

Specifications

Name	SX Polar axis scope
Finderscope	6x30mm (8 degrees real field of view)
Polar align method	Date & Time graduation circles with meridian offset scale
Polar alignment reticles	Polaris alignment scale in the northern hemisphere and Octantis' four stars alignment in the southern hemisphere
Accuracy of alignment	Within 3 arc minutes
Illuminator	Red LED light, pre-installed in the mount
Water level	Built-in water level

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Vixen

Instruction Manual for SX Polar Axis Scope



Preface

Thank you for your purchase of the SX Polar axis scope for Vixen SX (SPHINX) equatorial mount series astronomical telescopes. In this manual how to install and use the SX Polar axis scope are described. Also, please read the instruction manual for SX (SPHINX) Equatorial mount for getting further information on using the mount and SX Polar axis scope.

WARNING!

Never look directly at the sun with the naked eye or with a telescope. Permanent and irreversible eye damage may result.

CAUTION

Never touch the equatorial mount body while it is in operation. Never put a finger into the hole through the Polar axis body for the Polar axis scope. It may hurt the finger due to a pinch.

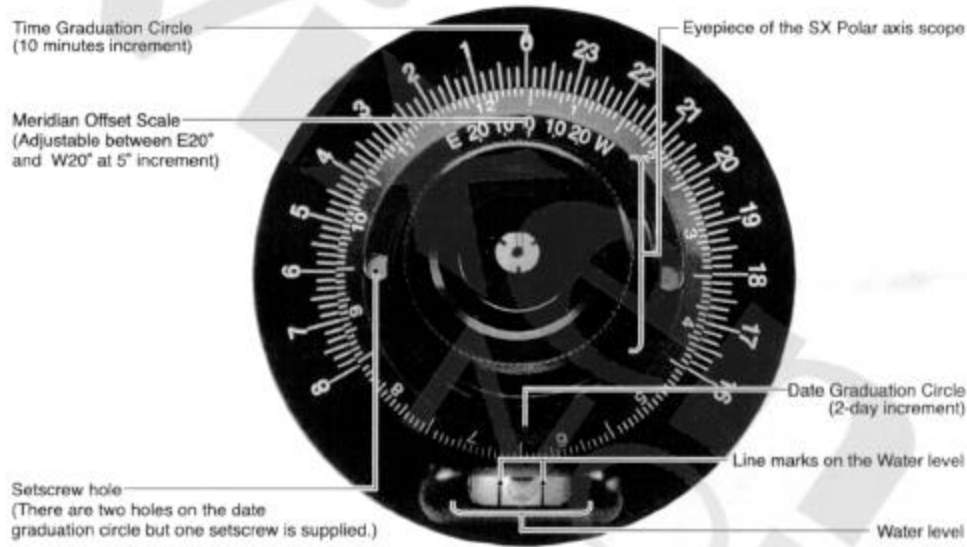
About Polar Axis Scope

Polar axis scopes are used for pointing the equatorial mount at the celestial pole precisely and its process is called "Polar alignment". When taking astrophotography of nebulae or star clusters, you will have to set the telescope's axis of rotation to accord with the Earth's axis of rotation exactly.

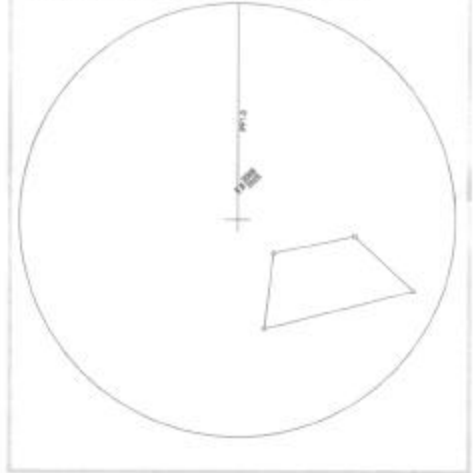
CAUTION

1. If Polar alignment is not done properly, stars will rotate around an axis in the center of the picture taken or stars will trail off and you won't be able to tight stars images.
 2. Polar alignment is not possible both in the northern latitude and in the southern latitude of over 70°.
- ◆ Check a latitude and longitude of your observation site on a map of the area before you set the telescope for the Polar alignment.

Name of each part



Reticle in the Polar axis scope
 (Small Polar alignment scales on the straight line correspond to positions of Polaris from 2003 throughout 2025.)



Installing the SX Polar Axis Scope



① Take off the plastic Polar axis cap by turning it counterclockwise.

