TEC APO 200

OWNER'S MANUAL
2005

IMPORTANT - PLEASE READ THIS MANUAL BEFORE USING YOUR TELESCOPE

SAFETY WARNINGS

Do not look at the sun through the telescope!
Viewing the sun through the telescope without special equipment (Solar Filter) will cause permanent visual impairment and telescope parts damage.
Do not disassemble!
Disassembly of telescope could result in personal injury and telescope malfunction.

CONTACT INFORMATION

If you have any questions or need assistance - please contact us:
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E-mail: tec@telescopengineering.com • Web site: www.telescopengineering.com
User's group site: http://groups.yahoo.com/group/tec-scopes
Address: Telescope Engineering Company • 15730 West 6-th Ave. Golden CO, 80401. USA

TEC APO 200 TECHNICAL SPECIFICATION'S

	APO200 ED	**APO200 FLuorite**
Clear aperture	8" / 200mm	8" / 200mm
Focal length	1800mm	1600mm
Focal ratio	9.0	8.0
Image scale	1.9 arc min/mm	2.1 arc min/mm
Resolution (theoretical)	0.46 arc sec	
Focuser	Feather Touch 3545	
Eyepiece holder	2" Collet type	
Focusing range	4.5" / 114mm	
One turn focus travel	Coarse 21.5mm / Fine 2.3mm	
Back focus distance	7" / 180mm	
Focuser load capacity	10 lb	
Tube assembly diameter	9.2" / 234mm	
Baffle dia.	10" / 254mm	
TA length (shortest)	66" / 1675mm	58" / 1473mm
Balance point position	~700mm from flange	~600mm from flange
OTA weight	50 lb / 23kg	45 lb / 20kg
Lens coatings:	Broad band anti-reflection coating (BBAR)	
Price (**2005**)	**$16,900**	**$27,000**
Includes :	Optical tube assembly, front cover, plug and tube rings.	

OPTIONAL EQUIPMENT (see www.telescopengineering.com for the current prices)

Tube rings	$360
Finderscope bracket with base	$100
7x50 finder (Japan)	$120
TEC dovetail plate 12" long	$90
Scopeguard case	$950

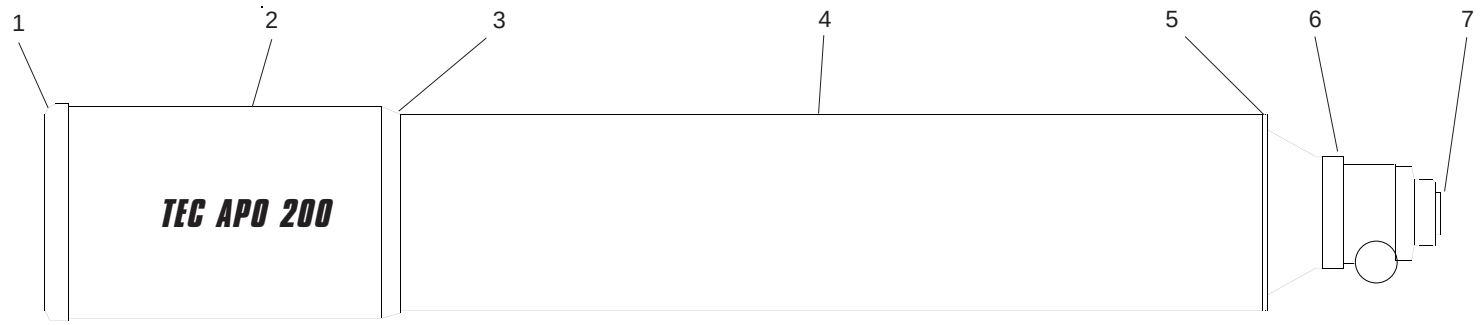
OVERVIEW

This manual has been written to help you enjoy using your TEC APO 200 refractor.
The APO 200 has a number of features that in a given combination are rarely found in one scope:
Precision apochromatic objective with modern coating that makes lenses almost invisible
Retractable baffle
Light weight tube assembly
FeatherTouch 360° rotatable focuser with coarse and fine focusing
Collet type eyepice holder.
Line of accessories, including :
Precision tube rings with adjustable latches
Dovetail plate 12” long (same width and fit as Losmandy plates)
Finder bracket with new principle of finder adjustment

ALL PARTS OF THE TELESCOPE, INCLUDING: OPTICS, COATINGS, ETC. ARE MADE IN THE USA.

