

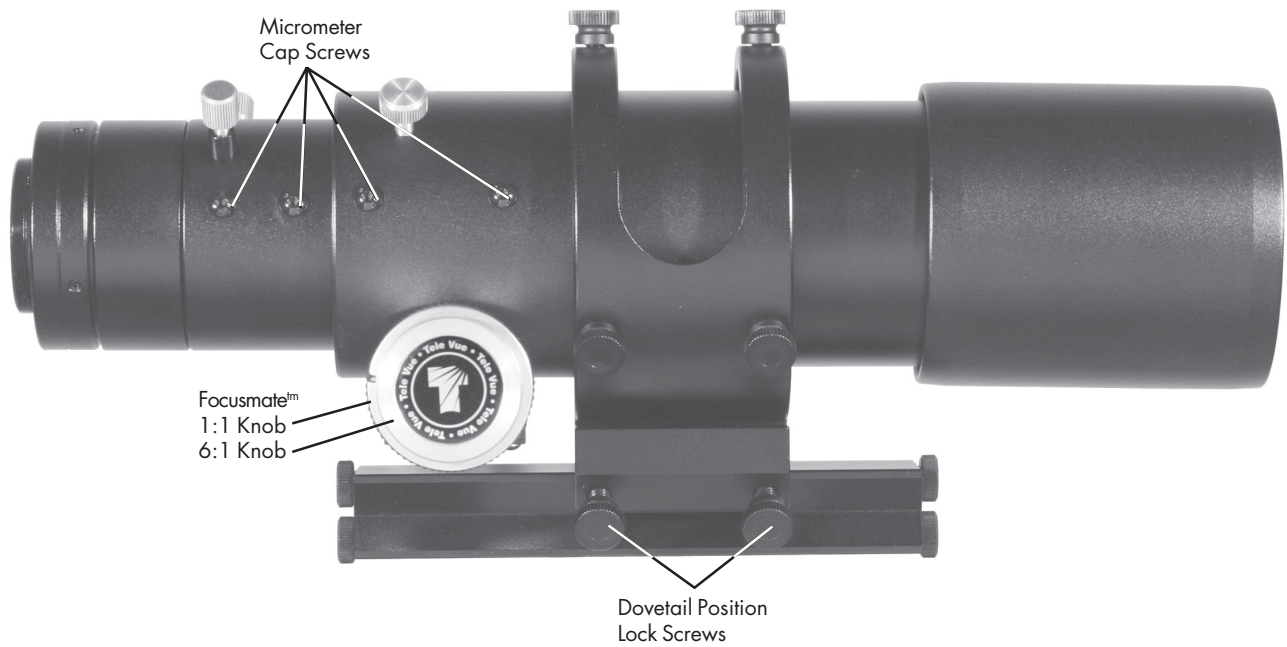
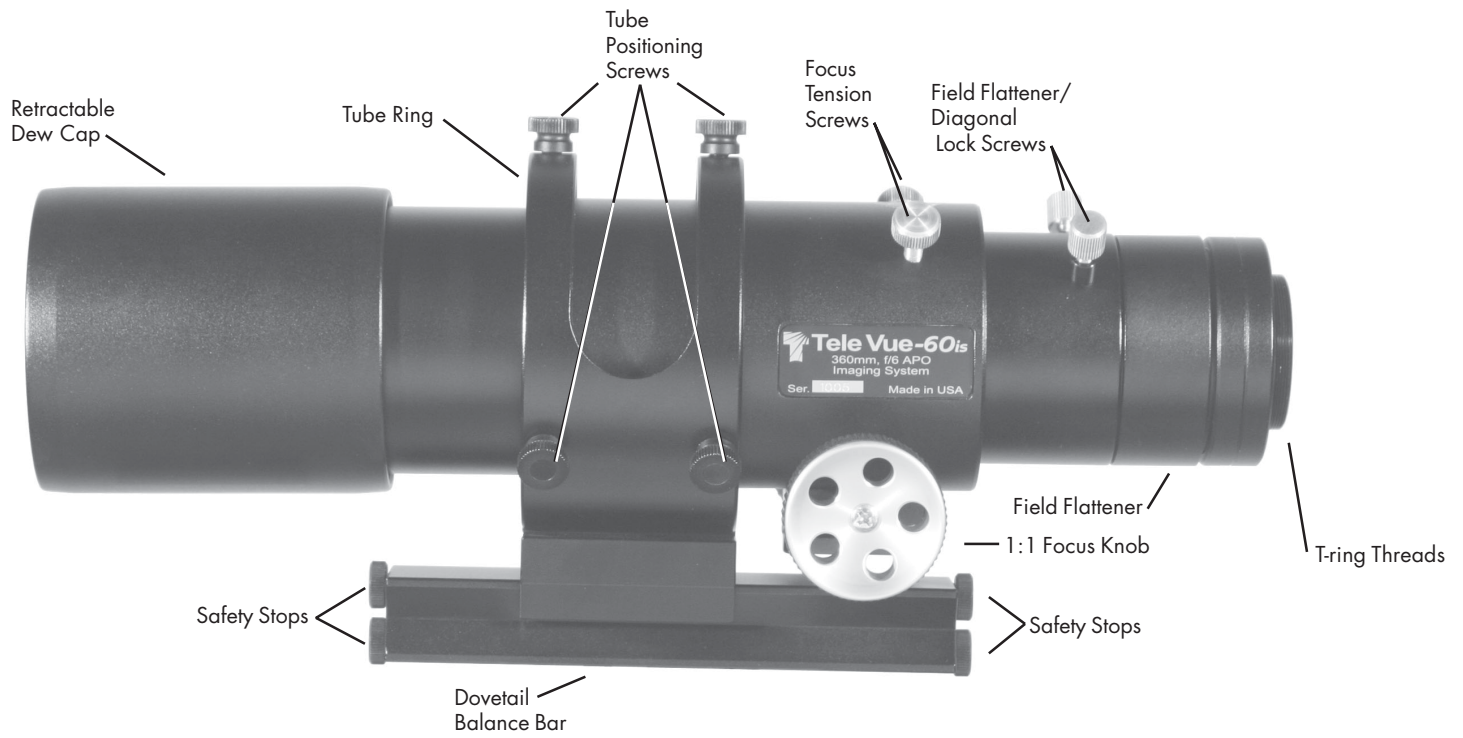
TV60isOG 0805
PRICE \$5.00
Printed in U.S.A.

