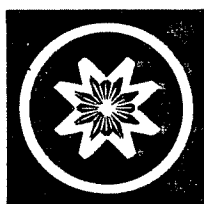


Supplementary Instructions

Meade Models 2080/LX5 8" Schmidt-Cassegrain and 2120/LX5 10" Schmidt-Cassegrain Telescopes with Quartz Electronic Drive Systems

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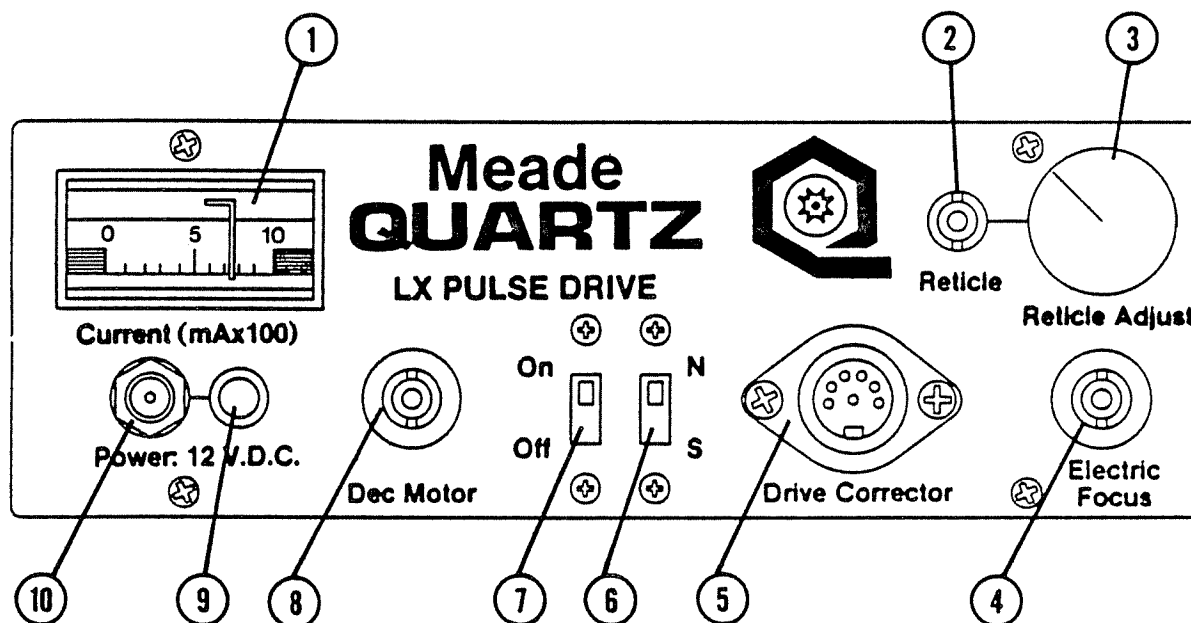


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A. Introduction

Congratulations! You now own the most advanced Schmidt-Cassegrain telescope ever produced for the amateur astronomer. Your new Meade LX5 telescope 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 LX5. Refer to the standard Model 2080/2120 Instruction Manual for complete detailed information regarding set-up, operation, and specifications of your telescope.



- | | |
|--------------------------------------|------------------------------|
| (1) Ammeter | (6) Northern/Southern Switch |
| (2) Illuminated Reticle Output | (7) On/Off Switch |
| (3) Illuminated Reticle Adjust Knob | (8) Dec Motor Output |
| (4) Electric Focus Output | (9) Power Indicator |
| (5) Electronic Command Center Socket | (10) Power Input Socket |

Fig.1: LX5 Power Panel

B. LX5 Quartz Electronic Drive

The 8" and 10" LX5 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 LX5 Quartz Drive provides accurate tracking to within plus or minus .005% of the sidereal frequency, independent of temperature changes or local power line variations.

1. AC Operation

The 8" and 10" LX5 telescopes are supplied with a 12v DC 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 (#10, Fig. 1). Check that the On/Off switch (#7, Fig. 1) is in the "On" position, and that the Northern/Southern switch (#6, Fig. 1) is set for the hemisphere of your observing location. The power indicator (#9, Fig. 1) should now be lit and the telescope tracking. If the Power Light is not working, see "Troubleshooting the Drive System" below.

2. DC Operation

The 8" and 10" LX5 telescopes operate on DC current and may be powered directly from a 12 volt battery or power cell. The LX5 drive system normally draws about .25 amp in standard operation with the Electronic Command Center (ECC) in use. Maximum current usage is .50 amp when all optional accessories are being used. 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 LX5 Schmidt-Cassegrains are supplied with a DC power cable for use with a car battery. To use the DC power cable, connect the cable to the power socket (#10, Fig. 1) on the power panel of the LX5, and the cigarette plug to your cigarette lighter. Be sure that the On/Off switch is "On". If the power indicator is not lit, see "Troubleshooting the Drive System" below.

Also supplied with the telescope is a small Battery Pack with cord. This Battery Pack holds 8 size AA batteries (supplied by the user) and will power the telescope for up to 6 hours. Rechargeable batteries are recommended. Note: When the telescope is being powered by the Battery Pack without the ECC, the power usage is about .09 amp or 1/3 that normally required by the telescope when used with the ECC (.25 amp).

3. Northern/Southern Switch

The Northern/Southern switch (#6, Fig. 1) supplied on the Meade LX5 Schmidt-Cassegrains allows operation of the telescope anywhere in the World. Moving the switch to the Southern position reverses the telescope's tracking direction. Note: Once set, unless the telescope is moved across the Equator, this switch will never need to be used again.

4. Ammeter

An important feature on the LX5 telescopes is the ammeter (#1, Fig. 1). This meter shows the power usage of the telescope. When the telescope is powered from an AC source or a car battery, the amount of current being used is not important because the power available is essentially unlimited. But when the telescope is powered from the Battery Pack supplied with each LX5 telescope or a small power cell (such as the Meade Model 600 Power Cell), the telescope operating time will vary, depending on the power usage.

To estimate the operating time of the telescope, take the amp hour rating of the power source, and divide by the power usage. For example, the ammeter reads from 0 to 1000 mA (0 to 1 amp), so if the needle is positioned over the second mark, the telescope is using 200 mA or .2 amp. When the batteries are fully charged, the Battery Pack amp hour rating is .5 (the Meade 600 Power Cell has a 5 amp hour rating). Therefore, the operating time of the telescope when using the Battery Pack when the ammeter is showing a power usage of 200 mA would be about $.5/.2 = 2.5$ hours. Note: Actual operating time will depend on many factors such as the condition of the batteries and outside temperature.

C. Output Jacks

The Meade LX5 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. Electronic Command Center Socket

The Electronic Command Center Socket (#5, Fig. 1) results in the "plug-in" capability of the LX5. By simply plugging the Electronic Command Center into the socket, the full range of LX5 features are made available. See below for description of the Electronic Command Center features.

2. Illuminated Reticle Jack & Adjust Knob

The Illuminated Reticle can be plugged directly into the LX5 power panel reticle jack (#2, Fig. 1), eliminating the need for the separate battery box. The Reticle Adjust Knob (#3, Fig. 1) controls the brightness of the reticle.

3. Electric Focuser Jack

The Meade Model 1200A Electric Focuser may also be plugged directly into the LX5 power panel by way of the Electric Focuser jack (#4, Fig. 1). The Electronic Control Center may now be used to control the Electric Focuser to achieve very precise focusing of the telescope.

