SPECIAL INSTRUCTIONS

MODEL NO.313 JASON 455X

EQUATORIAL REFRACTOR TELESCOPE

JASON/EMPIRE, INC.
OVERLAND PARK, KANSAS

PARTS DIAGRAM

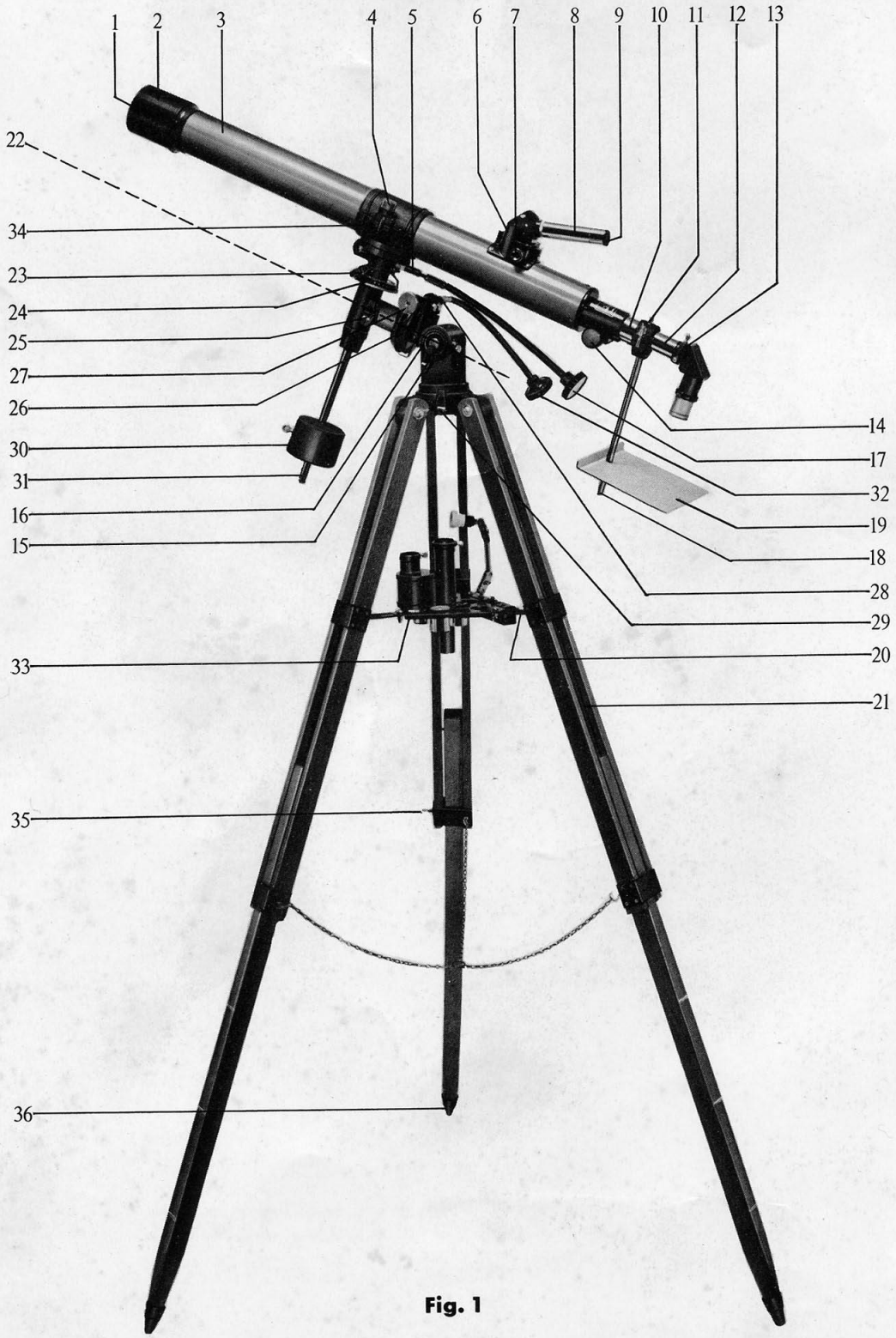


Fig. 1

1. Objective end
2. Sun shade
3. Main tube (body)
4. Body belt thumb screw
5. Declination attachment
6. Sighting scope
7. Sighting scope mirror knob
8. Sighting scope eyepiece tube
9. Sighting scope eyepiece
10. Rack and pinion micro-focusing tube
11. Set screw for draw tube
12. Rough focusing draw tube
13. Eyepiece adapter
14. Rack and pinion micro-focusing knob
15. Polar axis thumb screw
16. Latitude scale
17. Declination flexible cable control
18. Shaft for sun projection screen
19. Sun projection screen
20. Accessory shelf bracket
21. Tripod leg
22. Polar axis
23. Declination thumb screw
24. Declination circle
25. Right ascension thumb screw
26. Hour circle
27. Worm gear for right ascension axis
28. Right ascension attachment
29. Horizontal thumb screw
30. Balance weight
31. Balance weight shaft
32. Right ascension flexible cable control
33. Accessory shelf
34. Mount assembly
35. Thumb screws
36. Rubber tips

CAUTION: When observing the sun with this telescope, follow the sun viewing instructions described further on page 10.

UNDER NO CIRCUMSTANCES SHOULD OBSERVER LOOK DIRECTLY AT THE SUN THROUGH THE SIGHTING SCOPE AS DIRECT OBSERVATION OF THE SUN IS DANGEROUS TO THE NAKED EYE.

OPERATING INSTRUCTIONS

Read carefully before attempting Telescope Observations.

A telescope is an optical and mechanical instrument of great precision. Handled with care and respect, it will provide many years of excellent service. This booklet is designed to furnish you with information on this telescope's structure, specifications, and the use of proper operating techniques.

