

Obsession Telescopes - 18" f4.5

[Tom Trusock](#) - 7/2005

Sometimes, it's all about the aperture.

I've had the distinct pleasure of owning and using some very nice telescopes - most of them 10" or smaller in size. That size tends to get used an awful lot - I think I once wrote that I did the majority of viewing with scopes in the 4-5" class and that's still pretty true. There's a good reason for that - scopes that size are very portable, quick to deploy, and provide great views of hundreds of objects.

So I've got a 4" APO, that's just as sweet as can be, and an 8" Newt which has a superb mirror. I'm done, right? (My wife hoped so...)

But let's think about this for a minute.

At the last star party you went to, how many folks were in line behind the 8" newts or the 4" refractors? Where were those lines?

Dobs.

Big ole dobs.

Literally, it's an obsession. The bigger the better - at least if someone else sets them up, collimates them, supplies the ladder, points the scope, lets you



Reviewed - Obsession 18" F4.5

Hots

18" aperture
Top flight construction
Excellent views
Footprint and height smaller than many competitive scopes
Stable design
Smooth motions

Notes

Expensive (To clarify, it's very cost competitive when compared to similar scopes, but it's certainly an investment.)
Shroud can be somewhat fussy



25" of Dobzillia – This is a BIG scope.

look, and then takes them down at the end of the night. I recently helped with my club's new 25" beast – affectionately named "Dobzillia" by a fellow club member. It took 4 of us to load and unload it from the van. The same night, I helped my good buddy Gary set up his 20" Obsession (man, is that a sweet scope). While MUCH lighter, it still took two of us to get it in and out of his SUV, and we still spent most of the evening on a ladder. (There's a really nice goto function on that one BTW – voice activated too. All ya gotta do is say "Gary, lets goto XXX")

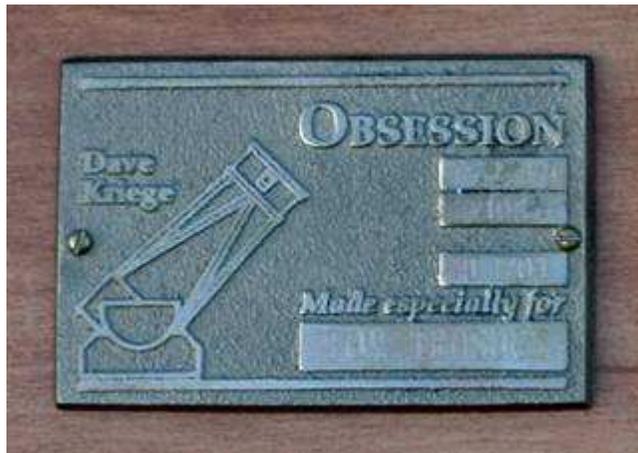
So yeah, they can be a bit of a pain.

But the views? Oh my, the views. Many people dream of large telescopes – and for good reason.

To me, 18-20" seems to be the magic aperture. Right about then, you start feeling that nothing's out of your grasp – all those little galaxies listed in the u2k? Got em. Wanna do the Hicksons? Go for it. The Palomar Globbs? Get thee to a (fairly) dark site. (I've currently bagged 2/3 of them from my driveway.) And Messiers... WOW! Talk about a new way to look at old friends. It's at this level that visual astronomy begins to reach near photographic quality.

Those who aren't ready to tote around a real behemoth may wish to consider something slightly smaller – say in the 15" - 18" class. Depending on the design of the particular telescope, it's quite possible to get an 18" that is really no larger some 15" scopes. And thus we come to Obsession Telescopes.

Obsession currently (7/05) offers dobs in the following sizes: 12.5", 15", 18", 20", and 25", with mirrors available from either Galaxy or OMI / Torus. The 18" Obsession is one of Dave's most popular sizes (and with excellent reason). Dave Kriege has been



One of the many nice personal touches

building scopes for years, and his current design is an evolution of his very first scope – Obsession 1.

I'm a big fan of knowing the history of a company, and to get a better handle on Obsession, I recently asked Dave how he got started making telescopes:

“My dad started me on a 4" f/10 scope with Edmund mirror for an 8th grade science project. First light was crescent Venus and I was hooked on astronomy. I then built a 6 and a 10 inch newtonian on equatorial mounts, the traditional design at the time. I got interested in deep sky. Then I was completely out of astronomy for 20 years, and was busy with family and dental career.



