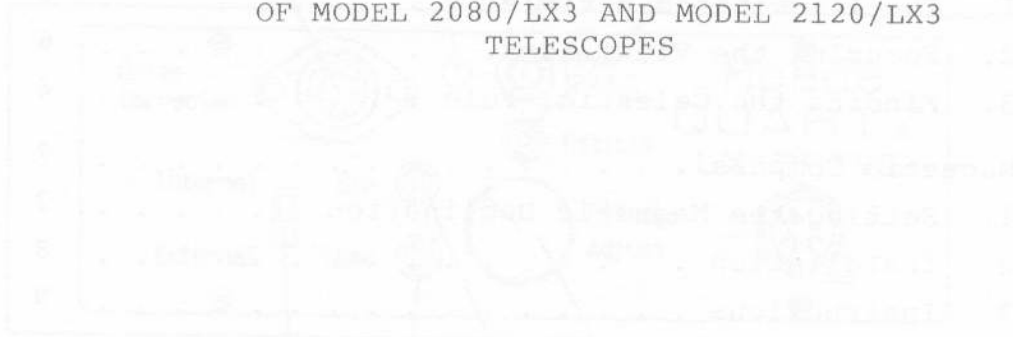


A P P E N D I X

SUPPLEMENTAL INSTRUCTIONS FOR THE OPERATION
OF MODEL 2080/LX3 AND MODEL 2120/LX3
TELESCOPES



1. Eyepiece
2. Objective
3. Finder
4. Mount
5. Base
6. Tripod
7. Counterweight
8. Drive
9. Control
10. Power

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A. INTRODUCTION

Congratulations! You now own the most advanced Schmidt-Cassegrain telescope ever produced for the amateur astronomer. Your new LX3 blends state-of-the-art micro electronics with proven optical precision and superb mechanical accuracy to create a telescope of unequalled practicality and performance. This supplementary manual explains in detail the operation and application of those features unique to the LX3. Refer to the standard Model 2080/2120 Instruction Manual or the special LX3 audio tape for complete detailed information regarding set-up, operation, and specifications of your telescope.

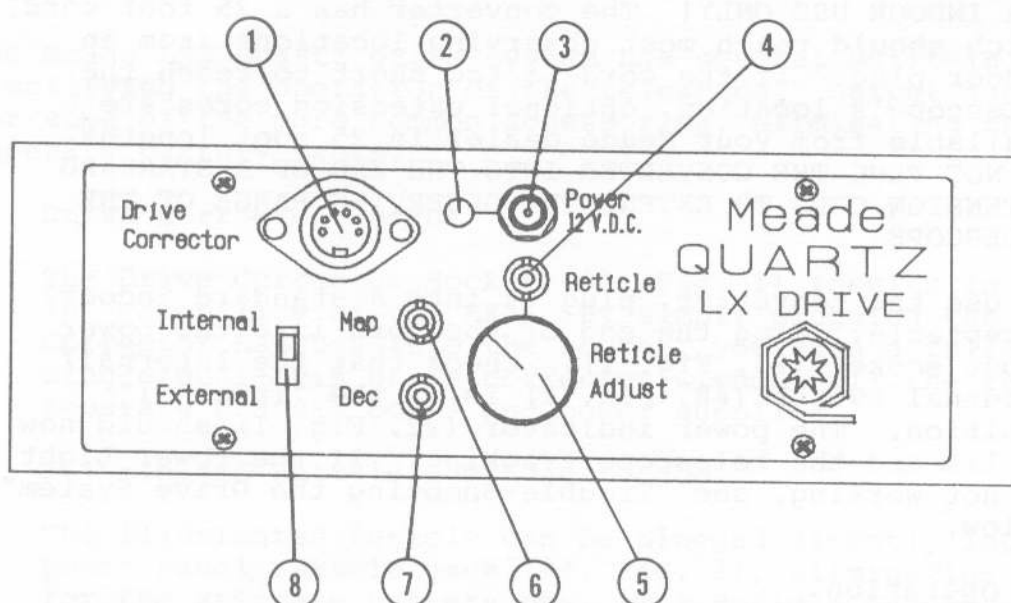


Fig. 1 LX3 Power Panel

- | | |
|-------------------------------------|-------------------------------------|
| (1) Drive Corrector Socket | (5) Illuminated Reticle Adjust Knob |
| (2) Power Indicator | (6) Map Light Output |
| (3) Power Input Socket | (7) Dec Motor Output |
| (4) Illuminated Reticle Adjust Knob | (8) Internal/External Switch |

B. LX3 QUARTZ ELECTRONIC DRIVE

The 8" and 10" LX3 Schmidt-Cassegrain telescopes incorporate the superb Meade LX Drive System and the latest in state-of-the-art electronics to achieve a first in commercially produced telescopes: Quartz accuracy coupled with true sidereal rate tracking. The quartz crystal used in the Meade LX3 Quartz Drive provides accurate tracking to within $\pm 0.005\%$ of the sidereal frequency, independent of temperature changes or local power line variations. This, coupled with the 10 arcsec or less precision in the mechanical gear train of the LX Drive, results in performance rivaling professional observatories.