OPERATING GUIDE

TeleVue-60is

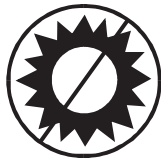


360mm f/6.0
IMAGING SYSTEM
APO REFRACTOR



Congratulations on purchasing the Tele Vue-60is (imaging system) APO telescope. This instrument is diffraction limited, and will perform visually up to the same standard as its sibling 1¼" focuser model, while having the enormous field capability of accepting 2" eyepieces, with an optional 2" diagonal.

Its primary goal, of course, is imaging. To that end the Tele Vue-60is features a 2" focuser with double locking screws bearing against brass clamp rings in both the body and drawtube, Focusmate™ 6:1 fine focus mechanism, screw-on field flattener which covers typical cameras such as the Canon 20DA without vignetting, and a heavy duty balance bar with a selection of bolt holes for balance and to mate with imaging platforms and adapters. An optional digital micrometer, with available RS232 port connection, can measure focus position down to 0.00005".

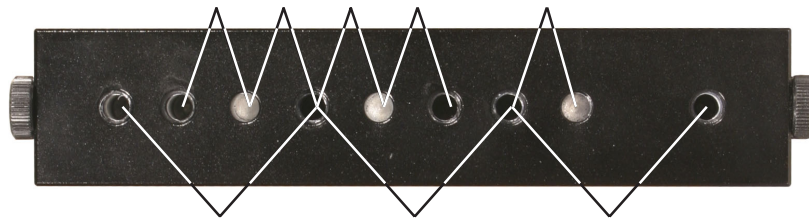


WARNING: NEVER look at or photograph the sun, or point the telescope toward or near the sun without proper solar observing equipment rigidly secured in front of the objective lens. Instant and permanent eye damage will result from viewing the sun directly, even during a solar eclipse, or when viewing through thin clouds, or when the sun is near the horizon. Your CCD camera can also be damaged.