***Dave Kriege and Obsession 1 at
StarFest in 1988
(courtesy Dave Kriege)***

Finally thought I'd like to get back into astronomy in 1987 so I went to the Apollo Rendezvous in Ohio. Two guys had 17 1/2 dobs in truss mounts with Coulter mirrors. Then I went to Astrofest and saw another home made 17 1/2. Huge mirrors in dob mounts, O-3 filters, fantastic deep sky

views - I felt like Rip van Winkle. When I woke up all this cool stuff was now available. So I bought all the old issues of TM magazine and made Obsession 1 in 1988.

I felt that the existing dobs could be improved upon dramatically. Especially the mirror cell and side bearing/rocker interface. When I took the scope to Astrofest in 1988 Richard Berry took a photo and put me on the cover of TM magazine. Also I got a call from Galaxy Optics wanting to buy my scope design. Next year I built Obsession 2, my 25 f/5 that I still use. I took it to Astrofest in '89 and people wanted me to build them scopes like my "Obsession". So in 1990, I began to make them commercially- never thinking I'd be doing it this long. The 90s were tough as I was still working full time as a dentist, building alot of scopes, and writing the Dob book. Also raising a family. In 2001 I hired an associate and I cut back on teeth to two days a week so I had more time for everything else."

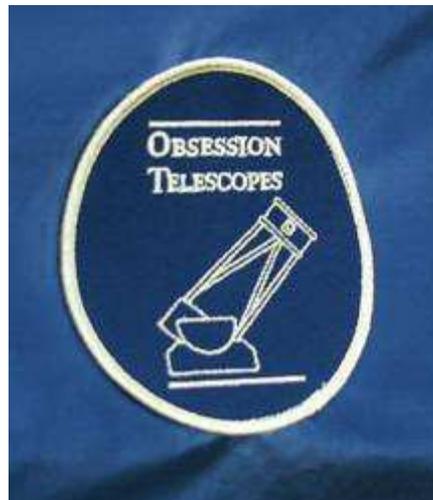
Thus 2005 marks the 15th year that Obsession has been supplying high quality large aperture telescopes for the aperture hungry amateur astronomer and has (as of this writing) shipped over 1200 telescopes.

But lets get down to brass tacks – What's offered, what's reviewed, and what are my thoughts.....

Enie, meenie, miny, moe – which premium dob to lay out the dough for?

Lets back up a bit and make one thing clear right off the bat – I don't do a lot of reviews of my own equipment anymore – usually it's sent in for review, and if I purchase it, I wind up doing so afterwards. This wasn't the case here. I intended to purchase the scope for my own use from the start. That may or may not put a different spin on the article for you, but there it is. I guess the bottom line is – Am I happy with the scope, would I do it again? Read on.

There are a variety of reasons to purchase a particular 18", but for me, most centered around the physical size. I'd had ample opportunity to play with different scopes in the 15" to 20" range, and was impressed by the sheer (absence of) physical size in the 18" Obsession from the moment I first saw it. Previously I'd owned a 15" StarSplitter, and while that's an excellent scope, it's a bit overbuilt (like many others on the market). The 18" Obsession is nearly identical in physical size to the 15" f5 StarSplitter. I've also used enough larger scopes to know that I just don't fancy spending the entire night on a ladder.



All too often I find myself in between steps – either just a bit too high, or just a bit too low to be comfortable – the next morning, I could always feel my muscles protesting.

And then there's the sheer size, weight and fuss factor. I'm a big guy, and wanted the largest scope I could handle by myself. After helping a friend with his 20" f5, and my club with their 25", it confirmed my reasoning to purchase the 18". There is simply no way that I could load anything larger than the Obsession 18" into my current vehicle without assistance. If you have the proper vehicle and can simply roll the scope up a set of ramps using the wheelbarrel handles, it's much easier for a single person to load and unload the telescope. Even a smaller person should be able to handle the 15", 18" or 20" Obsession.

So late last year, after having multiple opportunities to use several different 18" telescopes often side by side, looking at the different design philosophies embraced by the various companies, I decided that Obsession's offerings best fit what I was looking for and decided to purchase a new 18" f4.5 Obsession for my own use.

The ordering process:

Obsession is a bit different from the other premium dob makers on the market. They stock most of their materials, and can deliver your scope very quickly. While actual wait times for some other vendors can be in the months (or even years), Obsessions are currently in the weeks. The lesson here is, don't place an order till you are ready to pay for it! You don't have 6 months to come up with the rest of the cash. While it's not instant gratification it's probably as close to it as you can come in the premium dob world.

