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# Cloudy Nights Telescope Reviews

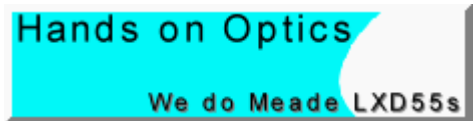


## The Meade 6" Schmidt-Newtonian

[Tom Trusock - Click to E-mail Author](#)

2/2004

Specifications (OTA only except where noted)	
Optical Design:	Schmidt-Newtonian
Clear Aperture:	6" (152mm)
Focal Length:	762mm
Focal Ratio:	F5
Coatings on Sample:	UHTC
OTA dimensions:	7.1"x27"
Secondary Obstruction:	2.14", 35% by diameter, 13% by area
Primary/Secondary:	Pyrex
Corrector Plate:	Clear Float Glass
Focuser:	2" R&P with various adapters
Price (includes mount):	\$839 (UHTC)
Available from:	Hands on Optics, Astronomics, Anacortes and various other dealers
Tested OTA is available through:	<a href="#">Hands on Optics</a>



Can amateurs see the forest for the trees? In all the excitement surrounding the Meade LXD55 series last year, the fervor concentrated on the inexpensive goto option the LXD55 provided, or the 5 or 6" refractor bundled with the LXD55 mount. Many people (myself included) bought the LXD55 SN6 and sold the ota because it was the cheapest way to get a small goto GEM. Did we ignore the best part of the system?

Problems with the LXD55 GEM (German Equatorial Mount) have been legendary. I don't think I've heard of one working out of the box (but I'm sure I will after this review

6" SNT Hots	6" SNT Nots
<ul style="list-style-type: none"> <li>• Wide, well corrected fields of view</li> <li>• Good optics</li> <li>• Fairly easy to collimate</li> <li>• Bundled with the LXD55 mount</li> </ul>	<ul style="list-style-type: none"> <li>• Long cool down times</li> <li>• Focuser lubed with syntaglu</li> <li>• No dew shield</li> <li>• Bundled with the LXD55 mount</li> <li>• Vinyl battery bag is fragile at low temps</li> <li>• Autostar is (ummm) less than responsive at cold temps</li> </ul>

gets posted). In typical cases, some hand controller modification or a shipment to Meade has been required. If you are mainly

interested in the LX D55 mount, you can read about my [previous experiences](#). In short, I purchased an LX D55 SN6 combo in fall of 2002, promptly sold the OTA (without really even looking through it) to a friend of mine, and had a rather bad experience trying to get the mount working properly. I finally (after several interventions by the good folks at Meade Tech Support) did get it to work fairly well. And yet, when I needed to raise some cash for another astroproject I felt no remorse at selling it. Suffice it to say that in the end, I did get it to work as advertised. Mostly.

When asked to take an in-depth look at the system again, I'll admit I had a little trepidation about fussing with the mount, but I was interested in seeing what the OTA was like. I agreed, and CloudyNights.com made arrangements for Hands on Optics to ship me a used LX D55 SN6 with UHTC coatings.



*UHTC models will be labeled*

My out of the box experience was slightly better this time.

The LX D55 6" SNT comes with the 497 Autostar, battery pack, LX D55 GEM, 6" SNT OTA, tube rings and mount plate, 1.25" adapter, 2" adapter, camera adapter, 6x30 finder and bracket, 26mm Meade Superplossl, and an instruction manual.

Meade's manual promises: "All Meade Schmidt-Newtonian telescopes are precisely collimated at the factory before packing and shipment, and it is probable that you will not need to make any optical adjustments before making observations. However, if the

telescope sustained rough handling in shipment, you may need to re-collimate the optical system." I can't say if it was the gentle hands of UPS, the previous owner, or something else, but even though the packages arrived in good shape, the OTA itself proved to be way out of collimation. To get an idea of just how bad it was, I observed the first evening without touching the collimation. While low power wide field views were acceptable, trying to observe Saturn was simply counter productive, as it didn't even reveal the Cassini division (note: the small 80mm APO next to it had no problem). Suspecting that I could get a better view the next night, I dug out the combination sight tube / Cheshire eyepiece and proceeded to have at it.



*The business end of the SN6*

The manual gave straightforward directions for proper collimation on page 39 (complete with pictures – kudos Meade!). The only thing that was a little different than I would have expected was that in a properly collimated SNT, it seems the reflection of the focuser drawtube is not centered with respect to the rest of the optical train. Meade states "correct collimation requires that the (diagonal) be offset in two

directions: 1) away from the focuser and 2) towards the primary mirror in equal amounts. This offset is approximately 1/8" in each direction." They also caution about turning the diagonal screws too far as "... the diagonal mirror may become loosened from its support." Note that proper collimation involves the adjustment of both secondary and primary. The secondary adjustment screws are located under the star logo in the middle of the corrector plate, and the primary adjustment screws are located on the back of the OTA and are shown below (as well as the primary lock screws).



