

# Article 12: Quick Start Guide for the Telescope Meade 10" LX-90; horizontal mounting

## LX-90: "Your personal window to the universe"

### 1 Parts Listing

- **LX-90 equipment:**
- LX-90 Astro Telescope (D = 254 mm (lens diameter), F=2500 mm (focus length), focal rate F/D = 10) with fork mount system
- Autostar Handbox with Coil Cable
- Handbox holder
- Field Tripod – Alt/Az alignment- variable height
- Bubble Level/Compass to get the base platform in horizontal plane or Water m/laser. Kompasset plassere i okularholderen etter observasjonene, i den posisjonen benyttes den som støvdeksel,
- Battery Compartments. Four C-cell batteries in each compartment.
- Eyepiece holder and 1,25"
- 90 deg prism for LX90 (the image in 90 reflect light observation is reversed left for right).
- Viewfinder:8X50. A low-power, wide-field sighting scope with crosshair that enable easy centering of objects in the telescope eyepiece
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- 26 mm eyepiece for SkyWatch
- Dust Cover tilhører LX 90
- Soltrekk

#### **SkyWatch equipment**

- 40mm Meade eyepiece for LX90
- Barlow Lens: 2X tilhører Tycho observatoriet
- Eyepiece Holder and 45 deg prism (results in a fully correctly oriented image, for terrestrial observations) tilhører SkyWatcher
- "USB-to-Serial Adapter Cabel", which allow you to control your telescope from PC Connected between USB og teleskopets serieport og #505 Connector Cable Set

#### **Tycho Brahe (Norway) equipment (Utstyret fraktes fram og tilbake):**

- Light pollution filter, 1,25"
- Optics O-III filter, 125"
- UHC filter (Ultra High Contrast) for seeing more stars and more details in deep-sky objects
- Filter ND96-0.9 for increased contrast and resolution of the Moon etc

- Filter Meade #911B: for deep-sky objects
- Align-ringer 2X

### **PC (Windows 7: UIA 32518):**

- Meade Autostar Suit Version 3.23 (program for PC-telescope connection) + Envisage Imaging software v. 7.03
- Sky Map Pro 11
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## **2 Quick start guide for Metochi observatory**

### **How to assemble the telescope**

- Start to prepare the observation at sunset (Time 20:45:00; Date 05,07.2015)
- Soltrekket tas av
- Gently pry the dust cover from the front of the telescope tubes.
- [Tripod stands ready in the Metochi observatory theater, the base platform in horizontal plane (check the platform, set the water in three different directions).
- The telescopes fork mount is attached directly to the Tripod platform. Take the telescope onto the top of the tripod head, inserting the threaded rod into the central hole in the bottom of the drive base of the telescope. Tighten the tension knob.]
- Attach the Hand box holder to right fork arm handle and interface coil cord to hand box port (HBX).
- Set Autostar Handbox with Coil Cable in Handbox holder
- LX 90: Monter diagonal prism (90) and eyepiece 40mm
- SkyWatch: Monter diagonal prism (45) and eyepiece 26mm. Tighten the attachment thumbscrews.
- Power Suply og skjøteledning (4 uttak)

### **Aligning the Viewfinder (land object)**

- Point the telescope at same well-defined and stationary land object at least 200 meters distance. Center the object in the telescope eyepiece. Re-tighten the R.A. and Dec. locks
- Set focus on the object
- Focus knob moves the telescope primary mirror to achieve precise image focus. LX90 telescope can focus on an object from distance of 10 meters to infinity. *Rotate the focus knob counterclockwise to focus on distance objects and clockwise to focus on nearby objects.*
- Look through the viewfinder eyepiece and loosen or tighten the alignment screw until the viewfinder crosshair is precisely centered in the telescope eyepiece.
- The viewfinder is approximate align
- Aligning the SkyWatcher telescope

## Home position



Telescope aligns Polaris (left). Telescope in home position (right)

- Home position means starting position for alignment procedure. In Home position the tube are in north direction and stay in horizontal plan.
- Align the telescope to magnetic north (page 18): Loosen the RA lock and place the compass into the diagonal prism and adjust the horizontal direction of the telescope until it point in same direction as the colored side of the compass needle. Tighten the RA lock.
- Loosen the Dec. lock and adjust the vertical position of the telescope to the level position. Use the water on the top of the optical tube (see the image: Home position, section 5). Tighten the Dec. lock (the image above (right) shows the telescope in Home position).



• Vateret viser at teleskopets høyde over horisonten er null. Dec-skalaen viser At-verdien, den er null.



