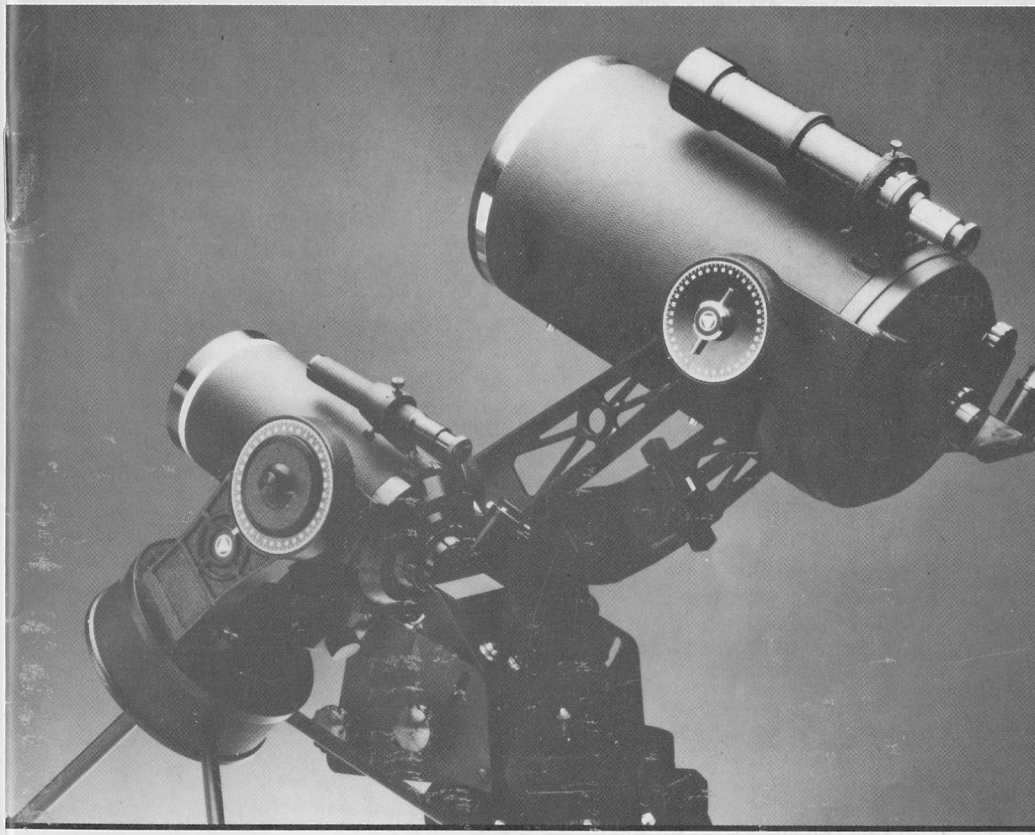
BAUSCH & LOMB

CRITERION



ACCESSORY INFORMATION

Models 4000–6000–8000

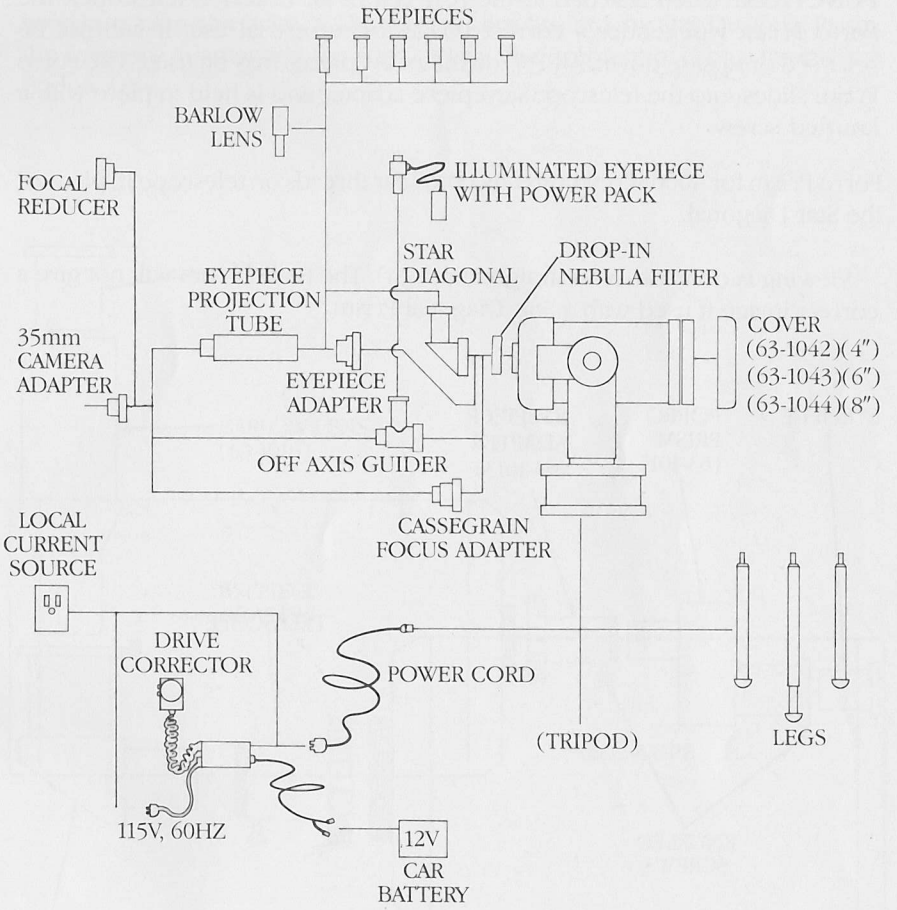
BUSHNELL
DIVISION OF BAUSCH & LOMB

Index

Pages by Code Numbers

35mm CAMERA ADAPTERS

Schematic For Attaching Most Accessories to Criterion Telescopes



Section 1
Visual Accessories

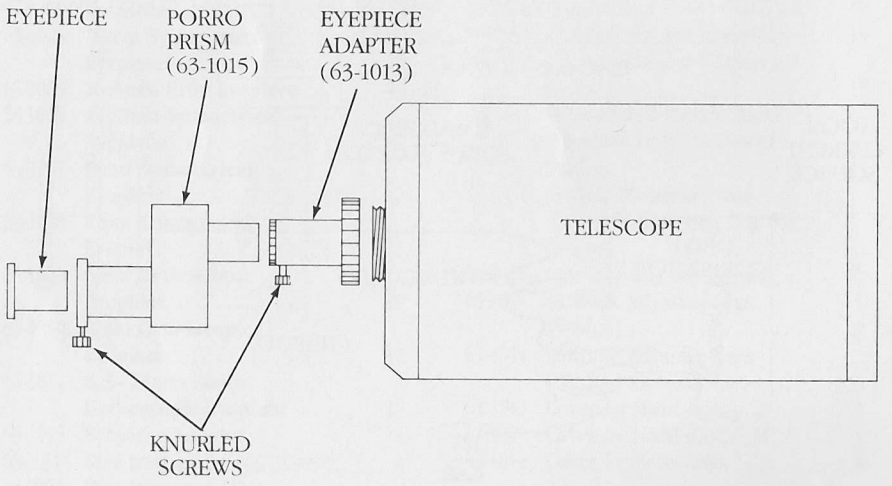
63-1015 (For 6000 & 8000) • 63-1052 (For 4000)

PORRO PRISM

FUNCTION: When attached to the rear cell of all Criterion telescopes, the Porro Prism will render a correct image for terrestrial use. It will not be reversed or upside-down. All 1¼" diameter eyepieces may be used. The Porro Prism slides into the telescope's eyepiece adapter and is held in place with a knurled screw.

