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LX200GPS User FAQ's & Tips

Compiled from postings at the Yahoo LX200GPS User Group

#	Subject	Category	Contents
1	12 V Power	Tip	**The 8-C cell batteries are insufficient to power the scope for any length of time. Use an external 12 Volt battery or AC power adapter (to 12 volt).**
2	12 V Power	Tip	**You can get a DC cords for the LX200GPS from Scope Stuff. It is a fused, cigarette lighter plug with an aux cigarette lighter receptacle on a coiled cord that will reach 8 feet (so the ad says), and the scope end is a right-angle 5.5/2.5 plug. It works perfectly for all of us who power our scopes from an auxiliary battery pack under the tripod. It sells for $9.95 which INCLUDES SHIPPING! It has a coiled cord and a right angle plug on the scope end to help keep the cord down and out of the way. All you need to do is change the fuse to a 2 or 3 amp, and you're ready to go. No adapter to buy, or get into polarity trouble with. Here's the link to it: http://www.scopestuff.com/ss_cig1.htm**
3	12 V Power	Notice	**The LX200GPS uses the optional #547 Power Supply for 110V AC and 12V DC (car cigarette plug) operation. It is Meade Part number 07577 and will cost $79.95.**
4	12V Power	Tip	**Consider a "JumpStart" type power packs used for jumping car batteries and/or powering 12v devices. These typically supply about 13.5 volts, but have way more than enough amp-hours to power a scope for a long time. Many come with a built-in re-charger. Wal-Mart has an 18-amp-hour one for around $70, with two 12VDC (10 amp circuit breakers) sockets for plug-in in 12VDC items and jumper cables on the sides for jump starting your car. You should use a cord with a 2.5 amp fast-blow fuse in that case.**
5	12V Power	Critical	**The LX200GPS operates off of 12 Volts. It is not compatible with the 18V power supplies used for the older LX-200's. Per the manual, use the #607 DC power cord, and a 12VDC power supply (battery). DO NOT USE AN 18VDC supply. DO NOT USE THE #1812 cord! You'll be sorry. The LX200GPS is not rated for 18VDC. The control panel clearly states "12VDC IN". The new LX200GPS uses a #547 AC to DC converter that supplies 12VDC at 2.5amps. and uses a 5.5mm Outside Diamater, 2.5mm Inside Diameter plug, center positive.**
6	12V Power	Notice	**In the manual on page 48, it indicates that a 12 power supply is supplied with the scope! It is an error in the manual: It was supposed to state "or USER supplier 12v power supply"**
7	12V Power	Tip	**Radio Shack has a 12 Volt DC Power Cable w/Adaptaplug (Part# 270-1558 ($5.99) that works with the LX200GPS. It's only 8 feet long, though. The correct Adaptaplug is Adaptaplug "N" (5.5 mm OD. 2.5 mm ID Center Positive) (# 273-1717 for $1.99). They also have 2 & 3-plug adapters and various 12V accessories. Can be ought from Web site or store. Replace the 5 amp fuse in the cigarette plug adapter with a 2.5 amp fuse (LX-200 GPS rating). Alternatively, the 12VDC Fused Power Cord from Radio Shack #270-1594 (pg 383 of the Radio Shack 2002 Catalog) is a nice cord, comes with an on/off "lighted" rocker switch, and a 2amp fast blow fuse. Replace the fuse with a 2.5 amp fast blow fuse and get the size N "Adaptaplug" (5.5 mm OD. 2.5 mm ID Center Positive).**
8	12V Power	Critical	**For best results, don't run any ancillary device such as a dew heater off the main telescope control panel. Always run such high amp-hour requirements from a totally separate power source.**
9	12V Power (Typo in manual)	Critical	**Page 13 of the LX200GPS Manual incorrectly states under the section titled "How to Assemble Your Telescope", "Plug an adapter into the 12VDC Out port of the computer control panel (13E,Fig.1)". This is incorrect! What they meant to say was to use the "12VDC IN" port (13B, Fig 1) for an external DC power cable. Even the diagram on page 6 describes the "12VDC Out" (13E) port as a power output port for "telescope accessories", not to supply external power to the telescope from a 12VDC source (battery).**
10	Alignment	Tip	**The telescope and Autostar must be left on TERRESTRIAL for typical use. This allows YOU to initialize and align the telescope on your targets (i.e, two star alignment, etc.) and once pressing your final "Enter" upon alignment, the telescope THEN defaults to "Astronomical"....if you have it defaulted to "Astronomical" before initializing, you are not able to do the proper alignment.**
