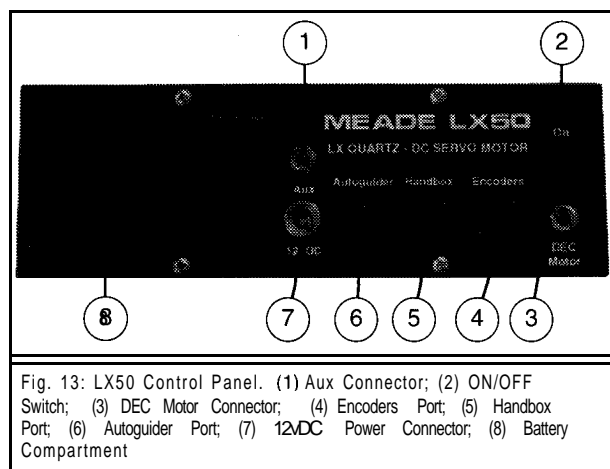


Note: With the eyepiece inserted directly into the eyepiece holder, without using the diagonal prism, the image through the eyepiece will be inverted and reversed left-for-right. The inverted image is a result of the optical structure of the telescope and is normal for astronomical telescopes. If the diagonal prism is inserted into the telescope first, then the eyepiece, the image will appear right-side-up, but still reversed left-for-right.

Once the selected object is in focus, with the R.A. lock UNLOCKED, and the Dec lock (1), Fig. 12, LOCKED, use the R.A. slow-motion control knob (2), Fig. 11, and the Dec. Slow Motion Control (5), Fig. 11, to center the object in the field of view.

7", 8" and 10" LX50 Control- Panel

The Control Panel includes connectors for DC power input, the DEC Motor, and the Keypad. There are also connectors designed to accept optional accessories such as a CCD autoguiding camera and the optional Meade Encoders*. An illustration and a description of the LX50 Control Panel features follows:



Aux Connector: The Aux (Auxiliary) connector (1), Fig. 13, provides DC voltage that is the same currently being supplied to the telescope. The power cord for the 7" LX50 cooling fan attaches here.

Note: (7" mode!) The Maksutov optical tube assembly is equipped with a fan which will assist in the stabilization of the temperature of the optics. To operate the fan, make sure the special power cord (supplied in the accessory box) is plugged into the fan and the LX50 Control Panel plug marked "Aux." The fan will start when the power switch in the "ON" position. The amount of time required to stabilize the temperature is dependent upon ambient conditions at the observation site and the temperature of the telescope itself.

The fan should be activated at the beginning of the observation session to accelerate the temperature stabilization. As soon as the optics have reached an equilibrium with the environment, the fan should be turned off by unplugging the fan power cord. Fan operation time should range between 5 and 25 minutes. While it is permissible to run the fan continuously, it is not recommended because the very slight vibration of the fan may cause noticeable movement of the objects observed in the sensitive optics.

ON/ OFF Switch: When the ON/ OFF Switch (2), Fig. 13, is moved to the ON position, the power light indicator will blink indicating a self-test in progress. After the self-test is complete (a few seconds), the red light will shine steadily.

• See the latest Meade General Catalog.

DEC Motor Connector. The DEC Motor (3), Fig. 13, is a 3mm mini phono jack connector socket, designed to accept standard mini phono jack coil cords. One end of the supplied coil cord plugs into the DEC Motor connector on the Control Panel. The other end of the coil cord plugs into the DEC MOTOR socket in the right fork arm of the telescope to power the declination motor.

Encoders Port The Encoder Port (4), Fig. 13, is designed for use with the optional Magellan II Computer Correction system and is active only after the Magellan II LX50 encoders have been installed on your system. One end of the heavy coil cord (supplied with the Magellan II) plugs into the Control Panel. The other end of the coil cord plugs into the ENCODER port near the base of the left fork arm of the telescope.

Handbox Port: The Handbox Port (5), Fig. 13, is a 4-pin phone jack connector socket, designed to accept standard 4-pin phone jack coil cords. Use this port for the LX50 Hand Controller or the optional Magellan II Hand Controller.

Autoguiding Port: The Autoguiding Port (6), Fig. 13, allows direct interfacing with Meade CCD autoguiding equipment such as the Pictor 201XT and other popular aftermarket CCD autoguiding/imaging cameras to accomplish autoguiding for non-attended astrophotography. The autoguiding effectively watches a star and detects slight movements. When star movements are detected, the autoguiding signals drive corrections in the telescope to bring the star to a home position.