Porro Prism for 4000 screws directly onto rear threads on telescope in place of the Star Diagonal.

Viewing is done on-axis (straight through). The Porro Prism will not give a correct image if used with a Star Diagonal Prism.



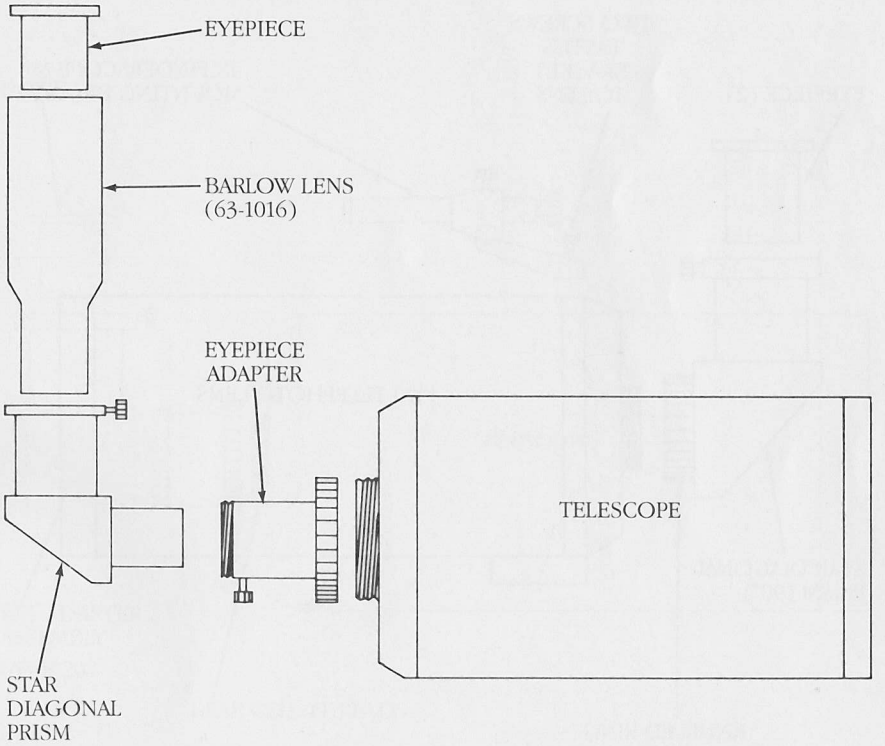
NOTE: 63-1015 fits 6000 & 8000 as illustrated.

Visual

63-1016

BARLOW LENS (2x)

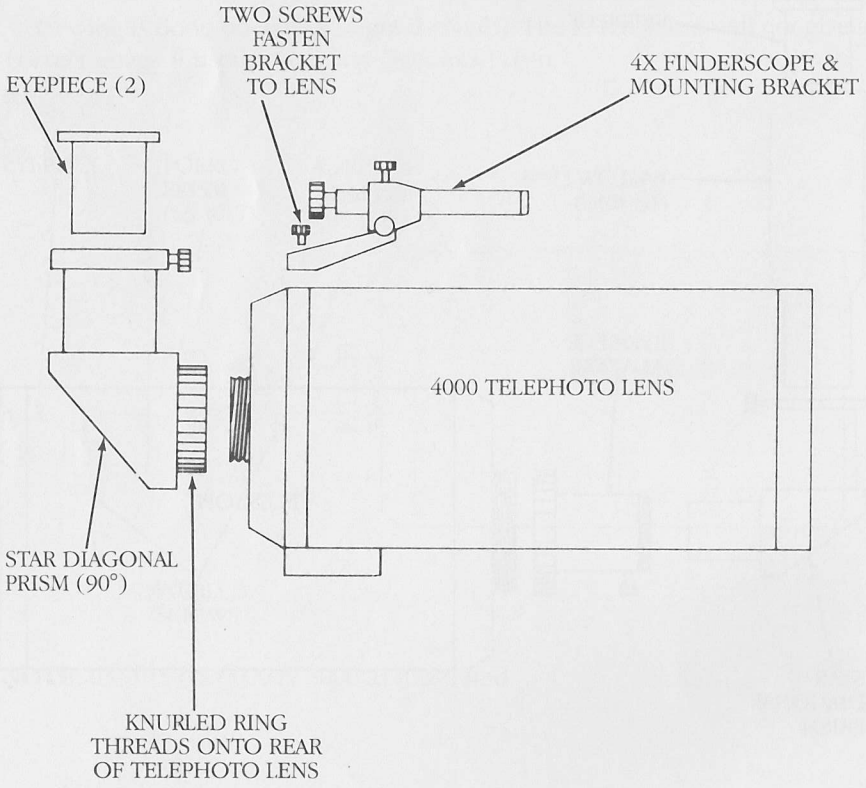
FUNCTION: The Barlow Lens will double the power of any eyepiece that is used in conjunction with it. The Barlow Lens fits into the Star Diagonal Prism, the Eyepiece Adapter and the Porro Prism. The Eyepiece of choice fits into the Barlow Lens.



68-1047

SPOTTING SCOPE CONVERSION KIT For 4000 Telephoto Lens

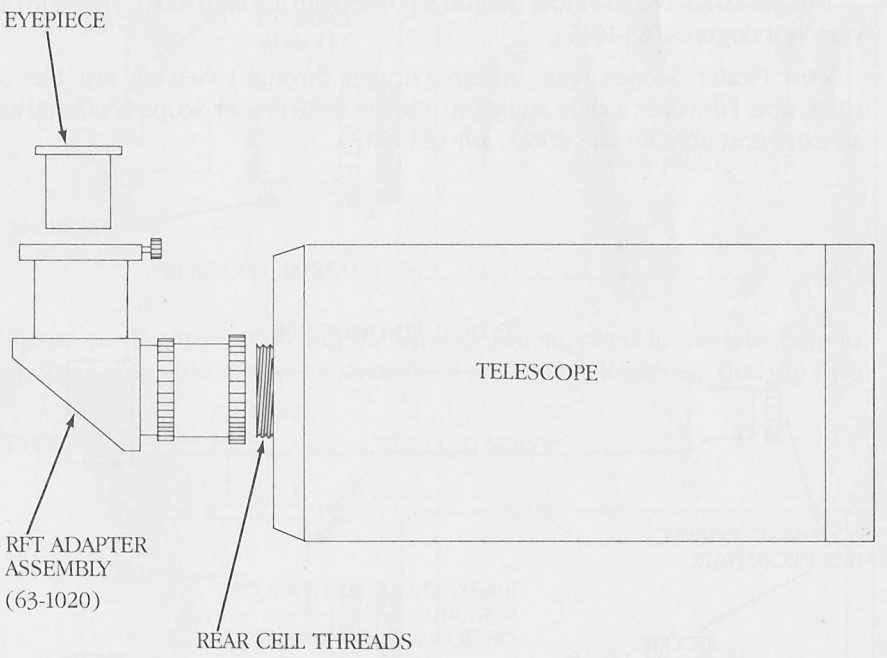
FUNCTION: Converts 4000 Telephoto Lens into a visual telescope. The kit includes a 30mm (40x) and an 18mm (67x) eyepiece, a Star Diagonal Prism (90°) and a 4x finderscope. Higher and lower power eyepieces may be used. The images will be correct top-to-bottom, but reversed left-to-right. In order to obtain completely correct images, an Eyepiece Adapter (63-1013) in conjunction with a Porro Prism (63-1015) is required.