11	Alignment Accuracy	Tip	**Avoid setting up the scope near power lines and large metal objects that could cause interference the internal compass finding magnetic north calculations. It will throw off initial alignment significantly.**
12	Alignment Accuracy	Critical	**For improved alignment accuracy, Calibrate Sensors prior to the first auto align or if pointing accuracy degrades over time. This will align the scope to "true" north versus magnetic north for improved accuracy in alignment. Calibrate sensors is part of the Autostar telescope menu. It simply calculates true north by having you center Polaris in your FOV. You will need to be able to see Polaris. If you don't do this, the telescope still calculates true north but you have no way of knowing how accurate it is. This is not intended to be done every time you power up. The telescope remembers the settings.**
13	Alignment Accuracy	Tip	**Set the coarse focus before alignment. If you do it afterwards, it will change the light path enough to add quite a bit to alignment offset. Also, consider locking the mirror during alignment. Any mirror flop during alignment can also through off alignment accuracy.**

#	Subject	Category	Contents
14	Alignment Accuracy	Tip	**It is important to find exact center for the alignment stars. A cross-hair reticle eyepiece helps enormously.**
15	Alignment Accuracy	Critical	**ALIGNMENT STARS are supposed to be off center when doing your initial alignment....this is the method through which you communicate the position of the telescope, and all of your specific data to the Autostar....you are telling the scope to talk to the Autostar in essence and the "pulling back" of your alignment targets do just that. One should never expect the initial alignment stars to be dead center....now once you pull those in properly and do a good alignment, all SUBSEQUENT targets should be centered or close to it.**
16	Alignment Accuracy	Critical	**You will consistently see about a 20 arcmin alignment error with the scope until you "Calibrate Sensors" as per page 29 of the manual and Train Drives. Overall, the "Calibrate Sensors" and "Training the Drive" fixes all alignment and accuracy problems.**
17	Alignment Stars	Tip	**Having trouble picking the "right" alignment stars on any given night? Stars not visible? Not sure which pair to select?? Well....it could not have come at a better time....check out this new web page: http://www.ilangainc.com/bestpair/ which is nifty little program that pre-selects the best stars for your location, time and night you are observing! Read carefully all the parameters that are included to allow for the maximum efficiency in two star alignment!! (Note: this is for "2-star" where you pick the stars....NOT 2-star "Easy.")**
18	Amps & Fuses	Critical	**The LX200GPS amp rating is 2.5 amps. Recommend using a 2.5 amp fuse in the 12 V power supply.**
19	Amps & Fuses	Tip	**If a component within the scope develops a short, its internal resistance will drop and it will start to draw more and more current until something gives. If the line is fused it will start blowing fuses for apparently no reason---a sure sign that something has gone seriously wrong. There is probably nothing wrong with your batteries. Everyone should do themselves a favor and put a fuse in the line! The Meade #607 power cord does not have a fuse. You can either buy an adapter which does and then plug the #607 into it or buy a different cord from Radio Shack with an in-line fuse.**
20	AutoStar II Cold Weather Operation	Tip	**All AutoStar units are different. Some are more prone to temperature extremes than others....those that are cold-sensitive are ALSO typically HEAT sensitive as well. At temperatures below 27F the LED readout becomes frequently muddled. as the temperature continues to fall, many users report a totally BLANK LED readout, yet the Autostar continues to function (if you can figure out which button to push!) The Autostar will fail altogether if exposed to temperatures lower than 28-20F for more than about twenty minutes. For dependable use, there are two things that should be remembered about the Autostar that are typically NOT a factor with the LX 200 classic hand box: a. keep the hand control warm by putting inside your coat or pocket when not necessary to observe. b. try to run the telescope ONLY off of a very good external DC power station OR from AC power (better). Note also that there have been many reports that suggest that the Autostar is much more sensitive to cold when the humidity/dew/frost situation is high, suggesting that the water content of the air is also a contributing factor. It appears that cold nor heat affects the long-term dependability nor use of the internal circuit boards of the system based on the LX 200 classic models, the LX 90 and the ETX series of scopes.**