FAMILIARIZING YOURSELF WITH THE TELESCOPE

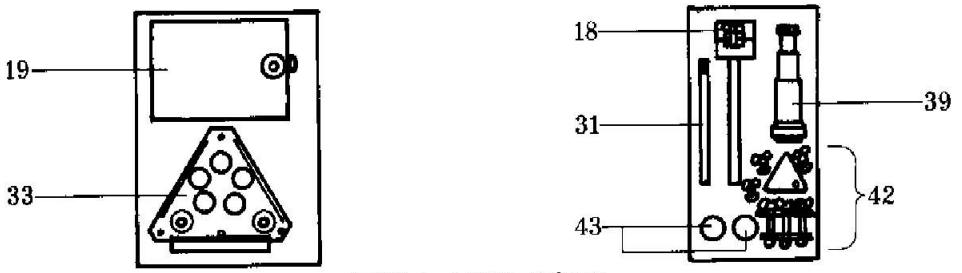
Your telescope has been specially packed in styrofoam to protect it in shipping and storage. Always re-pack your telescope as indicated by the packing diagram (fig. 2) and you will have no trouble when assembling and disassembling.

WHAT IS A TELESCOPE ?

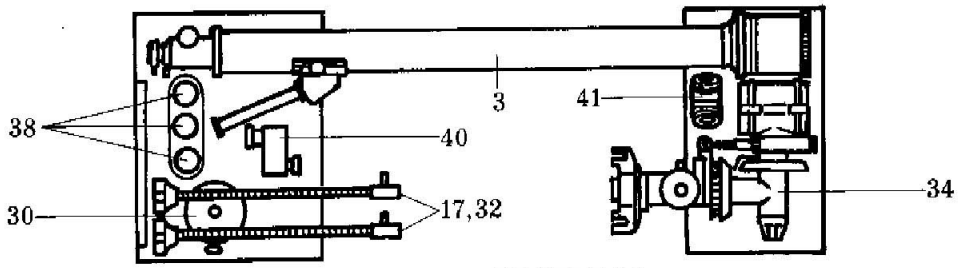
A telescope is an optical system designed to magnify distant objects. The telescope you have purchased is called a REFRACTOR Telescope. It has a large lens (the objective) mounted in front of the tube. The objective controls light rays and directs them through the telescope, where the eyepiece (ocular lens system) magnifies the image that is formed.

This telescope has an equatorial mount. It is extremely versatile because it allows the telescope to move in all directions. Thus, it is possible for your telescope to track a star's movement across the sky in the same path that the star seems to take (called diurnal movement). It has flexible cable controls (17 and 32), which make it possible to move the telescope while you are looking through it.

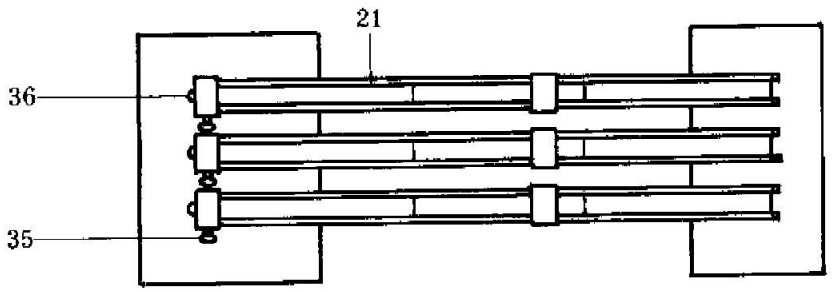
PACKING DIAGRAM



TOP SECTION



MIDDLE SECTION



BOTTOM SECTION

18. Shaft for sun projection screen
19. Sun projection screen
31. Balance weight shaft
33. Accessory shelf with illuminator
39. Barlow lens
42. Small accessories compartment ...for nuts and bolts
43. Sun, Moon filter

MIDDLE SECTION

3. Main tube (body) with sighting scope
17,32. Flexible cable controls
30. Balance weight
34. Mount assembly
38. Eyepieces
40. Erecting prism
41. Star diagonal prism

BOTTOM SECTION

21. Tripod legs
35. Thumb screws
36. Rubber tips

ASSEMBLING THE TELESCOPE

Use the parts diagram (fig. 1) and the packing diagram (fig. 2) as your guides.

I. Remove the tripod legs (21). Loosen the thumb screws (35) and slide out the wooden inner sections so that the height of each leg is the same (you will find the height graduation marks on the legs handy for this purpose). Tighten the thumb screws and put the tripod legs aside.

II. Attaching The Mount Assembly (34) To The Tripod

Remove the long bolts, wing nuts, and washers from the small accessories compartment (42). Place the tripod legs along side each other on the ground with the screw eyes and accessory shelf brackets (20) facing up. Place the long bolts through the holes in the tripod leg, making sure that all bolts are pushed through in the same direction (left to right or right to left). There should be a washer placed on either side of each tripod leg. Attach the wing nuts loosely to the bolts. Remove mount assembly (34) from the box.

Slip one notch of the mount assembly over the bolt you have just placed through the tripod leg ..... with the main part of the mount assembly facing up. Again, make sure that the tripod screw eye and accessory shelf bracket faces up. Tighten the wing nut to secure the mount. Leaving the first leg and mount on the ground, attach the other two legs to the mount. Make sure that the screw eyes and accessory shelf brackets face in

Stand the tripod up, spreading the legs. Loosen the three wing nuts just enough to seat the mount firmly, then tighten the wing nuts again. Remove the accessory shelf (33) and the small bolts and wing nuts found in the accessory compartment (42). Place the accessory shelf on top of an accessory shelf bracket (20). Push a bolt through the bracket and shelf and tighten the wing nut. Do the same with the other two brackets.