I had several conversations with Dave via telephone and e-mail, and finally wound up with the following options:

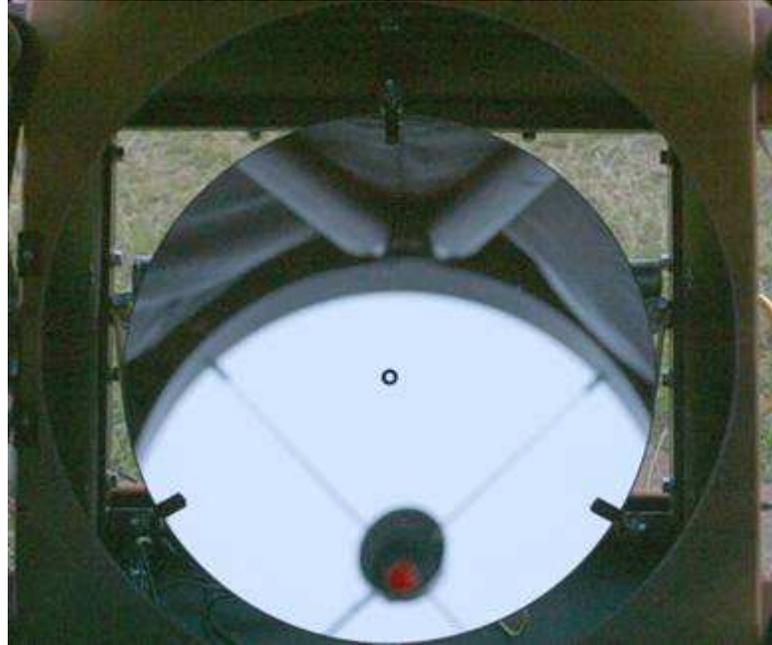
- 18" f4.5 w/ Torus Mirror 96% enhanced aluminum coatings
- Focal length of 81.1 inches
- 18 point flotation mirror cell (uses a Kevlar sling for edge support)
- 3.1" Secondary mirror w/ 98% enhanced Brilliant-Diamond coatings (Zygo MkIVxp test certificate provided)
- 1.25" Truss Poles (8)
- WheelBarrel Handles
- FeatherTouch Focuser
- Light Shroud
- Argo Navis DSC and 8192 tic encoders
- CounterWeight Kit
- ServoCat (Gen II, not factory installed, but added later)

As this is mainly a review of the telescope, I won't say much about the Argo or ServoCat, however - for those interested in reading my experiences with the Argo, you can check out this review: <http://www.cloudynights.com/documents/argo.pdf>

And for anyone interested in more information about the Servocat, check out this one:
<http://www.cloudynights.com/documents/Stellarcat.pdf>

Choosing a mirror:

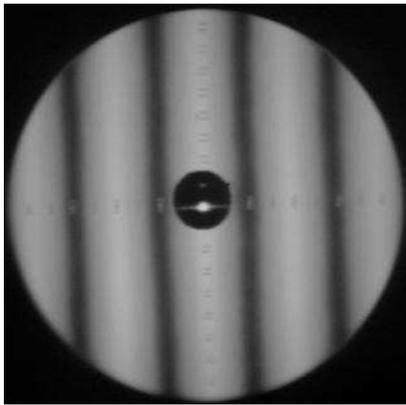
Picking a mirror was nearly as difficult as picking a telescope brand. There's no denying there are a LOT of good opticians out there today. I've seen (and owned in some cases) excellent mirrors from Galaxy, Pegasus, ZOC, OMI, Royce, Woden, Swayze and others. Amateurs really have little idea just how lucky they are today. Even after picking Obsession as the structure I wanted, I was still left with a choice between Galaxy and OMI. After some introspection and research I finally settled on James Mulherin and OMI Torus for a number of reasons:



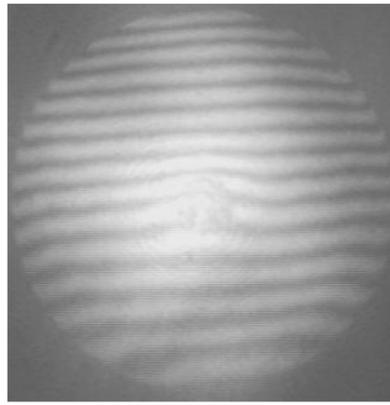
- 1) After several interactions with James, I came away very impressed with his attitude about business. He's extremely customer oriented. I also found him to be very approachable, and willing to take the time to explain his testing procedure and rationale.
- 2) James has an excellent attitude in regards to customer service, often going the extra mile to satisfy his clients. He confirmed recently when he went the extra mile and offered to recoat, test and refigure a customer's mirror – a customer that had purchased a long time ago, had issues but never said anything to anyone till recently. In short, James goes out of his way to make his customers happy.
- 3) He uses a specific quantifiable testing procedure (interferometry), documents his regime, and is of great assistance in helping you to figure out what everything means. I've learned a lot about testing mirrors in the past year, and the more I learn, the more impressed I am with his mirrors and his testing procedure.
- 4) And more to the point, his mirror tests are online at:
http://www.opticalmechanics.com/Test_Data_Intro.htm and you can inspect the results for all the mirrors he's done. Including the mirror you select.