Getting Acquainted

1) Dovetail Balance Bar: Moving the telescope fore and aft by means of the Dovetail Balance Bar will permit balancing for smooth operation of your mount. To move the scope, loosen the two Dovetail Position Lock Screws on the side of the Dovetail Channel. Slide the scope fore or aft along the Dovetail Balance Bar until balance is achieved. Tighten the Position Lock Screws. The top two Safety Stop Screws will prevent the telescope from accidentally sliding off the Dovetail Balance Bar. The bottom two Safety Stop Screws will prevent the Dovetail Balance Bar from sliding through the Tele Vue QRB-1002 Quick Release Bracket which can be used to piggyback the Tele Vue-60is on other telescopes.

1/4-20 threaded holes and corresponding video pin holes for Bogen mounts



Threaded holes for various Tele Vue adapter plates and Tele Vue mounts

The threaded holes in the bottom of the Dovetail Balance Bar are spaced for Tele Vue alt-azimuth mounts and also correspond to Tele Vue equatorial mount adapters which are listed on the Tele Vue website. The series of identically spaced mounting holes provide additional fore/aft balancing freedom. Should more weight need to be added to the front of the scope even with the scope pushed all the way forward, then attach the Dovetail Balance Bar to your mounting adapter plate by the rear group of holes.

2) Tube Ring: The Tube Ring is machined from a single piece of aluminum with two, 3-point suspension rings. The scope is shipped with the top screws bottomed against the Tube Ring. For maximum adjustment range: hold the telescope, loosen both top screws halfway through their travel, and tighten each of the lower screws until the telescope is held firmly against the top screws. Some tube rotation is possible, however complete image orientation can be had by loosening the Field Flattener and rotating the camera for the most pleasing image composition. (See section 6)

3) Dew Shield: Extend the Dew Shield by simply pulling it forward. Stops on either end retain it on the tube. Two #10-32 button head screws cover threaded holes in the dew shield. Use these holes to mount a light weight finder such as the Tele Vue Qwik-Point. The button head screws may be discarded after installing such a finder.

4) Lens Cap: The Tele Vue-60is objective sits close to the end of the front cell. It is safest to pull the dew shield forward before removing the lens cap. The plastic will not scratch the objective should it accidentally fall against the first surface of the objective. Squeeze the two tabs to remove the lens cap from the dew shield.

5) Focuser: The Tele Vue-60is provides a smooth operating rack and pinion focuser plus the dual speed 6:1 reduction of the Focusmate™. This level of control permits focusing as fine as 0.00005" as measured by the optional Digital Micrometer Kit.

Appropriate focus tension and locking is achieved by loosening or tightening the two 10-32 Focus Tension

Screws on top of the focus body. A brass clamp ring sits in a recessed groove within the interior wall of the focuser body and the Focus Tension Screws tighten against it. The brass clamp ring in turn, cinches around the Teflon sleeve within which the Draw Tube rides.

The end of the Draw Tube is threaded to accept the Field Flattener. It also contains two 8-32 screws which tighten against a brass clamp ring to hold either the Field Flattener or 2" star diagonal.

The single knob on one side of the focuser is a direct 1:1 drive. The other side has the Focusmate™. Focusmate™ contains both 1:1 and 6:1 ratios, with the outer knob being the finer of the two. If so desired, the Focusmate™ can be switched to the left side of the instrument. Please call Tele Vue for instructions.



Detail showing the threading for the Field Flattener, Field Flattener Lock screws and brass clamp ring.



Field Flattener optimized for 55mm distance from T-ring's mating face to image plane.