Ⅲ. Attaching the Telescope (see fig. 3)

Loosen the various locking mechanisms (thumb screws 15, 23 and 25). Turn the necessary axes so that the main telescope body belt (4) is parallel to the ground. Place the telescope in the body belt and lock it in place, making sure the telescope eyepiece is on the same side as the declination attachment (5). Lock all thumb screws (15, 23 and 25). (Note: the clamp levers may be screwed into the clamps at several angles. Reset them if they are in the way of the mount).

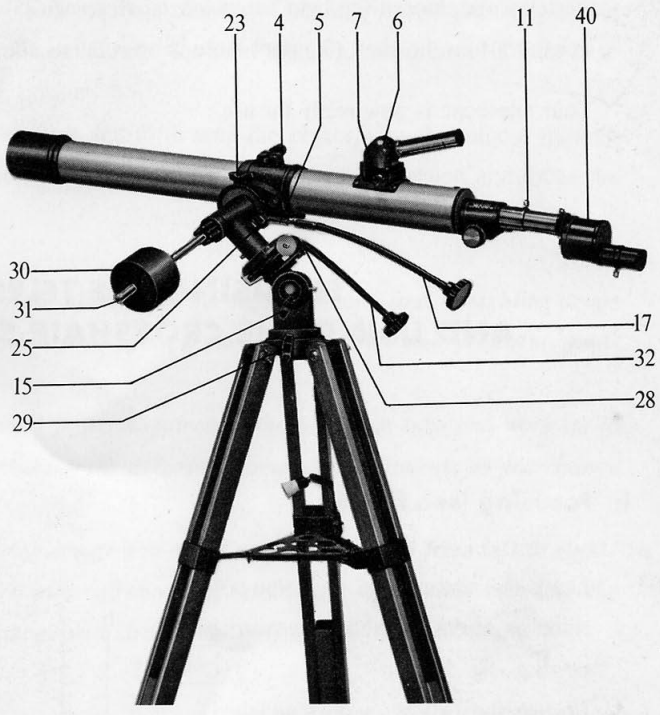


Fig. 3

TERRESTRIAL POSITION

Remove the balance weight shaft (31) and balance weight (30). Screw the balance weight shaft (31) into the female receptacle located at the base of the declination shaft. Note that the position of this weight can be changed by slipping it back and forth, making it possible to balance the telescope. Fasten the weight with the set screw. Fasten the declination (17) and right ascension (32) flexible cable controls to the mount at (5) and (28). Make sure that the set screw on the two cable controls screw onto flat surfaces on the mount.

Ⅳ. Balancing the Telescope (see fig. 3).

While supporting the telescope body, loosen the body clamp knob (4) and the declination thumb screw (23). Carefully slide the telescope body one way or the other through the body belt until

the telescope does not rotate about the declination axis. (Note: this balance point will change, depending on the eyepiece accessories used). Now loosen the polar axis thumb screw (15) and place the polar axis parallel to the ground. Tighten the polar axis thumb screw. Again supporting the telescope, loosen the right ascension thumb screw (25) and adjust the position of the balance weight (30) on the shaft (31) until there is no rotation about the right ascension axis.

Your telescope is now ready for use.

FOCUSING THE TELESCOPE AND USING THE CROSSHAIR SIGHTING SCOPE

I. Focusing (see fig. 4)

Leave the telescope in the same position as when assembling (terrestrial position, fig. 3).

Loosen the two set screws attached to the eyepiece adapter (13) on the main telescope tube.

Remove the lowest power eyepiece (Ke2lmm) and attach it to the eyepiece adapter, tightening the set screws. Aim the telescope at a distant object in the daytime ..... such as the corner of a building, telephone pole, etc. If the object is not seen through your telescope, turn the sighting scope mirror knob (7) to the eyepiece end ..... telescope position. Turn the micro-focusing knob (14) so that the focusing tube (10) is about one half way out. Pull out the rough focusing draw tube (12) so that the object is in rough focus. Rock the focusing knob (14) back and forth until the object is in sharp focus.

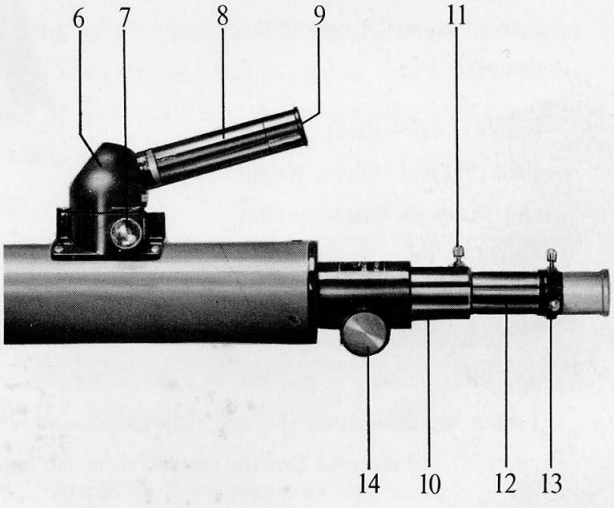


Fig. 4

Tighten the set screw (11).

II. Using the Sighting Scope (see fig. 4)

The 10X crosshair sighting scope (6) is designed to make it possible to locate an object easily and quickly. By centering the image in the sighting scope's crosshair, you will automatically set the main telescope tube to view the same image. Turn the sighting scope mirror knob (7) to the objective end ..... sighting scope position.

Move the sighting scope eyepiece (9) back and forth until the object is in sharp focus through the sighting scope. Return the sighting scope mirror knob to telescope position and focus the telescope as previously described.

Note 1: Whenever locating an object, always use the sighting scope first in sighting scope position ..... as it has a wide field of view and will speed up your preliminary adjustment tremendously.