All that being said tho, I really don't think you would go wrong with Galaxy either.

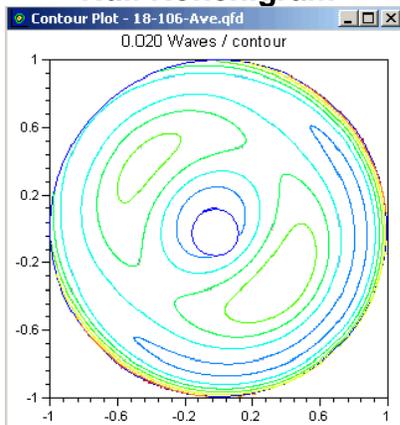
So I contacted OMI about a mirror, and after a few conversations, James informed me that he had a really special mirror coming up in the next batch. However, I've always felt that very few (if any) can really tell the difference between a mirror with a .99 strehl and a .96 strehl or even lower – especially in a large aperture. There are just too many other variables that come into play – collimation, cool down, seeing, etc... for nearly anyone to be able to consistently tell a significant difference between two excellent mirrors. (So why are we do we all want those absurdly high strehl values? Simple – it's your money, and everyone wants the best they can get.



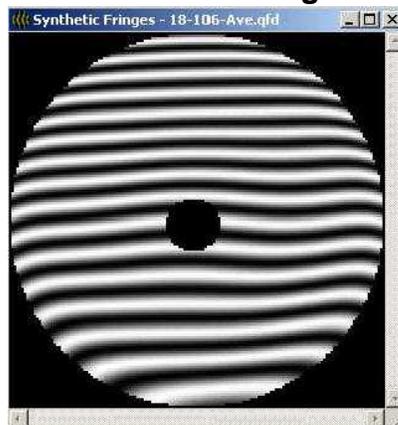
Null Ronchigram



Null Laser Interferogram



Synthetic Fringes



Contour Plot

I'm really not any different in this regard, but after conversations with James and Dave, I decided to put my money where my mouth was, and I *settled* on 18-106-071604. The individual specs for this mirror were available on the web at the time, so I was able to get something of an idea (in advance) how it would perform, and compare it to other mirrors from OMI (personally, I don't think it's extremely valid to compare test results from different companies on

different mirrors – read the afterword for more comments on this). Tests were conducted on the wave front and at 533nm and then scaled to 550nm as that's where the dark adapted eye is most sensitive.

Here are the specs for my “nothing special” mirror.

- PTV - .142
- RMS - .023
- Strehl - .979
- Focal lengths - 81.1”

Above, you can see the other test results that were supplied with the primary.

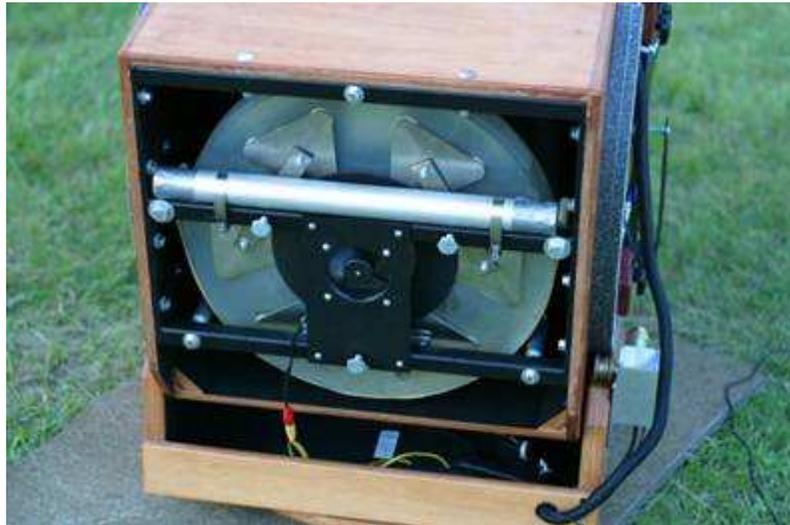
I placed my order in late August, and by the middle of September, I received notification that my scope was ready. A buddy of mine picked it up (thus saving me several hundred in shipping costs) and we met at the Mackinaw bridge.