4. Model 39 Declination Motor Assembly Jack

The "Declination Motor" jack (#8, Fig. 1) is used in the Dual-Axis Drive Corrector mode. The Electronic Control Center is required for use of the Declination motor and will operate the Declination Motor at the 2X drive corrector speed or the 8X image scanning speed. (The Model 39 Declination Motor Assembly is an optional accessory for LX5 telescopes.)

D. Electronic Command Center (ECC)

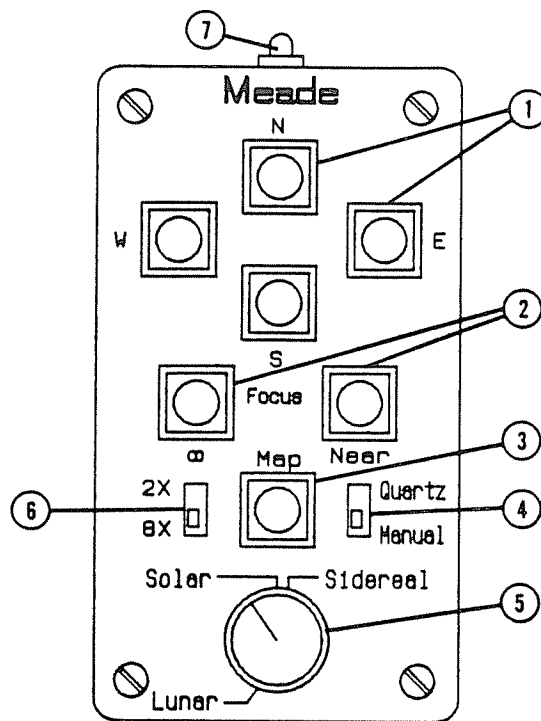
The hand-held Electronic Command Center plugs directly into the LX5 power panel "Drive Corrector" socket (#5, Fig. 1) and is the heart of the LX5 concept. Virtually all telescope functions are put at your fingertips, making separate Battery Packs and handboxes obsolete. At the same time, if a simple, quick observing session is planned which will not require the sophisticated features of the LX5, the telescope may be operated without the Electronic Command Center, reducing power consumption. This may be useful if you wish to power the telescope from the Battery Pack.

1. Drive Corrector Operation

The Electronic Command Center for the LX5 Schmidt-Cassegrain telescopes is designed to be used either as a single-axis (Right Ascension) drive corrector or dual-axis (Right Ascension and Declination) drive corrector. The dual-axis mode requires the addition of the optional Model 39 Declination Motor Assembly; the "N" and "S" buttons on the Electronic Command Center will not function unless the Model 39 Declination Motor Assembly is attached.

a. Crystal Mode

When the slide switch (#4, Fig. 2) is on the "Quartz" position, the Quartz crystal in the LX5 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 "Quartz" mode, the variable speed knob (#5, Fig. 2) is non-functional. This mode of operation is best suited for photographing deep-space objects that move at the sidereal rate.



- (1) Drive Corrector Control Buttons
- (2) Electric Focuser Buttons
- (3) Map Light Button
- (4) Quartz/Manual Slide Switch
- (5) Variable Speed Knob
- (6) 2X/8X Speed Slide Switch
- (7) Map Light

Fig. 2: Electronic Command Center

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 57 HZ to 62 HZ, which covers the Lunar, Solar, and Planetary rates. The Lunar and Solar rate positions are marked for reference. As in the "Quartz" 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 Electronic Command Center in the dual-axis mode, simply plug in the optional Model 39 Declination Motor Assembly. The "N" and "S" buttons are automatically activated.

d. 2X/8X Speeds

As described above, when any of the four Drive Corrector buttons (#1, Fig. 2) is pressed, the telescope moves in the labeled direction. The speed at which the telescope moves is determined by the 2X/8X slide switch (#6, Fig. 2). When in the 2X position, the telescope moves at twice the tracking rate in the Right Ascension direction; ideal for critical corrections during long exposure photography or image centering at very high observing powers. Moving to the 8X position results in telescope movement at eight times the tracking speed in the Right Ascension direction. Add the optional Model #39 Declination Motor Assembly, which plugs into the LX5 power panel, and you can scan at either speed in any direction, making the manual controls almost superfluous.

2. Electric Focuser Buttons

Add the optional Meade #1200A Electric Focuser, and ultraprecise microfocusing is at your fingertips. Simply depress the ECC's focus pushbuttons (#2, Fig. 2) to obtain the sharpest lunar and planetary focus possible. Coarse focusing is accomplished with the telescope's manual focus knob.

3. Map Light Button

The Electronic Command Center includes a red L.E.D. located at the top of the handbox (#7, Fig. 2). Depressing the "Map" button (#3, Fig. 2) illuminates this light for reading star maps or charts during an observing session.

E. 9 X 60mm Polar Viewfinder

In addition to being an excellent 9 X 60mm 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, thread the bulb/battery holder into the hole located just under the eyepiece of the viewfinder.

To turn on the reticle, rotate the knurled switch on the bulb/battery holder to the "on" position. The brightness is adjustable by rotating the knurled switch. To prolong battery life, remember to turn off the reticle when not in use.

To replace the batteries in the Polar Viewfinder, remove the bulb/battery holder from the Polar Viewfinder. Separate the two halves of the bulb/battery holder by unthreading the two pieces, exposing the batteries. After replacing the batteries, thread the two halves of the bulb/battery holder together, and replace the unit onto the Polar Viewfinder.

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.

1. Rotate the eyepiece until the reticle is in sharp focus.
2. Loosen the black knurled locking ring (just behind the dew shield).
3. 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.
4. 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:

1. First, mount the viewfinder in its brackets. The 9 x 60mm viewfinder must be partially disassembled in order for it to fit into its bracket. Unthread the entire diagonal mirror/illuminated reticle from the main viewfinder body. Note that when viewed from the side, the bottom portion of the 2-ring viewfinder bracket is off-center. Slide the smaller end of the viewfinder first through the bracket ring which is furthest from the bottom of the bracket. You will have to unthread the black nylon collimation thumbscrews on the bracket to provide sufficient clearance for the viewfinder. Replace the diagonal mirror/illuminated reticle assembly onto the viewfinder tube.
2. Attached to the telescope tube is the viewfinder bracket base to which the viewfinder (mounted in its own 2-ring bracket) is attached. Slide the viewfinder and bracket into the base on the main telescope tube and lock into position by tightening the two thumbscrews on the side of the viewfinder bracket base.
3. 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.
4. Rotate the optical tube in declination until the declination circle reads 90 degrees. (In this position, the optical tube will be pointing toward Polaris.)
5. 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), and the viewfinder's eyepiece is also vertical to the horizon. By making sure the viewfinder's eyepiece is also vertical, you are automatically picking the correct crosshair to make vertical to the horizon.
6. Hold the Polaris Reference Circle next to the telescope with the arrow pointing up.
7. Rotate the inner (local time) circle until your current local time corresponds to the current date on the outer (date) circle.
8. The position of Polaris will be indicated by the slant of the inner (local time) circle that extends out to the outer (date) circle.
9. 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 Polar Reference Circle.

