Astroview Telescope

Operating Manual

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CAUTION: Before attempting to assemble, Read this document carefully at least once. & don't Attempt view sun through telescope or Finder Telescope. Without proper safety device / accessories. This will Result in Permanent Damage of Eye.

Be sure to read this manual or at least the introductory assembly and operational procedures before attempting to use the telescope.

INTRODUCTION:
ASTROVIEW TELESCOPE is specially designed for astronomical and terrestrial application. They are the most sophisticated, precisely manufactured telescopes available in India. The Telescope enables the visual astronomer to make detailed observation of the Solar System • the Planets: Mercury, Venus, Mars Jupiter, Saturn, Uranus and Neptune) and closer than distant nebulae, star clusters and galaxies. The photo-hobbyist will find endless range of possibilities, which will be a great success. The capabilities of the instrument are essentially limited not by the telescope, but by the acquired skills of the observer or Astronomer. Kindly read this manual completely, so that you will be fully familiar with telescopes.

OPTICAL SYSTEM:
A wide range of optical system and accessories are available for Astroview Telescopes, essential for expanding an unlimited opportunity to the advanced amateur for serious research. Each accessory, as part of an integrated system, attaches easily and directly to the instruments described in this manual, once you have a STANDARD astrovie telescope. You can update your telescope with optical system accessories at a later date, when the Need arises. This means your telescope is get continuously update. & never became older Device.
ASTROVIEW Telescope accessories, system, and parts can be used on a wide range variety of special purpose / home-made telescope too.

Standard Astronomical Telescope
1. Focusing Unit
2. Mounting Bracket
3. Telescope Tube
4. End Cap & Front End Cap.
5. Mounting Shaft.
1. Focusing Unit: - Simple Screw type Focuser Unit is employed to enhance telescopes performance & help you in focusing the image at its exact position. Which have more advantages than simple draw tube focuser.

2. Mounting Bracket: - Mounting Bracket is made up of Heavy duty cast iron. and produces firm grip of telescope. for vibration free viewing.

3. Telescope Tube: - Telescope tube is P.V.C. Tubing internally painted with matt black finish paint to reduce internal reflection of light in the tube.

4. End Cap & Front End Cap. :- There are two caps for each telescope is provided. One is at the front end & other is at the rear end. When telescope is in action remove the front end cap. It is necessary other wise you cant get any image. (There is no need of removing the rear end cap while observing. it is only essential when telescope loses its collimation.)

5. Mounting Shaft: - Finely Machined shaft which fitted to the Mounting Bracket which holds the mounting Ring. This shaft fits in tripod or Pier stand.
6. Telescope Performance:- As atmospheric conditions varies the performance varies, in clear cloud free night it performs to its peak.

7. Setting up and using the telescope

When setting up the telescope make sure that the base of the mount sits firmly and correctly on the floor or ground. Make sure that the mount does not shake or wobble. If you are using a German equatorial mount align the polar axis of the mount with the Pole Star (Polaris); for casual observations this does not need to be done very accurately. (For Equatorial Mounts only.)

A beginner is advised to start by observing the Moon and planets and then proceed to stars, clusters and nebulae. Point the telescope at the Moon (use the gun sight for aiming) and try to see it through the eyepiece; once it has been located hold the tube in position, locking it with locking screw, and try to focus the image by moving the focuser unit in and out. It should be possible to focus the Moon with the eyepiece in its mount or draw tube. If you cant see the moon it should be possible that moon is not in field. For confirming this, look through the eyepiece for light coming from moon. It light is unavailable you have to relocate the moon. It will be necessary to move the telescope towards the moon to get a image formed by mirror . If this is done check that the collimation is maintained and correct if necessary. Realign the telescope using gun sight, if necessary.
Once focus is obtained, with the eyepiece conveniently in its mount, fix the eyepiece mount with locking screw on focuser for time being to the tube. After viewing the Moon, try locating and viewing Jupiter and its satellites, Saturn and its rings, Mars and Venus, and then cluster, nebulae and galaxies.

In a good telescope the edges of the discs of the planets will appear sharp and then stars will appear as sharp distinct points. Most amateur telescopes, especially first telescope, suffer from various defects such as coma, mild astigmatism and possibly poor figure. However, atmospheric conditions, especially for objects away from zenith (overhead), can also contribute greatly to poor viewing; in fact, sometimes the satellites of Jupiter display multiple images because of poor seeing (i.e. poor atmospheric conditions). So do not be despondent if on first viewing the images do not appear as sharp as you’d like them to be. Try out the telescope repeatedly and make the corrections suggested in the next section, if necessary. That why the images does not appear sharp & distinct don’t compare with these telescope because good quality telescope produce very sharp & distinct images like us.