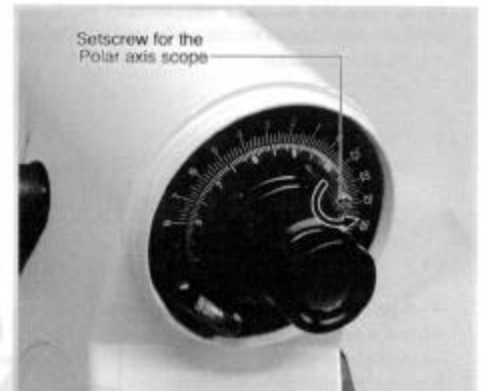


② Attach the SX Polar axis scope to the Polar axis of the mount by turning it clockwise.

Note : Make sure to insert the SX Polar axis scope to be straight otherwise the threads may be damaged.



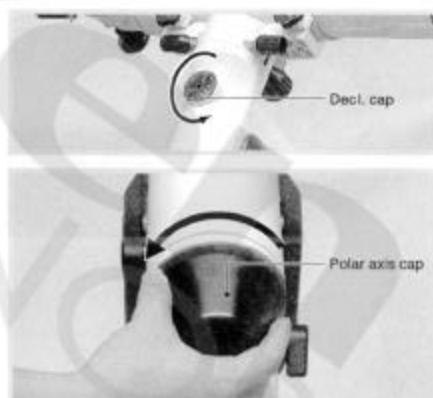
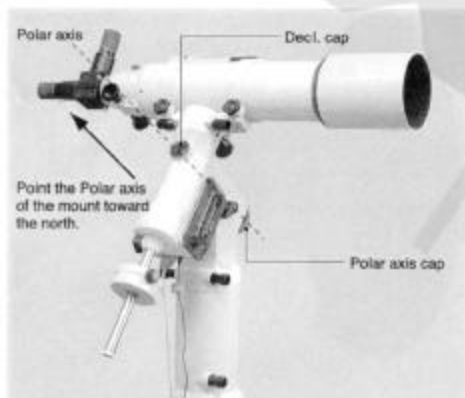
③ Screw the SX Polar axis scope into the Polar axis of the mount by gripping about the setscrew as a holding aid.



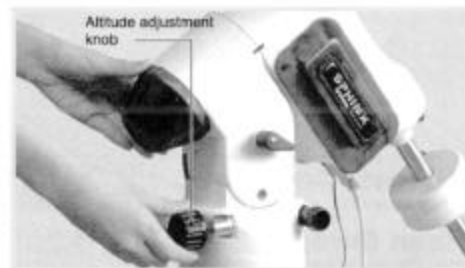
④ Take off the setscrew after you attach the SX Polar axis scope into the Polar axis of the mount. Keep the setscrew for the future maintenance.

Using the Polar axis scope in the northern hemisphere

- ① Set up the telescope in a flat and hard ground where you can see Polaris in the sky. Point the Polar axis of the mount in the direction of north as shown in the figure by using a compass if available. Adjust the tripod legs so that you place the tripod as level as possible.
- ② Take off the Decl. cap and Polar axis cap. These caps can be removed readily by twisting counter-clockwise.



- ③ Adjust the mount in altitude until the latitude indicator (the edge part in front of the altitude scale) points to your latitude. (Refer to the manual for the SX equatorial mount.) The mount is set at an altitude around 35° at our factory. Be sure to adjust the mount in altitude when your observing site is different from the initial setting of a latitude 35°. Release the altitude adjustment clamp and turn the altitude adjustment knob for adjustment as shown in the Figures. The mount can be adjusted within $\pm 15^\circ$ at 35°.



NOTE1: When the mount is used outside Japan or an area out from the initial setting of a latitude 35°, correct the range of the latitude adjustment to suite your observing latitude. (Please refer to the manual for the SX equatorial mount)

NOTE2: The altitude of the mount can be altered by simply turning the altitude adjustment knob. Release the altitude adjustment clamp before you turn the altitude adjustment knob so as to turn it easier. The altitude adjustment clamp is to prevent the mount from rattling during operation also. Lock the altitude adjustment clamp again right after you finish the altitude adjustment. (Please note that the altitude adjustment knob does not become tightened completely even if you lock the altitude adjustment clamp tightly.)

- ④ Advance the settings to aligning the telescope on the screen of the STRA BOOK until the relevant star chart will appear on the screen. Refer to the section "Aligning the telescope" in the instruction manual of the SX equatorial mount.
- ⑤ Rotate the Decl. axis by operating the keys **DC+** or **DC-** while looking inside the Polar axis in front of the Polar axis body. Move until you see the Polar axis scope through the hole on the Decl. axis.