GETTING TO KNOW YOUR TELESCOPE

The parts of telescope and their functions are identified and described below:



1 Front Cover. - made of Aluminum, push-pull type. It protects the optics from dust

2 Retractable Sliding Baffle. This feature makes the OTA shorter for handling and transportation. The open end of the baffle is rounded to improve the aerodynamics of the front end of telescope. Rounded edge creates less turbulence compared to straight cut baffles.

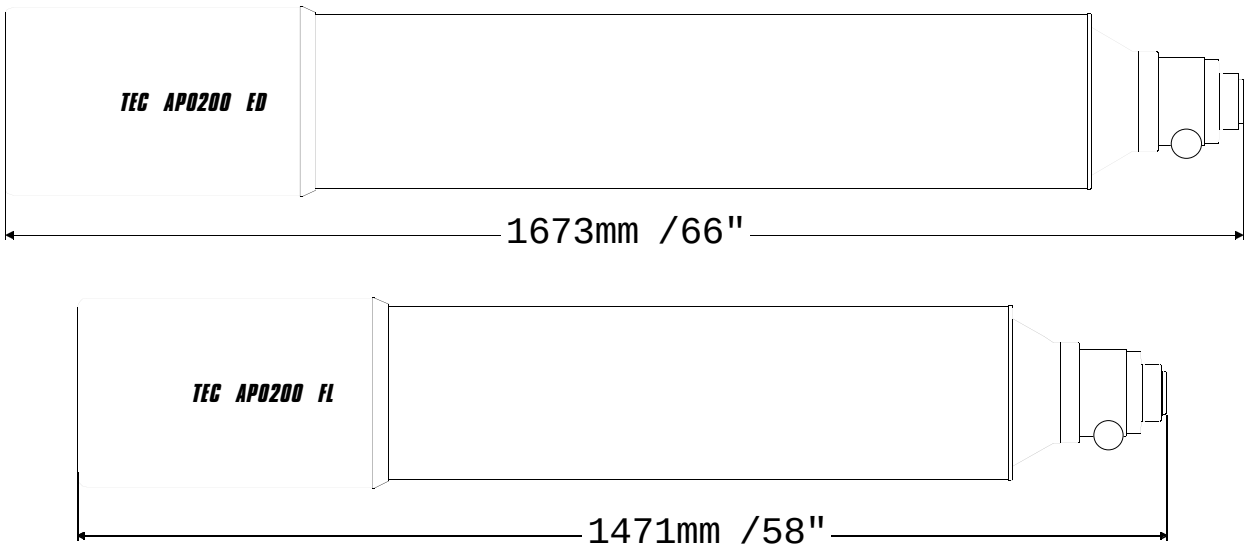
3 Baffle flange. It holds the baffle with (6) 4-40 Button Head Screws.

4 Tube assembly. On the inside it is coated with a special black coatings and contains 3 sharp edged baffles, which block internal reflections. 3 baffles are enough for the given dia. of OTA.