Note 2: Always start with the lowest power eyepiece in the telescope tube and work up to the power you want ..... making the necessary focusing adjustments as you change eyepieces.

Note 3: Do not be disturbed that the image you see is upside down and from left to right. This is a normal situation with astronomical telescopes. By simply inserting the erecting prism (40), the image will straighten itself out for terrestrial use.

Eye Pieces and Magnification

This telescope is supplied with three different eyepieces (Ke21mm, H12mm and SR4mm). The power of each particular eyepiece is directly related to the focal length of the objective lens in the telescope ..... which is 910mm (millimeters).

The formula is as follows:

$$\frac{\text{Focal length of objective lens}}{\text{Focal length of eyepiece}} = \text{Magnification}$$

As an example, your SR4mm eyepiece will show a magnification of:

$$\frac{910\text{mm}}{4\text{mm}} = 227.5\text{X Magnification}$$

Using the same formula, the other eyepieces will give:

H 12mm .....75.8X Magnification

Ke 21mm ..... 43.3X Magnification

The Barlow lens (39) (described in the accessory section) will double the magnification of each of these eyepieces.

USING YOUR TELESCOPE ASTRONOMICALLY

Before learning the technical details of this telescope, you will find that you can now enjoy observing the stars, the planets, the moon and the sun with your present knowledge. Loosen the declination axis thumb screw (23), the right ascension thumb screw (25), and the polar axis thumb screw (15). Re-adjust your telescope so that it is in the position as shown in fig. 1. Loosen the horizontal thumb screw (29) so that you can swing the telescope in a circle. Attach the star diagonal prism (41) and your lowest power eyepiece (Ke2l). See the accessories section for details of the star diagonal prism.

THE MOON AND THE STARS

If you are viewing at night, you will get the most fun out of looking at the moon and its surface. Aim the sighting scope so that the moon is in the center of the crosshairs. Tighten all thumb screws. The main telescope is now directly aimed at the moon. Focus the telescope as described previously. With your hands on the two flexible cable controls (17, 32) you will find that you can move the telescope in any direction as you study the moon's surface. The design of the two cable controls is such that the telescope can be swung a limited distance before the screws must be loosened for further movement. Do not try to force the movement of the telescope past the automatic stops on the controls. To go past a stop position, loosen the necessary thumb screw and shift the telescope manually before re-tightening the screw. The balance weight should be adjusted up or down depending upon the position the telescope is in. You will find that if the balance weight is correctly adjusted, the telescope will move on any axis (with the appropriate thumb screw loosened) with the slightest touch of the finger.

At this point, try the more powerful eyepieces in your observation of the details of the moon. After looking at the moon, you will probably want to look at some of the stars in the more well known constellations (like the big dipper). The stars will appear like flickering dots of light. This is the case with even the more powerful telescopes.

Your daily paper will probably tell you the location of the planets and the times that they are in your area on any particular day. See if you can find one of these planets. Try Venus first, as it is the brightest object in the heavens (discounting the moon and sun) at most times of the year. The planets will tend to appear like flat discs through your telescope and you will probably be quite surprised by the rapidity with which they move across the sky. If you aim your telescope at a planet and walk away for five or ten minutes, you are likely to find that the planet has moved out of the telescope's field when you get back.

A SIMPLE WAY TO AIM AT THE SUN

If you are first using this telescope in daylight, follow this procedure to study the sun. Because the sun is so powerful and can damage your eyes if you look at it directly, **DO NOT USE THE SIGHTING SCOPE** to aim at the sun. Instead, remove the star diagonal prism (with eyepiece and **sun filter** (43) attached) from the draw tube of the telescope. Next, face the telescope toward the sun. The main shadow of the telescope will get smaller and smaller and then become a ring when the tube is aimed directly at the sun. Now, attach the prism (with eyepiece and **sun filter**), and you are ready to focus on the sun. Most of the sun's activities take place at the edge of the sun. An even more fascinating way of observing the sun is by use of the sun projection screen (19). It is ideal for group viewing. Remove the shaft (18) and the sun projection screen (19) from the box, and mount them to the telescope. Slide the screen onto the shaft with the white side facing up. Fasten the screen about 2 inches from the far end of the shaft with the set screw. Turn the micro-focusing knob (14) so that the micro-focusing tube (10) is far enough out for the split-ring clamp to fit on it. Place the split-ring clamp around the micro-focusing tube with the set screw (11) protruding through the hole in the clamp and tighten the wing nut. Follow the aiming instructions of the previous paragraph (but without using the sun filter). When you attach the prism, it should face down. Gently manipulate the telescope until the sun's image appears on the screen. By moving the screen higher up the shaft, you will get a smaller, but much brighter image. Once the image is obtained, you may switch the eyepieces around until you get the image you like. The flexible cable controls enable you to follow the sun's motion easily. Note the irregular edges as the flames leap into the heavens. Dark spot on the sun's surface are the sun spots you have heard so much about.

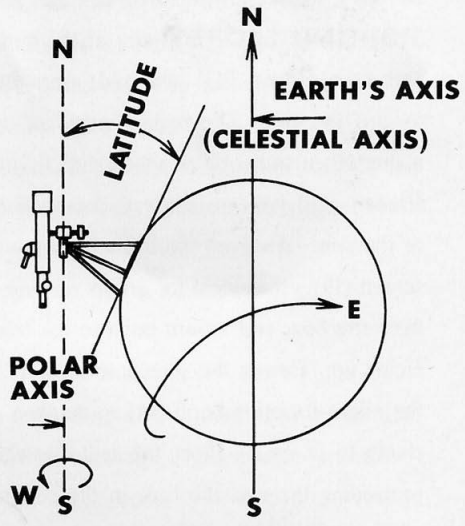
USING THE TELESCOPE TERRESTRIALLY (See Fig. 3)

Since the image seen through the telescope is upside down and left to right, it is essential that the erecting prism (40) be attached to the eyepiece adaptor before using this telescope for terrestrial (or land) viewing. See the accessory section for use of the erecting prism. Loosen the polar axis thumb screw (15). Set the polar axis at right angles to the tripod (straight up). Loosen the declination thumb screw (23).