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

F. 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.

1. Setting Magnetic Declination

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 in your area using the Isogonic Chart (Fig. 3)

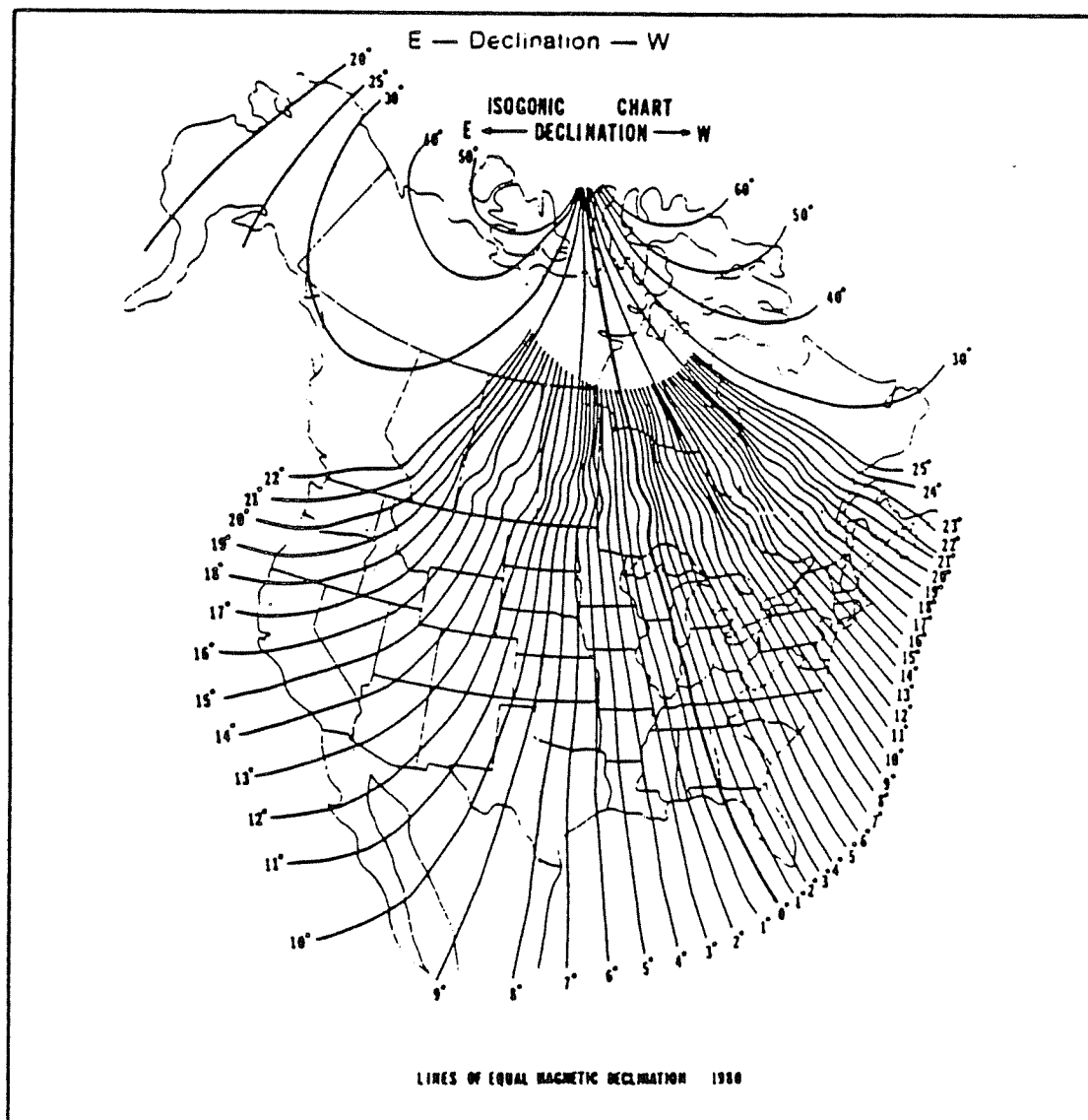


Fig. 3: Magnetic Declination Map

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 the 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. 4 shows the correct setting for 10 degrees west declination, which covers Buffalo, NY, or Philadelphia, PA.

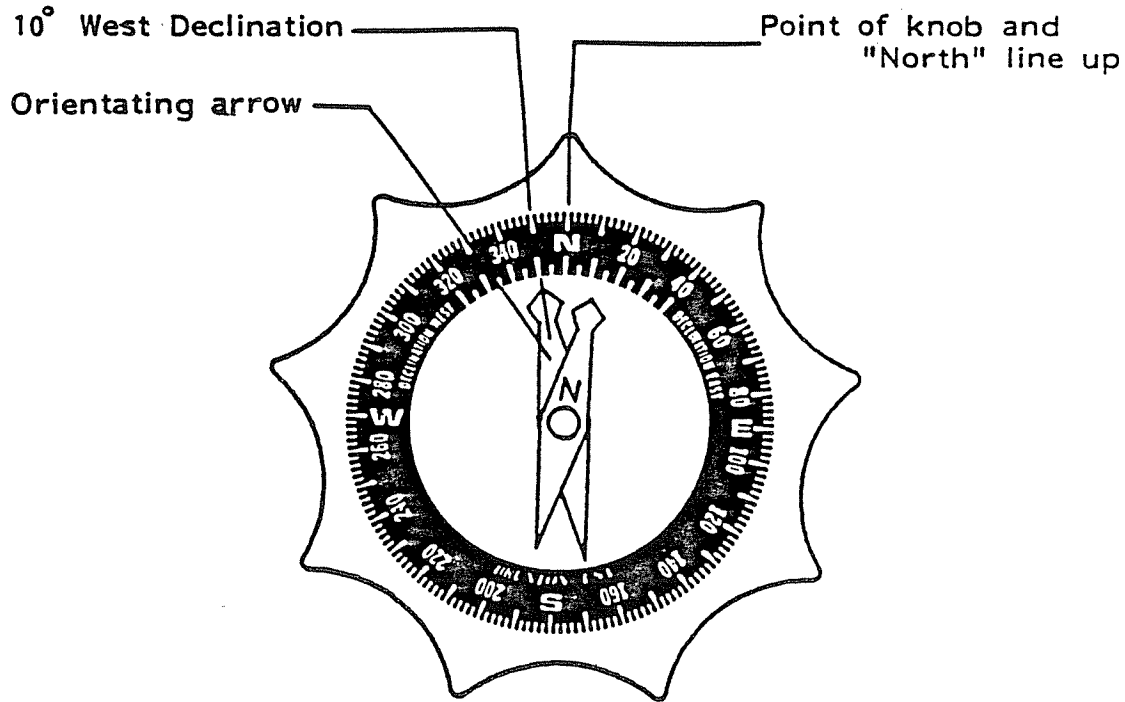


Fig. 4: Magnetic Compass

2. Compass Installation

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

1. 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 knobs. (See Fig. 4.) Press the compass firmly into the knob.

2. Assemble the Equatorial Wedge onto the Field Tripod as described in the 2080/2120 Instruction Manual using the knob/compass combination to attach the wedge to the tripod.

3. Finding True North

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. 5). The magnetic pointing arrow will point to magnetic north.