Scope Specifics

One thing that working in the public sector has taught me - First impressions are important, and man does this scope make a good first impression. You may have heard these scopes described as furniture quality, and while I wouldn't go that far, I would say that Obsession has some truly excellent woodworking. The scope has several personal touches – including an obsession name plate near the focuser and another on the mirror box that is engraved with your name. Even the shroud gets into the act sporting a rather snazzy obsession logo. Visually, this is one sweet telescope to look at.

As per the motions – well, there's a reason why other dobs aspire to have "Obsession like" motions. After some minor adjustments (spacers and waxing) I found motions to be very smooth, and allowed for hand tracking well in excess of 500x. The one drawback to such exceedingly smooth motions is a corresponding susceptibility to balance issues. Counterweights or a counterweight system is a must. Obsession sells a good starter system to help you adjust the initial balance point, but for an active system (if you use vastly different amounts of weight in the UTA) you may have to look elsewhere. Alternately you could just install (or have Dave install) the Servocat and do away with your balance issues entirely. I had a chance to use the 18" both with and without the ServoCat, and this was the route I wound up taking.

The structure is very stable, and when hand tracking, I found vibrations to damp almost immediately. I've found stability to be linked with the sheer mass of the telescope, and this was one of the reasons I opted to choose a lightweight traditional design instead of one of newer ultralights. The ultralights are exceptional scopes (I have an 8" ultralight), but there are trade offs to every design.



Obsession uses a low profile design with the truss poles mounted on the outside of the mirror box to shrink the overall size and weight of the box. Everything is low profile –

the result is a dob that's significantly smaller and lighter than many of the others on the market. The 18" mirror box was no larger than a competitor's 15" mirror box.

Much has been written on mirrors, cell design and edge supports – after all, what is a mirror but a support system for a reflective coating? Obsession uses a traditional open air design with active cooling to speed the 2" thick mirrors acclimatization. The edge support is a Kevlar sling – an upgrade from the sling of years past, Kevlar does not stretch – therefore the days of readjusting collimation throughout the night are over. Depending on who you talk to, you'll get various opinions on edge support. Some favor the waffle tree design, others the sling. Still others a modified cable sling.

My experience with different telescopes has shown me that you can get acceptable results with any of these methods – as long as they are properly employed. After some online conversations last fall, I purchased a cable sling upgrade for my 18" obsession for StellarCat – but so far I've held off on installing it. At the moment, I don't see much of a practical reason. Potential purchasers should be aware that it's there if you feel the need. (And fairly inexpensive too.)

The Obsession philosophy for the mirror is for it to live in the mirror box. As someone who hates touching large pieces of glass, it's one I'm happy with. However, this does mean the mirror is not removable for transport. While many (including myself) are quite pleased with that arrangement, it may be a concern if the scope is at or near your limits to lift, or if you like to baja at 60 miles per hour. I've never experienced a problem.



The secondary mirror is 3.1" which translates into a 20% central obstruction, and overall I find it quite acceptable for all types of viewing – lunar and planetary as well as DSO's. Some folks will talk about a contrast loss because the secondary isn't as small as it could be. In comparison with my other scopes, the 18" will (in good seeing) simply blow them out of the water in all respects – aperture rules. When compared to similar size

scopes with a slightly smaller secondary – I've personally noted little to no difference. On the 18" (and 20") the secondary is adjusted by use of three spring loaded collimation bolts (the 15" uses 4) – this method assures that the secondary will be responsive to slight adjustments, and works much better than other methods I've used.

Obsession Telescopes includes a piece of heat rope for secondary dew prevention – I must confess I've never used mine. I opted to immediately replace it with an Astrosystems dewguard – an electronic unit with sensor and controller that attaches directly to the secondary mirror. I did, however, discover another of Obsession's fine touches – indicative of the thought that's gone into this system over the years - when I

installed the dewguard. I found that the secondary has been secured to the secondary holder by the use of a thin cord – if it worked itself loose in transport, this arrangement would prevent the secondary from falling loose and dropping onto the primary.

