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› Sky-Watcher EQ6-R GoTo SyncScan Equatorial Mount User Manual

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Model: EQ6-R GoTo Mount

1. INTRODUCTION

The Sky-Watcher EQ6-R GoTo SyncScan Equatorial Mount is a robust and precise instrument designed for both visual astronomy and astrophotography. It features a high payload capacity, quiet slewing, and an advanced SynScan computerized hand controller with a vast database of celestial objects. This manual provides comprehensive instructions for the assembly, operation, and maintenance of your EQ6-R mount to ensure optimal performance and longevity.



Figure 1.1: The Sky-Watcher EQ6-R GoTo SyncScan Equatorial Mount, fully assembled with tripod.

2. SAFETY INFORMATION

Please read and understand all safety instructions before operating the EQ6-R mount. Failure to do so may result in injury or damage to the equipment.

- **Do not look directly at the sun** through any optical instrument without proper solar filters. Permanent eye damage can result.
- Ensure the mount is placed on a stable, level surface to prevent tipping.
- Always secure all clamps and knobs before operating the mount or attaching heavy equipment.
- Keep hands and loose clothing clear of moving parts during operation.
- Use only the specified power supply. Incorrect voltage can damage the electronics.
- Avoid operating the mount in extreme weather conditions (heavy rain, strong winds, extreme temperatures).
- When transporting the mount, ensure all components are securely packed to prevent damage.

3. COMPONENTS OVERVIEW

Familiarize yourself with the main components of your Sky-Watcher EQ6-R mount.



Figure 3.1: Main components of the EQ6-R mount, showing the equatorial head and tripod.

- **Equatorial Head:** The main body of the mount, containing the motors and gears for tracking.

- **Tripod:** Provides a stable base for the mount. Features heavy-duty steel legs.
- **Counterweight Shaft:** Extends from the mount head to hold counterweights.
- **Counterweights:** Used to balance the telescope and accessories.
- **SynScan Hand Controller:** The primary interface for controlling the mount, navigating menus, and selecting objects.
- **Dovetail Saddle:** Accepts V- and D-style dovetail mounting plates for attaching optical tube assemblies (OTAs).
- **Accessory Tray:** Attaches to the tripod spreader, providing storage for eyepieces and other small accessories.
- **Power Cable:** Connects the mount to an external 12V DC power source.
- **Hand Controller Cable:** Connects the SynScan hand controller to the mount.

4. SETUP

Follow these steps to set up your EQ6-R mount for observation or astrophotography.

4.1 Tripod Setup

1. Extend the tripod legs to a suitable height and spread them fully for maximum stability.
2. Secure the leg locks.
3. Attach the accessory tray to the tripod spreader. This also helps to stabilize the tripod.
4. Level the tripod using the built-in bubble level (if present) or a separate spirit level. Adjust leg lengths as needed.



Figure 4.1: The EQ6-R mount head securely mounted on its tripod.

4.2 Mounting the Equatorial Head

1. Carefully lift the equatorial head and place it onto the tripod's mounting bolt.
2. Secure the head to the tripod using the large locking knob from underneath the tripod head. Ensure it is tightened firmly.

4.3 Attaching Counterweights

1. Unscrew the counterweight shaft safety screw and thread the counterweight shaft into the mount head.
2. Slide the counterweights onto the shaft. The number of counterweights needed depends on the weight of your telescope.
3. Secure the counterweights with the retaining knob on the shaft.
4. Re-attach the counterweight shaft safety screw to prevent counterweights from sliding off.

4.4 Mounting the Telescope

1. Ensure the Right Ascension (RA) and Declination (DEC) clutches are locked to prevent movement.
2. Open the dovetail saddle clamp.
3. Carefully slide your telescope's dovetail plate into the saddle.
4. Tighten the dovetail saddle clamp securely.



Figure 4.2: The EQ6-R mount with a telescope optical tube assembly (OTA) attached.

4.5 Balancing the Mount

Proper balancing is crucial for smooth tracking and to prevent strain on the motors.

1. **RA Axis Balance:** Unlock the RA clutch. Adjust the counterweights along the shaft until the telescope remains stationary when pointed horizontally. Lock the RA clutch.
2. **DEC Axis Balance:** Unlock the DEC clutch. Slide the telescope within the dovetail saddle until it remains stationary when pointed horizontally. Lock the DEC clutch.

4.6 Connecting the SynScan Hand Controller and Power

1. Connect the SynScan hand controller cable to the designated port on the mount and the hand controller.
2. Connect the power cable to the mount's power input port and to a 12V DC power source.
3. Turn on the mount's power switch. The hand controller display should illuminate.