63-1020

COMPLETE RFT ADAPTER ASSEMBLY
(RFT means "rich field telescope")

FUNCTION: This accessory reduces the effective focal length of all Criterion telescopes to one-half and results in a visual image that is four times brighter and one-half the size of the image seen without it. It is most useful in viewing very dim deep-sky objects, such as faint galaxies and nebulae.



Visual

63-1017, 63-1018, 63-1019, 63-1048

FINDER SCOPES (Spotting Scopes) Included with all astro telescopes

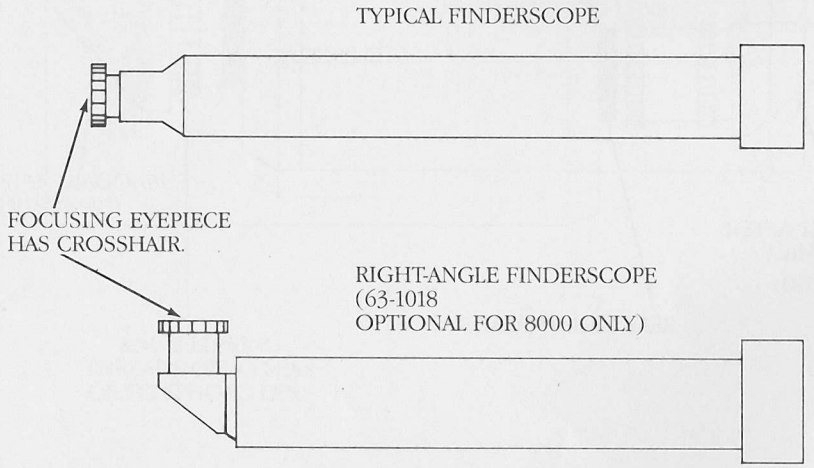
FUNCTION: The function of a Finder Scope is to aid in the locating of objects one wishes to see in a telescope. It provides a low power image with a wide field of view. Its eyepiece has a crosshair to locate the center of the field of view. It is a cousin to a riflescope except the view is upside down and reversed.

The model *4000* and the telephoto-to-spotting scope conversion kit has a 4x15 Finder Scope (4 power with a 15mm diameter lens). The field of view is 5 degrees (63-1048).

The *6000* has a 6x30 Finder Scope (6 power with a 30mm lens). The field of view is 6 degrees (63-1014).

The *8000* has a 8x50 Finder Scope (8 power with a 50mm lens). The field of view is 4 degrees (63-1017).

Most Finder Scopes have on-axis (straight-through) viewing just like a riflescope. However, a right angle (90°) prism 8x50 Finder Scope is offered as an extra cost item for the *8000 only* (63-1018).



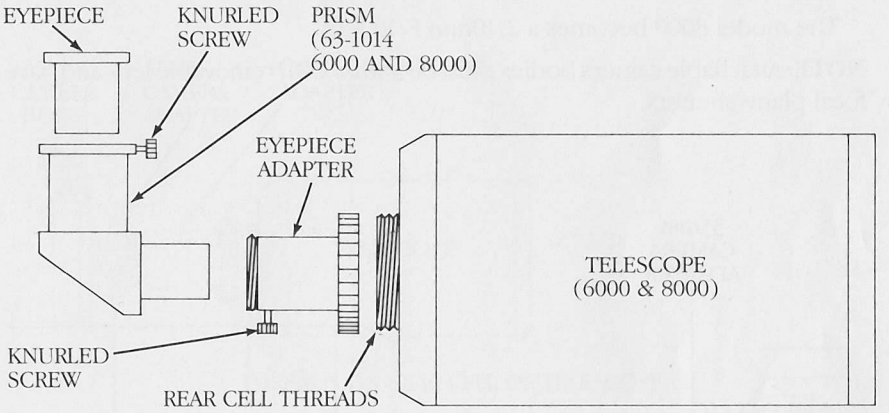
Visual

63-1014 (For 6000 & 8000) • 63-1054 (For 4000)

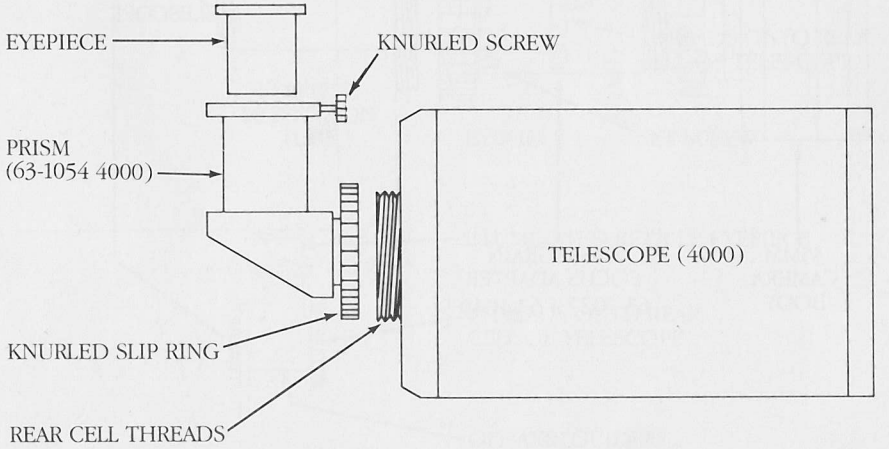
STAR DIAGONAL PRISM (90°) Included with all astro models

FUNCTION: There are two versions of the prism. One is for the 6000 and 8000 models and another is for the 4000. Both receive 1¼" eyepieces and are designed for viewer comfort.

Prism for 6000 and 8000 models slides into the eyepiece adapter and is held in place with a knurled screw.



Prism for the Astro 4000 and the same prism supplied in the telephoto-to-spotting scope conversion kit *threads* onto the rear cell with knurled slip ring.