Adjust the telescope so that it is parallel to the ground (fig. 3). Tighten the thumb screws. Aim the telescope with the sighting scope in the same way as you do for astronomical viewing. To move the telescope from left to right, loosen the horizontal thumb screw (29). To move the telescope up and down, loosen the declination thumb screw (23). For small movements, use the flexible cable controls (17, 32). Attach the image erecting prism (40) and lowest power eyepiece (Ke21).

USING THE SETTING CIRCLES TO LOCATE STARS

Since this equatorial telescope is designed to move in any direction, it can be set to track the apparent movements of celestial bodies across the sky. This is referred to as diurnal movement. This diurnal movement of celestial bodies is in the direction opposite to that of the earth's rotation and is around the earth's axis or celestial axis (fig. 5). By simply aiming the telescope polar axis (22) at celestial North, you will automatically place the telescope in parallel with the earth's axis and thus be able to locate stars in the sky based on information in star charts and star atlases. In simple language, you aim your telescope dead center in the celestial sphere... ... that point in the sky that is like the hub of a wheel and does not appear to move. The angle of declination is simply 90° minus the angle away from this hub. Celestial North is 90°. If you were at the North Pole, you would point your telescope straight up to aim at celestial North. To compensate for your position on the round earth, the polar axis (22) is set by the following procedure. (see fig. 6.)

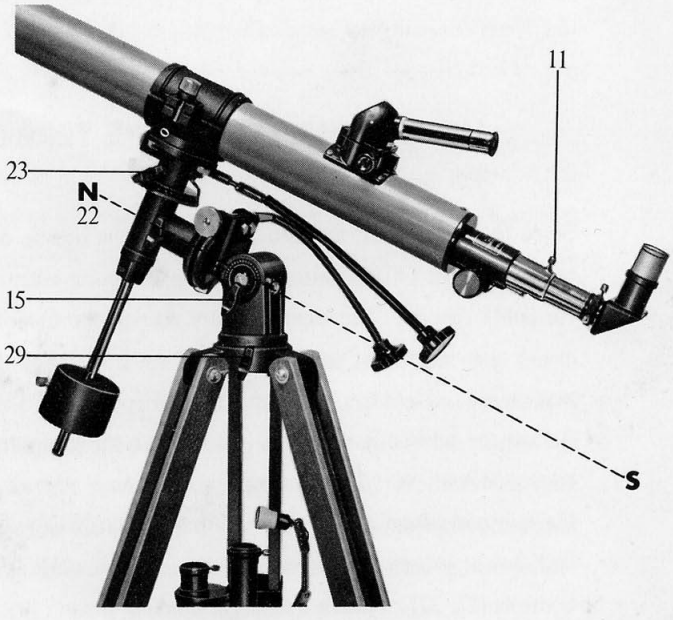


POLAR AXIS AND EARTH'S AXIS

Fig. 5

1) Set up the telescope at night. Loosen the declination axis thumb screw (23) and turn the telescope around until the arrow points at 90° on the declination scale. Tighten the declination axis thumb screw.

2) Loosen the horizontal thumb screw (29) and turn the telescope until the objective end (1) faces due North. This can be done by an approximate sighting on the Pole Star (Polaris) or by the use of a compass to find magnetic north. True North is then found by directing the telescope at the Pole Star, as magnetic North is slightly away from true North.



POLAR AXIS ADJUSTMENT

Fig. 6

3) Look up the latitude of your area in any geographical atlas. Loosen the polar axis screw (15) and set the latitude scale (16) to the correct latitude for your area. Aim the sighting scope at the Pole Star. You will probably notice that Polaris (the Pole Star) is not dead center in the crosshair sighting scope. This is probably because your telescope is not absolutely level with the ground. Loosen the horizontal axis screw again and turn the telescope so that it is directly aimed at the Pole Star. Tighten both screws firmly. Polaris is 1° off the North celestial pole. Therefore, the sighting of stars will have to be slightly adjusted as you locate them in the heavens.

TO LOCATE ANY STAR IN THE HEAVENS QUICKLY

With the telescope set as described in the previous section, look up the declination of any star in a common star chart. For instance, the bright star Vega is located plus 38° 44 minutes declination. Loosen the declination screw (23). Swing the telescope around the declination axis to 38° and lock it there. This sets the telescope to make a circle around the pole star with an angle of approximately 52° from Polaris (90° — 38°). The sky is divided like a big 24 hour clock, with minutes and seconds. You will notice on the chart that the Big Dipper (Ursa Major) is located from approximately 11 hours through 13 hours 45 minutes. Since Vega is located at 18 hours 35 minutes, by the simple process of swinging the telescope along the right ascension axis a bit past 1/4 turn to the right from the two pointer stars (at around 11 hours) of the Big Dipper, you will be near the constellation Lyra and the bright star Vega. (Note: these two pointer stars aim almost directly at Polaris, making it rather easy to locate the center of the celestial sphere).

After locating the pointer stars of the Big Dipper, loosen the right ascension thumb screw (25). Swing the telescope around so that the barrel of the telescope is on a line with the two pointer stars of the Big Dipper (and, of course, Polaris). Your telescope is now aimed at an approximate right ascension of 11 hours. Tighten the right ascension thumb screw. Turn the hour circle (26) so that the pointer is on 11 hours. You have now set the telescope so that it is coordinated with the celestial clock for your location, at this particular moment. Turn the right ascension cable control (32) so that the telescope moves approximately one quarter turn to the right, until the pointer is a bit past 18 hours 30 minutes on the hour circle. Look through the sighting scope.