21	AutoStar II Data Cable	Tip	**Rather than making your own serial cable or getting it from Meade at an inflated price, here is a link to Astro Gadgets, where you can buy one for 10 bucks! http://www.andale.com/stores/sf_catHome.jsp?sid=116080&mode=1&catId=1147063&pnum=1&psize=10&pageIndex=-1. Also, you can get one in various lengths from ScopeStuff (http://www.scopestuff.com/ss_smda8.htm).**
22	AutoStar II Moon Program	Tip	**Autostar II knows a LOT more about the moon than the Autostar I ever did. Over 1000 named craters, mountains, valleys, rills, landing sites, seas and lakes. With history and backgrounders. The Moon program in the AutoStar II has six subset menus (Overview - Landing Sites – Craters – Mountains - Mare, Lakes - Valleys Rills).**
23	AutoStar II Tours	Tip	**All tours and ephemeris objects (comets, satellites, asteroids, etc.) will be commonly shared as their format will be acceptable to either Autostar. Thus your tours can be used just fine as well as any out there for Autostar. Go to Weasners site for a wealth of information on tours http://www.weasner.com/etx/autostar/as_tours.html Also, the LX90 group has a collection at http://groups.yahoo.com/group/lx90/files/Autostar%20Guided%20Tours/**
24	AutoStar II Update	Critical	**Meade posts new AutoStar II Updaters and firmware for your Autostar II on their website. The main page is: http://www.meade.com/support/auto.html .**
25	AutoStar II Update	Critical	**If your scope crashes or if you loose internet connection while you are uploading a new version of software and your LX200GPS scope locks up. You can get to "Safe" download mode by Turning the scope on, and immediately pressing 999.**
26	AutoStar II Update	Tip	**Do NOT use the keypad to place your Autostar II in "download" mode before starting the Updater! Just have it on and start the Updater. The Updater will do the mode-switching. If you pre-place your Autostar in Download mode, the Updater cannot determine your current firmware version and can make mistakes about how the User Body data are stored. If that happens, your Autostar may get rather confused. Then, indeed, you may be forced into performing a RESET session, or a full download procedure.**
27	Calibrate	Critical	**Doing a "Reset" does not clear the sensor calibration. You must "calibrate sensors" again to clear it.**

#	Subject	Category	Contents
	Sensors		
28	Center Bolt	Tip	**Sometimes the center bolt can be difficult to turn – it binds in the tripod. Some people use lithium grease. But I'll give you the best hint I ever got from the LX90 user group. Pick up the tripod by the screw with the spreader touching the legs and shake it. This distributes the legs and centers the screw and orients it perpendicular the the tripod base. This allows the screw to turn into the telescope base without hindrance. This has made a big difference to me.**
29	Collimation	Tip	**Consider the accessory knobs that you can add to the Meade SCT telescopes. They have "knobs" on them making exact collimation much easier to perform for most individuals. Instead of using the allen wrench arrangement. See "Bob's Knobs" at www.bobsknobs.com**
30	Configuring COM Port	Tip	**To configure your COM port, you may have to go into the ASU program and specify the COM port to use. It may not auto detect the right one to use. You can fire up Hyperterminal, configured for a "Direct" connection to the COM port, 9600 N 8 1, and see if you can issue the following command to your powered up AutoStar, #:GVP# The AutoStar should return "LX2001#". That would mean you have a good cable and the right COM port.**