Section 2
Photographic Accessories

63-1027 (For 6000 & 8000) • 63-1049 (For 4000)

CASSEGRAIN FOCUS ADAPTER (Included with 4000 Telephoto Lens)

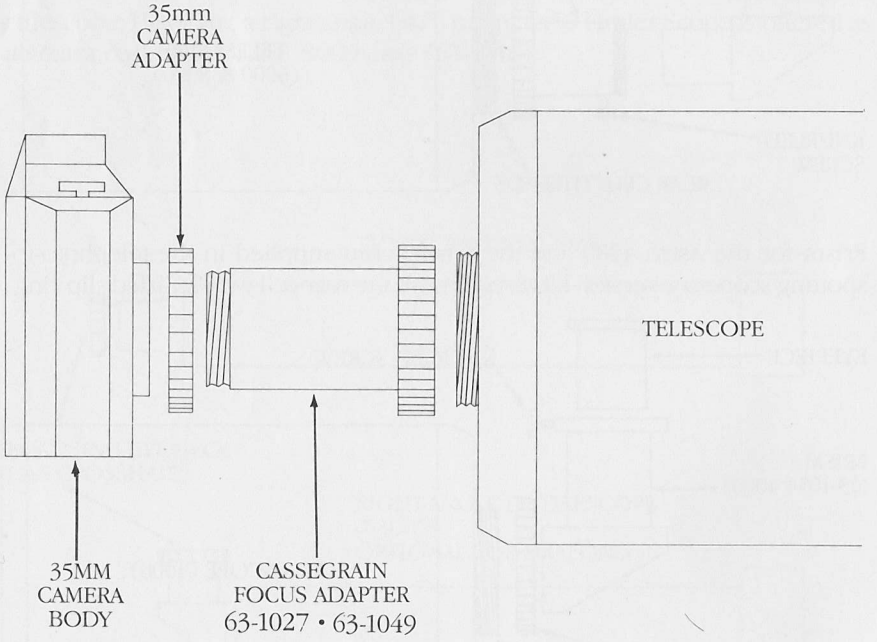
FUNCTION: The Cassegrain Focus Adapter in conjunction with a proper Universal T-Thread Adapter Ring permits the attachment of most 35mm camera bodies to Criterion telescopes. The telescopes become the camera "lens."

The model 4000 becomes a 1200mm F/12 lens.

The model 6000 becomes a 1524mm F/10 lens.

The model 8000 becomes a 2110mm F/10 lens.

NOTE: Attachable camera bodies must be 35mm with removable lens and have focal plane shutters.



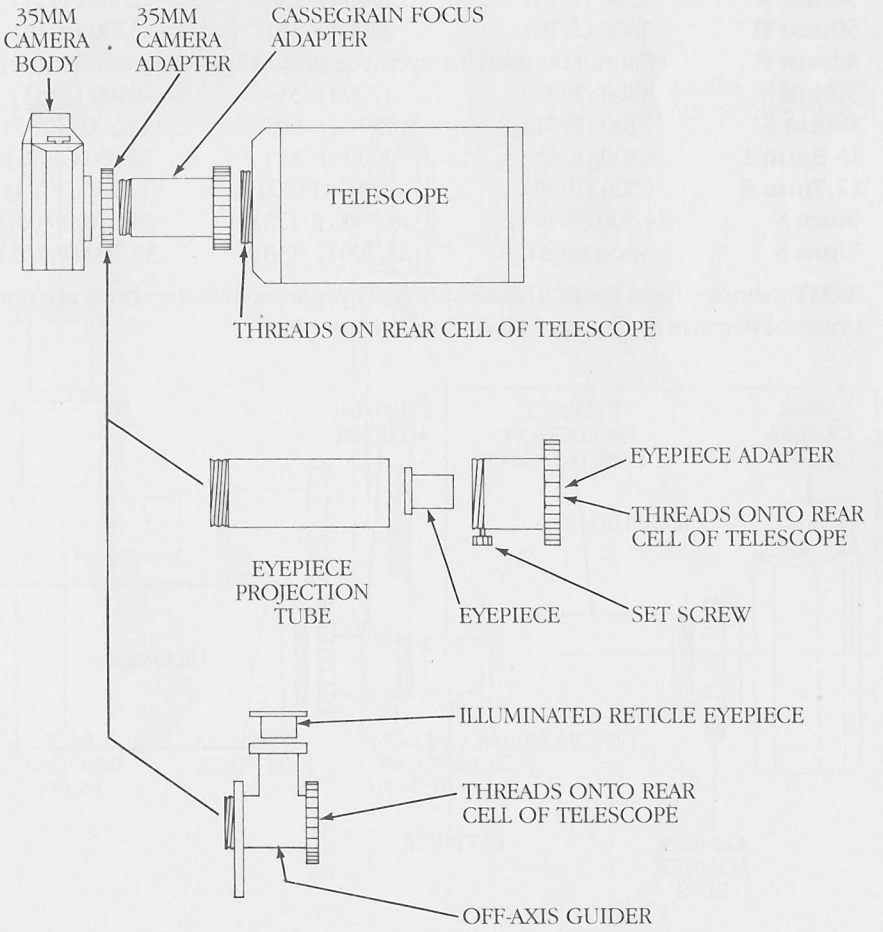
Photographic

20-0001, 20-0003, 20-0004, 20-0005, 20-0007, 20-0008, 20-0009

35mm CAMERA ADAPTERS

(Select number from Index for specific camera body. E.G. Canon 20-0005)

FUNCTION: Permits adaptation of most 35mm SLR camera bodies to Criterion telescopes for celestial and terrestrial photography. The telescope (any model) becomes the "lens." A ring is required in order to use the Cassegrain Focus Adapter, the Off-Axis Guider and the Eyepiece Projection Tube. Each camera requires a *specific* ring.



Photographic

63-1028

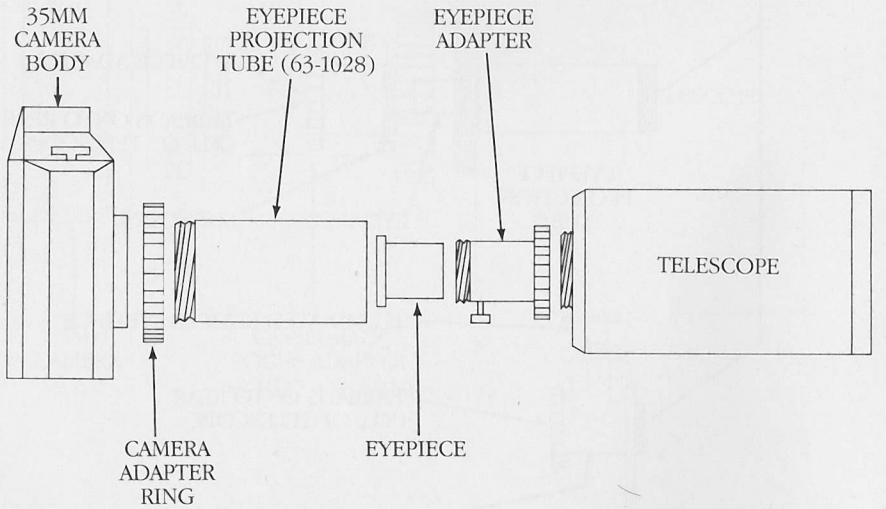
EYEPIECE PROJECTION TUBE (Tele-Extender)

FUNCTION: The Eyepiece Projection Tube permits very high power photography through Criterion telescopes. The tube is used in conjunction with a selected eyepiece. The table below gives the *approximate* effective focal lengths and F ratios for various eyepieces with Criterion telescopes.

NOTE: The 4000 requires an accessory eyepiece adapter (63-1013) which is included with the 6000 and 8000 models.