• Teleskopet peker mot horisonten,

- Turn the telescope power switch to the ON position. AutoStar takes a few moments to start up the system (“Press 0 to align or MODE for Menu”)
- The telescope is ready to change Azimuth (horizontal direction) and Altitude (vertical direction).
- Use Dec. Setting Circle/Dec. pointer and give the telescope altitude 39 deg. You can use the Up Arrow key to slew (move) up.
- To change the telescope slew speed, press Number key (see page 17, Slew Speeds). To change the telescope’s slew speed, press Number key “9” (“9” is the fastest speed and “1” is the slowest speed).
- Slew the telescope to altitude 39 degrees (Metochi has latitude 39 degrees).
- If you are lucky you can see the Polaris in Viewfinder view field. (kl 21:12, Polaris er ikke i synsfeltet, vent til Polaris er synlig på himmelen uten teleskop. Polaris var synlig i synsfeltet i begge teleskopene 45 min etter solnedgang. Venus og Jupiter går ned bak åsen kl: 21:35, 7. juli 2015)

### **Aligning the viewfinder (Polaris)**

- Use the Arrow keys to center Polaris in telescope view of field, use Meade illuminated reticle eyepiece.
- Use the viewfinder alignment screws until the viewfinder crosshairs are precisely centered on Polaris.
- If we can not see Polaris in viewfinder and the telescope, what can we do?
- Polaris can help us,
- Move the telescope slightly back and forth to Polaris shows up in the eyepiece (Article 3 – How to find direction to north)
- Alternative method to aim the telescope tube eller å sikte langs fundamentet til SkyWatch teeskopet.
- Unlock the “Vertical Lock” (Altitude adjustment) and set the telescope tube horizontal (altitude: 0 degrees), use the water. Tightening the screw when the tube is in horizontal position.
- The telescope are now in Home position ready for the alignment procedure: Easy (Two-Star) Align

### **3 Easy (Two-Star) Align**

- The system is ready when “Press 0 to align or Mode for Menu” displays.
- Press “0” key (To skip the alignment process and access the AutoStar menus, press the MODE key)
- Home Position use True North, press “1” key.
- Press ENTER key
- “Getting GPS Fix” displays. After performing these operations, AutoStar knows the observing site location, date and timer (Press any key to abort the GPS fix)
- AutoStar then choose two stars (6. juli 2015: Actures and Vega) to align upon. Move the Arrow keys to move the telescope until the star is visible and centered in the eyepiece (see “spiral search”, press GO TO when the telescope stops slewing, when the object does become visible, press MODE, page 21). Press ENTER.
- Repeat procedure for the second alignment star
- When the procedure is performed correctly, “Alignment Successful” displays (page 20)
- We are now ready to find an object

### **4 Moving through AutoStar’s menus**

- Press ENTER to go deeper into AutoStar’s menu levels
- Press MODE to move back toward the top menu level (see page 18 in manual)

## 5 Go To Saturn

- After performing the Easy Alignment procedure, the motor drive begins operating and the telescope is aligned for a night of viewing. Objects in the eyepiece should maintain their position even though (norsk: “selv om”) the Earth is rotating beneath (“under”) stjernene.
- Only use the GO TO or Arrow keys to move the telescope (do not loosen the telescope lock, then you will lose the alignment)
- After the telescope is aligned, “Select Item: Object” displays (Object Menu: page 25). Press ENTER
- “Object: Solar System” displays. Press ENTER
- “Solar System: Mercury” displays. Keep pressing the Scroll Down key until “Solar System: Saturn display.
- Press ENTER “Calculating” displays. Then “Saturn” and a set of coordinate displays.
- Press GO TO “Saturn Slewing...” displays and the telescope slewing until it finds Saturn. You may need to use Arrow keys to center Saturn precisely in the eyepiece.

## 6 AstroFinder Software/Autostar Suit

Spørsmål til til Meade.com:

- Connect the PC and the telescope, use the “USB-to-Serial Adapter Cabel”.
  - Get information about the “USB-to-Serial COMM Port” (COM3):  
Go to Device Manager:  
(Start/Innstillinger/Kontrollpanel/System/Maskinvare/Enhetsbehandling)
- Find the special COM-port in Device Manager, click on”Prolific USB-to-Serial Comm Port (COM3)” and control the Driver and the Com Port configuration (see the operation instruction for the Adapter Cable)
- Open the star program “Autostar Suit” and connect the telescope:  
Telescope/Communications/Serial Port Setup...: Choose COM3
  - The next step: Telescope/Protocol/AutoStar via Serial Port (WARNING...) VISES PÅ SKJERMEN
  - Kontroller PC-klokken, velg «(GMT+02:00) Athens, Bucarest, Istanbul» og la klokken automatisk justeres for sommertiden (Daylight Savings).
  - Go to menu bar and choose “Time”
    - Set Time & Date/Georgian. Her skal dato og lokal tid (Local Zonal) kontrolleres. Set «Daylight Savings» On and «Lokal time» ON. Set Time Zone: 2.0 (EET Eastern European Time). Click on “Use system Time & Date
    - Set Location (Metochi): Latitude: 39 Deg/15 Min/ 0 Sec/ North; Longitude: 26 Deg/0 Min/0 Sec/ east
- Press Left button on PC mouse twice on object and press “Slew Telescope”
  - Press “Sync Telescope” after centered the object in the eyepiece

## 7 Utilities Menu

- **Sleep Scope:** is a power saving option that shuts down the telescope without forgetting its alignment. . With “Sleep scope” selected, press ENTER to activate the Sleep function. AutoStar goes dark, but the initial clock keeps running. Press any key, except ENTER, to reactivate AutoStar and the telescope.
- **Park Scope:** Telescope is parked in the Home position. Next time it is powered up, enter the correct date and time – no alignment is required.
- **Cord Wrap:** see page 28
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## 8 Setup Menu

Dokumenter hvordan Metochi teleskopet er satt opp