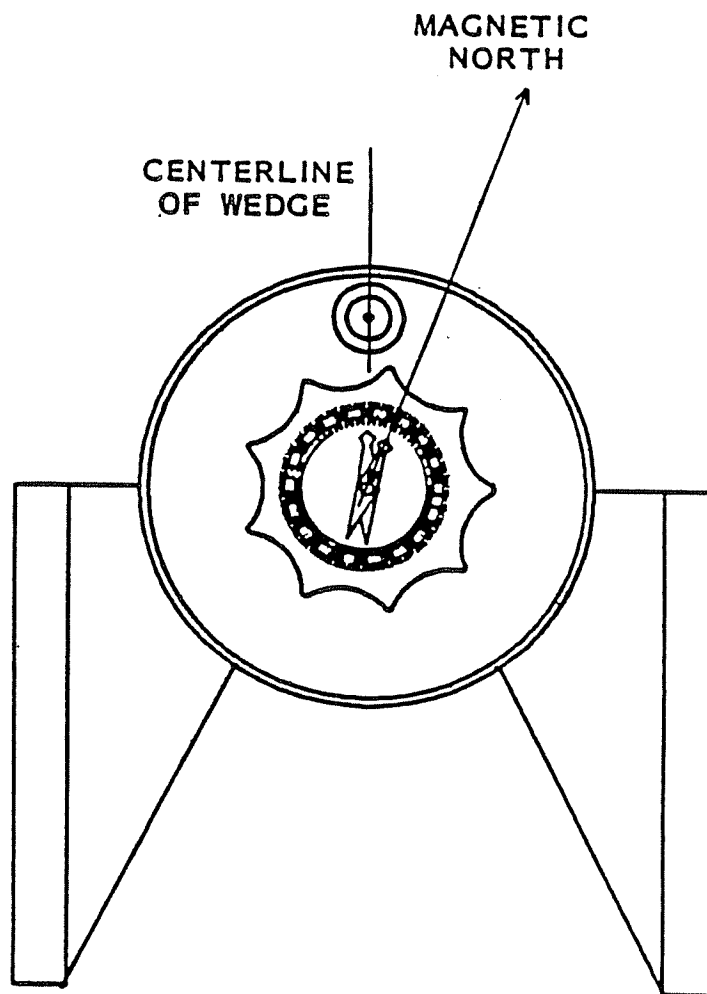


Fig. 5: Equatorial Wedge and Magnetic Compass

2. Rotate the knob/compass so that the magnetic pointing arrow lies directly over the painted black alignment arrow (Fig. 6.) The "North" position on the direction scale (and the point on the knob/compass) now point directly north.

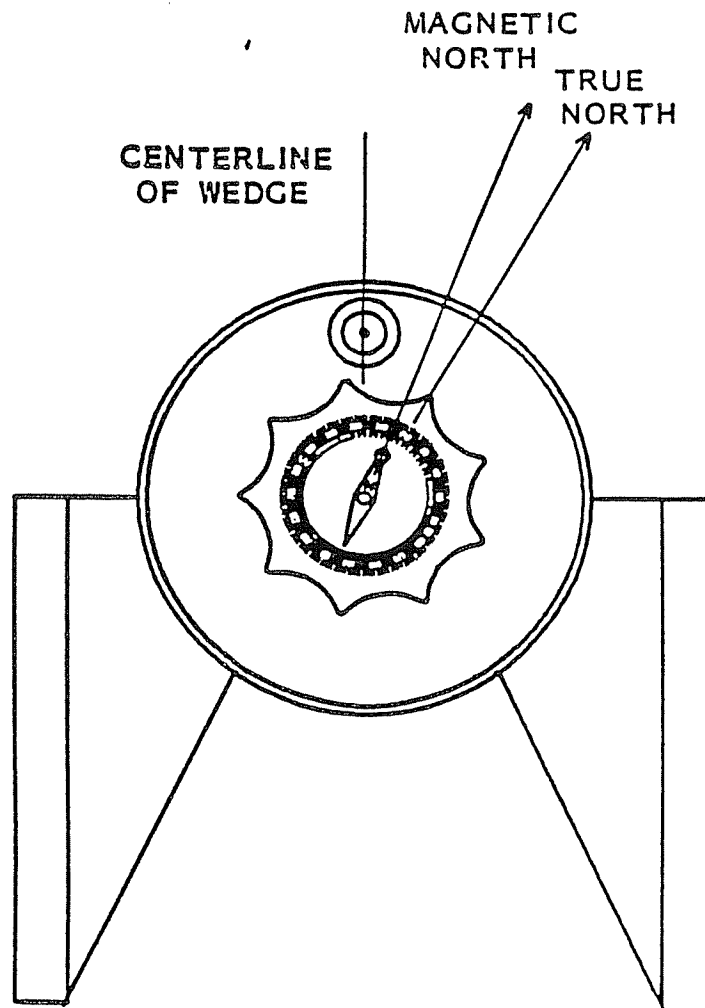


Fig. 6: Equatorial Wedge and Magnetic Compass

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. 7.) The centerline of the Equatorial Wedge now falls directly on the true north line.

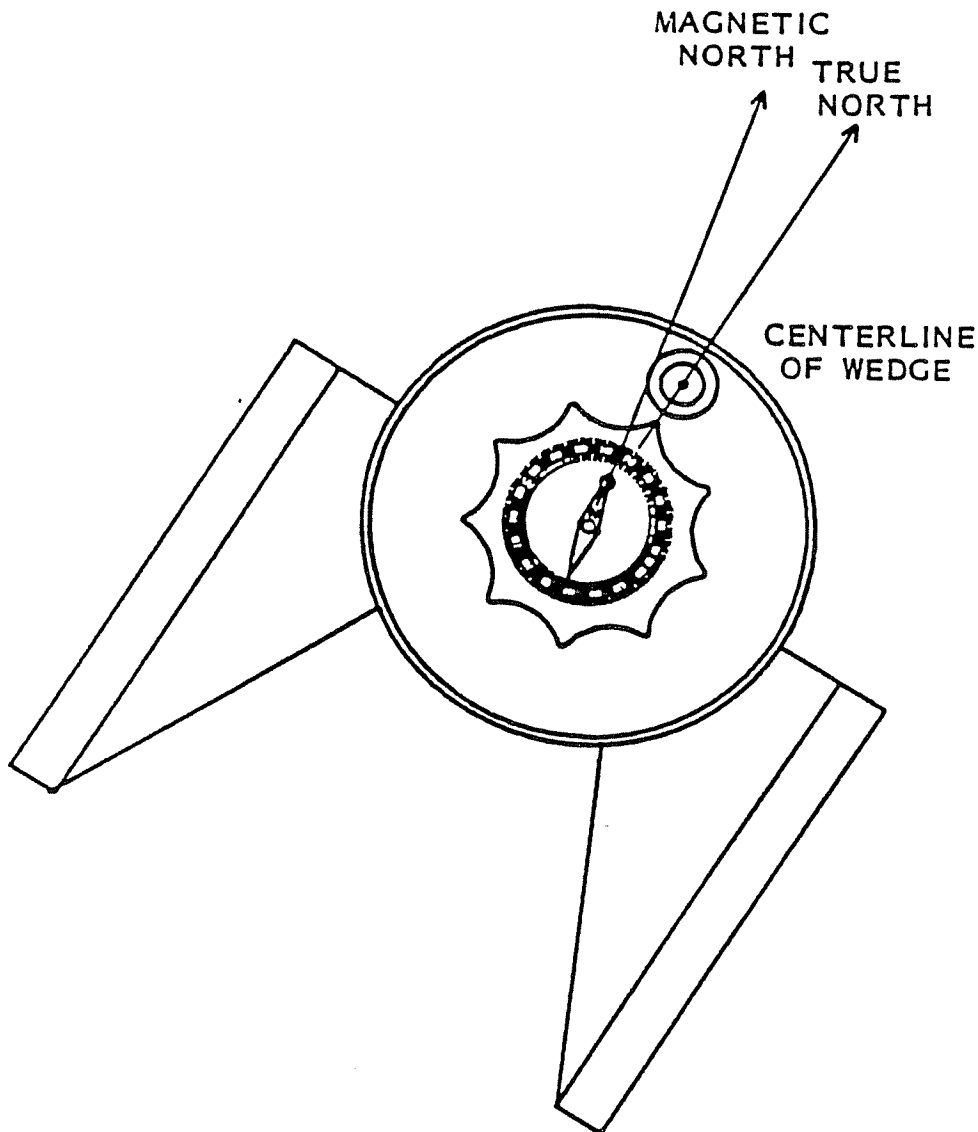


Fig. 7: Equatorial Wedge and Magnetic Compass

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.