There’s a whole school of argument about enhanced coatings on the primary – some feel there’s no benefit, others swear by them. One of the “disadvantages” I hear most often is that if applied incorrectly, they may mess up the mirrors figure. I’ve even heard stats like 1 out of 3 mirrors gone south bandied around. FWIW, I’ve experienced problems with both beryl and standard coatings, but have yet to personally have a problem with enhanced coatings. In any case, to be blunt, I didn’t buy this scope for the lunar and planetary views (although it gives some of the best views of those objects I’ve ever seen). No, this is a deep sky scope. The enhanced coatings that are offered on the primary are testament to that. I’ll take every advantage that I can get and welcome it.

Comparatively speaking if you have a pair of 18” and 20” scopes both with fresh, enhanced coatings on the primary and secondary the 18” gathers around 81% of the light of the 20”. If you have fresh enhanced coatings on the 18”, and fresh unenhanced coatings on the 20” that ratio changes to: 96%. It was easy to see the difference first hand in a direct side by side comparison last fall. All the observers present noted the enhanced coatings in the Obsession were clearly brighter than older, unenhanced coatings in another scope. While the math predicts this, I was still surprised to see it so dramatically.

Collimation and assembly are tool less. Only fingers are required. The UTA bolts / clamps are basically captive (they can unscrew unless the end user takes the time to pean the final few threads down) – so chances of them dropping off into the grass is slight. Obsession uses a bicycle style cam for the UTA clamp. It works well, and with little to no slop, but I find it’s not quite as convenient as say the Starsplitter split block approach – that, however, is a personal preference.

Primary and Diagonal Light Collection by Reflectivity

Col 1 - Mirror Size - Inches
 Col 2 - Reflectivity of Primary
 Col 3 - Reflectivity of Secondary
 Col 4 - Effective Light Gathering

**Obsessions come standard with 96% coatings on the primary and 98% coatings on the secondary*

Scope	Mirror	Sec	Effective
20	96%	98%	296*
20	96%	96%	289
20	96%	89%	268
20	96%	80%	241
20	89%	96%	268
20	89%	89%	249
20	89%	80%	224
20	80%	96%	241
20	80%	89%	224
20	80%	80%	201
18	96%	98%	239*
18	96%	96%	234
18	96%	89%	217
18	96%	80%	195
18	89%	96%	217
18	89%	89%	201
18	89%	80%	181
18	80%	96%	195
18	80%	89%	181
18	80%	80%	163

The 18" in use:

Although it's quite a large scope, it's really almost a grab and go for me given my observing and storage location. I'm lucky enough to be able to wheel it out and back – deployment takes a mere 5-10 minutes at most, even considering collimation.

Since it's nearly the perfect height for me, I don't need to spend any time on a ladder – a 6" step up is about the most I need (I'm 6' 2"). An observing buddy needs a little more than that so we either use StarStep observing chair or a very small stepstool. The bottom line is, it's a comfortable – and easy - scope to observe with.

And so, it's gotten used – A LOT. Both at home and away.

The scope is just small enough that I can horse the mirror box into the back of my Durango unassisted. There's no way that I could do that with the 20", nor with several of the other 18" scopes on the market. The scope travels well, but it's not an ultralight. IMO, there are advantages and disadvantages to the ultralight design, and if possible, I'll take a more traditional approach.

On site, assembly is simple and again requires no special tools. All hardware is captive (although the UTA cams can unscrew and the last few threads should be peened over to prevent this) so you don't have to worry about it dropping into the grass or – worse yet – the surface of the mirror. From a completely broken down state, assembly and collimation takes 10-15 minutes. I found I get best results with the following tools: a good 2" Laser w/ Barlow attachment, and the Jim Fly 2" TeleCat and Infinity Autocollimator.



It's truly amazing what you can see with a big telescope. At some point, it begins to cross the line between faint fuzzies and a photographic experience. There's something special about a good night on an 18" telescope. You get the feeling that there's just not much beyond your reach.

A big scope opens up a whole new world of observing projects. I'm knocking the Hicksons off, one by one, and I've already caught most of the Palomar globulars. And

my favorite objects? Planetary nebula? Spectacular. Some of the big Abell galaxy groups are simply amazing, and my next list is the Abell planetaries.

To try give you an idea – on a good night, the Eskimo nebula actually looks like a photo. M51 shows it's spiral structure every single night I look at it, (the recent supernova? An obvious change.) and there's nothing like exploring the depths of the Virgo supercluster with something like this. Galaxy identification does become something of a pain. I've noted numerous occasions that tiny galaxies seem to be vermin – they're just everywhere. And not only do you see structure in many of the Messier galaxies, but in others as well.