1. AC Operation

The 8" and 10" LX3 telescopes are supplied with a 12 V.D.C. converter for AC operation. **THIS CONVERTER IS FOR INDOOR USE ONLY!** The converter has a 25 foot cord, which should reach most observing locations from an indoor plug. If the cord is too short to reach the telescope's location, optional extension cords are available from your Meade dealer in 25 foot lengths. **DO NOT PLUG THE CONVERTER INTO THE END OF A STANDARD EXTENSION CORD TO EXTEND THE OBSERVING RANGE OF THE TELESCOPE.**

To use the converter, plug it into a standard indoor receptacle. Plug the end of the cord into the power input socket (#3, Fig. 1). Check that the Internal/External switch (#8, Fig. 1) is on the "internal" position. The power indicator (#2, Fig. 1) should now be lit and the telescope tracking. If the Power Light is not working, see "Trouble-Shooting the Drive System" below.

2. DC Operation

The 8" and 10" LX3 telescopes operate on DC current and may be powered directly from a 12 volt battery or power cell. The LX3 drive system normally draws about .4 amp in standard operation. Maximum current usage is .6 amp when all optional accessories are being used. The Meade Power Cell is a 5 amp/hour power cell, and will operate from 8 to 12 hours depending on usage. If the telescope is being powered from a car battery, the current drain is negligible. The telescope may be used all night without fear of a "dead battery".

The LX3 Schmidt-Cassegrains are supplied with a DC power cable. Connect the cigarette plug to your cigarette lighter, and the other end of the cable into the power socket (#3, Fig. 1) on the power panel of the LX3. If the power indicator is not lit, see "Trouble-Shooting the Drive System" below.

3. Internal/External Switch

The internal/external switch (#8, Fig. 1) is used to move from the standard drive mode to the remote drive corrector mode.

When the telescope is on internal, all frequency control is done internally by the quartz crystal. The drive corrector handbox will not function even if plugged in.

To use the Drive Corrector Handbox, move the slide switch to the "external" position. Now, the frequency control is transferred to the drive corrector. Note: If the slide switch is on "external" and no Drive Corrector Handbox is connected, the drive unit receives no power, and will not work. For detailed drive corrector instructions, see "Single/Dual-Axis Drive Corrector" below.

C. OUTPUT JACKS

The Meade LX3 Quartz drive system has several built-in features for simplifying the operation of the telescope. Output jacks are provided for some of the more common accessories, eliminating the need for separate battery packs.

1. Drive Corrector Socket

The Drive Corrector Socket (#1, Fig. 1) results in the "plug-in" capability of the LX3. By simply plugging the Drive Corrector Handbox into the socket, you have a full-fledged single/dual-axis drive corrector without all the fuss of separate chassis boxes and power supplies.

2. Illuminated Reticle and Adjust Knob

The Illuminated Reticle can be plugged directly into the LX3 power panel reticle jack (#4, Fig. 1), eliminating the need for the separate battery box. The Reticle Adjust Knob (#5, Fig. 1) controls the brightness of the reticle.

3. Map Light

The Meade Map Light plugs into this socket (#6, Fig. 1). It provides a constant brightness red light on a 6 foot cord for reading a star atlas or taking observing notes.

4. Model #38 Declination Motor

The Declination Motor Jack (#7, Fig 1) is used in the dual-axis drive corrector mode. The Drive Corrector Handbox is required for use of the declination motor. The declination motor does not function if the Drive Corrector Handbox is not connected and the Internal/External Switch (#8, Fig. 1) is not set to "External".

In addition to being an excellent 8 x 50 viewfinder, the Meade Illuminated Reticle Polar Viewfinder is designed to be used as an optical guide for finding the celestial pole.

1. The Illuminated Reticle

To assure safe arrival, the Polar Viewfinder is shipped with the bulb/battery holder not mounted on the viewfinder. To attach, loosen the thumbscrew on the mounting flange located under the viewfinder, and insert the bulb/battery holder. Tighten the thumbscrew to lock into position.