EYEPIECE	MODEL 4000	MODEL 6000	MODEL 8000
50mm R	1500 (F/15)	1900 (F/13)	2600 (F/13)
50mm H	1800 (F/18)	2300 (F/15)	3200 (F/16)
32mm P	(Cannot be used for eyepiece projection—will not fit tube)		
30mm S	3700 (F/37)	4700 (F/31)	6500 (F/33)
18mm S	7100 (F/71)	9000 (F/60)	12,500 (F/63)
16.3mm E	6300 (F/63)	8000 (F/53)	11,100 (F/56)
12.7mm S	9500 (F/95)	12,000 (F/80)	16,700 (F/84)
9mm S	14,500 (F/149)	18,500 (F/123)	25,500 (F/128)
7mm S	(See note)	23,700 (F/158)	32,700 (F/163)

NOTE: Shorter focal length (higher power) eyepieces than the above are not practical because the image in the camera is too dim.



Photographic

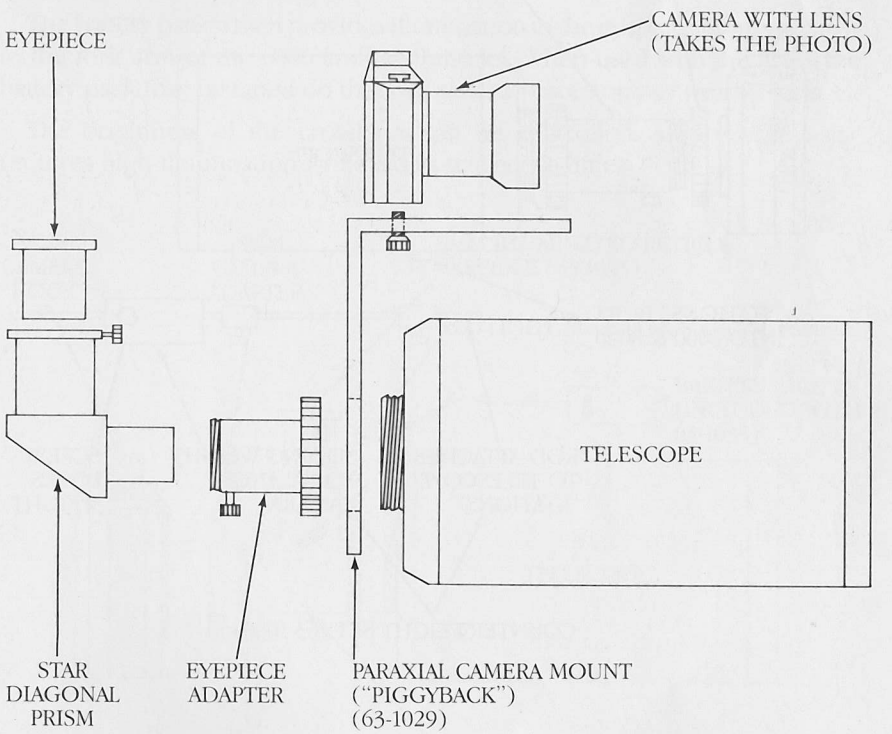
63-1029 (For 8000) • 63-1050 (For 6000)

PARAXIAL CAMERA MOUNT

(Sometimes called "piggyback" camera mount)

NOTE: *NOT AVAILABLE FOR THE 4000, Only for 6000 and 8000 telescopes.*

FUNCTION: Wide-field photographs of the sky can be taken with most any camera and lens combination by mounting the camera on the Paraxial Camera Mount and using the telescope as the means of "tracking" the area photographed. Photos are taken through the camera's lens, *not through* the telescope, which has a relatively narrow field of view.



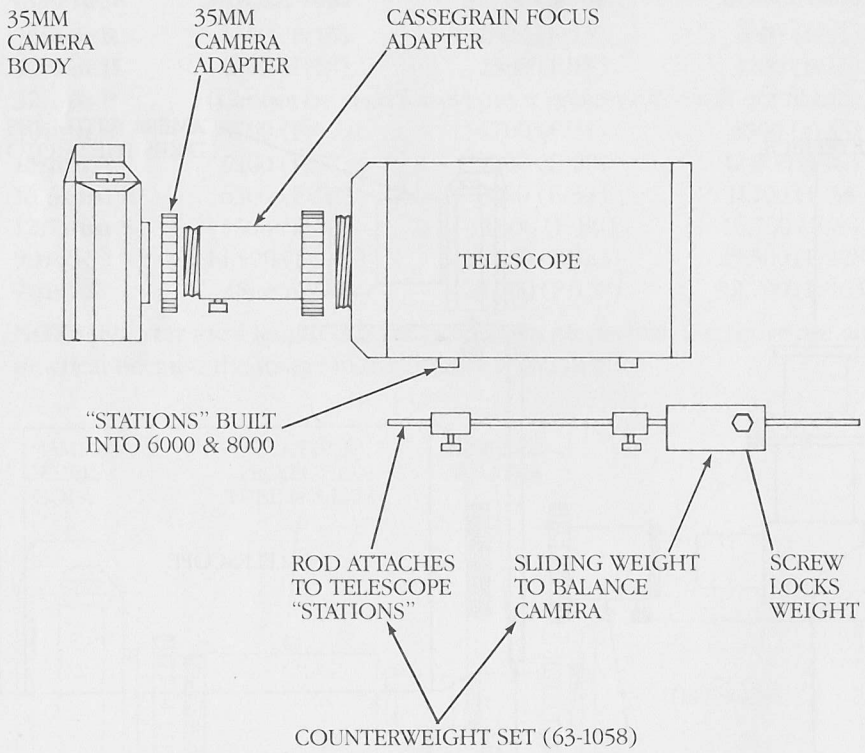
Photographic

63-1058

COUNTERWEIGHT SET

NOTE: *NOT AVAILABLE FOR THE 4000, Only for 6000 and 8000 Telescopes.*

FUNCTION: Balances camera on telescope to ease strain on drive motors, which assists in obtaining better photographs. Useful in *all* forms of astro-photography. Assembly attaches to "stations" on 6000 and 8000.



Photographic

63-1033

OFF AXIS GUIDER T-SECTION

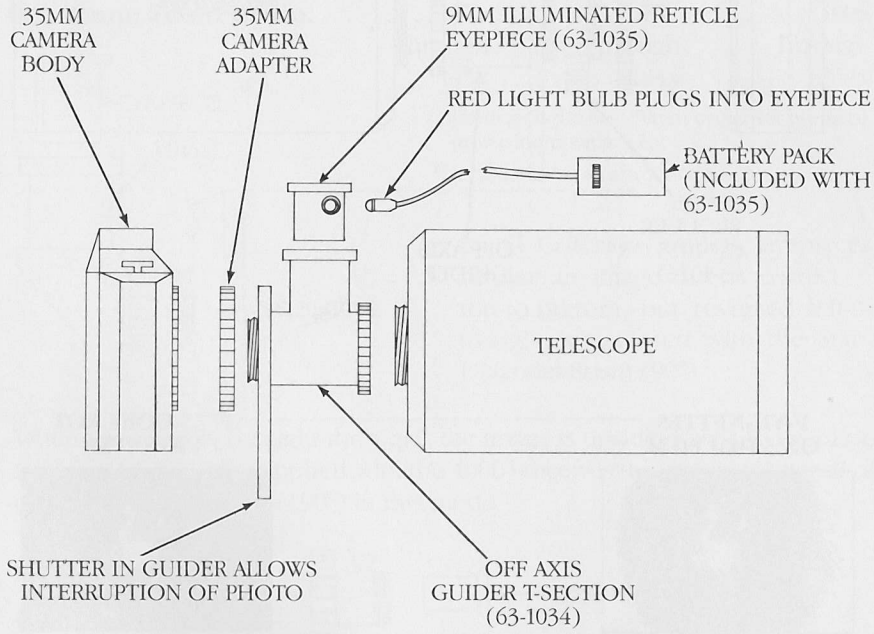
and ILLUMINATED RETICLE 9mm EYEPIECE

Complete and includes (63-1034) • T-Section, (63-1035) • Illuminated Eyepiece and Battery Pack

