

Duplex 3.5"

The Questar Duplex is the most versatile Questar instrument because its design permits it to be separated into two parts. The barrel, which is actually the Field Model with moon map and star chart added, can be carried separately in its own case for field trips. When the two parts are assembled, the Duplex has every feature of the fully mounted Questar Standard astronomical telescope.

To separate the barrel from the mounting, hold it in one hand, and release the knurled screw under the collar which supports it. The screw attaches to the 1/4-20 hole in the bottom support of the barrel which is used also to connect it to a tripod.

The Duplex includes lens cap, removable optical tube assembly with mounting holes

for most tripods, 16mm and 24mm eyepieces, 16mm and 24mm eyepieces, built-in finder, Barlow lens for eyepiece port, star-diagonal prism, 110 VAC synchronous electric drive. Continuous 360 ° slow motion controls 25:1 with manual override slip clutch on both axis, Declination clamp, setable right ascension and fixed declination setting circles, finder solar filter and carrying case. Velvet lined case has door pouches that hold one eyepiece, 1.5» aperture solar filter, electric cord, powerguide hand control and legs for converting to table-top polar equatorial position. A 1/4-20 mounting hole centrally located on base can be used to attach most tripods. 30-45 ° legs are standard.



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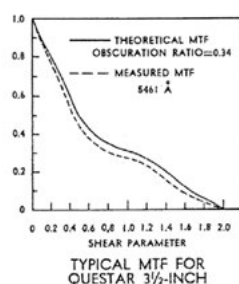
Questar Astronomy Telescope

Datasheet



Technical data

Design type	Maksutov Cassegrain Catadioptric. No coma, astigmatism or spherical aberrations
Clear Aperture	89 mm (center obscuration 27.9 mm)
Focal length	Basic visual, 1300 mm Camera close, 1400 mm Camera with Ext Tubes, 1600 mm
Finder lens	4" Fl., 4x and 8x, Field 12° and 8°
Powers	Powers are eyepiece dependent and can range from 40x to 270x with Questar Brandon eyepieces
Powers limit	Resolves 1 sec. Arc at 50 feet EFL
Field of you	Photographic model, 1°30 min, visual field of view 1.1° to 0.16°
Lens	BK7, MgF ₂ coated, passes UV to 3300 A, IR to 1 micron, parfocal
Mirror	F2, Pyrex®, Zerodur® or Quartz. AlSiO coated, 3.800» dia.
Eyepieces	24mm Brandon, 45° Ap Field : 16mm 4 lens Brandon, 45° Ap Field, optional eyepieces of 8 mm, 12 mm, 32 mm
Amplifying / Barlow lens	Minus 43.9 mm FL
Erecting system	Star diagonal type, 90° BK7, MgF ₂ coated
Barrel assembly	Barrel : forged aluminium, machined full length
Lens cell	Aluminum 24S-T4, black anodized
Rear closure plate	Stainless steel CENTRAL TUBE - precision machining and alignment after assembly
Dewcap	Internally black-flocked Synthane seamless tube 1/32" thick, to which is bonded a pre-roller aluminium sheet
Focus mechanism	Mirror Thimble, stainless steel sliding tube. Slides or stainless, fixed, light-baffle tube, with front-end insert tube of .010" wall thickness. Conical ss spring-loaded. Focus rod ss 303, ground shaft, 56 T.P.I. precision ground threads
Knobs	Aluminum 24S-T4, corrosion-resistant, hand turned on turret lathe, stainless steel shafts and levers
Equatorial Mount	Aluminum sand casting, virgin alloy 356-T6 heat treated. Toolroom hand-turned and polished. Highly corrosion-resistant. Jig-bored and precision threaded for legs. Bottom flange 7" o.d. Fits tripods with _-20 threads
Turntable or lower fork base	Sand casting same alloy, tollroom turned, jig-bored and precision-reamed, aircraft polyurethane painted
Legs	Aluminum 61 S-T3, centerless-ground and threaded, anodized. Center leg adjustable. Butyl rubber tips
Synchronous drive motor	_ R.P.M. 110V. 60 cycles, other cycles, voltages and direction of rotation available. Sealed, lubricated gear train, 2.7 watts
Right ascension gear	Bronze, 4" diameter, and 4" diameter teflon-facing bearing surfaces
Side arms, inner fork brackets, control box	Die castings of corrosion-resistant aluminum alloy 13, toolroom turned, milled, jig-bored, tapped and reamed. Special painted aluminum and clear-urethane protected
Finder mirror cage	Stainless steel, brushed satin finish
Altitude or declination circle	3-15/16" diameter, 301 s.s., cemented and riveted to bracket ring assembly, 1° divisions with etched and filled markings
Clamp	Bakelite padded s.s. stud clamps dec. circle to side arm
Azimuth or r. A. Circle	6" diameter, anodized aluminum, silk-screened, graduated to 10 and 4 min of time. May be set as celestial clock. Manual slow-motion independent of drive
Slow motions	Continuous 360° rotation, safety clutch held. Permits control to a few seconds of arc. Absolutely free of backlash, lag, or play. Ratio 31 to 1
Tube & mount interface	Dual axial alignment pins, precision milled mounting surface and _-20 thread knob with knurled O.D.
Dimensions	Height, upright, 14". With barrel horizontal, 11" high and long. Weight, 6.7 pounds



Typical Questar 3½ and Seven Modulation Transfer Function (MTF) as obtained with a shearing interferometer and expressed as a function of the shear parameter, S. To express the MTF as a function of the spatial frequency, R, in lines per millimeter, the following relationship can be used:

$$R = \frac{SD}{2\lambda f}$$

where S=shear parameter, λ = wavelength, f= focal length, and D=clear aperture.