To turn on the reticle, rotate the knurled switch on the bulb/battery to the "on" position. The brightness is adjustable by turning the nylon slotted screw located in the middle of the knurled switch. To prolong battery life, remember to turn off the reticle when not in use.

To replace the battery in the Polar Viewfinder, turn the knurled switch in the "off" direction until the switch comes off. After replacing the battery, thread the knurled switch back on.

2. Focusing the Viewfinder

The Meade Polar Viewfinder has been pre-focused at the factory. However, not everybody has perfect vision and slight adjustment is sometimes necessary to obtain maximum performance.

- a. Rotate the eyepiece until the reticle is in sharp focus. Move the rubber eyecup to a comfortable position.
- b. Loosen the black knurled locking ring (just behind the dew shield).
- c. While looking at a star, rotate the dew shield until the star is in focus. (This refocuses the objective lens.) CAUTION! Take care when rotating counter-clockwise. You are unthreading the dew shield and it may fall off if rotated too far! Refocusing the objective lens will only require a few turns of the dew shield at most.
- d. When the dew shield is rotated to the sharpest focus for your eye, tighten the locking ring against the dew shield to fix the position.

3. Finding the Celestial Pole

To accurately position the telescope on the celestial pole, follow this procedure:

- a. Align the Polar Viewfinder with the main optical tube (as described in the Model 2080/2120 Instruction Manual) by adjusting the black thumbscrews on the bracket until the object in the main optical tube is centered on the cross hairs of the Polar Viewfinder.
- b. Rotate the optical tube in declination until the declination circle reads 90 degrees. (In this position, the optical tube will be pointing toward Polaris.)
- c. Rotate the telescope in R.A. until one of the cross hairs is vertical to the horizon (this is not necessarily vertical to your eye). You can use either cross hair; select the one that provides the easiest viewing position.
- d. Hold the Polaris Reference Circle next to the telescope with the arrow pointing up.
- e. Rotate the inner (local time) circle until your current local time corresponds to the current date on the outer (date) circle.
- f. The position of Polaris will be indicated by the slant of the inner (local time) circle that extends out to the outer (date) circle.
- g. The date circle represents the reticle in the Polar Viewfinder. Move the telescope in azimuth (rotate the wedge) and latitude (move the tilt plate of the wedge) until Polaris is in the same position on the reticle as shown on the Polaris Reference Circle.

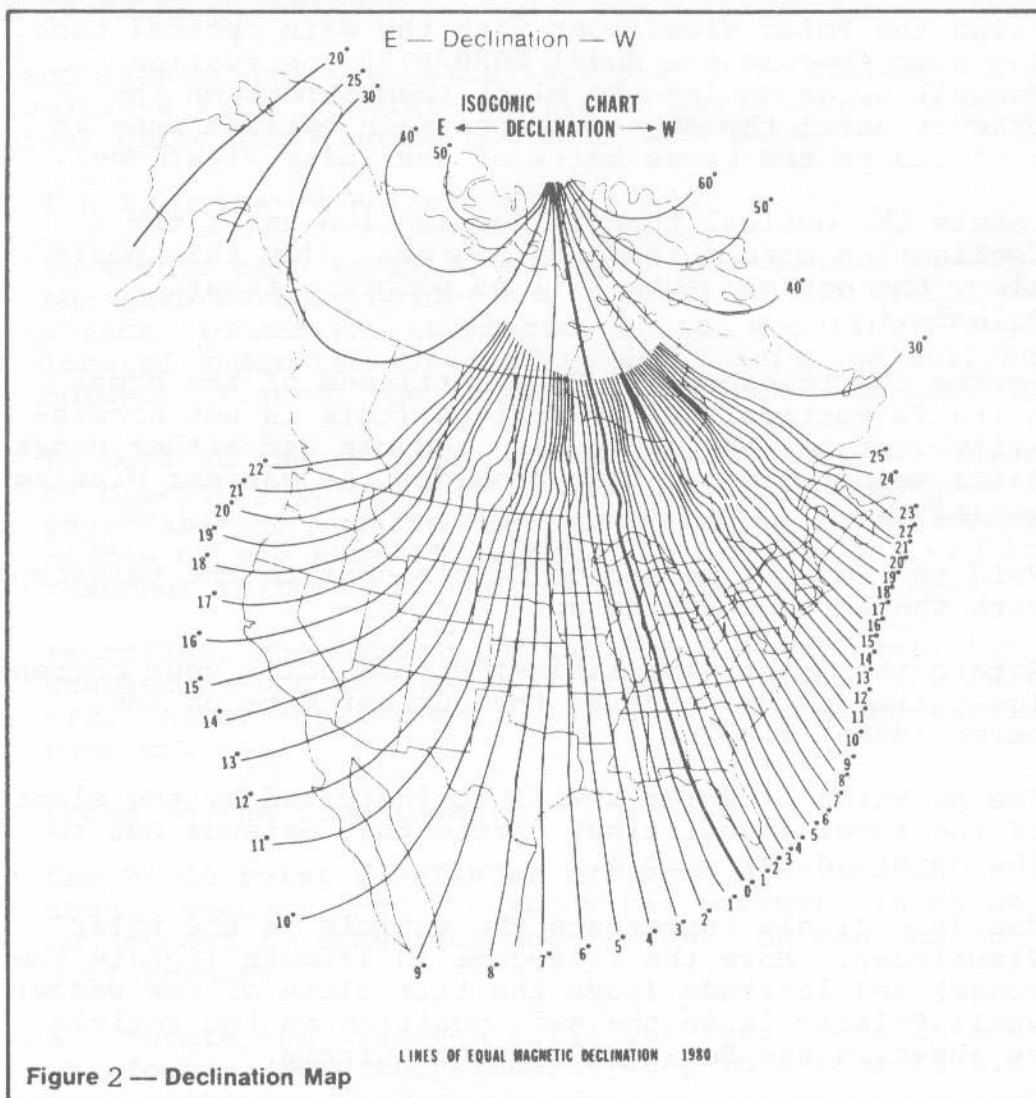
You now have an accurate polar alignment which will permit precise use of setting circles, clock drive, and piggyback/eyepiece projection photography.