Most CCD autoguiding/imaging cameras are supplied with a cable which is compatible with the Autoguiding port. If your CCD unit does not have a cable, one can be obtained from the CCD manufacturer.

12vDC Connector: The 12vDC Connector (7), Fig. 13, is designed to accept the DC Power Cord for connection to automobile plugs. The acceptable voltage range (under load) is from 5 to 18 volts.

Battery Compartment The battery compartment (a), Fig. 13, accepts six (user supplied) AA-size batteries.

The LX50 Keypad Hand Controller

The LX50 Keypad Hand Controller plugs into the telescope's Control Panel and places precise microslowing capabilities in the hand of the observer. The dual-axis corrector offers four photo-guide or microslow speeds, allowing for the very small tracking corrections necessary for long exposure astrophotography, as well as the ability to microslow to and center on an object. The keypad hand controller is also used to access the special functions of the LX50 model telescope, such as reversing the button directions and selecting different drive rates.

When the LX50 is first powered up, the four LEDs (3), Fig. 14, on the Keypad Hand Controller will light up four times in rapid succession, indicating the telescope is performing its self diagnostic test. The circuits and logic are tested and if any faults are found, the LED's will continue to circulate. If no faults are found, the LED next to 32x will remain illuminated.

1. Keypad Hand Controller: Normal Operations

Direction Keys: Four keys, labeled N, S, E, and W on the hand controller (1), Fig. 14, are used to move, or microslow, the telescope in a specific direction. When pressing a direction key, the only feedback is the motion of the telescope.

Speed Key: The **SPEED** key (2), Fig. 14, is used to adjust the speed at which the telescope moves when pressing one of the direction keys. The current speed will be indicated by one of four LEDs located next to the **SPEED** key. An illuminated LED indicates the current speed. Pressing the **SPEED** key will cycle

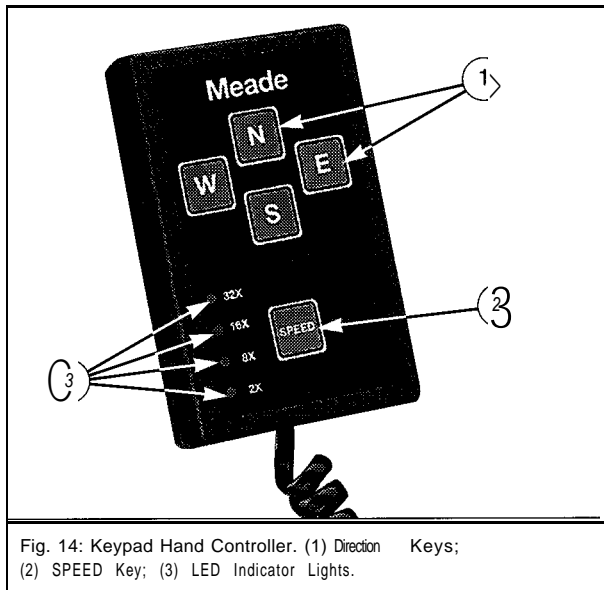


Fig. 14: Keypad Hand Controller. (1) Direction Keys; (2) SPEED Key; (3) LED Indicator Lights.

the hand controller through the four speed options. The four speeds are:

32X sidereal rate useful for centering the object in a viewfinder.

16X sidereal rate useful for centering the object in a wide-field eyepiece.

8X sidereal rate useful for centering the object in a high-power eyepiece.

2X sidereal rate useful for guiding during astrophotography.

NOTE: All of the slew speeds will drive the telescope in all four directions, except for 2X. When pressing the E key (for Northern Hemisphere operations) or the W key (for southern Hemisphere operations) with the 2X sidereal speed selected, you will not hear any movement from the telescope motor, but you will see star movement through the eyepiece. There will be no telescope movement because the 2X sidereal speed stops the Right Ascension tracking motor (when pressing the E key) and allows Earth's natural rotation to make minor adjustments to objects in the telescope's field.

The tracking speed, or sidereal rate, of the telescope is VERY slow — one complete revolution in 24 hours. An observer cannot SEE the telescope move when it is tracking. There is no noticeable telescope movement when pressing a direction key at the 2X speed unless viewing an object through an eyepiece.

2. Keypad Hand Controller: Special Function Menu

This feature is used to customize the operation of the telescope by changing up to four functions: Northern/Southern Hemisphere Operations; Reversing the N/S Button Direction; Reversing the E/W Button Direction; Changing the Tracking Rate.