FUNCTION: The Off Axis Guider with Illuminated Reticle 9mm Eyepiece enables the astrophotographer to take pictures of deep-sky objects such as galaxies and nebulae without a separate guiding telescope. The Guider "tracks" a star in the field of view outside the area photographed. The star is located in the crosshairs of the Illuminated Reticle 9mm Eyepiece and is kept in the same position during the exposure by using the controls of the Drive Corrector.

The battery pack which provides illumination to the eyepiece mounts (clips) to the fork arm of the 6000 and 8000 model. When used with the 4000, the battery pack may be taped on the fork arm or placed on any nearby surface.

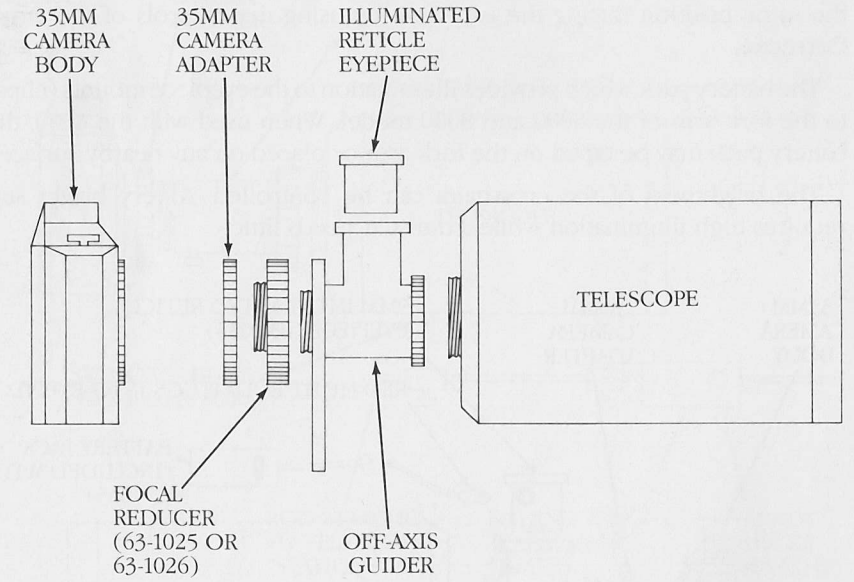
The brightness of the crosshairs can be controlled. A very bright star requires high illumination while a dim star needs little.



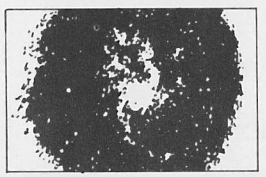
Photographic

F/5 FOCAL REDUCER #1 (63-1025) and F/7.5 FOCAL REDUCER #2 (63-1026)

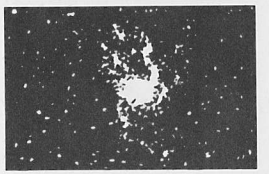
FUNCTION: These accessories reduce the exposure times required for deep-sky photographs, such as galaxies. The F/5 cuts the exposure time to one-fourth with half the image size and vignettes the film to some degree. The F/7.5 reduces the exposure by one-half with three-fourths the image size and does not vignette. Both are used in conjunction with the Off-Axis Guider and Cassegrain Focus Adapter.



F/VIGNETTES ON 35MM FILM



F/7.5 DOES NOT VIGNETTE



Section 3
Visual and Photographic Accessories

63-1001 THROUGH 63-1011

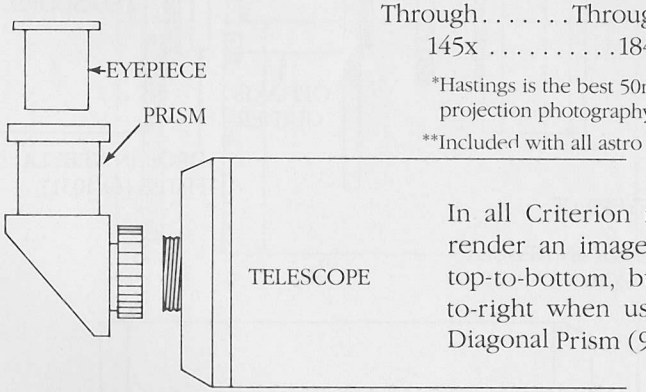
EYEPIECES (Oculars) all are 1¼" diameter which is "standard."

FUNCTION: Magnifies image produced by telescope. Each eyepiece has a specific focal length and optical design. The power delivered varies with the telescope used. The following lists the focal lengths available and the power achieved with each of the three Criterion telescopes. Each design is best for the focal length.

EYEPIECES	4000	6000	8000
50mm Ramsden	24x	30x	42x
***50mm Hastings**	24x	30x	42x
32mm Plossl	38x	48x	65x
****30mm Symmetrical**	40x	50x	70x
****18mm Symmetrical**	67x	85x	117x
16.3mm Erfle	74x	94x	130x
12.7mm Symmetrical	94x	120x	166x
9mm Symmetrical	133x	170x	234x
7mm Symmetrical	172x	218x	300x
6mm Orthoscopic	200x	254x	351x
4mm Orthoscopic	300x	381x	527x
8.3–21mm Zoom Ortho.	57x	73x	100x
	Through	Through	Through
	145x	184x	254x

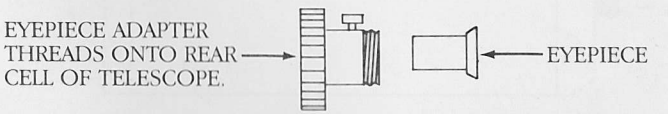
*Hastings is the best 50mm ocular for eyepiece projection photography.

**Included with all astro models.



In all Criterion models, eyepieces render an image that is correct top-to-bottom, but reversed left-to-right when used with the Star Diagonal Prism (90°).

When used axially (straight-through), the image is upside-down. An eyepiece adapter (63-1013 not supplied with the 4000) receives the eyepiece instead of the Star Diagonal prism (90°) in this mode.