And the best part? All of this is has pretty much been done from my driveway. Oh, my site's not bad, but it certainly could be better; mag 5.5 to 6.5 (on the best nights) and my house is on a corner lot where I have to contend with occasional cross traffic. It only gets better when I take the scope to a really dark site.

I could go on, but I think you get the idea.

And the optics? Well, you've got the test results. Visually, under the stars, they've proved themselves admirably – multiple observers have agreed, they hold up to anything else on the field. Obsession made an excellent structure, and Torus did an excellent job on the primary itself. I'm very pleased and would highly recommend both.

Drawbacks?

And yet - like everything else in the world, the scope's not *quite* perfect. First off, it's not an inexpensive telescope – more so after you add up some of the options you figure you can't live without. However, it is very cost competitive with the other premium scopes out there – more expensive than some, less expensive than others.

Unfortunately, while we're talking about money (and this is something the prospective buyer really needs to be aware of) new premium dob's don't tend to hold their value on the used market the same way something like a TeleVue Nagler will. With prices at these points, you'd better



be pretty certain you want one before you order it. Fortunately, with all the Obsessions on the field today, it's really not that hard to find a representative sample. If you're

planning on spending this much for a telescope, you really should be thinking about traveling to some of the major star parties to get a few looks through the major brands. You could look to pick one up used, but odds are if you're planning on spending this much cash on a telescope you're gonna keep it for a while – or at least that's how it was in my case. I decided I was better off to get one brand new with exactly the options I wanted, new coatings on the mirror, etc. Plus, I just couldn't pass up a chance to pick my mirror.

Secondly, at f4.5 this is a fast telescope. You should plan on investing in good eyepieces and a Paracorr (be sure to get the tuneable top version – it does make a difference). TeleVue Naglers, Panoptics and Pentax XW's are well matched to scopes such as this. Unfortunately, they aren't inexpensive but if you've gone this far, you might as well go a bit further. Be aware that it also pays to keep your preferred exit pupil in mind when considering your lowest power eyepiece.

Thirdly, while it's small for a traditional (ie: non-ultralight) 18" telescope, make no mistake. This is not a little scope. The wife might take exception to you setting it up in the living room. If not her, then the kids might not appreciate being relegated to the garage. It's probably also not a great option for an urban dweller who resides on the 14th floor of an apartment building in the middle of New York. Plan on having a place (preferably ground level) to store one of these if you are thinking about purchasing. Also think about how you are going to transport it. It will fit into most all of the SUV's on the market, but I don't think I could get it into a subcompact car.

As I mentioned above, I've very lucky in that I have a place to store it fully assembled. I simply roll it out, check the collimation (it tends to hold collimation very well) and I'm ready to go. You might want to check that the scope you're purchasing will go through your doors with a minimum of hassle. If you do use the wheel barrel handles, it's vastly easier to transport and setup.



The UTA Clamps

As per construction/design itself, the only real gripe I have with the scope is the shroud. It's made of a nylon and does not stretch - unfortunately, this makes it rather difficult to pull up and down. I've talked with Dave about this, and his logic behind the nylon is that he uses it largely due to the fact that it takes a beating much better than the spandex or cotton.. While you might have to replace a spandex or cotton shroud sooner, it does make little things like collimating the scope and removing the mirror cover a bit easier. I am

considering changing the shroud out for an Astrosystems one – but then I'd lose that nifty Obsession logo. This is really a personal preference.

There are a couple of other, minor things – the threads on the end of the UTA clamps really should be peened over. The clamps adjust by screwing them up and down. I recommend either peening the threads or screwing the clamps up when you remove the UTA. While the clamps / blocks are secured to the UTA, the cam handle itself can come unscrewed as I alluded above. In fact, I've had one cam bolt come loose in the back of the truck and I spent 15 minutes crawling around in there trying to find it. at my dark sky site. Dave recommends that you reverse the clamps for travel – put the block on top and the post projecting downwards.

It also took me a while to get used to the Telrad placement. Obsession zip ties the Telrad base to one of the UTA supports / poles. Although I wasn't initially fond of it, this is one of the cases where the designer really does know best. The benefit of having the Telrad zipped to the pole lies in the fact that it can be rotated for easy use without ever losing alignment. This is one of the little touches that's really grown on me.

Outside of the options Dave offers, Obsession isn't quite as willing to customize as some of the smaller vendors are – and with good reason. When you are selling this many telescopes a year you just don't have the time or the manpower to create different telescopes for each individual user.