G. Azimuth Control

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

- o Azimuth Base (large U shaped piece of aluminum)
- o Azimuth Arm (small T shaped piece of aluminum)
- o 2 - Azimuth Knobs
- o 2 - 8-32 x 1/2" flat-head machine screws
- o 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 two 8-32 x 1/2" flat-head machine screws.
3. Attach the Azimuth Base to the Field Tripod using the two 8-32 x 1" round-head machine screws.
4. Thread the two 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 three attachment bolts in the case of the Meade Model 2120). After positioning the wedge, tighten the central wedge knob or bolts.

H. Deluxe Latitude Adjuster

The Deluxe Latitude Adjuster (DLA) attaches directly to the Equatorial Wedge and permits very precise adjustments in latitude angle by the simple turning of one knob.

The Equatorial Wedge for the Meade 8" and 10" LX5 Schmidt-Cassegrain telescopes listed above is shipped with the main crossbar of the DLA already installed. Loosen the two socket-head screws that lock the main crossbar in place, to allow the crossbar to rotate slightly if needed. Thread the long adjustment knob into the main crossbar and position the end of the adjustment knob into the cavity at the lower end of the Equatorial Wedge Tilt-Plate. Tighten the two socket-head screws locking the main crossbar into place.

The DLA is now ready to use. To make fine latitude adjustments, follow this procedure:

1. Loosen slightly the knobs (see item (4), Fig. 8, on page 21 of the Model 2080/2120 Instruction Manual) on each side of the wedge.
2. Turn the DLA's adjustment knob (pressing against the bottom of the tilt-plate), so that the tilt-plate moves in latitude angle.
3. Re-tighten the two knobs (4), which were loosened in step 1, above.

NOTE: When installing the tilt-plate to the wedge, note that it is a tight fit and the sides must generally spread slightly to accept the tilt-plate. If the main crossbar of the DLA is already tightened into place this will inhibit your installation of the tilt-plate. You will therefore see that by releasing the screws on the ends of the DLA crossbar your installation of the wedge tilt-plate will be facilitated.

I. Optional Accessories

1. Meade 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 remain 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 telescope's DC power cable from the Power Cell if connected.
- 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 DC power 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 LX5. The telescope should now have power. If the power light on the LX5 power panel does not light, see "Troubleshooting the Power Cell," below. Refer to the LX5 operating instruction 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.

Troubleshooting the Power Cell

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

- a. Be sure the "On/Off" switch on the LX5 power panel is "On".
- 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 "Troubleshooting the LX5 Quartz Drive", page 16 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. Model 39 Declination Motor Assembly

The Model 39 Declination Motor Assembly attaches directly to the Model 2080/LX5 or 2120/LX5 and allows precise adjustments in declination.

Attaching the Model 39 Declination Motor

- a. Using the telescope's supplied hex wrench, remove the rear Declination slow-motion knob. This knob is on the opposite side of the fork arm, away from the R.A. controls.
- b. Slide the large Teflon gear onto the shaft, small end first. Position the gear so that the small metal hub does not quite touch the fork arm, (about 1/64" gap) and tighten the set screw.
- c. Using the two screws supplied, attach the Declination Motor to the undersurface of the fork arm. Adjust the motor position so that the small chrome pinion gear on the motor will engage with the Teflon slip-gear. Tighten the mounting screws only sufficiently to hold the motor in position. Over tightening the mounting screws may stall the motor.
- d. Plug the Declination cord into the motor. Plug the other end of the cord into the "Dec Motor" socket on the LX5 power panel. The electric Declination motor is now ready for operation.

The Declination slow-motion system is designed to be used manually without disengaging the motor. The Teflon gear will slip, allowing manual override. To use the manual slow-motion Declination control, simply turn the Declination slow-motion knob as if the motor were not attached.

The tension of the Teflon gear has been set at the factory. If it needs adjustment, turn the small slotted head set screw on the large hub of the Teflon gear. This adjustment is very sensitive and requires a very small turn. If this adjustment is set too light, the motor will turn the gear, but not the shaft. If it is set too tight, the manual slow-motion knob will become hard to turn.

Troubleshooting

If the electric Declination motor turns when pushing either of the red "North" or "South" buttons on the Electronic Command Center, but does not move the telescope, check the following;

- a. Make sure that the Declination tangent arm has not run out of travel. Look on the inside of the left fork arm at the bar running down the inside of the fork arm. If it is all the way to one side, then it must be moved back to the middle of the fork arm by turning the manual slow-motion knob.
- b. Make sure the Declination lock is locked. (Refer to page 11 of the Model 2080/2120 Instruction Manual.)
- c. Check that the Teflon gear has sufficient tension.

3. Model 1200A Electric Focuser

For extremely precise focusing during visual or photographic observations, the Model #1200A Electric Focuser attaches directly to the rear cell threads of all Meade Schmidt-Cassegrain models. The Model #1200A Electric Focuser is specifically designed for use with LX5 Models. The Model #1200A unit does not interfere with normal manual focusing of the telescope: coarse focusing is accomplished as before, by turning the manual focuser knob of the telescope. With the Model #1200A unit in place, most observers find that they can obtain a preciseness of focus impossible to achieve with manual focusing, a feature particularly desirable in the observation or photography of subtle lunar and planetary detail. The Model #1200A Electric Focuser incorporates a high-torque DC motor, powered from the LX5 power panel.

If the 2" Diagonal Mirror is already mounted on the telescope, it will need to be removed before the Model #1200A Electric Focuser may be installed. To attach the Model #1200 unit to the LX5 telescope, simply thread the unit onto the rear thread of the telescope. The 2" Diagonal Mirror (or any accessory such as a T-Adapter, Off-Axis Guider, etc.) may now be threaded onto the rear thread of the Electric Focuser. Connect the power cord to the Electric Focuser and the LX5 power panel "Electric Focus" socket.

The Model #1200A Electric Focuser has a total focus travel of about 5/8". It is recommended that the focus tube be positioned to the midrange of its travel by depressing the focus buttons. This focus tube position will allow parfocal eyepieces (eyepieces which all focus at approximately the same position) to be focused without manual focusing. Depressing the "Near" button on the Electronic Command Center will move the focus tube out from the Electric Focuser body; depressing the "Infinity" button will move the focus tube in. When the focus tube has reached it's maximum travel, it will stop, with the internal clutch slipping to prevent damage.

To use the Model #1200A Electric Focuser, first focus the telescope using the manual focus knob as before. Then, use the focus buttons to obtain a precision, vibration free focus. If using parfocal eyepieces, you may change eyepieces and refocus electrically. If you change to a non-parfocal eyepiece, or add a barlow, it will generally be necessary to refocus manually before using the Electric Focuser.

While trying to reach focus, if the Electric Focuser stops moving, it has reached the end of it's travel. Move the focus tube to the midrange position and refocus manually before focusing electrically.

J. Troubleshooting the LX5 drive system

The LX5 Quartz Drive is thoroughly tested at the factory prior to shipment, and should not require any servicing. However, should the LX5 drive fail to operate, please follow these simple instructions.

1. Check to make sure that the On/Off switch and Northern/Southern switch are properly set.
2. If the power indicator is not lit, check all electrical connections. Try an 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 or Battery Pack. If the power supply is the problem, return the power supply to your Meade dealer. If the telescope does not operate with any power supply and the power indicator does not light, then the LX5 drive may need servicing. Please contact your Meade dealer or our Customer Service Department.