Visual & Photographic Accessories

61-1031

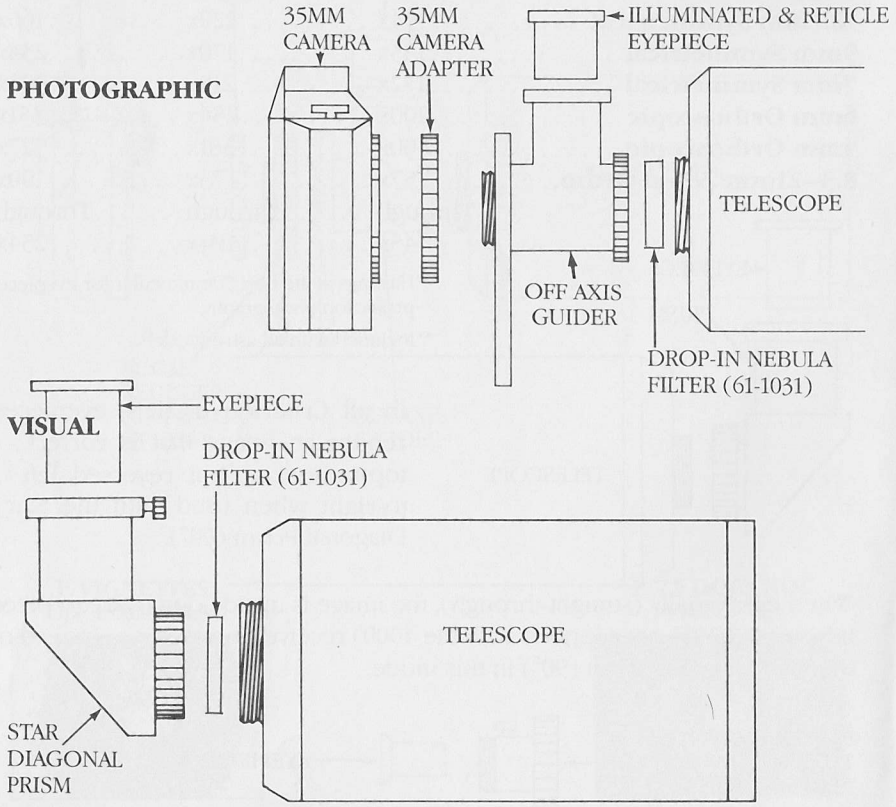
SERIES 6 DROP-IN NEBULA FILTER

FUNCTION: The Nebula Filter aids in viewing or photographing faint deep-sky objects such as galaxies and nebulae where sky glow from artificial lighting occurs. The filter is particularly helpful in metropolitan areas. The views through the filter are not as good as views without the filter away from lights.

The Nebula Filter is a standard series 6 drop-in style and fits into a recess just inside of the rear cell threads on the telescope tube.

The Nebula filter can be used in conjunction with any visual or photographic accessory of the Criterion 4000, 6000, or 8000 models.

NOTE: Since the filter recess is a standard series 6 size any photographic filter of that size may be used for terrestial photography.



Visual and Photographic

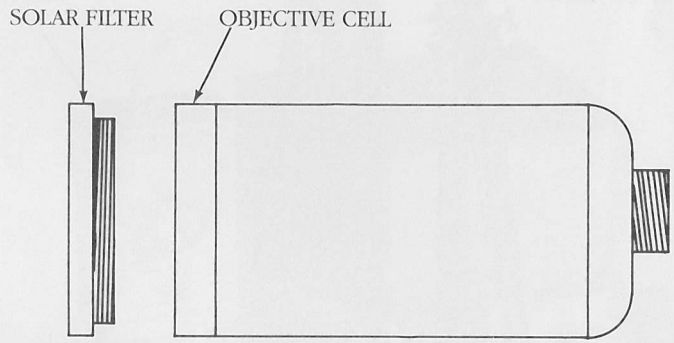
63-1056

SOLAR FILTER For 4000

FUNCTION: When attached to the objective cell of the 4000, allows safe viewing and photography of the sun. The filter reduces all of the sun's intense light to levels low enough that the solar disk can be viewed and photographed without harm to eye or camera.

The filter screws onto the threads of the objective cell. (See diagram below.)

NOTE: The sun must never be viewed without the solar filter installed on the telescope and must never be viewed through the finderscope. The finderscope should be capped or covered at all times while observing with the solar filter. Also, examine the filter before each use for scratches or other damage that could reduce its safety.



63-1036

GOLDEN PYRAMID FIELD TRIPOD W/CARRYING BAG

FUNCTION: Facilitates the use of telescopes in the field, away from the sturdy platform required for the Latitude Adjusting Legs included with the 6000 and 8000. Useful for all astronomical and terrestrial applications. Its telescoping legs allow an approximate ground-to-eyepiece height of 3′6″ to 5′3″. The wedge adjusts from 0° to 90° and rotates 360° for easy polar alignment. A built-in bubble level is an additional aid. Only 18 lbs. and includes a vinyl carrying bag. It is very stable. *Complete instructions are supplied with the tripod. Carrying bag only (63-1040)*

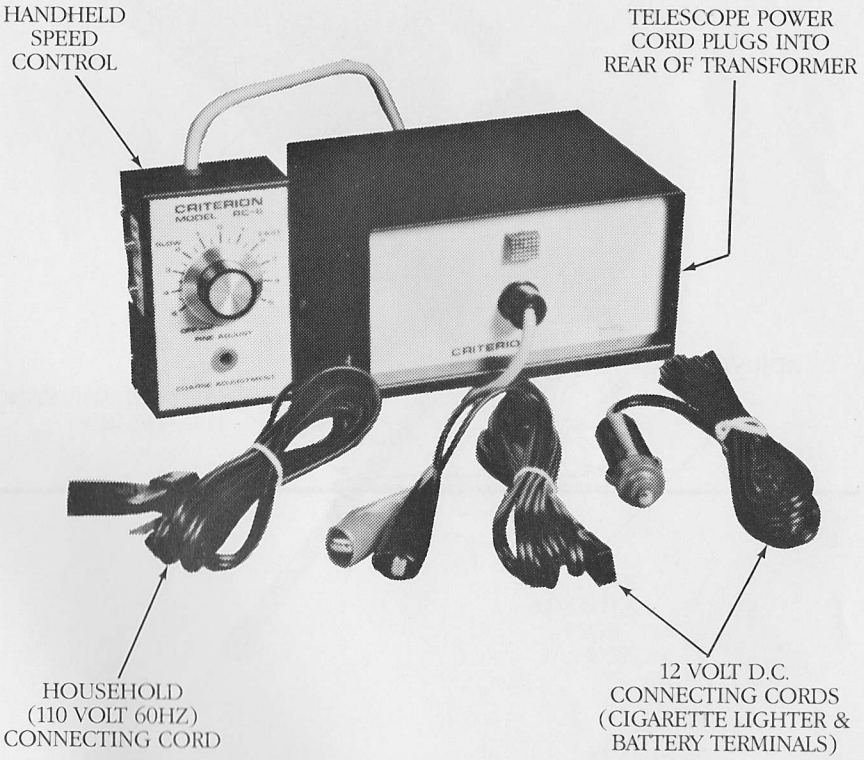
63-1030

DRIVE CORRECTOR—CRITERION MOTOR DRIVE CORRECTOR

FUNCTION: The Drive Corrector is a variable frequency control device that enables the astrophotographer to speed up and slow down the drive motors in all Criterion telescopes. This is necessary because of gear errors and refraction in the sky. Some long exposures (deep sky) without a Drive Corrector will not record sharp images. The unit functions on standard U.S.A. household electric current as well as 12 volt D.C. sources such as automobile batteries.