- ⑥ Focus on the reticle of the Polar axis scope by turning the knurled eyepiece end while looking through the Polar axis scope.



- ⑦ Adjust the brightness of the illuminator for the Polar axis scope. Press the key that is assigned for **Menu** to display the System Menu. Choose Polar Axis Light Brightn by moving the cursor with the arrow keys **↑** **↓** and press the key **Select**. The dialog box opens and you can adjust the brightness of the illuminated reticle in the Polar axis by operating the keys **↑** **↓** as you look through the Polar axis scope.



NOTE: There is no need to call up the same map as shown in the figure above.

- ⑧ Turn the time graduation circle by holding the water level on its both sides so that you bring the bubble at the middle of the water level.



- ⑨ Check the difference between the standard time meridian of your region and your observing site on a map of the area. If the observing site is in the east of the standard time meridian, rotate the time meridian indicator in the direction as indicated E on the meridian offset scale. If the observing site is in the west of the standard time meridian, rotate the time meridian indicator in the direction as indicated W on the meridian offset scale. You can move the time meridian indicator by rotating the eyepiece of the Polar axis scope while you hold the date graduation circle by a finger as shown in the Figure.

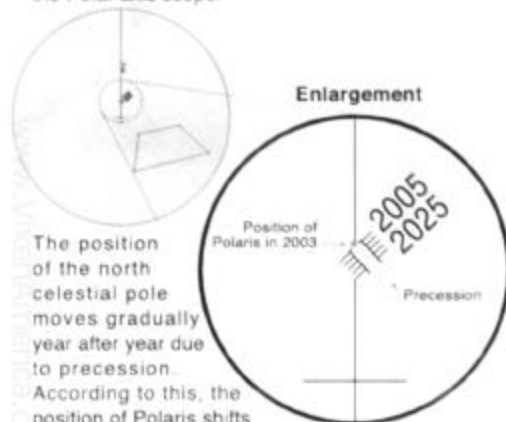


Example: If you are observing from Tokyo which has a longitude of 139°. You need to offset the standard time meridian indicator by 4° in the direction of E after you set the time meridian indicator to 0 degree on the meridian offset scale.

- ⑩ Match the date graduation circle with your observing time by turning the eyepiece of the Polar axis scope. In the Figure the time and date graduation circles read 21:42 on December 20th.



- ⑪ Place Polaris at set position shown in the Figure by turning the altitude adjustment knob and azimuth adjustment knobs while looking through the Polar axis scope.

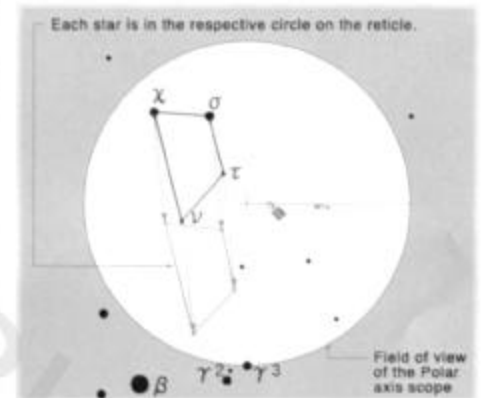


The position of the north celestial pole moves gradually year after year due to precession. According to this, the position of Polaris shifts every year as shown in the Figure. Place Polaris at a position on the alignment scale in the reticle

of the Polar axis scope to match with a year of your observation between 2003 and 2025. A pair of the azimuth adjustment knobs is installed so as to push against the metal peg on the tripod head each other. When one azimuth adjustment knob loosens, the other loosens, too. Adjust the mount in azimuth by turning either of the azimuth adjustment knobs until the Polar axis points in the right direction. Then, tighten the azimuth adjustment screws to hold the mount in place.

Using the Polar axis scope in the southern hemisphere

- ① Set up the telescope in a flat and hard ground where you can see Octantis in the sky. Point the Polar axis of the mount in the direction of south by using a compass if available. Adjust the tripod legs so that you place the tripod as level as possible.
- ② Refer to set up procedures from ② throughout ⑦ that are described for the use in the northern hemisphere.
- ③ Rotate the reticle in the Polar axis scope by turning the eyepiece of the Polar axis scope until the orientation of the four small circles matches the orientation of the four stars of Octantis while looking through the Polar axis scope.
- ④ Place Octantis at set position in the reticle as shown in the Figure by adjusting the mount in altitude and azimuth by using the altitude adjustment knob and azimuth adjustment knobs while looking through the Polar axis scope.



Four stars of Octantis	Brightness (Magnitude)
Sigma (σ)	5.5
Chi (χ)	5.2
Tau (τ)	5.6
Nu (ν)	5.7