31	Date & Time	Critical	**GPS does not provide Time Zone information. GPS provides time in 24hr format and based on UTC time, so it is up to the GPS receiver to determine this information. Most of the Information required by Scope is entered when you Select your State/City and this would be why you would not see further info such as Time or am/pm request. Even though the GPS does lock onto your location, it just updates the LAT/LONG for the site and set the time. It did not change the name of the location nor did it change the time-zone offset. You must go into setup, site, and add my location to make sure the time zone and name were accurate. Therefore, when you get your new scope, make sure you either change the Almeda, CA location or delete and add your own site in order for your time-zone to be correct.**
32	Daylight Savings Time	Tip	**The correct setting for DST is as follows: IF you live where DST exists, you turn it ON during the summer, and OFF during the winter. Or, to be precise, you "turn it" when the "clocks change", and (almost) forget about it for the next 6 months. If you live in a non-DST area, you leave it permanently OFF.**
33	DEC Lock Knob	Critical	**Do not overclamp the DEC lock knob! It appears to be a major weak spot in the design of the scope. This is a totally redesigned and poorly substituted change from the classic LX 200. The design is a poor knock-off from the LX 90, but is not substantial enough at all to carry the torque needed to lock the 10" nor 12" in place. You might try putting a Fender washer behind the fake setting circle and the DEC axis as a shim, but this is just a quick-fix.**
34	Dew Shield	Tip	**It appears that the 10" OTA on the GPS scopes is slightly larger than the older LX200's and the Meade 10" dew shield will not fit. One solution is to replace the felt liner in the dew shield with thinner felt. Go to your local craft store, buy some thinner felt, and use double-sided tape to apply it. It will look as though it was made that way.**
35	Eyepiece Holder	Notice	**At the back of the LX200 GPS you have standard SCT threads. The Telescope does NOT come with the Meade "Eyepiece Holder" (#07182). It does fit though. So, if you have a large CCD camera color filter wheel adaptive optics, the wedge and plan on doing photography of objects near the N. or S. Celestial Pole, you'll NEED one.**
36	Focusing	Critical	**Coarse focusing - once your mirror is locked down, then you MUST NOT use the coarse focus knob at all. this will attempt to circumvent the locked mirror position and put a strain on all of it: the mirror and its baffle sled, the focus assembly, and the locking assembly. Focus with the coarse focus knob FIRST and then fine tune with the microfocuser.**
37	Focusing	Critical	**Without the mirror locked down, you can focus with EITHER or BOTH coarse and fine focusing. With the mirror locked down, ONLY the microfocuser should be used. This moves the eyepiece assembly, rather than the telescope's large mirror, back and forth to achieve a very precise focus. Many times it many not be necessary to use the fine focuser, particularly at very low wide field views...the coarse focus knob will get you there every time for visual work.**
38	Focusing	Tip	**The mirror lock works exactly as advertised and instructed in the manual. Once the course focus is done, lock the mirror and then use the micro-focuser to achieve perfection. Make sure you read the manual on how to set this up as you want the micro-focuser to be about 1/4" out before starting so you have plenty of travel available.**
39	Focusing the Finder Scope	Tip	**You must loosen the black retaining ring towards the front or objective side of the finder, once that is loose, then you can screw in or out the whole objective lens. Once you have achieved focus for your eyeballs, then just simply tighten the retention ring again to hold the objective in place.**
40	Fork Arm Balance	Tip	**Put TWO batteries in the left fork arm as offset balance weights for the RIGHT fork arm's heavy offset (from the motor drive, lock and other features....the GPS sensor on the left arm does not offset this....but batteries will!). Use 2 "C" batteries in the left fork arm (and none in the right) to balance the scope. It will result in better tracking & less wear & tear on the gears.**
41	GPS	Tip	**To display your GPS coordinates, press and hold the "Mode" key for a couple of seconds; Then, with the RA and DEc displayed, use the up/down**