E. MAGNETIC COMPASS

The magnetic compass helps the observer to set-up the telescope without actually seeing the pole star Polaris. This allows setting up before dark or in locations where the view of Polaris is obstructed. The magnetic compass has an adjustment to compensate for the local angle of Magnetic Declination. Note: Magnetic Declination is the difference between Magnetic North (which the compass shows) and true north (where the telescope should be pointed). Magnetic Declination should not be confused with the astronomical term "Declination", which when used with "Right Ascension" describes the celestial coordinate system.

In order to obtain an accurate reading using the compass, you must first adjust for the Magnetic Declination for your location.

1. First, determine the Magnetic Declination your area using the Isogonic Chart (Fig. 2).



2. Squeeze the clear central vial with thumb and index finger of the left hand.
3. With the right hand, rotate the outer dial until the orienting arrow (the black arrow painted on inside clear surface) is lined up with the desired Magnetic Declination angle on the declination scale. Notice that East Magnetic Declination is to the right of the "North" position and West Magnetic Declination is left of the "North" position. As an example, Fig. 3 shows the correct setting for 10 degrees west declination, which covers Buffalo, NY, or Philadelphia, PA.

The Magnetic Compass is now set for the correct declination angle. To attach to the Equatorial Wedge, follow these steps:

1. Replace the 10" long threaded rod attached to the center of the field tripod with the new rod supplied. This new rod is made of non-ferrous steel and will not affect the compass readings. (See the Model 2080/2120 Instruction Manual, Altazimuth Adapter, for detailed instructions on replacing