The bright star close to the center of the crosshairs is Vega. Using the declination (17) and right ascension (32) flexible cable controls as you look through the sighting scope, make your final adjustments so that Vega is centered in the crosshairs. Now focus, using the main telescope. If the mount hits against itself, loosen the declination screw, swivel the telescope to clear the mount, and reset the declination pointer. The division of the sky into a 24 hour clock is, of course, based on the earth's rotation ..... which divides the day into 24 hours.

Each star is located at a right ascension of from 0 to 24 hours — (just like in a 24 hour clock). Each star is also located so many degrees from a flat, imaginary plane at the North Pole. It is called the angle of declination. Due celestial North would be straight up from the North Pole, or 90°.
It is essential to always start out with the lowest power eyepiece when locating a star. Once the star is found, the more powerful eyepieces with smaller fields of view may be used to greater advantage.

ACCESSORIES AND THEIR USES

Barlow Lens (39)

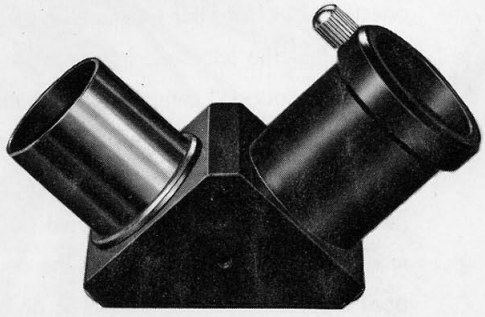
This lens will automatically double the power of any telescope. The lens is inserted in the eyepiece adapter of the telescope and the eyepiece is then inserted on the far side of the lens. Because the power of the telescope is doubled, the field of view is sharply reduced. The relative brightness of the telescope is also reduced.



BARLOW LENS

Star Diagonal Prism (41)

This prism is essential for viewing celestial objects. The observer can work in comfort without straining his neck, as the prism puts the eyepiece at a right angle to the telescope tube and makes it possible for the observer to stand or sit while observing the heavens. This prism bends the light rays at right angles to accomplish this purpose. It is attached in the same way as the Barlow lens.



STAR DIAGONAL PRISM

Image Erecting Prism (40)

The image seen through the telescope always appears left to right and upside down when using an eyepiece alone. The reason for this is that every time light passes through a lens, some of it is lost in its travels through the telescope. This decreases the amount of brightness that reaches the eye. To get maximum light ..... an essential in observing celestial objects ..... the number of lenses is deliberately reduced to a minimum. That the image is left to right and upside down will not disturb you while observing the stars, the moon, the sun, etc. The image erecting prism will straighten out the image when the telescope is used to view terrestrial objects. This image erecting prism is added to the telescope in the same way as the Barlow Lens.

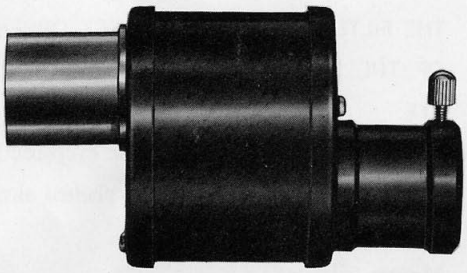
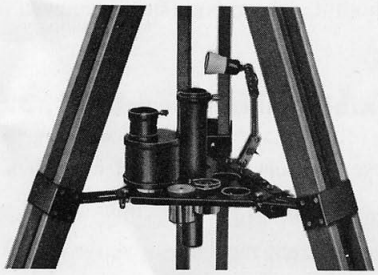


IMAGE ERECTING PRISM

Accessory Shelf with Illuminator (33)

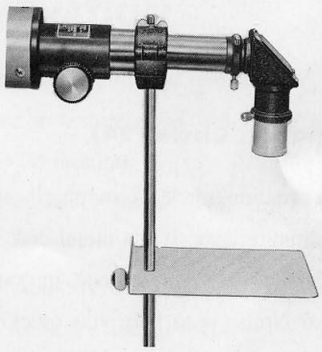
The telescope is most efficient astronomically in total darkness. Since, under these conditions, it is difficult to locate and identify accessories, we have added a small illuminator to the accessory shelf to make it easy to find the necessary accessories. This illuminator uses two "AA" penlight batteries.
The accessory shelf is designed to hold all your accessories.



ACCESSORY SHELF WITH ILLUMINATOR

Sun Projection Screen (18, 19)

The use of this screen is one of the best ways to view the sun. The screen fastens to the telescope tube and the sun's image is projected through the telescope directly onto the screen. It is ideal for group viewing.

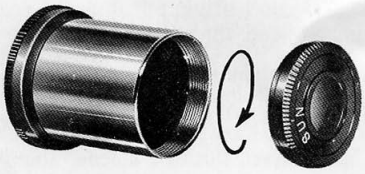


SUN PROJECTION SCREEN

Sun Filter (43)

The sun filter is essential when viewing the sun directly with the telescope.

UNDER NO CIRCUMSTANCES SHOULD THE OBSERVER LOOK DIRECTLY AT THE SUN WITHOUT THE FILTER IN PLACE AS DIRECT OBSERVATION OF THE SUN IS DANGEROUS TO THE NAKED EYE.

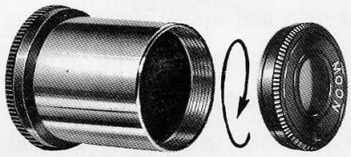


Sun Filter

This sun filter is screwed into the eyepiece before the eyepiece is inserted into the eyepiece adapter. Sighting on the sun has been explained already.