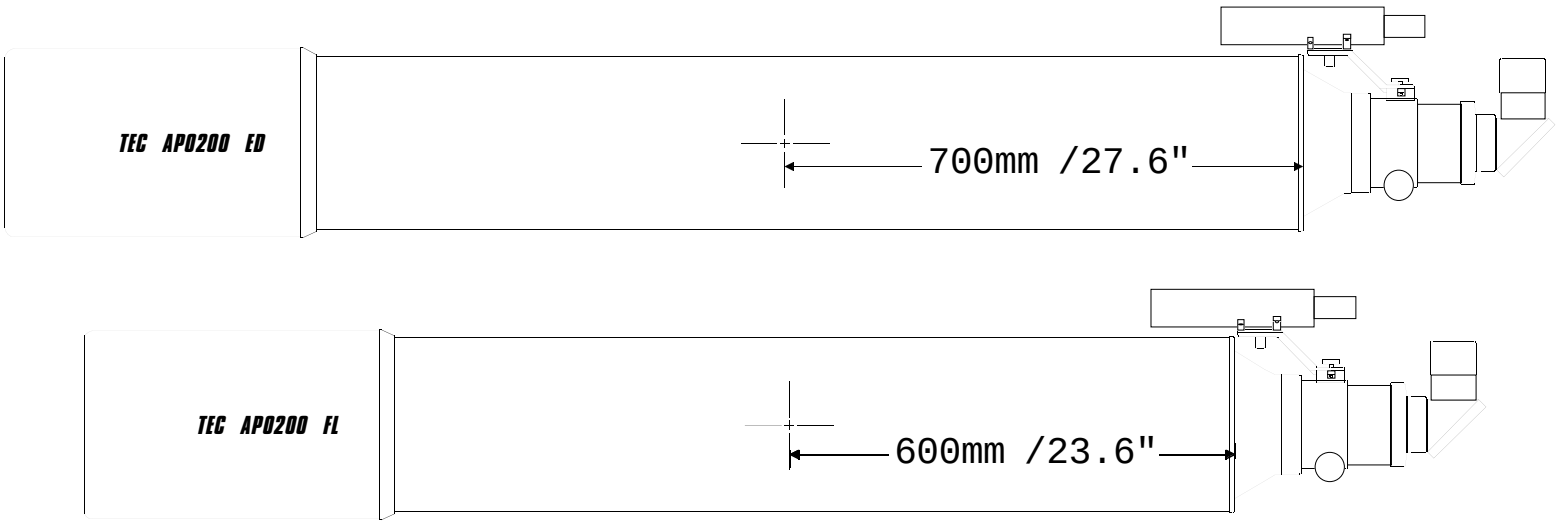
5 OTA Focusing Mounting Flange. (It is part # 6.1 in the focuser description).

