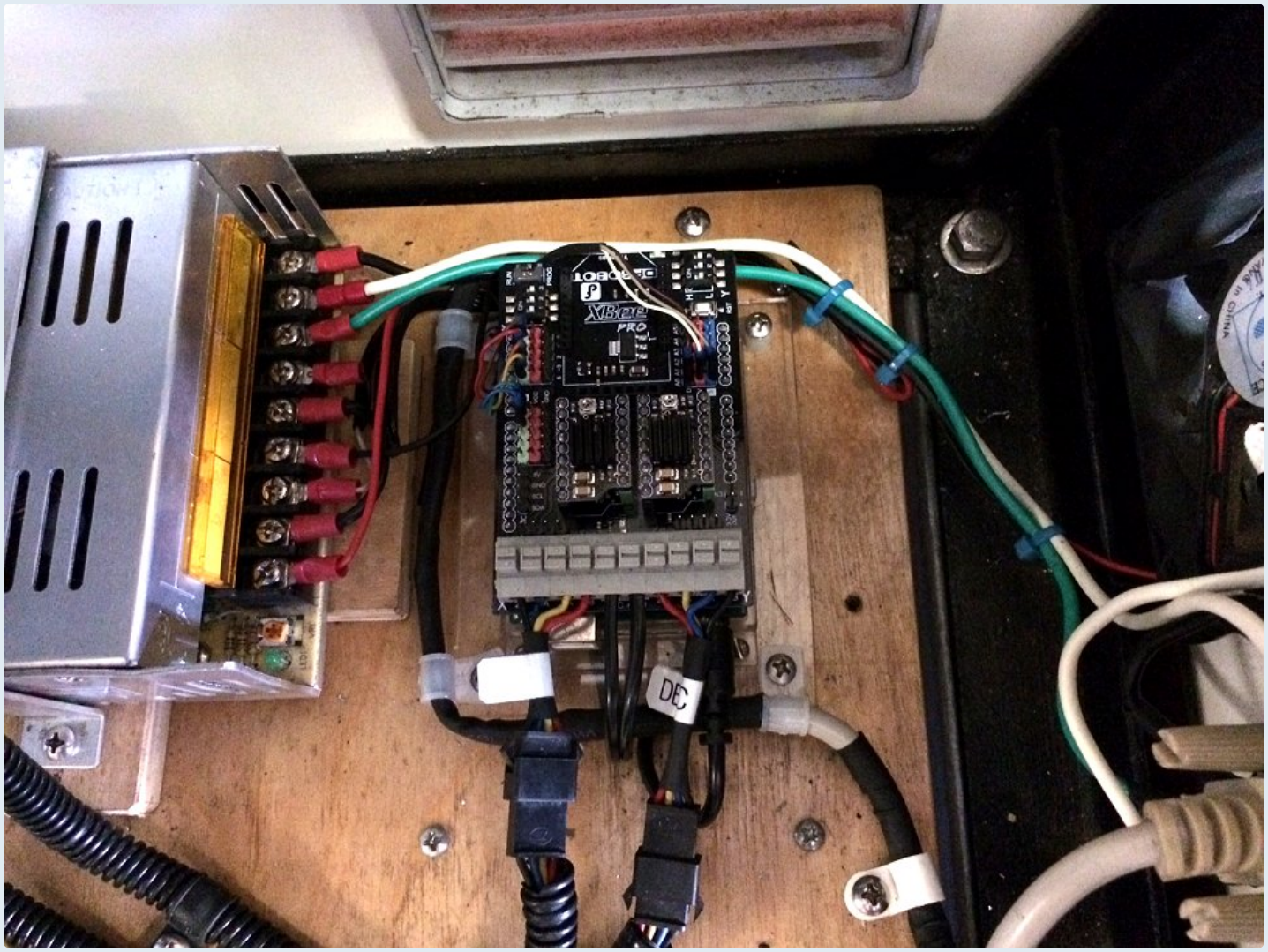
The following images are self-explanatory.



finders.jpg (236.81 KiB) Viewed 4408 times



base.jpg (116.93 KiB) Viewed 4408 times



arduino.jpg (183.55 KiB) Viewed 4408 times

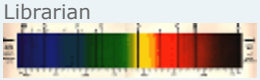
More significantly, health problems have also intervened and, a diagnosis of esophageal adenocarcinoma has presented itself. Survival times at this stage are measured in single digit months not years.