To enter the Special Function Menu: Hold down the **E** and **W** buttons for 2 seconds.

To move between features: use the **N** and **S** keys.

To select or change a feature: use the **SPEED** key.

To exit the Special Function Menu: press the **N** key until all four LED's blink in pairs and then press the **SPEED** key. This action will return the telescope to normal operation.

A. Northern/Southern Hemisphere Operation: The 7", 8" and 10" LX50 models are designed to operate from both the

Northern and Southern Hemispheres, with the Northern Hemisphere set as the default value. The hemisphere default can be temporarily changed from the Keypad Hand Controller. This change will be in effect as long as power is supplied to the telescope. When the power is turned off, the hemisphere operation reverts back to the Northern Hemisphere setting. To change the hemisphere operation:

1. Use the **N** and **S** key to move to the 32X LED.
2. The LED will blink slowly to indicate Northern Hemisphere operation or rapidly for Southern Hemisphere operation.
3. Pressing the **SPEED** button will toggle between the two hemisphere settings.

B. Reversing the N/S Button Direction: When guiding for an astrophoto, it is often desirable to reverse the direction of the telescope in the North and South movements (e.g., pressing the **N** button, the telescope will move South). To make this change:

1. Use the **N** and **S** key to move to the 16X LED.
2. Press the **SPEED** key. The 16X LED will now blink quickly indicating the buttons have been reversed.
3. Pressing the **SPEED** button will toggle between these two settings.

C. Reversing the E / W Button Direction: When guiding for an astrophoto, it is often desirable to reverse the direction of the telescope in East and West movements (e.g., pressing the **W** button, the telescope will move East). To make this change:

1. Use the **N** and **S** key to move to the 8X LED.
2. Press the **SPEED** key. The 8X LED will now blink quickly indicating the buttons have been reversed.
3. Pressing the **SPEED** button will toggle between these two settings.

D. Changing the Tracking Rate: The tracking rate can be changed in .5% increments using this function allowing an observer to accurately track the Moon, comets, asteroids, etc. To change the rate, follow these steps:

1. Use the **N** and **S** key to move to the 2X LED.
2. Pressing the **SPEED** key will activate this mode for input and turn off all four LED's
3. Press the **N** key for each .5% speed increase (the 32X LED will blink once for each key press) or the **S** key for each .5% speed decrease (the 8X LED will blink once for each key press).
4. When the desired number of speed correction adjustments is entered, press the **SPEED** key to complete the adjustment.
5. When the **SPEED** key is pressed, the 32X or 8X LED will blink once for each .5% adjustment entered, confirming the number of adjustments, and then return to the Special Function Menu, with the 2X LED quickly blinking to indicate the tracking rate has been adjusted.

Tracking the Moon: To set the tracking rate for observing the Moon, decrease the normal rate by 4-6 steps by pressing the **S** key 4-6 times.

Note: Whenever tracking speed changes are requested, they are made relative to the standard speed NOT relative to the last adjusted speed.

E. Exiting the Special Function Menu: To exit the Special Function Menu, press the **N** key until all four LED's blink in pairs and then press the **SPEED** key. This action will return the telescope to normal operation.

LX50 Hand Controller Special Function Menu Summary

LED	Function	LED Blinking Slow	LED Blinking Fast
32x	Change Northern/Southern Hemisphere	North Hemisphere	South Hemisphere
16x	Reverses N/S Button	N=N s = s	N=S S = N
8x	Reverses E/W Button	E = E w = w	E = W W = E
2x	Change Tracking Rate	Indicates Normal Sidereal Rate	Indicates Adjusted Rate

Magnification

The magnification, or power, at which a telescope is operating is determined by two factors: the focal length of the eyepiece employed and the focal length of the telescope. Meade LX50 models are supplied with one eyepiece as standard equipment. The focal length of the eyepiece, 25mm, is printed on its side.

Telescope focal length is, roughly speaking, the distance that light travels inside the telescope before reaching a focus. In the mirror-lens design of the LX50 models, however, this focal length is, in effect, compressed by the telescope's secondary mirror, so that long effective telescope focal lengths are housed in a short optical tube.

The focal length of the LX50 7" f/1.5 telescope = 2670mm.

The focal length of the LX50 8" f/10 telescope = 2000mm.

The focal length of the LX50 10" f/10 telescope = 2500mm.