#	Subject	Category	Contents
	Coordinates		**cursor keys at the bottom of the hand controller to cycle through the various displays of information (clocks, etc) until you see the Latitude and Longitude displayed.**
42	GPS Lock	Tip	**The Automatic Alignment (in which the GPS function acts) can be aborted by pressing any key in the Autostar II. It then allows you to do a Manual Alignment.**
43	GPS Lock	Critical	**At first the scope might freeze at the 'Taking GPS Fix' message. There are 2 possible solutions for this problem: A - Meade official response. Recycle the power (turn it off and then on). B - Click the Mode button 4 times. That will take you to the align Menu (Automatic Option) click ok and the scope will go through the align process.**
44	GPS Lock	Critical	**To increase speed of GPS alignment, set your location ("Site") first...prior to attempting GPS alignment. It is much faster and the default of YOUR site is retained. If you have trouble getting GPS alignment, remove the finder scope, make sure the scope is pointed down at 30-45 degrees, or change the Home position orientation.**
45	GPS Lock	Critical	**Best start up position in Alt Az position is with the on/off switch facing South (user facing north), Fork arms swung around 1 turn from either hard stop, Optical Tube facing North and DOWN 45 degrees to minimize finderscope profile to GPS antenna.**
46	GPS Lock	Critical	**The requirement that the telescope be in the "AltAz home position" before automatic alignment can be performed is something that is not mentioned anywhere in the automatic alignment procedure. It is only mentioned in the manual alignment procedure.**
47	GPS Lock	Critical	**The "time out" limit for initial GPS alignment is about 10 minutes. There is no status displayed to indicate that the alignment is proceeding. You'll know that GPS fix failed if AutoStar prompts you for Date and Time.**
48	GPS Lock	Tip	**The reason you shouldn't attempt a GPS fix indoors is because the GPS radio signals are very weak and long in wavelength and don't travel through dense foliage very well let alone walls and ceilings. You really need a clear view of the sky to get a solid fix. Some trees, sure, but not walls or ceilings.**
49	GPS Lock	Critical	**Prior to attempting the GPS fix, manually set your location(s) via: SETUP / SITE / LAT / LONG and hit "Enter" so that the default will be set. The GPS uses "where I was last" to figure out which satellites are overhead -now-. Without setting a location, first, the GPS system wastes a lot of time listening for satellites and, after determining that they're -not- there, it starts trying to find out what it -can- hear. And stepping through 24 satellites and listening for a while at each one, takes some time... even with a 16-channel GPS receiver. Pre-setting the location helps GPS know which satellites to look for.**
50	GPS Lock	Tip	**If you have trouble with GPS lock in the recommended position with the finderscope on, (Control Panel facing South, User facing North) reverse the position. Some users reported better success with the scope pointing South (control panel pointing North) and was able to get a GPS lock each time with the finderscope on.**
51	GPS Lock	Tip	**If continued problems with GPS fix, "Reset" the handbox and go through the entire start-up sequence.**
52	High Precision Mode	Tip	**High Precision mode is not well explained in the manual. High Precision mode takes you to a brighter star each time you wish to access a new object until you turn the default (under "SETUP/TELESCOPE/HIGH PRECISION") "off." This allows extremely accurate acquisition of objects that you might not be able to see in the finderscope or perhaps miss your first look into the telescope. It takes some additional time, so for brighter objects it should be turned "off" since it really would be unnecessary to go to a bright star beforehand if the object can clearly be seen in the finderscope or at low power in the telescope. An exception would be if your scope's GOTO was not performing adequately on any given night, whereas the HP selection would greatly improve object acquisition via the brighter star detour!**