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MEADE MODEL 605 MAGNETIC COMPASS FOR SCHMIDT-CASSEGRAIN FIELD TRIPOD INSTRUCTIONS

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 in your area using the Isogonic Chart (Figure 1).
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, Figure 2 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. The 10" long threaded rod which is attached to the center of the field tripod is made of non-ferrous steel and will not affect the compass readings. Thread this rod so that no more than 1-3/8" of its length extends above the center head of the field tripod, and lock into position with the hex nut on the underside of the center head as described in the Instruction Manual.

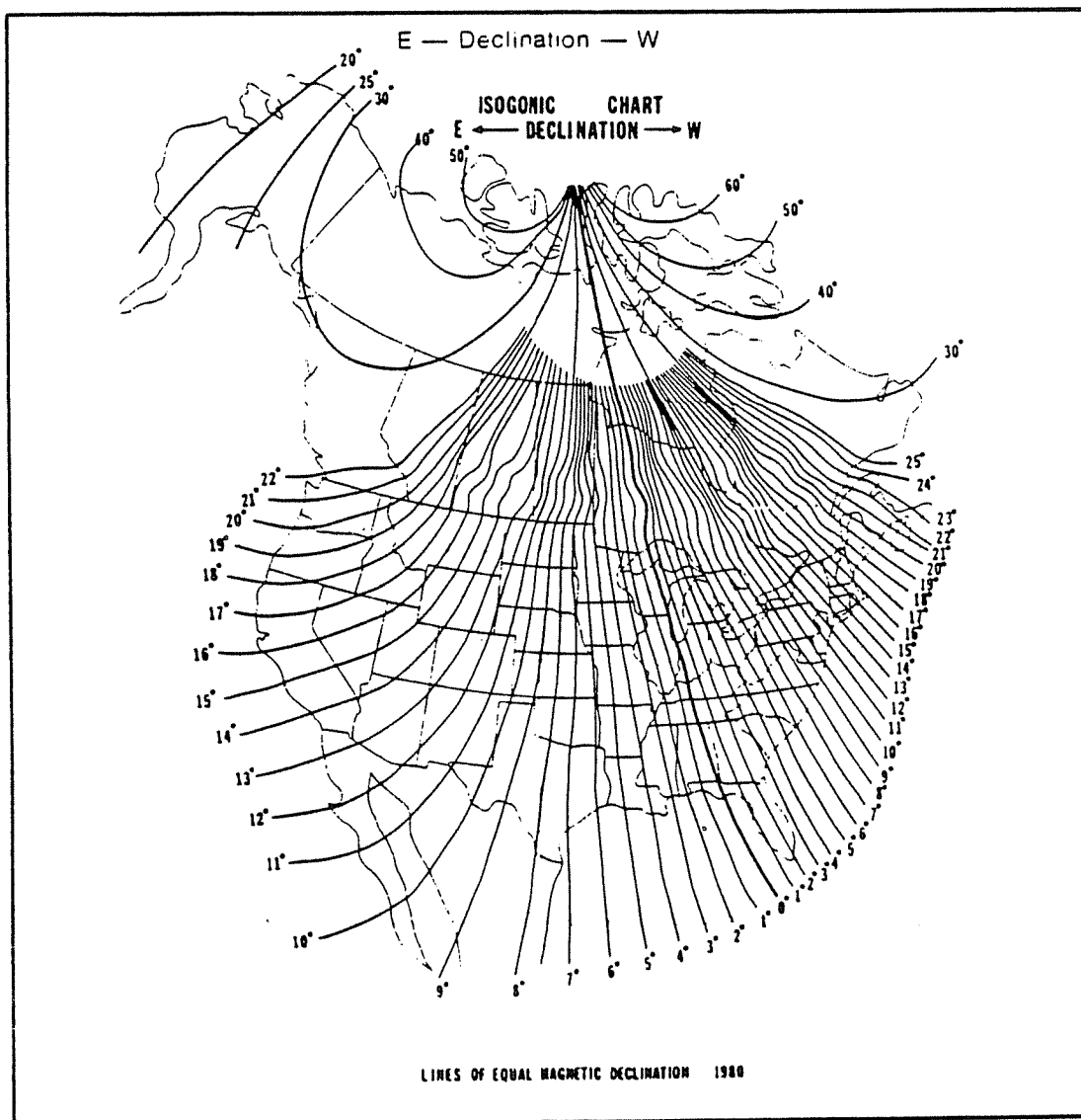


Figure 1

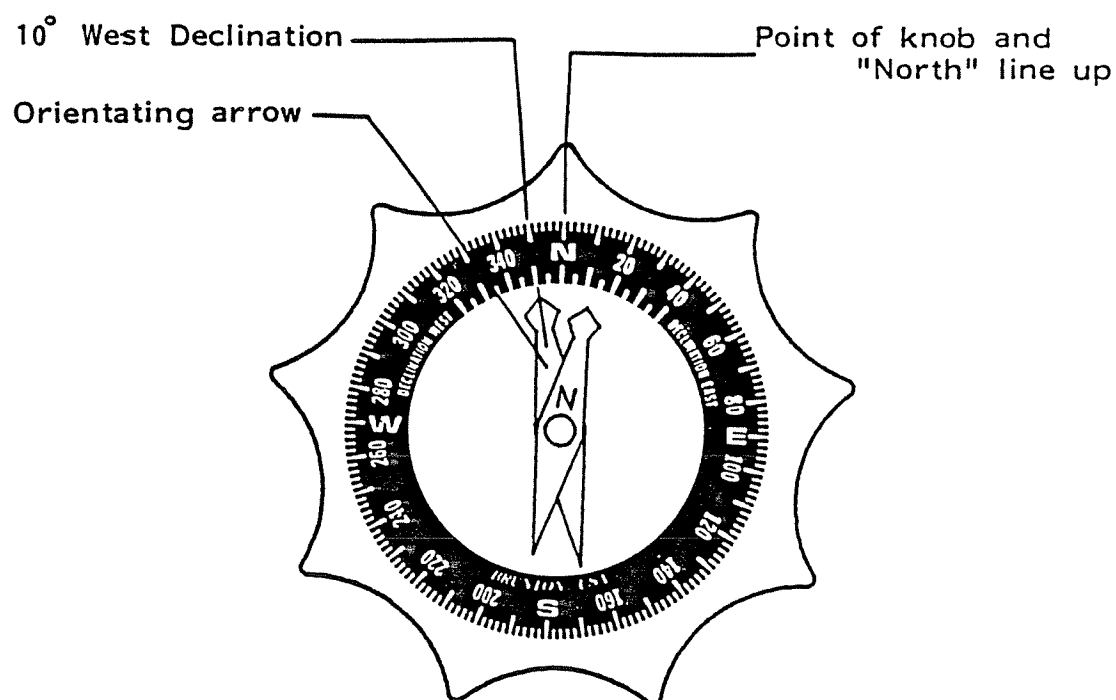


Figure 2

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 Figure 2.) 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 (Figure 3). The magnetic pointing arrow will point to magnetic north.