6 Focuser. See following Instructions written by Detlef Schmidt (Starlight Instruments).

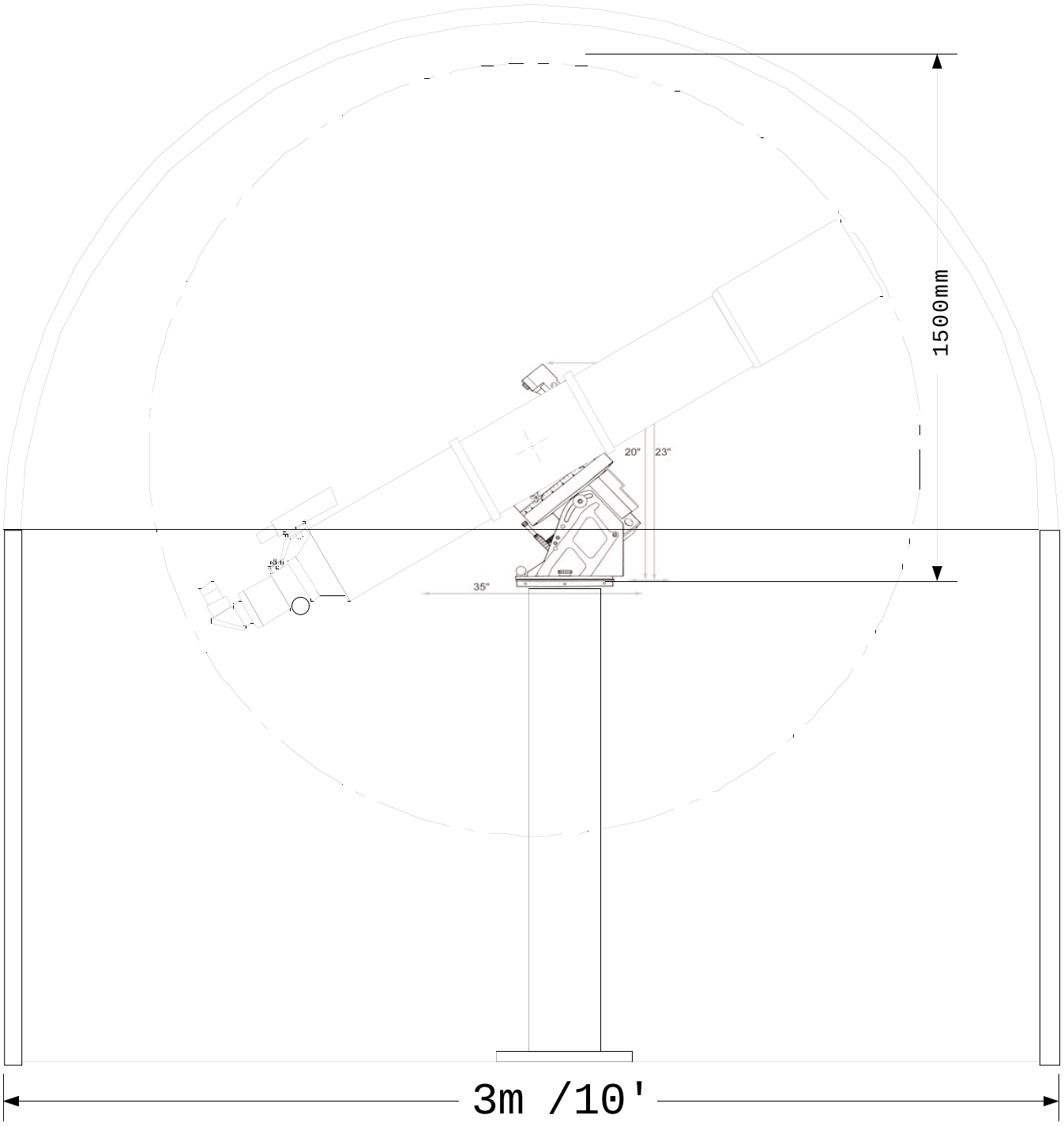
7 Plug. It is a small part that keeps the focuser end closed.



Transportation (shortest) length of APO200 ED and APO200 FL



Balance points for eyepiece side load appr. 4lb (Finder + diagonal + eyepiece)



The min dome hight for APO200 F/9 = hight of the pier + 1500mm
The min dome diameter for APO200 F/9 is ~ 3m (10')