53	Image Shift	Critical	**To reduce image shift from your focuser, you MUST only use the focus knob and turn all the way clockwise and then counterclockwise (never force up to nor past the stops) about 4-5 times totally. since the total travel will require more than 100 turns each direction, this will wear your hand and wrist out....but it WILL reduce image shift over time. Two important things to remember about image shift: 1) it will get better with time, the more the telescope is used, but it will get better much quicker if you will run the focuser ALL THE WAY inside and outside....you must reach the parts of the travel that you never actually use during astronomical observation to properly distribute the grease. 2) all image shift will improve with the age and continued use of your LX 200 GPS. Note: The information found at www.mapug.com about image shift reduction for the Original LX200's is INCORRECT for the LX200GPS line of telescopes. DO NOT ATTEMPT as damage to the focus lock mechanism may follow.**
54	Leveling Base	Tip	**AutoStar can correct for some amount of tilt in the base, and possibly for dip/lift of the barrel. During automatic setup, some of the steps are rotating the forks and raising and lowering the barrel to determine how level the base and barrel are. (tip and tilt). However, recommend doing the best job you can in starting with a level base.**
55	Manual	Tip	**If you want to do a manual 2-star alignment (or any other) you have to turn set Home Sensors to "off". The manual is a bit confusing.**

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	Alignment		
56	Manual Focus Knob	Critical	**You should NOT remove the focus knob unless you know how to tweak it back into place axially so that you do not get rotary shift. it is very easy to re-seat the chrome knob at an angle which will give you a wobble when focusing. The knob is threaded, but it is the final setting of the knob via the two small set screws that leads to misalignment of the knob on the focus rod. You cannot improperly screw the knob back onto the rod, but once there, it is quite easy to shift the knob to one side significantly if either of the two small set screws are tightened disproportionately**
57	Micro Focuser Attachment	Critical	**The supplied SC accessory adapter is screwed into the microfocuser adapter as shipped. You have to unscrew the SC accessory adapter from the microfocuser adapter prior to mounting the microfocuser adapter onto the scope. This is pretty obvious in retrospect, but this step is not in the manual.**
58	Micro Focuser Attachment	Tip	**The manual could have been much clearer on how to install the micro-focuser. The "quick-start guide" on page 5 is hard to follow. New users should instead follow the "getting started" section on page 12.**
59	Micro-Focuser Attachment	Critical	**The Micro-Focuser has a collar that removes from the microfocuser. This you can easily screw onto the rear of the scope. The adapter ring attaches to the rear port of the LX 200 GPS FIRST, then merely slips on the focuser unit and tighten each of the three hex screws one at a time until finger tight. Then, just like tightening lug nuts on a car wheel, tighten each one just a bit in succession until tight. do not tighten ONE completely down immediately as this will force the focuser assembly slightly off to one side against the collar. this will result in axial misalignment of the eyepiece/camera assembly to the optics of the telescope.**
60	Mirror Lock	Critical	**You do not have the lock the mirror every time! It is fine to operate the scope without the mirror lock engaged, and often should be operated just such....the only time it is really necessary to lock down the primary is when the telescope is being used for very high magnification work and/or imaging for long exposures....for visual work, the mirror lockdown is not necessary.**
61	Mirror Lock	Critical	**The mirror lock can, and should, be turned more than to where you first feel the resistance. It needs to be firm, but not dead-locked as new users have a tendency to do. The mirror will seat very firmly with moderate tightening. If you have tightened the mirror lock until it will not tighten further, then you have over-tightened it substantially. The entire purpose of this lock is NOT to seat the mirror in one position permanently. I is solely intended to prevent mirror shift, rotational shift and backlash once focused. You will find that only a very moderate tightening pressure will do just that.**