Moon Filter (43)

Because there is a great deal of reflected glare when the full moon is observed, the addition of the moon filter will remove this glare and make it possible to sharpen surface details. At other times, this filter is unnecessary and a sharper image can be obtained without it. The moon filter is screwed into the eyepiece in the same way that the sunfilter is added.



Moon Filter

Flexible Cable Controls (17, 32)

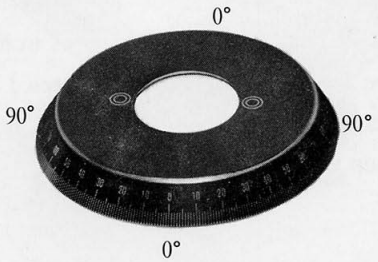
These controls are designed in such a way that even with all screws tight, it is possible to move the telescope in any direction. Thus, you may observe the stars, the planets, the moon, the sun in their apparent movements across the sky by slight turns of these controls and without the necessity of tightening and loosening the telescope thumb screws.



FLEXIBLE CABLE CONTROLS

Declination Circle (24)

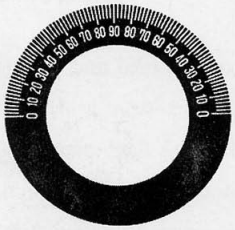
The declination circle is mounted on the shaft of the declination axis. It is a metal disk which is graduated in degrees. Its purpose, in coordination with the hour circle, is to help you quickly locate a sky object by relating it to a well known and easily located star.



DECLINATION CIRCLE

Latitude Scale (16)

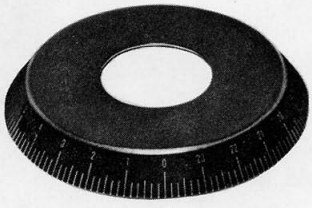
This scale is mounted along the polar axis under the polar axis thumb screw (15). It is a metal disk graduated in degrees of latitude. Set at the latitude of your geographical area, it helps aim the telescope quickly at the Pole Star (Polaris), so that the telescope is pointed directly at celestial North and is in parallel with the earth's axis.



LATITUDE SCALE

Hour Circle (26)

The hour circle is mounted on the shaft of the polar axis, above the worm gear for the right ascension axis (27). It is a metal disc graduated from 0 to 24 hours. It can be turned around the polar axis by hand. Its purpose, in coordination with the declination circle, is to locate a sky object by relating it to a well known and easily located star.



HOUR CIRCLE

Tripod (21) (see fig. 1)

This hardwood tripod is designed for maximum comfort. By loosening and tightening the thumb screws (35), you may raise or lower the tripod to the position you want. The rubber tips (36) on the tripod legs give firm footing on hard surfaces.

If you work on soft surfaces (earth, grass, etc.), remove the rubber tips. The spikes you will see are to be firmly pushed into the earth ..... otherwise the telescope will slowly sink down, shifting position.

HINTS FOR EFFECTIVE OBSERVATION

When the telescope is taken out of doors and the air is warmer than the indoor temperature, allow a few minutes before using the telescope ..... as the difference in temperature will cause a condensation of moisture on the lenses. This will disappear in 15 — 20 minutes.

If you accidentally perspire or touch the eyepiece with your eyelid or finger, wipe the eyepiece gently with a lintless cloth to prevent a blurred image.

It takes close to 30 minutes for our pupils to dilate (widen) and adjust to darkness.

You will be able to see much dimmer objects after 1/2 hour of telescope use at night.

The rising air currents caused by the sun shining directly on objects you are observing will sometimes appear to distort the image. This is often the case when observing over roof tops and tree tops.

MAINTENANCE OF THE TELESCOPE

As a precision optical and mechanical instrument, the telescope must be handled with utmost care. When not in use, store it in the box. Lenses must be cleaned as carefully and as rarely as possible to avoid affecting their accuracy and performance. Optical elements must never be taken out of their mount by an inexperienced person. When it becomes necessary to clean the lenses, a soft camel's hair brush (obtainable in an art supply store) should be used to brush off dust. Never rub the optical surface without first dusting it throughly, as a tiny particle of dirt can scratch the lens surface.

When a lens needs further cleaning beyond brushing, use a clean cotton cloth with a few drops of ether or grain alcohol on it. Wipe the lenses very gently.

SPECIFICATIONS

OPTICAL EFFECT

Objective lens : Achromatic, crown-flint two-ply glass, hard-coated
Lens clear aperture : 60mm
Focal length : 910mm
Resolving power : 1.93"
Visual magnitude : 11.0
Magnification : 43.3X 75.8X 227.5X (w/eyepiece only)
86.7X 151.7X 455X (w/barlow lens)

Eyepiece	Magni-fication	Magnification w/Barlow lens	Exit Pupil Aperture	Bright-ness	Visual Field	
					Actual	Apparent
Ke21mm	43.3X	86.7X	1.40mm	1.96	55' 48"	40°
H12mm	75.8X	151.7X	0.80mm	0.64	23' 41"	30°
SR4mm	227.5X	455X	0.26mm	0.07	7' 56"	30°

ACCESSORIES:

The following accessories are provided with this telescope.

Eyepiece (Ke21mm, H12mm, SR4mm)	3 pcs.	Sun Filter	1 pc.
		Moon Filter	1 pc.
Star Diagonal prism	1 pc.	Sun projection screen	2 pcs.
Erecting prism	1 pc.	Sighting scope	1 pc.
Barlow lens	1 pc.	Accessory tray	1 pc.

NEW SLR FINDER-SCOPE

The JASON MODEL 313 DISCOVERER telescope now comes equipped with a newly developed SLR finder-scope. This is a 10-Power reflector type finder-scope, pre-mounted and pre-aligned at the factory making it vastly more convenient for the user in the following ways:

a. It does away with the tedious procedure of aligning finder-scope axis with telescope axis, a routine prevalent with most astronomical telescopes when first setting up.

b. It gives a wider field of view and brighter image through the finder-scope and makes it much simpler to locate your object.