6) Field

Flattener: The two-element Tele Vue-60is Field Flattener simply threads into the end of the focuser Draw Tube. The input side is threaded for 48mm filters. The output side is threaded for camera T-rings. When attaching a camera, it is recommended to leave the Field Flattener in the telescope and thread your T-ring on to it. Then, attach the camera to the T-ring.

The Field Flattener is optimized for 55mm back focus as used by 35mm SLR and DSLR cameras. Extension tubes may be required to achieve the 55mm distance from the face of the Field Flattener to the CCD chip for other camera types.

To change the orientation of the camera for image composition, leave the Lock Screws loose and unscrew the Field Flattener until the desired camera angle is achieved (remember, less than 180° is required). Tighten the two 8-32 Lock Screws to solidly lock your camera in place.

7) Diagonal Bushing and insert tool: When you want to use the Tele Vue-60is visually you will need to insert a 2" Star Diagonal into the draw tube in place of the Field Flattener. The Diagonal Bushing will add more bearing surface for the diagonal. Holding the scope horizontally, unscrew the Field Flattener. Thread the Diagonal Bushing, with the spanner slots facing out, into the Focuser Draw Tube. As the bushing threads in you may find it easier to continue by using the insert tool. The tool will also make removal of the bushing easier. To use the tool, just span the shorter length of the tool across the slots and continue to turn. The Diagonal Bushing only needs to be threaded in until the face is flush with the end of the draw tube.



Insertion of the Diagonal Bushing using the insert tool. It is easiest to start the threading with your finger and use the tool for removal.

Optional Digital Micrometer Kit provides an easy way to index focus position when focusing by finding smallest diameter of a star using the full width halfmaximum value of a star.



8) Optional Micrometer: Focusing for CCD imaging can be frustrating. The combination of the Focusmate™ and Digital Micrometer Kit, which can detect 0.00005" of focus travel, can make the task easier and quicker. By having an index, the photographer can always go back to a previous focus point. For installation, set-up and use of the Micrometer Kit see the instructions included with the kit.



9) Case: The Tele Vue-60is case is fitted for the telescope with a DSLR camera attached. When packing the scope in the case be sure to place the rigid ethafoam filler over the scope's objective. The top two screws in the mount ring will protrude through the aperture in the ethafoam.

CARE:

The Tele Vue-60is requires no special care. Treat it as you would any fine camera lens. Use the lens cap when the telescope is not in use.

If you leave your scope idle in dewy conditions it is always a good idea to tilt the telescope slightly up. If dew forms on the lens during cold

weather, it is best to use an electric hair dryer (on the lowest setting) to gently warm it away. A few specks of dust will have no effect on the quality of the image, and may be gently blown off with a squeeze bulb. **Do not use compressed air cans to blow dust off any optical surfaces.**

Fingerprints should be cleaned off. Though the anti-reflection coatings are durable, they can be scratched. The simplest cleaning method is to moisten a very soft, lint-free tissue, cloth, "Q-Tip" or surgical cotton with a lens or glass cleaner and gently whisk away the stain. Do not apply any solutions directly to the glass surfaces. After every cleaning stroke use a fresh applicator. The fewer strokes the better! Any residual "film" will not effect visual performance.

The star diagonal has a first-surface mirror. It should be cleaned only when absolutely necessary. The Tele Vue 60° and 90° diagonal mirror should be removed for cleaning by removing the back cover's four screws, lifting the back off the diagonal body and cleaning the entire mirror surface. First blow loose dust away with a squeeze bulb. **CAUTION: Do not clean mirror with water or water based cleaners such as Windex or any other commercial lens cleaners: this is not a lens. All contain too much water and will leave a residue.** Use a Q-Tip moistened with pure acetone or methanol or Isopropyl alcohol (reagent grade). Wipe the surface gently. **Use very light pressure and never rub.** Slight residual stains or dust spots will have no visible effects in observing. Clean the Porro or 45° prisms just like the mirror diagonal.

The black anodized surfaces of the Tele Vue-60is can be cleaned with "Windex."