On a given telescope, different eyepiece focal lengths are used to achieve different magnifications, from low to high. Optional eyepieces and the #140 2x Barlow Lens are available for powers from a range of about 60x to over 500x, depending on the focal length of the telescope and eyepiece (see *Optional Accessories*, page 16).

To calculate the magnification obtained with a given eyepiece, use this formula:

$$\text{Power} = \frac{\text{Telescope Focal Length}}{\text{Eyepiece Focal Length}}$$

Example: Using the 25mm eyepiece supplied with the 8" f/10 LX50 telescope, the power is:

$$\text{Power} = \frac{2000\text{mm}}{25\text{mm}} = 80\text{x}$$

The most common mistake of the beginning observer is to "overpower" the telescope and use high magnifications which the telescope's aperture and typical atmospheric conditions cannot reasonably support. Keep in mind that a smaller, but bright and well-resolved, image is far superior to a larger, but dim and poorly resolved, one. Powers above about 300x should be employed only under the steadiest atmospheric conditions.

Most observers will want to have 3 or 4 eyepieces and perhaps the #140 2x Barlow Lens to achieve the full range of reasonable magnifications. See *Optional Accessories*, page 16, for further details.

The Viewfinder

The LX50 models, as with almost all astronomical telescopes, present fairly narrow fields of view to the observer. As a result,

it is sometimes difficult to locate and center objects in the telescope's field of view.

The viewfinder, by contrast, is a low-power, wide-field sighting scope with crosshairs that enables the easy centering of objects in the main telescope's field of view. Standard equipment with the 7" and 8" LX50 models is a viewfinder of 6-power and 30mm aperture, called a "6 x 30mm viewfinder." Standard equipment with the 10" LX50 model is a viewfinder of 8-power and 50mm aperture, called an "8 x 50mm viewfinder."

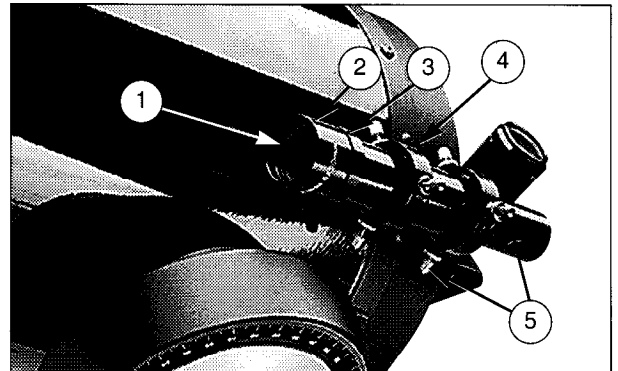


Fig. 15: The Viewfinder. (1) Objective Lens; (2) Lens Cell; (3) Focus Lock Ring; (4) Viewfinder Mounting Bracket; (5) Viewfinder Collimation (alignment) Screws.

1. Focusing the Viewfinder

The viewfinder has been factory prefocused to objects located at infinity. Individual eye variations, however, may require that the viewfinder be refocused to your eye. Looking through the viewfinder, point the telescope at a distant object; if the viewfinder image is not sufficiently in focus for your eye, it may be refocused as follows:

- Remove the viewfinder from its mounting bracket (4), Fig. 15, by slightly unthreading the six alignment screws (5) Fig. 15, until the viewfinder can slip out easily.
- Loosen the viewfinder focus lock ring (3) Fig. 15, at the objective-lens-end of the viewfinder, enabling rotation of the objective lens cell (2), Fig. 15, clockwise or counterclockwise for precise focusing while looking at a distant object through the viewfinder.
- After a precise focus has been achieved, tighten the viewfinder focus lock ring (3) Fig. 15, against the objective lens cell to lock the focus in place.
- Replace the viewfinder into its bracket on the main telescope.

Note: No focusing is possible from the eyepiece end of the viewfinder.

2. Alignment of the Viewfinder

In order for the viewfinder to be useful, it must first be aligned with the main telescope, so that both the viewfinder and the main telescope are pointing at precisely the same place. To align the viewfinder, follow this procedure:

- The viewfinder bracket includes six alignment screws (5), Fig. 15. Turn the three rear-most alignment screws so that the viewfinder tube is roughly centered within the viewfinder bracket, as viewed from the eyepiece-end of the telescope.
- Using the standard equipment 25mm eyepiece, point the main telescope at some easy-to-find, well-defined land object, such as the top of a telephone pole. Center the object precisely in the main telescope's field and lock the