Note: Do not dis-mount or dis-assemble the SLR finder-scope since it is precision pre-aligned at the factory.

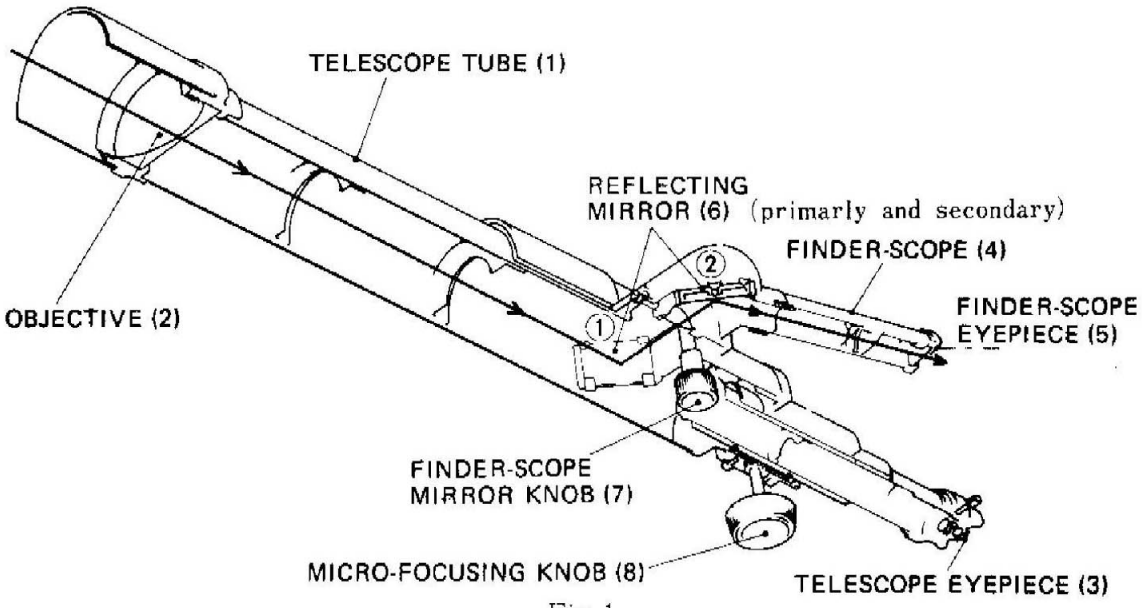


Fig. 1

Note: Illustration shows finder-scope reflecting mirror in "finder-scope viewing position".

HOW TO USE

a. Turn FINDER-SCOPE MIRROR KNOB (7) towards the objective end of telescope. This puts REFLECTING MIRROR (6) into position as shown on illustration and permits viewing through FINDER-SCOPE (4).

b. Slide FINDER-SCOPE EYEPIECE (5) back and forth until object is in sharp focus.

c. Turn FINDER-SCOPE MIRROR KNOB (7) towards eyepiece end of telescope. This shuts away the finder-scope view and puts telescope in position to view through TELESCOPE EYEPIECE (3).

d. You will note that the same image as seen through the finder-scope will automatically appear through the telescope. Focus telescope in the normal manner by rotating the MICRO-FOCUSING KNOB (8).

COLLIMATION OF SLR FINDER-SCOPE

If the reflection of the finder-scope is not in line for any reason, the secondary mirror should be adjusted on its mounting to bring about the proper alignment. It is a somewhat delicate adjustment and should not be attempted by the amateur. Extreme caution should be used.

a. Set up the telescope and center the distant object through the telescope eyepiece, not the finderscope. Stabilize the telescope in position with the necessary thumb screw and/or clamp lever.

b. Turn the finder-scope mirror knob to put the telescope in finderscope viewing position.

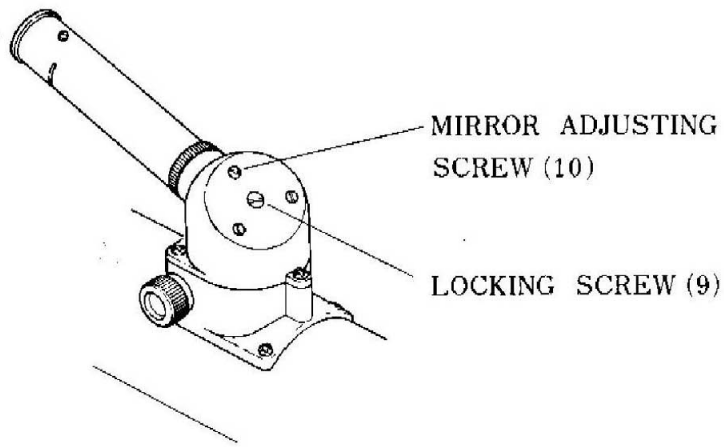


Fig. 2

c. Slightly loosen the locking screw (9) on the finderscope mount and turn the three mirror adjusting screws (10) clockwise or counter-clockwise to be properly centered and aligned.

d. You will note that each mirror adjusting screw moves to arrow direction when tightened and that it counterworks when loosened. See Fig. 3.

e. When adjustment is complete, retighten the locking screw.

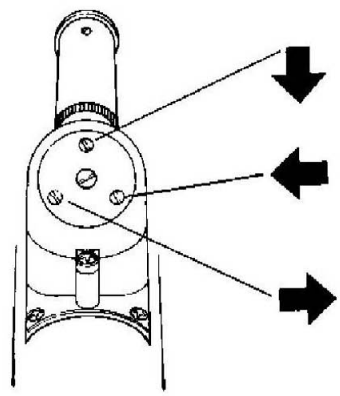


Fig. 3

Printed in Japan