Thus, in the next few months, the beast will not likely reach first light and there will be no further images from my 8" Solar Newton.

Over the last few years, I've enjoyed participating in the forum and, wish it and its members all the best in the future.

Bill

Merlin66
Librarian



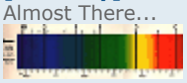
Re: Concept model of new 12" Solar Newton

Sun Dec 03, 2017 11:16 pm

Oh man.....
I'm truly sorry to hear of your diagnosis.
I can only wish you and your family all my heart felt thoughts.
Hang in there.

"Astronomical Spectroscopy - The Final Frontier" - to boldly go where few amateurs have gone before
https://groups.io/g/astronomicalspectroscopy
http://astronomicalspectroscopy.com
"Astronomical Spectroscopy for Amateurs" and
"Imaging Sunlight - using a digital spectroheliograph" - Springer

[whrudey]
Almost There...



Re: Concept model of new 12" Solar Newton

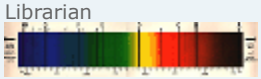
Mon Dec 04, 2017 1:55 am

Thanks Ken - your thoughts are appreciated. My biggest concern is my lovely partner Gigi - must prepare things for her.
Next is first light for my 12" Solar Newton - will give it a good try.

Cheers,

Bill

marktownley
Librarian



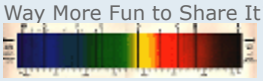
Re: Concept model of new 12" Solar Newton

Mon Dec 04, 2017 8:15 pm

Oh no Bill, that's not good. Really sorry to hear this. I've always really enjoyed your updates but this last one comes with a sour twist

http://brierleyhillsolar.blogspot.co.uk/
Solar images, a collection of all the most up to date live solar data on the web, imaging & processing tutorials - please take a look!

robert
Way More Fun to Share It!!



Re: Concept model of new 12" Solar Newton

Thu Dec 07, 2017 6:08 pm

Hi Bill
Thanks for all your amazing posts and inspiring images
Good luck
Best wishes
Robert

images and animations http://tinyurl.com/h5bgoso
2021 images https://tinyurl.com/d7jbz3sw
2020 images https://tinyurl.com/v6muwvm
ED80. ED100. SW200. Celestron-150mm-PST mod. C9.25. ES127
LS60PT-LS60F-B1200. B600-Cak. PGR-Ch3-IMX265

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52 posts 1 2 3

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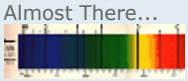
Concept model of new 12" Solar Newton

[whrudey]
Almost There...



Re: Concept model of new 12" Solar Newton

Fri Dec 08, 2017 4:33 pm

Thanks Ken, Mark and Robert. Do appreciate your well wishes.

Whilst I'm not pleased with the situation, I plan to continue my work as long as I can. Had purchased a Lunt 100 DS which will be arriving next week. Hope to fire it up in addition to my 12" Solar Newton and see what they can do. Too bad we're in a solar minimum.

Cheers,

Bill

CarlDD
Oh, I get it now!

Re: Concept model of new 12" Solar Newton

Sat Dec 09, 2017 12:58 am

Hi Bill

Your Solar Newtonian looks to be a superb example of the ATM'ers art.

I hope you get to spend some quality time with both the Lunt and Solar Newtonian.

Best Wishes

Carl

In Frequency of use

TV (Renaissance) 101 on Gibralter mount with Skytour used with SM90 / SM90 / BF10, Denk Standard with Power x Switch and

32mm Takahashi Abbe Orthos.

Borg 77 Achro, TeleVue Binovue with 28mm Takahashi Erfles now mainly for Solar White Light with 82mm IDAS UHB RS Filter.

OO OMC140, Maxbright BV's, a pair of 25mm Zeiss Aspherical Orthos, lunar and planetary.

Obsession 12.5 with AN, TV BinoVue, pairs of 32mm Baader Plossls or 19mm Pans, a 10mm Delos and oldies TV 12, 16 & 20mm NT2's

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52 posts 1 2 3

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