WARRANTY

The Tele Vue-60is is warranted to the original owner, to be free of manufacturing or workmanship defects for 5 (five) years from the date of purchase. Please return the warranty card for easy identification. If your Tele Vue-60is requires warranty service, please call Tele Vue to discuss the defect, upon which you will receive a return authorization. **NO RETURNS ARE ACCEPTED WITHOUT PRIOR AUTHORIZATION.**

The warranty does NOT include: collimation, defects caused by mis-handling, defects of subjective nature, coverage for any telescope purchased through an unauthorized Tele Vue dealer, or purchased outside the home country where Tele Vue has representation. Warranty work will be performed at Tele Vue's discretion and may only be performed by Tele Vue Optics. The telescope must be shipped in its case with proper inner and outer packaging. Return shipping and insurance charges are the purchaser's responsibility.

A LAST WORD

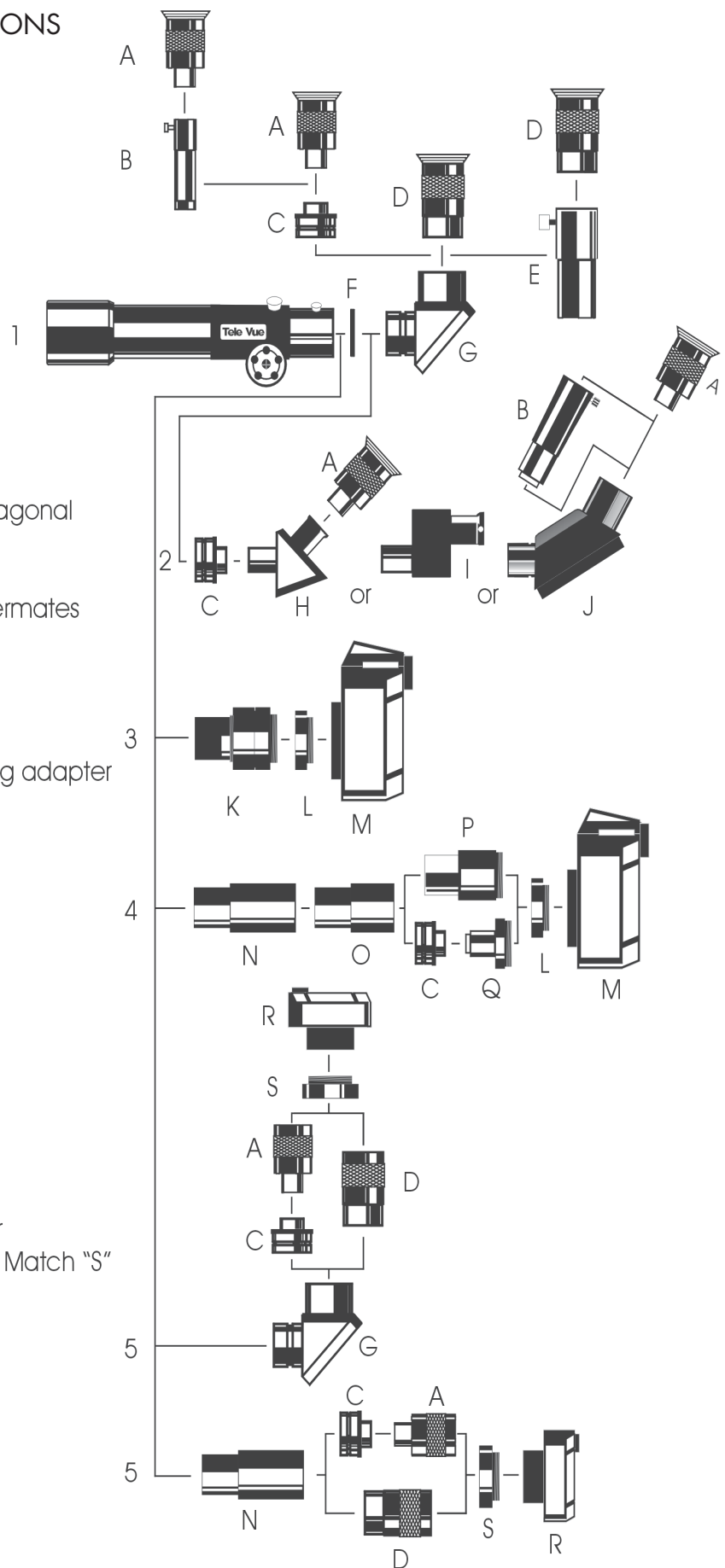
Please contact us with any thoughts, experiences or questions regarding your Tele Vue-60is. Finally, we hope you feel as much pride in owning the Tele Vue-60is as we have had in building it for you.