62	Mirror Lock	Critical	**For transporting the LX 200GPS, tighten the mirror lock down firmly (but it is not necessary to tighten it until it stops). If you anticipate a bumpy trip to your dark sky site or if you are shipping the scope or taking on a long trip, crank the mirror all the way by turning clockwise until snug with the coarse focuser (do not over-tighten this either!) and then apply the mirror lock with moderate firmness.**
63	Mirror Lock	Critical	**If you run the primary mirror to either end of its travel, you'll notice that the mirror lock knob cannot be turned. Some scopes are shipped that way--with the mirror all the way back (focus knob turned fully clockwise). To move, run the primary to the center of its travel (21 full turns of the focus knob from either end of mirror travel on the 10") and the mirror lock knob will then be free. Clockwise unlocks the mirror lock. It may take a firm twist the first time to unlock. You will feel a "hard stop" at full unlock position (fully CW). In summary: Make sure the mirror is not at either end of its travel and turn the mirror lock knob clockwise to unlock and all will be just fine. Note: The set screw on many mirror lock knobs have been loose enough to cause slipping when trying to lock the mirror down, causing the knob to begin to unthread from the brass shaft.**
64	Paint Color	Tip	**To paint a finder scope or dew shield or to touch-up a scope to match as close as possible to the "Meade Blue" of the LX series telescopes, can get REALLY close by using the following product KRYLON HIGH GLOSS FAST DRYING SPRAY: "Regal Blue", color #1901. You can buy this at True Value hardware, some paint stores and (perhaps) Wal Mart. Use it sparingly and in MANY coats, as it will flake and run if you use in excess. Always steel wool down the shiny tube of any auxiliary scope you wish to paint. Allow this paint to dry for at least 24 hours before mounting the scope.**
65	PEC Training	Tip	**You need a little more than 8 minutes to "train" the main RA drive as that is the periodicity of the worm gear. However, mistakes in that training can cost you a lot of accuracy in overall tracking. To do a careful training and minimize errors, do two "dummy" trainings first. You will quickly learn by the second time what errors are common to your system and recognize them by the time they turn around the third time. Train at very high power and use a cross hair eyepiece to keep a bright star centered. Also, you can turn the star image slightly out of focus and keep the crosshairs on the dark center of the image.**
66	PEC Training	Tip	**Periodic error will change over time and is something that must be checked and corrected for if possible about once every three months if the scope is used regularly, particularly if the instrument is carrying a load like a camera, guide scope, CCD, counterweights, etc. Many small variations in the "trueness" of the worm to the drive gear, the clutch pressure, the load and torque and other factors will require that periodic error be accounted for frequently.**

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67	Polar Alignment	Tip	**Use Dr. Clay Sherrod's Kochab Clock alignment method for accurate portable field alignment. You can find a complete description of how it works and how to go about determining this (the first time takes a bit of thinking, from then on it is wonderful....) at: http://www.arksky.org/Kochab.htm**
68	RA Hard Stops	Critical	**Some scopes ship with the RA axis rotated almost all the way toward a hard stop. Rotate the scope to get equal play both in left ascension and right ascension before GPS align. This way you won't have the scope hitting the hard stops.**
69	RA Hard Stops	Tip	**The scope has RA gearing that lets the scope turn almost 720 degrees. If you turn the scope past a complete circle and a little further it will come to a hard stop.**
70	Reset Command	Tip	**It does appear that a RESET will indeed erase the PEC on the Autostar II, along with the calibration of the sensors AND the training.**
71	Reset Command	Tip	**Unless uploading new firmware OR a communication problem between Autostar and telescope, a reset is not necessary typically.**
72	Satellite Tracking	Tip	**Satellite orbit data over a week old is highly suspect. Check with www.heavens-above.com to pick satellites which actually will show up within the next 6 hours (the Autsotar's predictive limit). Also can use the NORAD site for TLE's just before setting up the scope. Also load it into Starry Night Pro to check for passes. The data works perfectly well when switched to the "Sattracker".**