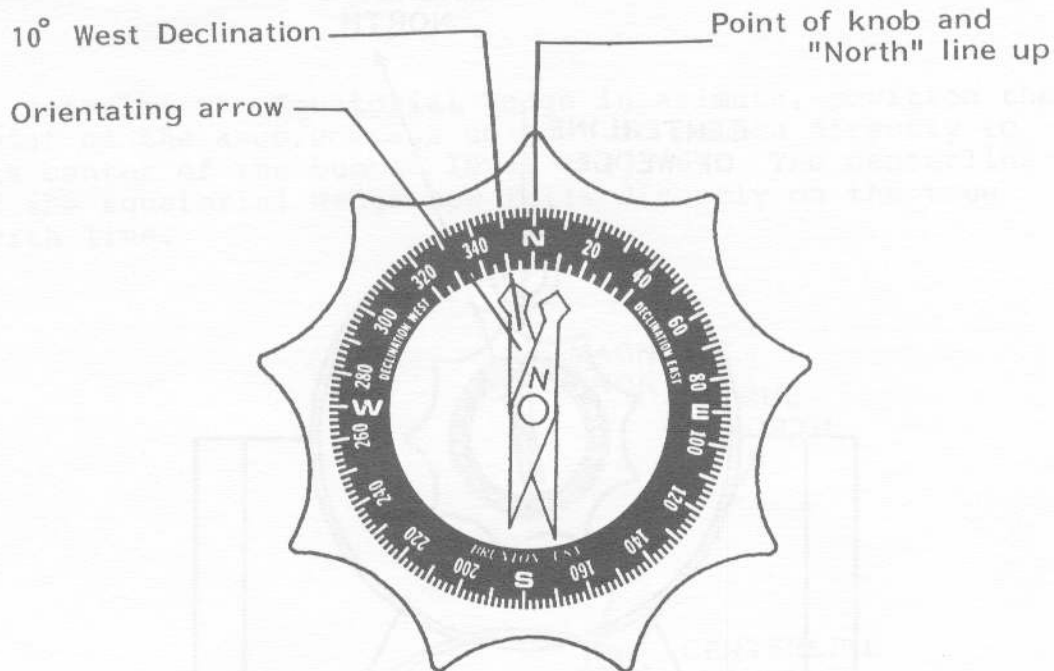


Fig. 3

this rod.) Thread the new rod so that no more than 1-3/8" of its length extends above the center base of the field tripod, and lock into position with the hex nut on the underside of the center base as described in the Instruction Manual.

2. Snap the Magnetic Compass into the 3" diameter wedge attachment knob (after setting the Magnetic Declination as described above). Position the compass into the knob so that the 360 degree location on the direction scale (the "North" position) lines up with one of the nine points of the knob. (See Fig. 3.) Press the compass firmly into the knob.
3. Assemble the Equatorial Wedge onto the Field Tripod as described in the Instruction Manual using the knob/compass combination to attach the wedge to the tripod.

The Magnetic Compass is now ready to use. Just follow these simple steps for a quick and easy azimuth alignment:

1. Loosen the knob/compass slightly. This allows for rotation of the Equatorial Wedge under the knob/compass (Fig. 4). The magnetic pointing arrow will point to magnetic north.
2. Rotate the knob/compass so that the magnetic pointing arrow lies directly over the painted black alignment arrow (Fig. 5). The "North" position on the direction scale (and the point on the knob/compass) now point directly north.