4. Care and maintenance of the telescope

Like any other delicate instrument the telescope requires some care in its use and some maintenance every now and then. Make sure that the tube end is covered by an end plate and the eyepiece assembly is protected when the scope is not in use, otherwise dust and dirt will soon deteriorate the performance of mirror and diagonal. If the telescope is not going to be used for longtime it might best be kept in its box. Obviously, the telescope should not be left outside unprotected. Protect it from the sun and rain, dust.

No matter how careful you are, the mirror and diagonal will collect dirt and grime over a period of a few months. & hence it is re aluminized again.

7.1 Collimation (Aligning the mirrors)

This is best done during the daytime with the telescope aimed at the sky or simply out of the window. It is also a good idea to do the collimation with the tube, not in its cradle, but just resting on a table or ledge. The side of the tube holding the eyepiece support plate should be on top at this stage.

Step 1: Look into the open end of the telescope tube and adjust, if necessary, the 3 wing nuts on the bolts supporting the mirror cell so that you can clearly see your face.

Step 2: Remove the eyepiece from the eyepiece mount so that the diagonal mirror can be viewed directly. Keeping your eye centered over the eyepiece mount look at the diagonal and the images seen therein. The rectangular / elliptical diagonal will look square/round in outline as it is seen in
projection; in the diagonal will be seen the outline of the main mirror and by double reflection the image of the diagonal itself and the image of your eye. Usually, after alignment images will appear concentric, as shown in Fig. 32 C. Carefully identify the various images before proceeding.

![Diagram showing telescope alignment](image)

**Fig. 32.** Collimating the telescope.

Step 4: Once the image of the primary mirror has been centered adjust the 3 positioning bolts supporting the main mirror cell, so that the images of the diagonal and your eye are centered with respect to the image of the main mirror and the outline of the diagonal. When the adjustment is complete the appearance should be as shown in Fig. 32C.

![Telescope eyepiece](image)

The eyepiece

A Huygen type eyepiece (10X or 15 X) is used for the telescope. It is however better to use a 25mm (25mm = 10 X) focal length. Ramsden eyepiece, which is manufactured in India. Imported Kellner, orthoscopic and other oculars would be real luxuries; if and when these are produced in India they would be preferred to the simple Ramsden. Remember one thing clearly that the magnification
increases with shorter focal length oculars. Still, a beginner is best off using 25 mm focal length eyepieces; a clear wide field is preferable to a faint narrow field when one first makes observations. With experience and at a time when the whole telescope is being familiar one can make use of shorter focal length eyepieces.

Diagonal:-

The diagonal is a small flat mirror used to turn the main mirror image bundle through 90° so that it can be viewed through the eyepiece. While the optimum shape for the flat is elliptical which is front coated aluminized mirror with protective coat of SiO₂ Care (Protect it from Dust, Moisture etc. its surface should not be touched by means of hand or any thing else other Damage of coating will result.

Primary Mirror:-

This is the most important part of the Telescope, because the whole quality of image is solely dependant on it, it is extremely perfect Hand polished, & corrected mirror, it is also front coated aluminized mirror with protective coat of SiO₂ Care (Protect it from Dust, Moisture etc. its surface should not be touched by means of hand or any thing else other Damage of coating will result.
The telescope tube:

The telescope tube is made of PVC it has several advantages over rolled sheet metal tube. It is light in weight uniform in shape than rolled sheet metal tube corrosion free. The tube is in circular section. Mirror cell (which holds primary mirror) it does not change easily with changes in temperature

5.2 The mirror cell

The mirror cell must be such that the mirror rests in place subject to little or no stress. It is important for collimation that the orientation of the mirror face is adjustable; but this adjustment must be done not on the mirror face directly but on the cell which supports it.

6) Magnification Factor:-
Magnification of Telescope is dependant on the focal length of primary mirror & focal length of eyepiece. As the focal length of primary mirror increases the magnification increase & as the focal length decrease of eyepiece the magnification increases. These two factors affect the magnification. Formula for calculation magnifying power is given below.
\[ M = \text{Magnifying power, } M = \frac{F}{f_e} \]

Where

\[ F = \text{Focal length of primary mirror} \]

\[ f_e = \text{Focal length of the eyepiece} \]

ALTAZIMUTH (AXIS) LOCK

In the above Picture, Two axis locking screw have been shown. This is useful for holding the position firmly. When the proper picture is captured tighten the two screws marked A for locking the axial movement.

FOCUSER UNIT
In the above picture, the focuser unit is shown. The arrow indicates the direction of movement of the focuser unit. For acquiring clean focus, you must rotate it in both directions by some trial & error method. You will find the adequate focus.

Diagonal Support:
In the above picture, the diagonal support is shown. As per our experience, under extremely rare occasions, it requires re-alignment. So, don’t think much more about it. For its alignment, you need special tools like laser alignment tools or Cheshire eyepieces or at least you need a sight tube. Consult us before attempting to adjust it.

Barlow Lense:-
Barlow Lense is Concave Lense used for Magnifying the Image. This comes with its housing & it is to be mounted below the eyepiece. It multiplies the magnification factor given by its power.

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