SPECIFICATIONS:

Type	2-element APO refractor
Clear Aperture	2.4 inches (60mm)
Aperture Gain	73, compared to a 7mm eye pupil
Focal Length	14.2 inches (360mm)
Focal Ratio	f/6
Resolution (visual)	1.9 arc-sec. (Dawes Limit)
Resolution (photographic)	240 line pairs per mm
Magnification	9x to 150x using Tele Vue eyepieces
Close Focus	Approx. 10 ft.
Field Visual	7.3° at 6.5x (55 Pl), 8.7x (41 Pan)
Field, 35mm film	3.8° by 5.7° (6.8° diagonal)
Image Scale	4.0° per inch
Focuser	2" rack and pinion, plus 6:1 fine focus
Mounting	6-pt. adjustable mount ring. Balance bar with ¼-20 holes for optional Tele Vue mounts or equatorial adapters
Weight	approx. 6 lbs. (OTA only)
Length	10" (OTA only) 11.5" (with f.f.)
Tube	Black anodized aluminum
Accessories	Standard: Carry bag

Design	Focal Length (mm)	Barrel Diameter (inch)	Eye Relief (mm)	Dioptx Ready	Apparent Field (°)	True Field (°)	Power	Power w. 2x Barlow or Powermate	Power w. 2.5x Powermate	Power w. 3x barlow	Power w. 4x Powermate	Power w. 5x Powermate
Plössl	55	2	38	Y	50	7.3	6.5	13.1	-	-	26.2	-
Panoptic	41	2	27	Y	68	7.3	8.8	17.6	-	-	35.1	-
Nagler T5	31	2	19	Y	82	6.7	11.6	23.2	-	-	46.5	-
Panoptic	35	2	24	Y	68	6.2	10.3	20.6	-	-	41.1	-
Ethos	21	2	15	Y	100	5.8	17.1	34.3	-	-	68.6	-
Nagler T5	26	2	16	Y*	82	5.6	13.8	27.7	-	-	55.4	-
Nagler T4	22	2	19	Y	82	5.0	16.4	32.7	-	-	65.5	-
Panoptic	27	2	19	Y	68	4.9	13.3	26.7	-	-	53.3	-
Ethos	17	2	15	Y	100	4.7	21.2	42.4	-	-	84.7	-
Nagler T5	20	2	12	Y*	82	4.4	18.0	36.0	-	-	72.0	-
Plössl	40	1¼	28	Y	43	4.3	9.0	18.0	22.5	27.0	36.0	45.0
Plössl	32	1¼	22	Y	50	4.3	11.3	22.5	28.1	33.8	45.0	56.3
Panoptic	24	1¼	15	Y*	68	4.3	15.0	30.0	37.5	45.0	60.0	75.0
Nagler T4	17	2	17	Y	82	3.9	21.2	42.4	-	-	84.7	-
Ethos	13	2¼	15	Y	100	3.6	27.7	55.4	69.2	83.1	110.8	138.5
Nagler T5	16	1¼	10	N	82	3.5	22.5	45.0	56.3	67.5	90.0	112.5
Panoptic	19	1¼	13	Y*	68	3.4	18.9	37.9	47.4	56.8	75.8	94.7
Plössl	25	1¼	17	N	50	3.4	14.4	28.8	36.0	43.2	57.6	72.0
Radian	18	1¼	20	Y	60	2.9	20.0	40.0	50.0	60.0	80.0	100.0
Ethos	10	2¼	15	Y	100	2.8	36.0	72.0	90.0	108.0	144.0	180.0
Nagler T6	13	1¼	12	Y*	82	2.8	27.7	55.4	69.2	83.1	110.8	138.5