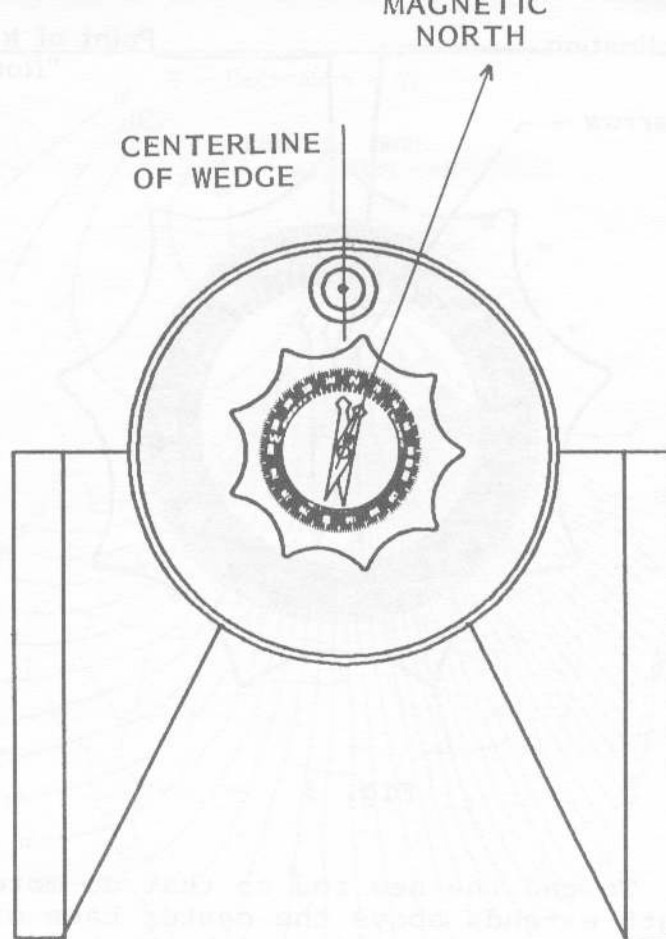


Fig. 4

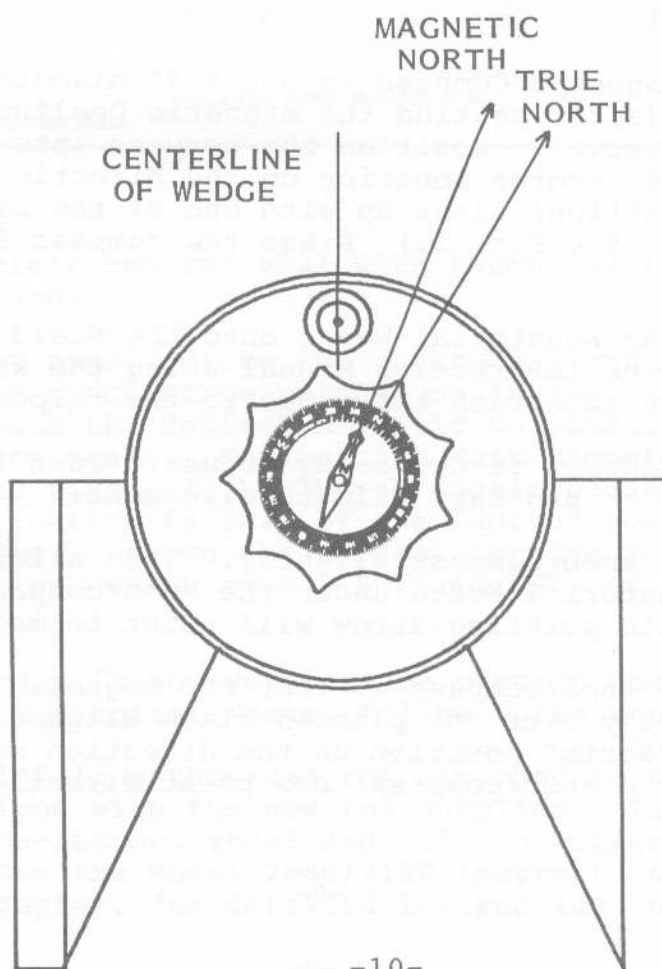


Fig. 5

3. By rotating the Equatorial Wedge in azimuth, position the point of the knob/compass so that it points directly to the center of the bubble level (Fig. 6). The centerline of the Equatorial Wedge now falls directly on the true north line.