73	Scope Dimensions	Notice	**The 10" XL200GPS foam dimensions 36.25" x 23.125" x 17" The thickness of the first half is 7.25 inches and the second half is also 7.25 inches. There is a spacer in between that is 2.25 inches. The 8" XL200GPS foam dimensions: 29-1/2" x 19-1/2" x 12-1/2" (13-1/2" with scope in)**
74	Scope Hang-up on Replacing Board	Critical	**If the LX200 will not boot & just hangs there (for example, after aborting a download, enter 999 right after first powering on, to force the scope into a download mode. Then, download the new firmware and the scope should run fine.**
75	Scope Weights	Notice	**Here are the weights of the various scopes. Don't hurt yourself: 8" = 46lbs (tripod = 20 lbs). 10" = 62 lbs (tripod = 20 lbs). 12" = 73 lbs (tripod = 50 lbs). Source: LX200GPS Instruction Manual**
76	Serial Cable Testing	Tip	**A simple test to verify your cable is good, open up Hyperterminal, using the Com port you believe is correct, select the following port settings: Bits per Second = 9600 Data Bits = 8; Parity = N; Stop Bits = 1; Flow Control = None; Now, with your laptop cabled up to the scope, scope powered up, open the com port with hyperterminal, and type the following LX200GPS command: #:GVP# <press enter key> You should see the scope return "#LX2001#" or something like this. This tells you the cable and connections are good. If you get nothing back, try a different COM Port. You may have used the wrong port. If nothing works, your cable, or scope may be the culprit. Also, try the other "RS-232" port on the scope and see what you get.**
77	Slewing Noise	Tip	**The slewing is noisy, especially at high slew speeds. You can adjust the SLEW rate of the LX 200's through the hand control for just that reason...by adjusting to a slower rate than the standard "8", the motors do quiet down considerably**
78	Starry Night Pro	Tip	**You can operate the LX200GPS with Starry Night Pro via the "Generic LX 200" default rather than the "LX 200 and Autostar" setting. Control of the GPS scopes is perfect on that setting. You may get a "time out" message from time to time, but clicking the "OK" keeps it running smooth. Note that ANY manual selection of objects via your keypad will throw the complete telescope/computer/Starry Night sync totally off and the telescope will not point properly nor recover unless a new star alignment is done from scratch. Thus, once you have delegated the computer screen as the "pointing tool" for the telescope, you should stick with that procedure and not skip back and forth between computer selection and Autostar/handset selection. if you "disconnect" from the scope you can use the handset and "reconnect" to use SNP again.**
79	Sun Warning	Tip	**You can disable the sun warning altogether -- the option to do it is in the utility menu.**
80	Syncing	Tip	**Syncing refines the Autostar's accuracy in the area of the sky you synced. It may or may not have negative effects on other areas. Using high precision mode has a similar effect in that you sync on an automatically selected bright nearby star and it should put the DSO you're after dead on.**
81	Training Drives	Tip	**The manual recommends using a stationary terrestrial object for training the drives. You -can- use Polaris, however. It shouldn't move too far during training.**
82	Training Drives	Critical	**If you ask the scope to GOTO an object, then re-adjust the Altitude using the slow-motion control knob, the scope may re-adjust itself to its original position. To fix this, train the Dec and RA drives as described in the manual. This corrects for gear backlash and the problem goes away.**
	Training Drives		`verify the quality of your work by` `ADDing a Landmark, then slewing away in all 4 diagonal directions,`

#	Subject	Category	Contents
			and GoTo'ing back to it... if your training is -perfect- you won't overshoot or undershoot the LANDMARK ... if you -do- over/under shoot, note which axis is doing it, and retrain that axis. If it's still over/undershooting, perhaps "overtrain" or "undertrain" a bit to compensate.

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http://groups.yahoo.com/group/LX200GPS

Thank you to all who have contributed!