It is also used for visual purposes when household current is not available—converting a 12 volt battery to 110 volt 60HZ in the field.

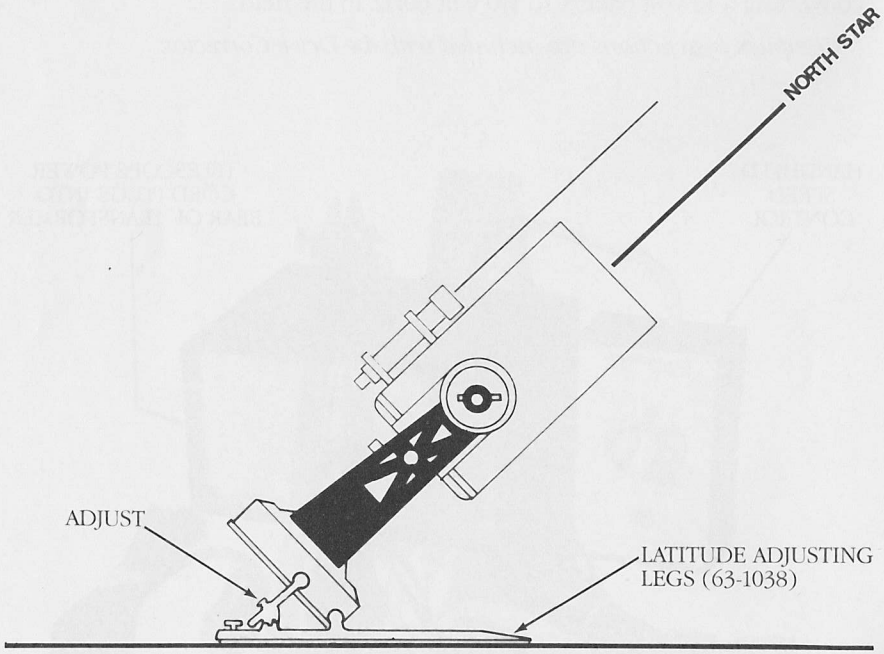
Complete instructions are included with the Drive Corrector.



63-1038

LATITUDE ADJUSTER LEGS (Included with the Criterion 6000 and 8000)

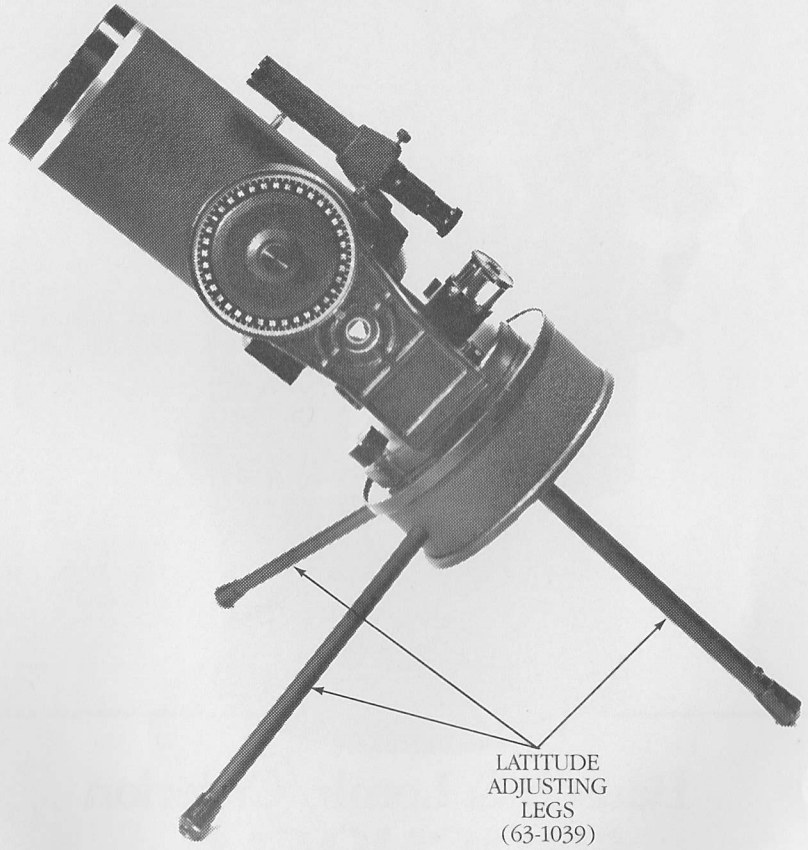
FUNCTION: Permits the telescope to be properly "Polar Aligned" in order to follow the motions of most celestial objects. *Complete instructions for use are included in the instruction manual.* These two legs are designed for "table top" use.



63-1039

LATITUDE ADJUSTER LEGS
(Included with the Criterion 4000 Observatory Telescope)

FUNCTION: Permits the telescope to be properly "Polar Aligned" in order to follow the motions of most celestial objects. *Complete instructions for use are included in the instruction manual.* These three legs are designed for "table top" use.

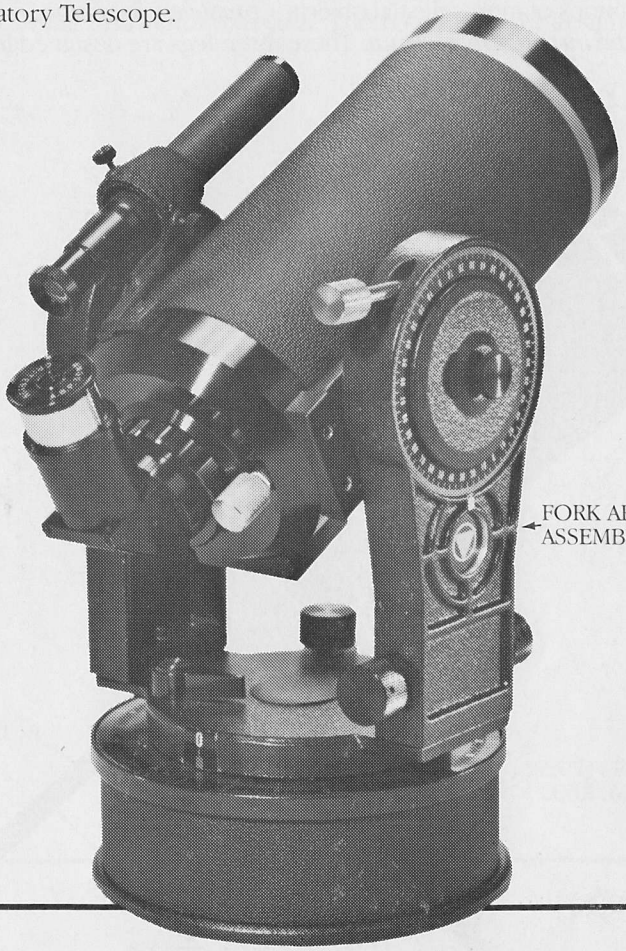


Visual and Photographic

61-6480

FORK ARMS and CLOCK ASSEMBLY DRIVE for 4000

FUNCTION: In combination with the Spotting Scope Conversion Kit (68-1047), this accessory converts the 4000 Telephoto Lens into a *complete* Observatory Telescope.



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