And finally, this certainly isn't a drawback, but it is something you need to be aware of. There's something very unique about Obsession telescopes. There's little lead time. When you order your scope, be prepared to take delivery in very short order. Unlike many other dob manufacturers it's not uncommon to be using your obsession a matter of weeks after the order has been placed.



The Telrad is Zip Tied

Summary

Obsession has been selling premium large aperture telescopes for 15 years, and has somewhere around 1200 satisfied customers. They've got a long history of figuring out what works and what doesn't. Every single design on the market has its trade offs. The Obsession design philosophy may not be for everyone. Sure, there are a few minor

things I'd change about the telescope, but frankly, I'm thrilled with mine. It would be the absolute last scope I'll part with.

So at the end, we're back to: Am I happy with the scope, would I do it again?

In a heartbeat.

As of this writing, I've used three different size Obsessions – 20", 18" and 15" – and all have been spectacular examples of what a large telescope can be. If you're looking for a premium reflector, be sure to take a good long look at Obsession – you won't regret it.

Afterword I – Some thoughts on mirror tests:

As you read this and maybe begin to think about choosing a mirror for your next telescope, it's important you understand something. Optical test results are primarily for the mirror makers. Not the customers. An optical test helps the optician make the mirror better. That's its purpose in life. Different optical shops that both create 2 great mirrors can use completely different tests and get different P-V's, strehls, etc – AND YET BOTH MIRRORS CAN PERFORM SUPERBLY under the sky. Trying to compare ratings from different shops can be an extremely frustrating experience – particularly when the opticians rely on different tests that seem like they should (to the lay person) generate identical numbers.

To understand your mirrors performance and how it relates to those numbers, it's important to understand some things about testing.

A P-V that's based on an entire mirror (the knife edge P-V is a different animal) is a worst case value. It's probably the absolute worst measure of a mirrors quality. To determine this type of P-V, you take the top of the highest hill to the depth of the lowest valley - no matter where the two are in relation to each other or the mirror. They might be right next to each other and in the shadow of the secondary (and thus of absolutely no consequence), they could be on opposite edges of the mirror, or, they could be right next to each other and lying in the light path in such a position that will completely ruin your field of view. Additionally, it does not speak to the smoothness of the mirror. What's the mirror like away from those points? If we were to discard those points as outliers, what would that do to the data set? P-V does not take any of this into account.

Strehl is a much better estimate - however, for it to be cross comparable you need to have a standard that it's measured by. If you are talking about a qualitative method of mirror assessment like interferometry, at a minimum, you **really** need to know the wavelength that it's taken in. You also need to take multiple interferograms, and average the results. Because the interferometer tests thousands of points, even the dust in the air between the mirror and the testing apparatus can affect the outcome. The edge supports can also induce astigmatism. The key to eliminating these false data from the test lies in running multiple test and averaging them to statistically remove the problems. Remember the sample has to be from a statistically valid set – in this case, the larger the better.

The RMS - well, for high strehl value mirrors, strehl can be directly computed from the RMS, so pretty much the same applies.

In addition, it would be nice to know the sample size - the larger the better, as it needs to be a statistically valid set.

You'll hear lots about other methods of evaluating the mirror – in particular the whole Qualitative vs Quantative argument often comes into play. It's important to realize that the particular tests were chosen by the optician for their purposes. Every test has its limitations. A good optician can make an excellent mirror with what some might consider to be a rather non-informative test, and a poor optician can make a truly awful mirror with an excellent test.

As with anything today, it pays to have some idea what you're getting.

Afterword II - Obsession and large dob add on's

Here's a list of accessories the new dob owner may wish to consider (some of them obsession specific, most not):

From Markless Astronomics:

Markless counter weight system
DSC Stalk
Astro PC-Podium

<http://www.marklessastronomics.com/>

From Astrosystems:

Cooling Fan Power Supply
Upper cage carry case
Truss carry case
Astrosystems scopecoat
DewGuard
Kendrick 2" Barlowed Laser

<http://www.astrosystems.biz>

From Cats Eye Collimation:

Catseye Collimation Tools (I recommend the comboset pro kit)

<http://www.catseyecollimation.com/ceyeflr1.html>

Further Resources:

Understanding Your Interferometric Test Results

http://www.opticalmechanics.com/interferometric_testing.htm

RONCHI INDEX - Performing and interpreting the Ronchi test

http://www.users.bigpond.com/PJIFL/ronchi_index.html