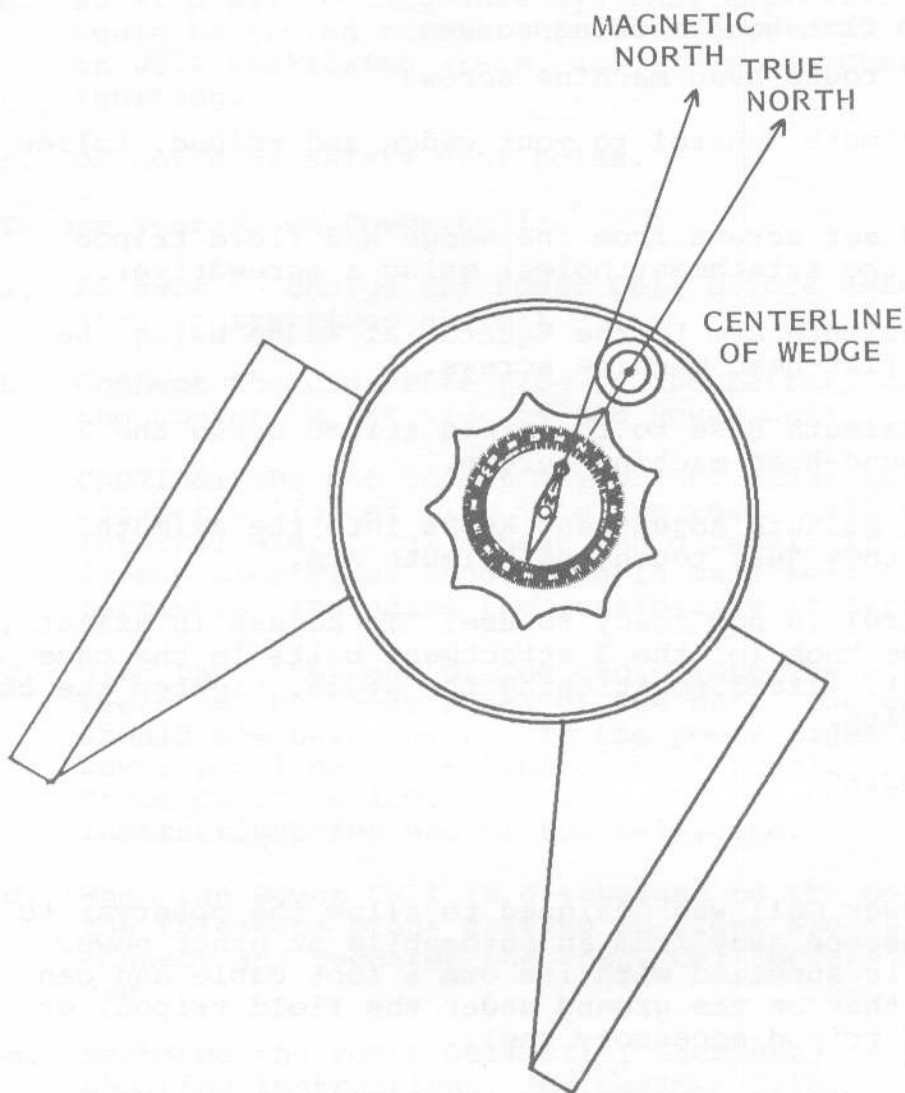


Fig. 6

4. Tighten the knob/compass, locking the Equatorial Wedge into place.

The Field Tripod and Equatorial Wedge are now pointed directly toward Celestial North, without ever having seen the North Star!

F. AZIMUTH CONTROL

The Azimuth Control for the Meade Equatorial Wedge and Field Tripod is shipped in a plastic bag and includes the following parts:

- ° Azimuth Base (large U-shaped piece of aluminum)
- ° Azimuth Arm (small T-shaped piece of aluminum)
- ° 2 Azimuth Knobs
- ° 2 - 8-32 x $\frac{1}{2}$ " flat-head machine screws
- ° 2 - 8-32 x 1" round-head machine screws

To attach the Azimuth Control to your wedge and tripod, follow these simple steps:

1. Remove the 4 set screws from the wedge and field tripod (which plug the attachment holes) using a screwdriver.
2. Attach the Azimuth Arm to the Equatorial Wedge using the 2 8-32 x $\frac{1}{2}$ " flat-head machine screws.
3. Attach the Azimuth Base to the field tripod using the 2 8-32 x 1" round-head machine screws.
4. Thread the 2 Azimuth Adjustment Knobs into the Azimuth Base, until they just touch the Azimuth Arm.

The Azimuth Control is now ready to use. To adjust in azimuth, loosen the central wedge knob (or the 3 attachment bolts in the case of the Meade Model 2120). After positioning the wedge, tighten the central wedge knob or bolts.

G. OPTIONAL ACCESSORIES

1. Power Cell

The Meade Power Cell was designed to allow the observer to use the telescope away from an automobile or other power source. It is supplied with its own 6 foot cable and can be placed either on the ground under the field tripod, or on the field tripod accessory shelf.

To charge the Meade Power Cell, a constant voltage float charger is provided. This type of charger will not over-charge the battery and may be left plugged in continuously. This will insure a "fully charged" power cell and will also extend the life of the power cell.

To charge the Meade Power Cell:

- a. Disconnect the cable from the Power Cell.
- b. Insert the charger cigarette plug into the receptacle on the side of the carrying case.

- c. Plug the charger AC power cord into the appropriate 120v AC, 60-cycle outlet, or 240v AC, 50-cycle outlet.
- d. Charge the Power Cell for approximately 24-36 hours after each complete discharge, to fully recharge the Power Cell. The charger may be left on indefinitely.
- e. As with all rechargeable systems, explosive gasses could be vented on overcharge. Therefore, use only in well ventilated areas, away from sources of ignition.
- f. Do not seal safety vent holes.

To use your Meade Power Cell:

- a. Be sure to charge the Power Cell before using. (See instructions above.)
- b. Connect the cigarette plug of the battery cable into the socket on the side of the Power Cell.

CAUTION: Do not insert any object other than a cigarette lighter plug into the Power Cell socket. Internal electrical damage could result if a direct electrical connection is made between the terminals, including the possibility of fire.

- c. Plug the other end of the cable into the power receptacle on the power panel of the LX3. The telescope should now have power. If the power light on the LX3 power panel does not light, see "Trouble Shooting the Power Cell", below. Refer to the LX3 operating instructions for use of the telescope.
- d. When the Power Cell is discharged to the point where the telescope stops driving in right ascension, disconnect and recharge the Power Cell before further use.
- e. Recharge the Power Cell after each use, as per charging instructions, for maximum life.
- f. Like all batteries, these units contain corrosive and toxic materials. Do not puncture, disassemble, mutilate, or incinerate.

Trouble Shooting the Power Cell.

If, after following the above steps, the telescope power light does not go on, check the following:

- a. Check the "External/Internal" switch on the LX3 power panel for the correct setting. (See Page 4 of this Instruction Manual for proper setting.)