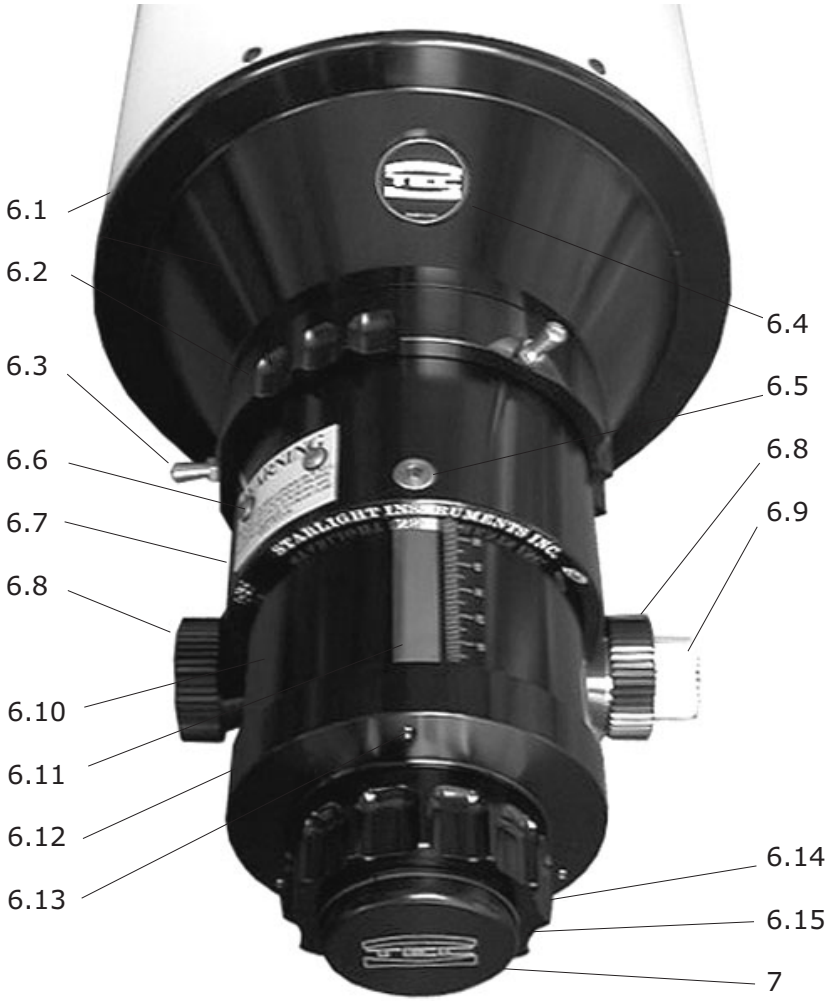
FEATHER TOUCH FOCUSER MODEL 3545

Care and use of the Feather Touch 3545

The Feather Touch 3545 was a collaborative design effort between Telescope Engineering Co. and Starlight Instruments for TEC's line of fine refractors. It was designed to provide the user the with the best possible control while focusing using a 9:1 fine focus reduction assembly along with other features that make the use of the telescope simple and functional. All efforts were taken to design it with the best available materials and technology to achieve long-lasting functionality and reliability.

Part Description

6.1 OTA Focuser Mounting Flange
6.2 Focuser Locking Collar
6.3 Locking Collar Stems
6.5 Tension Adjustment Screw
6.6 Finder Base Screw Holes (Plugged with (2), 8-32 Button Head Screws)
6.7 Focuser Housing
6.8 Coarse Focus Knobs
6.9 Fine Focus Knob
6.10 Draw Tube with mm scale
6.11 Stainless Steel Wear Strips
6.12 Draw Tube End Cap
6.13 Draw Tube End Cap Locking Screws
6.14 Eyepiece Collet Locking Nut
6.15 Eyepiece Collet Sleeve (not shown being under the plug (fig. 7).



Description of Design Features

1. The Feather Touch 3545 achieves excellent focusing capability using a 9:1 Planetary Reduction Assembly coupled to a fine focus knob (fig. 6.9). The fine focus knob should be used once the image is close to focus and final tweaking is required.
2. The two coarse focusing knobs (fig. 6.8) on each side of the focuser allow quick rough positioning of the eyepiece or imaging equipment. They are coupled to the rack and pinion set and the fine focus knob.
3. The assembly incorporating the focusing knobs, the pinion and it's housing is called the pinion assembly (not shown). This assembly is attached to the focuser housing using (2) 6-32 socket head cap screws. The position of the pinion assembly relative to the rack, is precisely adjusted by Starlight Instruments using 4 flat bottom set screws (internal to the pinion assembly) to provide the minimum amount of backlash between the rack and the pinion for ease of operation. The other adjustment that is made is to align the pinion axis to be parallel to the rack face.