Primary collimation and lock screws

Meade recommends using the "film canister" approach to collimation (basically a simple sight tube) and give instructions for making one. For a more exacting collimation, I used a combination sight tube / Cheshire, but one could use certain types of lasers as well. Thus armed, an observing buddy and I went out for a second round.

Seeing was Pickering 6-7, and the temps were around 0F, NELM was around 5.8. The scope had been stored in an unheated location and cooling for most of the evening.

First let me say that I found the included 6x30 finder next to useless. Its aperture is so small that even from a dark site it's only possible to make out the brightest targets, and in areas of the sky lacking bright stars it's extremely

difficult to try to star hop to a target. Granted on the LXD55 mount, you may not plan on doing much star hopping but given the occasional(?) goto failure it's a good idea to plan on it every once in a while. I'd highly recommend a reflex finder for the OTA, either the Rigel Quickfinder or any of the multitudes of the red dot finders on the market.



Note the purple color of the UHTC

Second, it was immediately apparent that the glue – err – sorry, grease – Synta uses on their focusers is alive and well in the lxd55 focuser. In these temps, while focusing was not impossible, it was hard to believe that the R&P focuser Synta uses was remotely related to the most rudimentary crayford design. Focusing required a fair amount of torque, and may create vibration problems with heavier OTAs – the 6" however, was quite useable and vibrations damped out within 2-3 seconds with the legs retracted.

Third, I was astounded by the view.

Even accounting for the contrast reducing central obstruction (35% by diameter, 13%

by area), this was one of the nicest views I've had of Saturn. Images were very sharp (although a bit washed out when compared to a 4" APO) with multiple bands being seen across the planet. The 6" SNT easily showed Cassini, the Enecke Minima, and the Crepe Ring where it crossed the surface of the planet. While a 4" APO was superior when it came picking out low contrast details in the cloud tops of the planet, there is no denying the 6" SNT provided an extremely nice view.

A comment from my observing buddy summed it up nicely: "What's the cost difference between these two setups again?"

We had intended to get to a list of targets that evening, but it just never happened. About an hour into the session (most of which had involved staring at Saturn through 4 different telescopes) the LXD55 mount decided that it wasn't getting enough attention and went into a slew, reboot, slew, reboot cycle that even resetting the power didn't fix. I began to look around to see what other mounts I could put the OTA on to complete the review, but thought I'd give it one more chance.

When clear weather arrived again, it brought with it subzero weather (-8F), substandard seeing – even for Michigan (Pickering 4-5) and a chance to study some deep sky objects.

Where this OTA really shines is as a wide field scope. With the 24 Panoptic, the field is nearly flat to the edge of the entire 2+ degree true field of view. Although not even close to being sharp to the edge with the BW-optik 30 (hardly surprising, and not the fault of the scope), the 3 deg true field of view is quite impressive - especially in a scope with the SNT's light gathering abilities. The Double Cluster filled the FOV with scattered points of light. While the subtle star colors were slightly washed out in the SNT when compared to my 4" apo, (undoubtedly due to the contrast reducing effects of the rather large central obstruction) the SNT still provided a very nice view (for best results,

the CO should be kept to under 20% - recall the SNT's is 35%). One of my favorite galaxy pairs - M81 and M82 - was nicely framed in the 24 Panoptic, and reminded me for the umpteenth time just how nice it is to have a fairly large aperture wide field scope. Similarly striking was M42, with the Trapezium blazing away at its heart. The only downfall of the evening was when the LXD55 mount malfunctioned yet again putting a stop to the night's observing.

I'll also note that Meade's battery bag has problems with the cold – one particularly cold session the bag was resting on the tripod tray when I bumped it with my leg. It slipped out, fell 8 inches into a couple of inches of snow, and when I picked up the bag, I was astounded to see that the vinyl had fractured. If you do much cold weather observing you should be aware the vinyl can become very brittle at cold temperatures.



*Vinyl becomes brittle at low temps*

In addition to the problems this particular mount had, I was effectively reminded of the issues common to all Autostar equipped systems in cold weather (all of my sessions with this scope were below 10F) – namely the display gets very sluggish. Don't plan on reading any scrolling text, but as long as you are patient, it's still useable. You could alternately plan on getting/making some form of a heater for the hand paddle.

But I was reminded rather forcefully, nearly every night I spent under the stars with the

SN6, that the LXD55 mounts are hardly trouble free experiences out of the box.