Plössl	20	1¼	14	N	20	2.7	18.0	36.0	45.0	54.0	72.0	90.0
Panoptic	15	1¼	10	N	68	2.7	24.0	48.0	60.0	72.0	96.0	120.0
Nagler T4	12	2¼	17	Y	82	2.7	30.0	60.0	75.0	90.0	120.0	150.0
Nagler T6	11	1¼	12	Y*	82	2.4	32.7	65.5	81.8	98.2	130.9	163.6
Radian	14	1¼	20	Y	60	2.3	25.7	51.4	64.3	77.1	102.9	128.6
Ethos	8	2¼	15	Y	100	2.2	45.0	90.0	112.5	135.0	NR	NR
Plössl	15	1¼	10	N	50	2.0	24.0	48.0	60.0	72.0	96.0	120.0
Nagler T6	9	1¼	12	Y*	82	2.0	40.0	80.0	100.0	120.0	160.0	NR
Ethos	6	2¼	15	Y	100	1.7	60.0	120	NR	NR	NR	NR
Nagler T6	7	1¼	12	Y*	82	1.5	51.4	102.9	128.6	154.3	NR	NR
Plössl	11	1¼	8	N	50	1.4	32.7	65.5	81.8	98.2	130.9	163.6
Radian	8	1¼	20	Y	60	1.3	45.0	90.0	112.5	135.0	180.0	NR
Ethos-SX	3.7	2¼	15	Y	110	1.1	97.3	NR	NR	NR	NR	NR
Nagler T6	5	1¼	12	Y*	82	1.1	72.0	144.0	180.0	NR	NR	NR
Plössl	8	1¼	6	N	50	1.0	45.0	90.0	112.5	135.0	180.0	NR
Radian	6	1¼	20	Y	60	1.0	60.0	120.0	150.0	180.0	NR	NR
Radian	5	1¼	20	Y	60	0.8	72.0	144.0	180.0	NR	NR	NR
Nagler T6	3.5	1¼	12	Y*	82	0.8	102.9	NR	NR	NR	NR	NR
Radian	4	1¼	20	Y	60	0.7	90.0	180.0	NR	NR	NR	NR
Nagler 6	2.5	1¼	12	Y*	82	0.5	144.0	NR	NR	NR	NR	NR
Radian	3	1¼	20	Y	60	0.5	120.0	NR	NR	NR	NR	NR
Nagler Zoom	3 - 6	1¼	10	N	50	0.4 - 0.8	120.0 - 60.0	240.0 - 120.0	NR	NR	NR	NR
Nagler Zoom	2 - 4	1¼	10	N	50	0.3 - 0.5	180.0 - 90.0	NR	NR	NR	NR	NR

PHOTO/VISUAL CONFIGURATIONS



- 1. Astronomical Viewing with 2" Star Diagonal
- 2. Terrestrial Viewing Configuration
- 3. Photographic - Prime Focus
- 4. Photographic - Prime Focus w. Powermates
- 5. Photographic - Afocal (Digiscoping)

- A. 1 1/4" Eyepiece
- B. 1 1/4" Barlow or Powermate
- C. Tele Vue 2" to 1 1/4" high-hat reducing adapter
- D. 2" Eyepiece
- E. 2" Barlow or Powermate
- F. Diagonal Bushing
- G. 2" Star Diagonal
- H. 1 1/4" 45° Erecting Prism
- I. 1 1/4" Image Erecting Porro Prism
- J. 1 1/4" 60° Everbrite Mirror Diagonal
- K. Field Flattener
- L. T-Ring
- M. D/SLR or CCD Camera
- N. 3.5" Extension Tube
- O. 2" Extension Tube
- P. 2" Powermate with T-Ring Adapter
- Q. 1 1/4" Powermate with T-Ring Adapter
- R. Digital Camera with Lens Threads to Match "S"
- S. Digital Camera Adapter