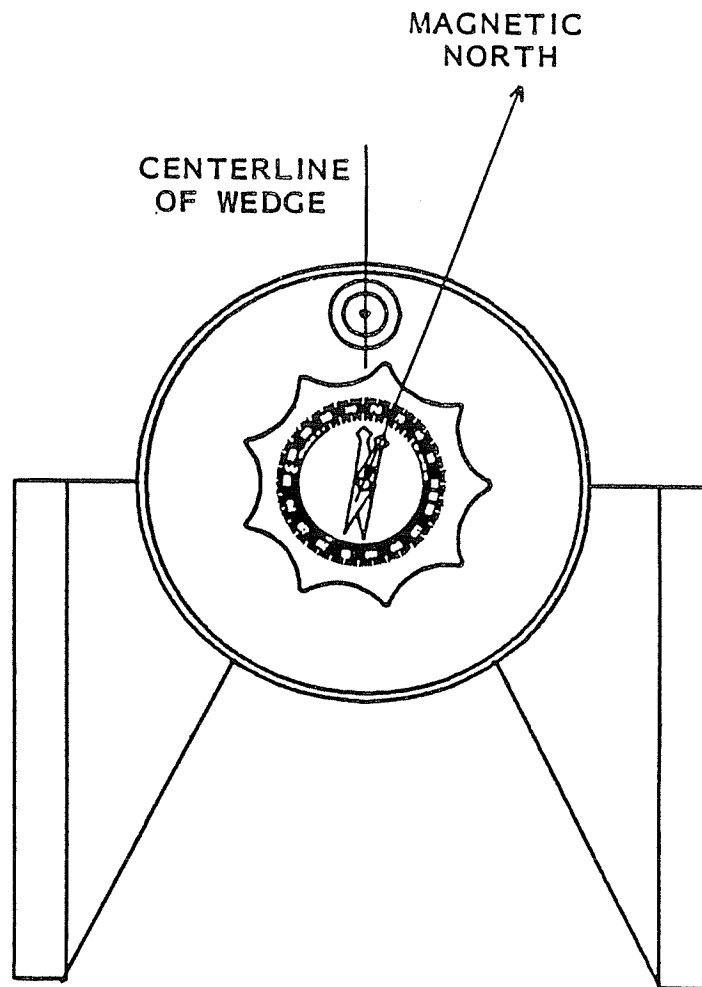


Figure 3

2. Rotate the knob/compass so that the magnetic pointing arrow lies directly over the painted black alignment arrow (Figure 4). The "North" position on the direction scale (and the point on the knob/compass) now point directly north.

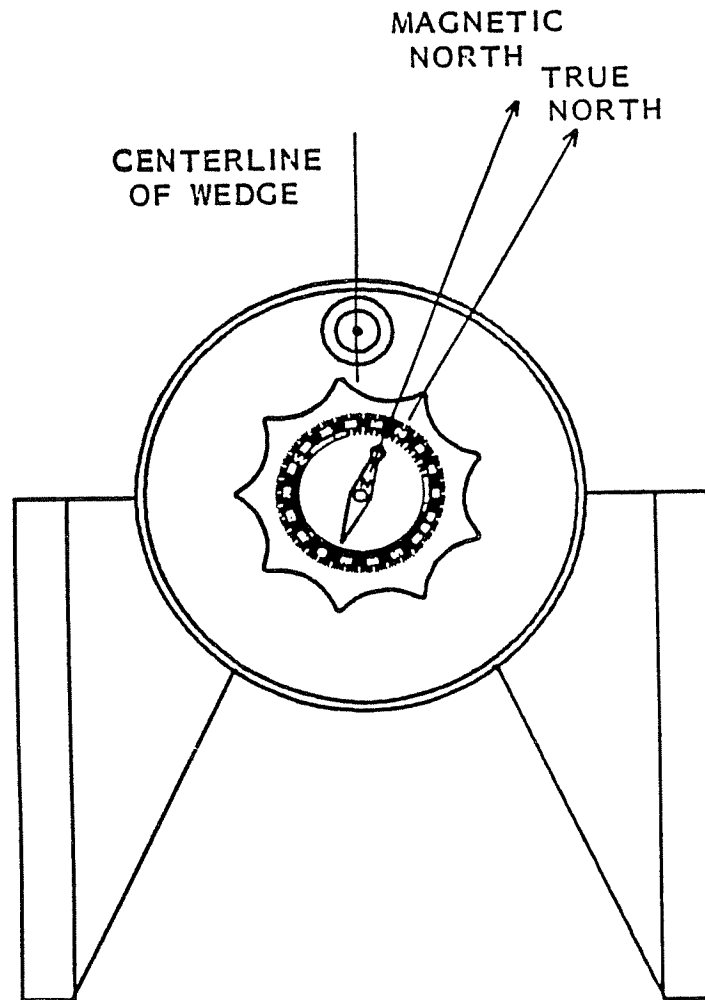


Figure 4

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 (Figure 5). The centerline of the Equatorial Wedge now falls directly on the true north line.
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!

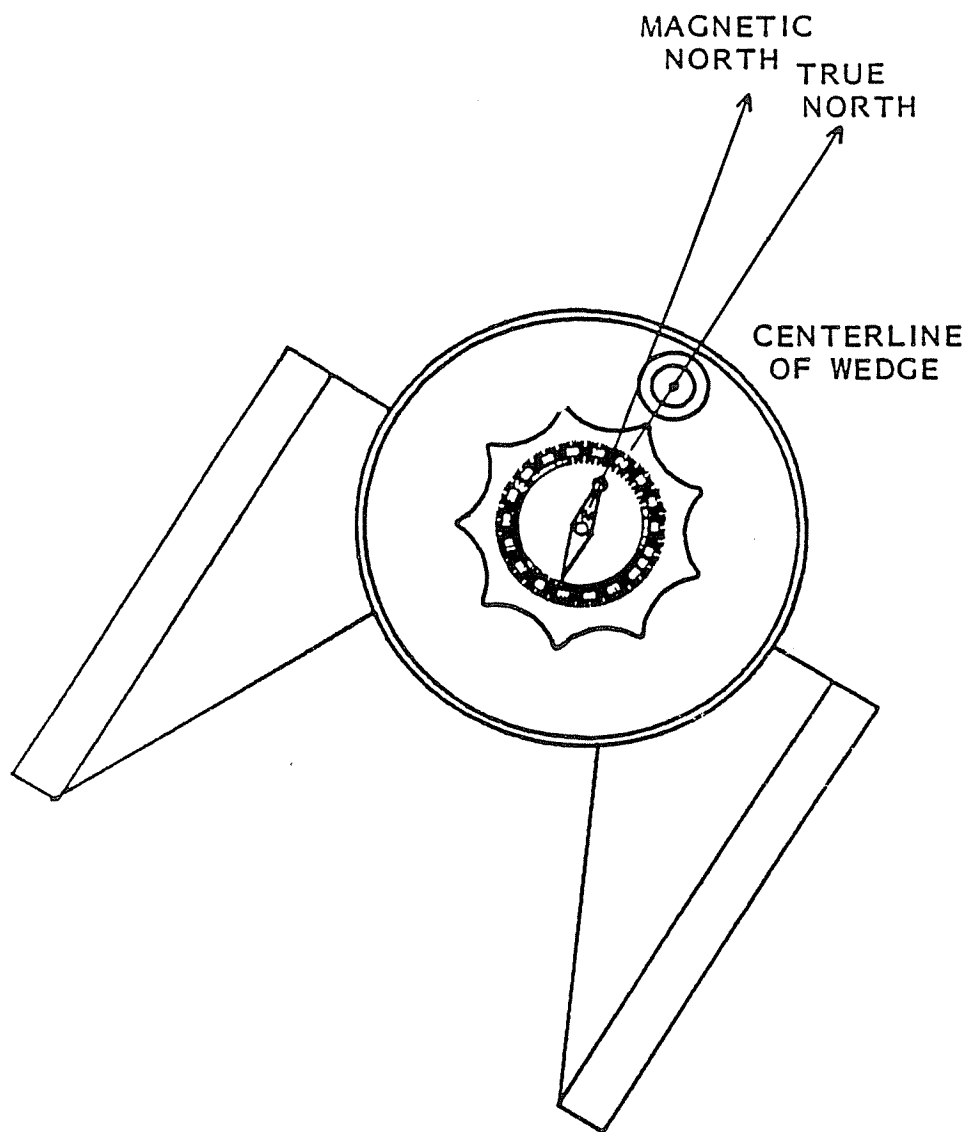


Figure 5



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MEADE MODEL 39: DECLINATION MOTOR ASSEMBLY

For: Meade Models 2080/LX5 and 2120/LX5 Schmidt-Cassegrain Telescopes

The Model 39 Declination Motor Assembly attaches directly to the Model 2080/LX5 or 2120/LX5 and allows precise adjustments in declination.