*John Crilly has developed this fix for problematic LXD55 mounts. Proceed at your own risk, and be aware the fixes contained within will probably violate your warranty.*

### **COMMON AUTOSTAR PROBLEMS**

John Crilly

The two most frequently-observed problems with LXD55 mounts using the Autostar are occasional random, uncontrolled slews and unexpected hand controller restarts or lockups. I have found that both of these problems can usually be traced to one of three problem areas, all of which involve connectors.

The most common of these involves the connectors which accept the handbox cable. This problem is most common in earlier units, as the connectors in the handbox and RA motor were upgraded in later production units and are less subject to it. The symptoms are either of the problems described above. After

disconnecting both ends of the handbox cable, the connectors mounted in the handbox and the RA motor box can be examined using a flashlight. Thin wires will be observed originating from slots in the connector body. Each of these is intended to contact a similar wire embedded into the cable plugs. All the wires in the receptacles should rest at similar heights, which should be sufficiently high to cause good tension with the plug when inserted. If some of the wires are set too low, they will not deflect enough when the plug is inserted and the connection will be poor and/or intermittent. Any such wires need to be carefully reformed to rest at the same height as the others. It is necessary to ensure that the wires remain straight - if they are at an angle they could contact the wrong wires in the plugs with expensive results.

The second most common source of the same symptoms (and the trickiest to diagnose and repair) is inside the handbox. Again, this is more common in earlier production units. Detection and repair of this is best done by someone VERY familiar with electronic soldering. The problem occurs when the connector is installed onto the circuit board in the handbox but insufficient heat is applied. Since there are solder pads on both the top and bottom sides of the board, the heat must melt solder on both sides to achieve both connections. I have seen a few where this wasn't properly done. It can be hard to detect, as the top connections are hidden by the connector itself, but an experienced technician may notice the appearance of an insufficiently heated joint. It's easily corrected by adding fresh solder and sufficient heat - but some skill is required, as excess solder and/or heat can cause too much solder to flow onto the top of the board and can bridge undesired connections. This could also lead to expensive results.

The third most common cause is the power connector in the RA motor box. The 2.5mm center pin in this connector is split so that the plug, when inserted, compresses the two halves together to provide tension for a good connection. If the two halves are not parallel but are instead squeezed together, the contact pressure is inadequate and unreliable power is supplied. The easy fix for this, if it is detected, is to carefully separate the two halves until they are parallel.

Meade has rather a different approach to the focuser on this scope. Rather than simply make it a 2" focuser and supply a standard 2" to 1.25" adapter, their 2" adapter screws off and they supply a screw on 1.25" adapter and a camera adapter. You should also know they also supply a tube extension for more leeway in placement of a camera or eyepiece. For much of my testing, I chose to leave the 2" adapter attached and used a standard 2" to 1.25" adapter. I did not experience any difficulty in reaching focus with any of the eyepieces I used, and was surprised by the wide coma free views a well collimated SNT provides.



*Note the screw on adapter...*

Ronchi tests confirmed what I'd observed on the planets – namely - the optics were quite good – surprisingly good actually. Images snapped into focus, and the airy disk (with a very pronounced diffraction ring) was visible under conditions of good seeing. Outside of the large central obstruction, the optics were about all you could ask for out of any scope, and tend to confirm the statements you hear on the internet today – Meade is currently

producing some of the best optics they ever have.

I can't really comment on the UHTC vs non-UHTC debate except to say that if it works as advertised (and it seems too) then in my opinion, if you are getting this scope for the optics, it would be silly not to spend the extra money for the improved coatings. Even if you don't see much of a difference, UHTC coated optics will certainly garner more money on the used market.



*Good optics in a small package*

If I was looking at one of these OTAs, I'd consider adding a dew shield, an 8x50 finder, a Rigel Quickfinder, a set of knobs to replace the front collimation screws (ala Bob's knobs) and a replacement focuser (Moonlight Telescope Accessories makes an SNT kit designed for the Meade OTAs).

The LX200 mount is sufficient support for the 6" and the rap test (lightly rap the side of the scope with your fist) showed the setup to stabilize in 2-3 seconds. If you are planning on a larger OTA, you may want to keep the idea of replacement tripod legs (or simply replacing the tripod) in the back of your mind depending on your tolerance for the shakes.