- b. Check all electrical connections.
- c. Try using the telescope with a different power source (an automobile battery or the AC Converter), to verify that the Power Cell is the source of the problem. If the telescope does not operate using a separate power supply, then refer to "Trouble Shooting the LX3 Quartz Drive", Page 17 of this Instruction Manual.
- d. If you have determined that the Power Cell is not working, be sure that the Power Cell is fully charged.
- e. Inspect the fuse in the Power Cell wire harness. Open the cardboard separator inside the case and twist open the fuse holder to inspect the fuse. If bad, replace with a 20 amp fuse.

Power Cell Storage.

If you intend to store the Power Cell for extended periods of time, a few simple reminders can prolong the life of the Power Cell. First, always store the Power Cell in a fully charged condition. The charger can be left charging indefinitely. Always store in a cool place, and recharge the Power Cell every three to six months.

2. Single/Dual-Axis Drive Corrector

The Meade "plug-in" drive corrector for the LX3 Schmidt-Cassegrain telescope is designed to be used either as a single-axis only (Right Ascension) drive corrector or dual-axis (Right Ascension and Declination). The dual-axis mode requires only the addition of the Model 38 Declination Motor; the "N" and "S" buttons on the handbox will not function unless the Model 38 Declination Motor is attached.

Operation

a. Crystal Mode

When the slide switch (#2, Fig. 7) is on the "Crystal" position, the Quartz crystal in the LX3 Drive is controlling the telescope's tracking speed. The "E" and "W" buttons override the Quartz crystal to speed up or slow down the tracking speed as long as the button is pressed. When the button is released, the Quartz crystal resumes control. Note: In the "Crystal" mode, the variable speed knob (#3, Fig. 7) is non-functional. This mode of operation is best suited for photographing deep-space objects that move at the sidereal rate.

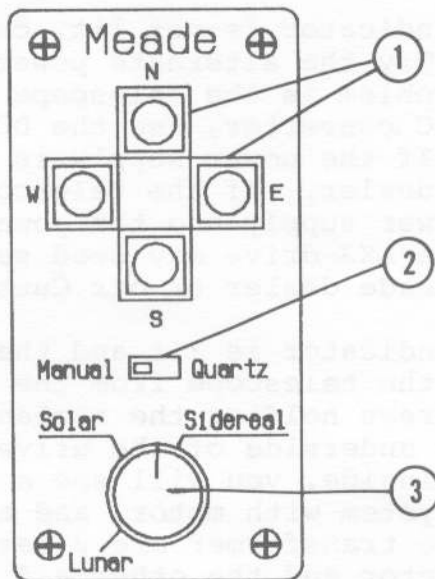


Fig. 7: Model 36 Drive Corrector

- (1) Control Buttons
- (2) Quartz/Manual Slide Switch
- (3) Variable Speed Knob

b. Manual Mode

Moving the slide switch to the "Manual" position transfers the tracking speed control from the Quartz crystal to the variable speed knob. This knob will vary the drive frequency from 57Hz to 62Hz, which covers the Lunar, Solar, and Planetary rates. The Lunar and Solar rate positions are marked for reference. As in the "Crystal" mode, the "E" and "W" buttons override the variable knob to speed up and slow down the drive rate.

c. Dual-Axis

To use the Meade drive corrector in the dual-axis mode, simply plug in the optional Model 38 Declination Motor. The "N" and "S" buttons are automatically activated.

For more information on guiding and photography, see "Photographic Accessories for the Model 2080" in the Model 2080/2120 Instruction Manual.

H. TROUBLE-SHOOTING THE LX3 QUARTZ DRIVE

The LX3 Quartz Drive is thoroughly tested at the factory, and should not require any servicing. However, should the LX3 drive fail to operate, please follow these simple instructions:

1. Check to make sure that the Internal/External switch is properly set. If the drive corrector handbox is not attached, the slide switch must be set to "Internal".

2. If the power indicator is not lit, check all electrical connections. Try the alternate power supply to determine if the problem is the telescope or the power source. If using the AC converter, use the DC power cable and car battery. If the power supply is the problem, return to your Meade dealer. If the telescope does not operate with either power supply and the power indicator does not light, then the LX3 drive may need servicing. Please contact your Meade dealer or our Customer Service Department.
3. If the power indicator is lit and the telescope fails to track, unplug the telescope from the power source. Remove the 4 small screws holding the rectangular cover plate located on the underside of the drive base, and remove the cover plate. Inside, you will see a power transformer, the LX worm gear system with motor, and a small circuit board. Attached to the transformer are 2 sets of wires; 1 set has a 2 wire connector and the other a 3 wire connector. Check to make sure both sets of wires are connected. If not, replace the connectors on the transformer pins. The 2 wire connector can go on either way, and the 3 wire connector can only go on one way. Replace the cover plate. If the drive still does not function, see your Meade dealer.



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