Attaching the Model 39 Declination Motor

1. Using the telescope's supplied hex wrench, remove the rear Declination slow-motion knob. This knob is on the opposite side of the fork arm, away from the R.A. controls.
2. Slide the large Teflon gear onto the shaft, small end first. Position the gear so that the small metal hub does not quite touch the fork arm, (about 1/64" gap) and tighten the set screw.
3. Using the two screws supplied, attach the Declination Motor to the undersurface of the fork arm. Adjust the motor position so that the steel pinion gear on the motor will engage with the Teflon slip-gear. Tighten the mounting screws only sufficiently to hold the motor in position. Over tightening the mounting screws may stall the motor.
4. Plug the Declination cord into the motor. Plug the other end of the cord into the "Dec Motor" socket on the LX5 power panel. The electric Declination motor is now ready for operation.

The Declination slow-motion system is designed to be used manually without disengaging the motor. The Teflon gear will slip, allowing manual override. To use the manual slow-motion Declination control, simply turn the Declination slow-motion knob as if the motor were not attached.

The tension of the Teflon gear has been set at the factory. If it needs adjustment, turn the small slotted head set screw on the large hub of the Teflon gear. This adjustment is very sensitive and requires a very small turn. If this adjustment is set too light, the motor will turn the gear, but not the shaft. If it is set too tight, the manual slow-motion knob will become hard to turn.

Troubleshooting

If the electric Declination motor turns when pushing either of the red "North" or "South" buttons on the Electronic Command Center, but does not move the telescope, check the following;

1. Make sure that the Declination tangent arm has not run out of travel. Look on the inside of the left fork arm at the bar running down the inside of the fork arm. If it is all the way to one side, then it must be moved back to the middle of the fork arm by turning the manual slow-motion knob.
2. Make sure the Declination lock is locked. (Refer to page 11 of the Model 2080/2120 Instruction Manual.)
3. Check that the Teflon gear has sufficient tension.

DELUXE LATITUDE ADJUSTER

For: Meade 8" and 10" Schmidt-Cassegrains
Models: 2080, 2080/LX2, 2080/LX3, 2080/LX5
2120/LX3, 2120/LX5

Installation Instructions

The Deluxe Latitude Adjuster (DLA) attaches directly to the Equatorial Wedge and permits very precise adjustments in latitude angle by the simple turning of one knob.

The Equatorial Wedge for the Meade 8" and 10" Schmidt-Cassegrain telescopes listed above is shipped with the main crossbar of the DLA already installed. Loosen the two socket-head screws that lock the main crossbar in place, to allow the crossbar to rotate slightly if needed. Thread the long adjustment knob into the main crossbar and position the end of the adjustment knob into the cavity at the lower end of the Equatorial Wedge Tilt-Plate (refer to Figure 1). Tighten the two socket-head screws locking the main crossbar into place.

The DLA is now ready to use. To make fine latitude adjustments, follow this procedure:

1. Loosen slightly the knobs (see item (4), Fig. 8, on page 21 of the Model 2080/2120 Instruction Manual) on each side of the wedge.

2. Turn the DLA's adjustment knob (pressing against the bottom of the tilt-plate), so that the tilt-plate moves in latitude angle.

3. Re-tighten the two knobs (4), which were loosened in step 1, above.

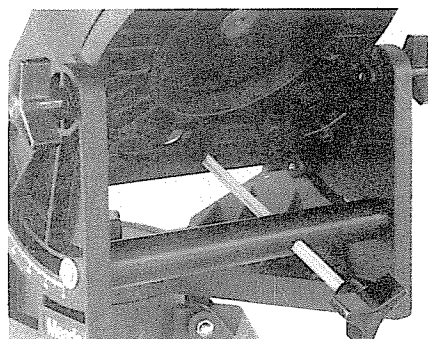
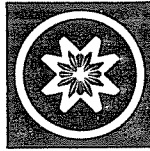


Fig. 1

NOTE: When installing the tilt-plate to the wedge, note that it is a tight fit and the sides must generally spread slightly to accept the tilt-plate. If the main crossbar of the DLA is already tightened into place this will inhibit your installation of the tilt-plate. You will therefore see that by releasing the screws on the ends of the DLA crossbar your installation of the wedge tilt-plate will be facilitated.



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OPERATING INSTRUCTIONS FOR USE OF THE MEADE 9 X 60mm POLAR VIEWFINDER

In addition to being an excellent 9 X 60mm 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, thread the bulb/battery holder into the hole located just under the eyepiece of the viewfinder.

To turn on the reticle, rotate the knurled switch on the bulb/battery holder to the "on" position. The brightness is adjustable by rotating the knurled switch. To prolong battery life, remember to turn off the reticle when not in use.

To replace the batteries in the Polar Viewfinder, remove the bulb/battery holder from the Polar Viewfinder. Separate the two halves of the bulb/battery holder by unthreading the two pieces, exposing the batteries. After replacing the batteries, thread the two halves of the bulb/battery holder together, and replace the unit onto the Polar Viewfinder.

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.

1. Rotate the eyepiece until the reticle is in sharp focus.
2. Loosen the black knurled locking ring (just behind the dew shield).
3. 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.
4. 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:

1. First, mount the viewfinder in its brackets. The 9 x 60mm viewfinder must be partially disassembled in order for it to fit into its bracket. Unthread the entire diagonal mirror/illuminated reticle from the main viewfinder body. Note that when viewed from the side, the bottom portion of the 2-ring viewfinder bracket is off-center. Slide the smaller end

of the viewfinder first through the bracket ring which is furthest from the bottom of the bracket. You will have to unthread the black nylon collimation thumbscrews on the bracket to provide sufficient clearance for the viewfinder. Replace the diagonal mirror/illuminated reticle assembly onto the viewfinder tube.

2. Attached to the telescope tube is the viewfinder bracket base to which the viewfinder (mounted in its own 2-ring bracket) is attached. Slide the viewfinder and bracket into the base on the main telescope tube and lock into position by tightening the two thumbscrews on the side of the viewfinder bracket base.

3. 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.

4. Rotate the optical tube in declination until the declination circle reads 90 degrees. (In this position, the optical tube will be pointing toward Polaris.)

5. 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), and the viewfinder's eyepiece is also vertical to the horizon. By making sure the viewfinder's eyepiece is also vertical, you are automatically picking the correct crosshair to make vertical to the horizon.

6. Hold the Polaris Reference Circle next to the telescope with the arrow pointing up.

7. Rotate the inner (local time) circle until your current local time corresponds to the current date on the outer (date) circle.

8. The position of Polaris will be indicated by the slant of the inner (local time) circle that extends out to the outer (date) circle.

9. 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 Polar Reference Circle.

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