



LXD-55 SETUP AND GoTo!



How To

QUICK SETUP

VOLUME 1

There has been much discussion regarding the "proper" way to set up the LXD-55 GEM (German Equatorial Mount) for Polar Alignment and Accurate GoTo's using the AutoStar 497.

These are the procedures which I have been using and refining to give me the most efficient combination of speed and accuracy.

There will undoubtedly be those with differing methods, debates on whether some steps are necessary. All I can say is that for the past two years, this method has consistently given me excellent tracking and accurate GoTo's.

All modifications and enhancements are done at the risk of the owner.

Pre-Setup...

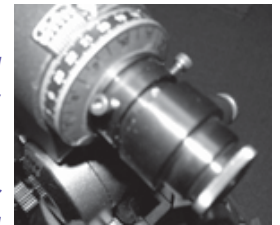
Regardless of which scope you own, if the optics are not aligned properly (collimated) your fancy expensive eyepieces, tracking mounts and computerized locator will not do you much good. If the lenses and / or mirrors are not properly aligned, you simply will not be able to achieve the best views your scope can offer. Make sure your scope is properly collimated before you go outside.

Tip: You can find many different articles on collimation by doing a search of the web. There are also the routines that I use in the "Ultimate Collimation" Tips & Tricks Guide.

Before you go outside with your new scope, you may elect to perform some of the enhancements and mods as described in the original *Tips & Tricks* guide or as discussed in the Yahoo LXD55Telescopes user group. I am going to assume you are satisfied with the condition of your mount and scope and will only refer the mods or changes that I feel are absolutely necessary.

○ Align the Polar Scope to the RA Axis as described in the LXD-55 Manual on pages 50 and 51. Pay no attention to the orientation of the trapezoid, or the little circle. All you care about is that while you rotate the mount around the RA Axis, the cross-hair stays centered on your designated target.

Tip: Replacing the three small adjustment set screws in the polar scope with the same thread Allen head screws will make this process a lot easier and much more of a permanent nature. If you have a distant target to use such as a street lamp or remote radio tower beacon, they will make excellent targets. If not, you do as I do and use the round shiny key lock on my neighbors garage door about 300 yards away.



Don't fret the details! Unless you are planning on using the setting circles and dialing in the coordinates of the objects you want to observe, close is good enough.

○ Set your mount up for an accurate Polar Home Position. Remove the arrows that came on the mount from the factory. Refer to the *Tips & Tricks* guide and follow the instructions for establishing a good Polar Home Position. Print out a sheet of the arrows at the end of the guide to accurately mark your mount.

○ Set up your scope where you have a clear view of a distant target. Balance your OTA and then perform the LXD-55 Adjust" procedure to align the OTA to the RA Axis. Use **Method 2** as described on page 53 of the manual.

Tip: This procedure can be tedious and frustrating. Take your

time and be patient as your scope is going to go through some strange contortions and will end up with the eyepiece in some strange positions. Just follow the instructions as presented by the AutoStar and you will be rewarded.

Many have expressed fears of the dovetail (saddle plate) coming loose from the saddle or the rings separating from the dovetail. Just make sure that the dovetail is secure in the saddle and make small fine adjustments of the screws on the underside of the dovetail.



Group: WarpsCorp.

This is a picture of my mount with a 120mm Orion refractor mounted and undergoing the alignment procedure. If you want to insure that you never have to worry about the rings separating or the dovetail coming off the saddle, you can perform the captive bolt modification which I have described several times in the LXD55Telescopes group. There are also pictures in the files section of the Yahoo

Let's make your future setups a little bit easier. The steps we just did are normally a one time effort. They only need to be repeated should you feel your scope setup has gotten way out of whack.

Making It Easier...

Now a couple of things to make your nightly setup go a little faster and easier.

○ Print some more of the adhesive arrows from the *Tips & Tricks* guide. Confirm that your OTA is properly balanced in the mount and that the mount is balanced on both the RA and DEC axis.

Place a set of alignment arrows on the outside edge of each ring (SN series) or at each end of the cradle (AR series). This will allow you to easily mount your OTA in a pre-balanced position when you set up. It will also help maintain alignment of the OTA to the RA Axis that you just went through by indicating how much to tighten down the rings over the OTA.

Take another set of arrows and place them on the counterweight shaft marking the position of each counterweight. This will allow you to easily install the counterweights in a pre-balanced position and save you the time of rebalancing your setup.

Tip: Before going outside to setup for the first time, save yourself a lot of money and a lot of trouble by replacing the included battery holder with a rechargeable 12v battery pack. Cut the plug off of the original battery pack to splice onto your new power pack.