NOTE: It is possible to reverse the pinion assembly for left handed preference but Starlight Instruments does not recommend the user reversing this assembly because of possible misalignment resulting in a loss of performance or possible damage.
Please contact Starlight Instruments or TEC if this change is desired.

4. The Feather Touch 3545 focuser is assembled to the OTA via the Focuser Mounting Flange (fig. 6.1), and the Focuser Locking Collar (fig. 6.2). Loosening the focuser Locking Collar allows the focuser to be rotated to any position relative to the telescope for ease of use. Once the focuser has been positioned, it can be locked by turning the Locking Collar by either grabbing the grooves on this collar or by grabbing the optional Locking Stems and rotating the Locking Collar clockwise until it is tight. The Locking Stems help to provide a better grip for tightening the collar. They can however be replaced with the 10-32 Button Head Cap Screws for a cleaner look if that is desired. NOTE: The focuser can be removed by loosening the Locking Collar and unscrewing it completely and then pulling the focuser from the Adapter Flange. This should only be done in rare circumstances and after contacting Starlight Instruments or TEC because of possible damage that may result.
5. The Draw Tube (fig. 6.10) is fitted with 3 Stainless Steel wear strips (fig. 6.11). These strips provide very low friction between the Housing (fig. 6.7) and the Draw Tube (fig. 6.10). There is no lubrication required on these parts and an occasional cleaning of the Draw Tube and the Stainless Steel Wear Strips with a damp paper towel to remove any grit or dirt is advisable. The design is such, that as the focuser is racked in and out, the wiping action of the Wear Strips on the mating surfaces tends to be self-cleaning.
6. The drag between the Focuser Housing (fig. 6.7) and the Draw Tube (fig. 6.10) can be adjusted by using two adjustment methods. The Tension Adjustment Screw can be adjusted using a 3/16 inch Allen wrench. Only a slight amount of rotation on this screw makes a notable difference. Tightening this screw will allow larger loads to be lifted without the focuser moving from the dead weight that may be attached to it and it will also decrease the amount of deflection during positional changes during long exposures. Generally the factory settings should be sufficient for most applications.
In addition, adjustment can be done in a simpler way - by tightening a thumb screw (not shown in the picture, but easy to find) under the pinion assembly.
7. In the event that different equipment such as: an optional Field Flattener (not available yet) or AP 2.7" threaded End Cap (available from Starlight Instruments) is needed at the end of the focuser, the Draw Tube End Cap (fig. 6.12) can be removed by loosening the (3) 6-32 socket head set screw and then unscrewing the back.
8. The 2 inch Eyepiece Holder does not use traditional thumb screws. This focuser uses an Eyepiece Collet Locking Nut (fig. 6.14) and an Eyepiece Collet Sleeve. This design assures that the eyepiece or imaging equipment is always precisely positioned and held into place during imaging. To secure your eyepiece, insert the eyepiece into the 2 inch opening making sure that the nut has been turned counter clock wise to open the collet sleeve and push in the eyepiece. Tighten the Collet Nut clockwise until it is tight.
WARNING: Failure to tighten the Collet Nut can result in personal injury and/or damage to equipment. Always make sure that the eyepiece is secured properly during use.

WARNING: Never point the scope to the sun without proper filtering or without the Front Cover in place. Failure to do so can result in personal injury or damage to the collet locking sleeve and/or optics. The Collet Sleeve is plastic and can melt if it gets too hot. Possible fumes during melting can cause fogging or damage to the optics.
9. If a finder base is to be attached to the focuser housing make sure that the screws being used are the proper length.

WARNING: If they are too long they will contact the draw tube thereby causing damage to the anodized surface of the draw tube.

WARRANTY
Starlight Instruments Incorporated guarantees this product to be free of any defects in material or workmanship for 3 years to the original owner. Disassembly of focuser outside of the described items voids all warranties.
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Latest updates for this manual or new accessories are available on our web:
www.telescopengineering.com and on TEC-scopes group: http://groups.yahoo.com/group/tec-scopes/