*I asked Clayton Kessler – an accomplished astrophotographer who purchased my 6” in 2002 - what he thought about using the SN6 for astrophotography..*

Clayton Kessler's - M42

- Date: February 26 and March 3, 2003
- Location: Seven Sisters Observatory - Manchester
- Equipment: Meade 6" Schmidt Newtonian on G11 w/ Lumicon Deep Sky Filter
- Conditions: Very clear and cold!
- Film: Kodak Supra 400
- Exposure: 2x60, 1x40, 1x10, 1x5, 1x2 minutes

### **Astrophotography with the Meade LXD55 6” SN OTA**

Clayton Kessler

About a year ago I had the opportunity to pick up an “Almost New” Meade LXD55 6” SN optical tube assembly (Thanks Tom). While this has not been the best year in Michigan for astrophotography I have used

this enough to form some opinions as to it's suitability. I cannot say much about the use of this OTA for actually *looking* at stuff – heck I hardly ever do that! I **have** run a fair amount of film through this scope in order to fine tune my setup.

A short bit about my setup. I use a Losmandy G11 (non-Gemini) mounted to a permanent pier in the back yard. I guide with an SBIG ST4 – using an Orion ST80 on the 6” as a guide scope. I have several other tube assemblies (mostly achromatic refractors) that I can attach to this mount depending on the targets being photographed. Other than “Mars Madness” this 6” SN has resided on the mount pretty much all year.

Things I like:

- Tube length is fairly short and easy to handle.
- The 750mm focal length is a good size for many of the deep sky objects that I like to shoot.
- The Newtonian design cuts back on chromatic aberration.
- The focal plane is relatively flat as seen on 35mm film – some distortion in the corners but not as much as I expected.
- The tube and focus mechanism are mechanically solid and flexure free.
- The factory supplied rings work well and allow mounting of a dovetail plate on the top and the bottom – the top mounted plate is important for mounting accessories like guide scopes.
- The scope is well designed with respect to using both an eyepiece and a camera. I think Meade did a good job designing around the back focus differences between visual astronomy and the use of a 35mm camera for astrophotography.
- The focuser is sensitive enough to achieve good focus using a ronchi grate focus aid.
- The focus lock supports a Canon F1 camera (a heavy camera!) without moving.

Things I did not like or would like to see changed:



- The finder scope is inadequate and the bracket is in a poor position for use with a camera – I took the finder off and have not re-attached it.
- I wish the camera adapter mechanism included a provision to easily rotate the camera to allow for easier frame composition.
- I wish the system had enough back focus to allow the use of an Off Axis Guider like my Taurus Tracker.

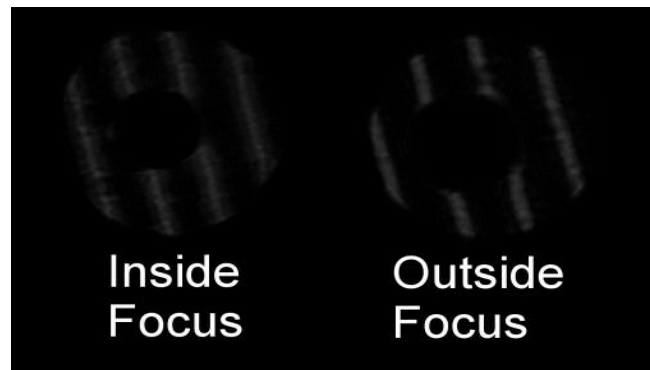
I must say that I have been very impressed with this scope for astrophotography. While I have had some challenges fine tuning my setup and removing flexure from the OTA/guidescope assembly none of these problems were caused by the OTA. I think I have solved the flexure problems by modifying the ST80 for multiple point clamping on the ST4 and I am looking forward with great anticipation to some clear weather this winter. I think the 6" Schmidt Newtonian OTA is an excellent astrograph for large deep sky objects like M42, B33, The Rosette Nebula, M45 and others in this general size category.

As far as the OTA goes I love the thing – I wonder if my G11 can handle the 10" f4 version!

After taking an in-depth look at this OTA, I feel the its been given short shrift by the amateur community, often ignored in favor of the Meade refractors, and otherwise viewed as an accessory to the mount. I find this extremely ironic in light of all the issues I've seen with the mounts. As a system, I find it hard to recommend the OTA and mount combo, especially if you are a beginner. There are just too many out of the box issues. Yes, it's possible to get it working, and working well, but it can be an exercise in frustration – if you go this route, be certain you buy from a reputable dealer. The SN6 OTA on the other hand, is a very nice little scope, and I'd highly recommend it to someone looking to pick one up. Optically, the sample I saw was quite good – the only drawback being due to the design itself – ie: it's reduced contrast due to the large central obstruction – however, this is more of an

issue for visual use than anything else.

In retrospect, I think I threw away the best part of the system last year when I sold the OTA to Clay.



*These Ronchi (pronounced RON-KEY) pictures were taken through our sample SN6 using a modified EZ tester, and similar pictures will be a part of telescope tests (where applicable and possible) from here on out.*

[Discuss this article in the Cloudy Nights Forums](#)

*Recalling the optics on the scope he started with, Tom realizes just how good today's amateurs have it.*