I use a GreatLands 12v 7ah battery pack from target which has a fuse protected output, 2-12v cigarette type taps, and one each of a 3, 6 and 9volt tap. It came with an AC adapter / charger as well as a adapter to charge from the cigarette lighter of a car. One charge will get me through 5-6 viewing sessions. I have a second identical unit that I use to power my electric focusers, digital camera, cam corder, illuminated reticles and other accessories.

A rechargeable battery pack will give you longer service and will eliminate the erratic behavior of the AutoStar and motors which can be caused by low batteries.

OK, you are done with the hard part... time to go outside and enjoy the heavens!

Final Setup...

○ Take the mount outside and setup with the North Leg (the one with the star) pointing as close to north as you can get - a compass will help here. Install the counterweights as you marked with the alignment arrows. The counterweights should ALWAYS be over the north leg. Level the mount. I have a small bubble level mounted to the top of one of the legs.

Tip: I always spread out a 6' x 6' heavy duty cloth painters tarp under my mount. It keeps everything a lot cleaner and should I drop something during the night, makes it a lot easier to find and retrieve.

○ Put the scope in Polar Home Position using the alignment arrows you installed on the mount. The DEC motor should be on the west side of the mount.

○ Before you mount the OTA in the rings, remove the polar scope cover (both ends), turn the mount 90 degrees towards the west or east and sight through the polar scope. Make any adjustments necessary to place the cross-hair directly on Polaris. Pay no attention to the orientation of the other markings in the polar scope - using the fine azimuth adjustment knobs and the latitude adjustment handles, put the cross-hair directly on Polaris.

○ Mount the OTA in the rings and adjust so that all of the alignment arrows you applied are lined up. It should be balanced. Sight through the polar scope one more time and make any needed adjustments to re-center Polaris. Return the scope to Polar Home Position.

Tip: I do a lot of solar viewing and daylight setups. To aid in alignments, I took three small (2" diameter) juice cans, filled them with concrete and pounded them into the ground directly under each leg. Now just by setting the legs on the center of the juice cans, I get a fairly close polar alignment - sufficient

for use during the day and a good starting point for alignments at night.

Powering Up...

○ Plug the AutoStar into the HBX port and connect your power pack to the power plug. Turn on the power and follow the AutoStar instructions to enter your time, date, location, daylight savings, etc. I am assuming you have already chosen your type of scope and mount in the AutoStar menu and have the latest version of the AutoStar software downloaded into the handbox.

Tip: I got tired of trying to get the time exact and since I use several different sites for observing, I grew tired of "guessing" at close coordinates. I installed the StarGPS system and now when I power on, in about two to three minutes, the exact time, date and my exact location are automatically downloaded from satellite. Highly recommended accessory.

○ Perform a "Calibrate Motors" from the AutoStar menu. When the mount stops slewing, repeat it one more time.

○ Perform a "Train Drives" from the AutoStar menu. Make sure you do it for both drives. Choose an object far away and if possible, use a cross hair eyepiece. Once you have chosen a target and have it centered in the cross-hair eyepiece, take the time now to accurately align your finder scopes on the same target. After you have trained the drives, either manually or using the AutoStar, return the scope to Polar Home Position.

○ Perform a "One Star" alignment. Follow the directions and use a cross-hair eyepiece if possible. Once the scope stops slewing, use the latitude adjustment handles and azimuth knobs to center Polaris in the eyepiece. Once centered, it will slew to the second star. Remember what star it chooses. Once you have centered this star press enter to complete the alignment. If you get an "Alignment Successful" message, proceed to the next step. If not, redo the "One Star" alignment.

○ In the AutoStar menu, choose Polaris as a target. Once it slews to Polaris, make adjustments with the manual azimuth knobs and latitude handles to center Polaris in the ep.

○ Choose the star that AutoStar chose as the second star and slew to it. Once the slew is completed, center the star using the arrow keys on the AutoStar. Once centered, hold down the enter key to perform a "Synch" on that star.

○ Now choose Polaris again as a target. Repeat the above procedure.

Each time you repeat the procedure of slewing to Polaris, you are refining and fine tuning your Polar alignment. I find that three times is usually enough to get me almost dead on which allows tracking of 25-30 minutes with little movement from dead center.

You can keep refining until you are satisfied with your alignment. As you continue, it will get easier and easier to the point where the entire Powering Up procedure will take you less than 15 - 20 minutes.

I hope this procedure will be of help to the new members of our group and hopefully even some of the "pros" can gain something from it or offer something to make it easier.

There will no doubt be questions and objections to some of my methods... however, the simple fact is that it works for me every time and has allowed me to enjoy many satisfactory hours at the eyepiece seeing what I want to see, rather than looking for what I wish I could see.

Please feel free to e-mail me with any questions or comments.

Clear Skies.... and Good Viewing...

Warp

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*SN10 / AR6 / Orion 120 / Orion 80
2 x LXD 75 w/6" Newt - on order*

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