Figure 4.3: The SynScan Hand Controller connected to the EQ6-R mount, ready for operation.

5. OPERATING THE EQ6-R MOUNT

The SynScan hand controller provides intuitive control over the mount's functions.

5.1 Initializing the SynScan Hand Controller

1. Upon power-on, the hand controller will display a welcome message.
2. Set the current date, time, and your location (latitude and longitude). This information is crucial for accurate GoTo functionality.
3. Select your time zone and enable or disable Daylight Saving Time as appropriate.

5.2 Alignment Procedures

To enable accurate tracking and GoTo capabilities, the mount must be aligned with the celestial pole.

- **Polar Alignment:** For astrophotography, precise polar alignment is essential. Use the built-in polar scope or a software-assisted alignment routine (e.g., "Polar Alignment" menu option on SynScan).
- **Star Alignment:** After polar alignment, perform a 1-star, 2-star, or 3-star alignment using bright stars. The hand controller will guide you through the process. This calibrates the GoTo system.

5.3 GoTo Functionality

Once aligned, you can use the GoTo function to automatically slew to celestial objects.

- Navigate to the "Object Catalog" menu on the SynScan hand controller.
- Select from categories such as Messier, NGC, IC, Caldwell, or Solar System objects.
- Choose your desired object and press "ENTER". The mount will automatically slew to the object's coordinates.
- Use the directional arrow keys for fine adjustments if the object is not perfectly centered in your eyepiece.

5.4 Tracking Modes

The EQ6-R supports various tracking rates:

- **Sidereal Rate:** Tracks stars and deep-sky objects.
- **Lunar Rate:** Tracks the Moon.
- **Solar Rate:** Tracks the Sun (*only with proper solar filters*).
- These can be selected from the "Tracking Rate" menu.

5.5 PC Connectivity and Autoguiding

The SynScan hand control can connect to a computer via an RS-232 cable for advanced control and integration with planetarium software. The mount also features a built-in autoguider port for precise long-exposure astrophotography.

6. MAINTENANCE

Regular maintenance ensures the longevity and optimal performance of your EQ6-R mount.

- **Cleaning:** Wipe down the mount and tripod with a soft, dry cloth after each use. Avoid abrasive cleaners or solvents.
- **Storage:** Store the mount in a dry, dust-free environment. If possible, store it in its original packaging or a padded case.
- **Lubrication:** The internal gears are pre-lubricated. Do not attempt to lubricate them yourself unless instructed by

Sky-Watcher support.

- **Cable Management:** Ensure all cables are neatly routed and not under tension to prevent damage.
- **Clutch Adjustment:** Periodically check the tightness of the RA and DEC clutches. They should be firm enough to hold the load but allow for smooth adjustment when unlocked.

7. TROUBLESHOOTING

This section addresses common issues you might encounter.

Problem	Possible Cause	Solution
Mount not powering on.	No power, faulty cable, power supply issue.	Check power cable connection, ensure power source is active (12V DC), try a different power supply if available.
GoTo accuracy is poor.	Incorrect date/time/location, poor polar alignment, inaccurate star alignment.	Verify date, time, and location settings. Re-do polar alignment and star alignment carefully. Ensure mount is balanced.
Tracking is not smooth or stops.	Mount unbalanced, clutches loose, power fluctuations, motor issue.	Re-balance the mount. Tighten RA/DEC clutches. Ensure stable power supply. If problem persists, contact support.
Hand controller displays error message.	Connection issue, internal error.	Check hand controller cable connection. Power cycle the mount. Consult the SynScan manual for specific error codes.

8. SPECIFICATIONS

Product Dimensions	25 x 21.5 x 12.5 inches
Item Weight	92.4 pounds
Payload Capacity	Up to 44 lbs (20 kg)
Mount Type	German Equatorial Mount (GEM)
GoTo Database	Over 42,900 objects
Tracking Rates	Sidereal, Lunar, Solar
Power Source	External 12V DC (Power Supply not included)
Autoguider Port	Yes
Dovetail Compatibility	Vixen and Losmandy (V- and D-style)

9. WARRANTY AND SUPPORT

For warranty information and technical support, please refer to the official Sky-Watcher website or contact their customer service directly.

- **Manufacturer:** Sky-Watcher
- **Website:** www.skywatcherusa.com (or relevant regional site)
- **Contact:** Refer to the website for contact details, including phone numbers and email support.

Please retain your proof of purchase for warranty claims.

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