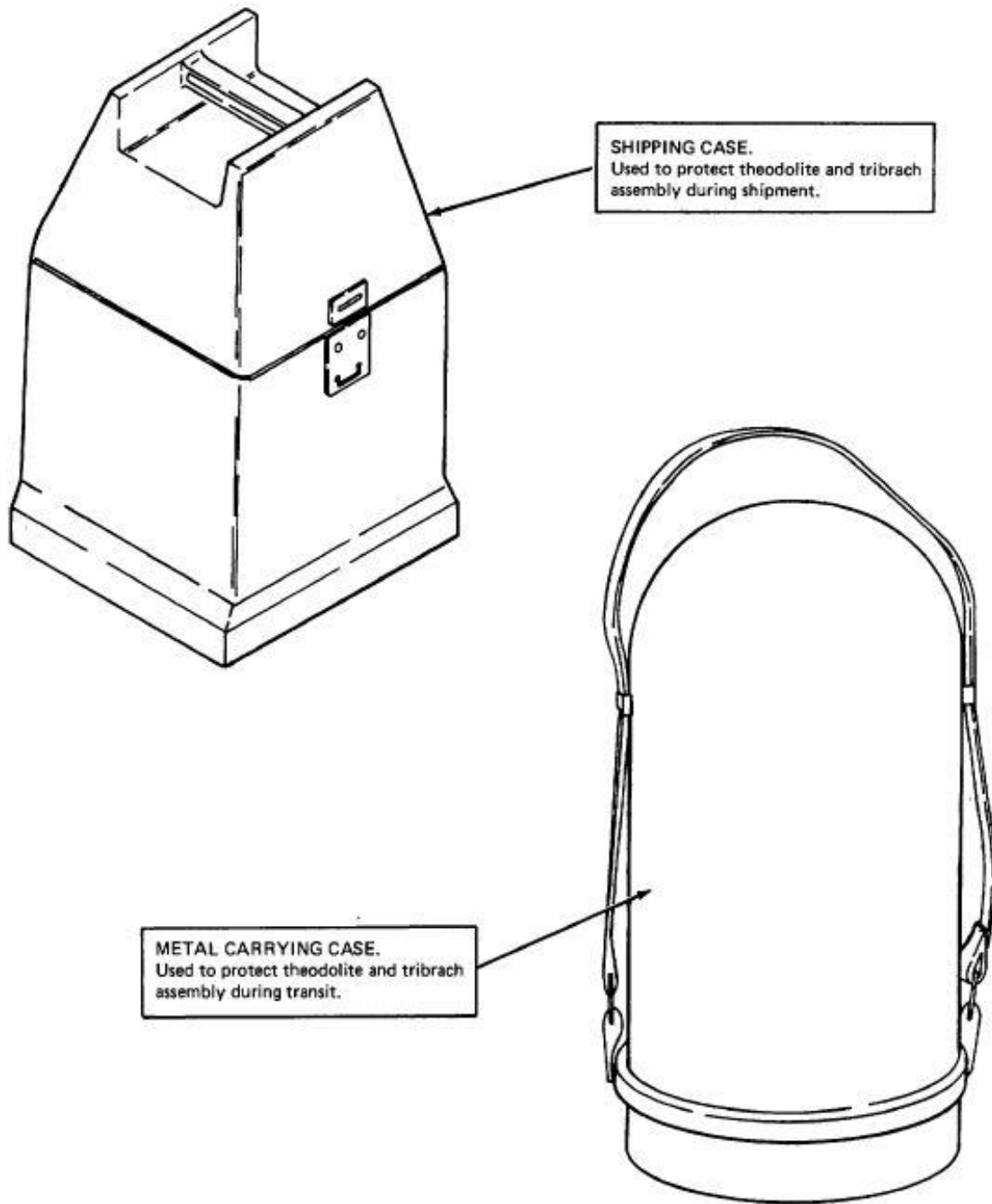


NOTE: GRASP CARRYING CASE STRAP WITH BOTH HANDS AND REMOVE THEODOLITE IN ITS CARRYING CASE, FROM THE SHIPPING CASE.

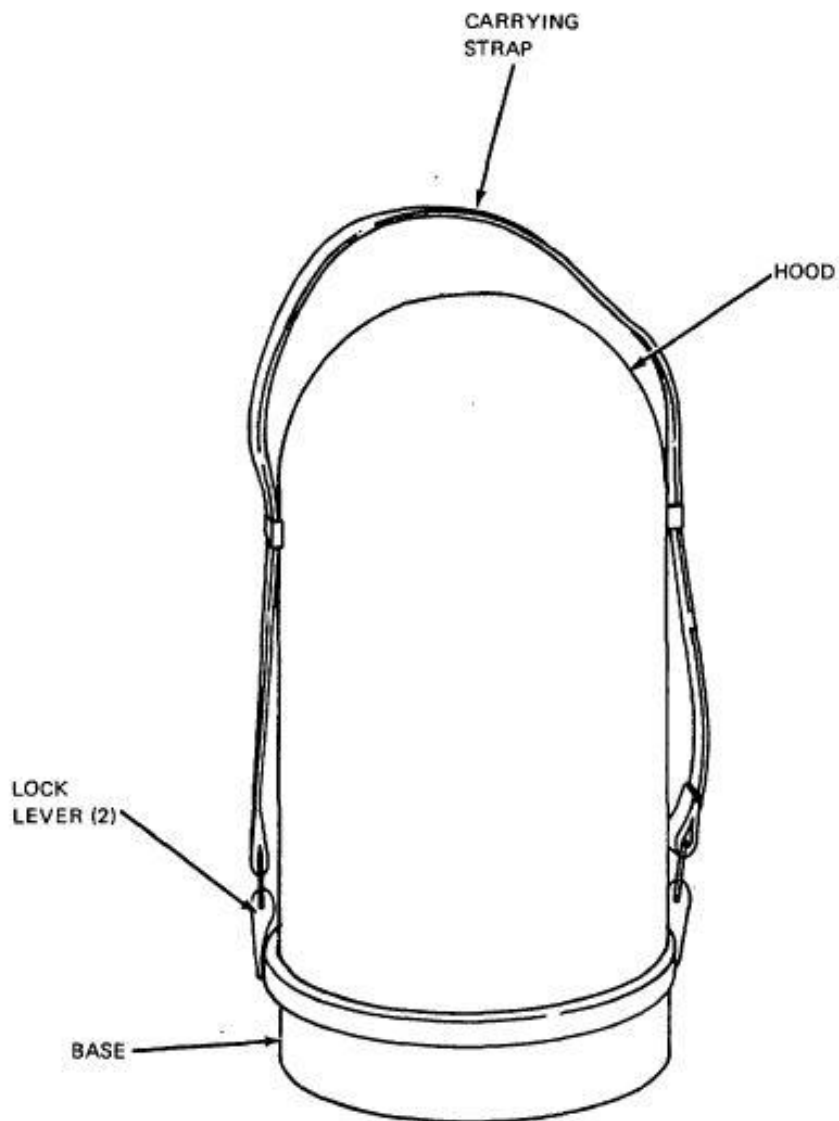
5-6675-312-14/2-6

Figure 2-6. Removal of metal carrying case from shipping case.



5-6675-312-14/1-1.1

Figure 1-1. Location and description of major components (Sheet 1 of 8)

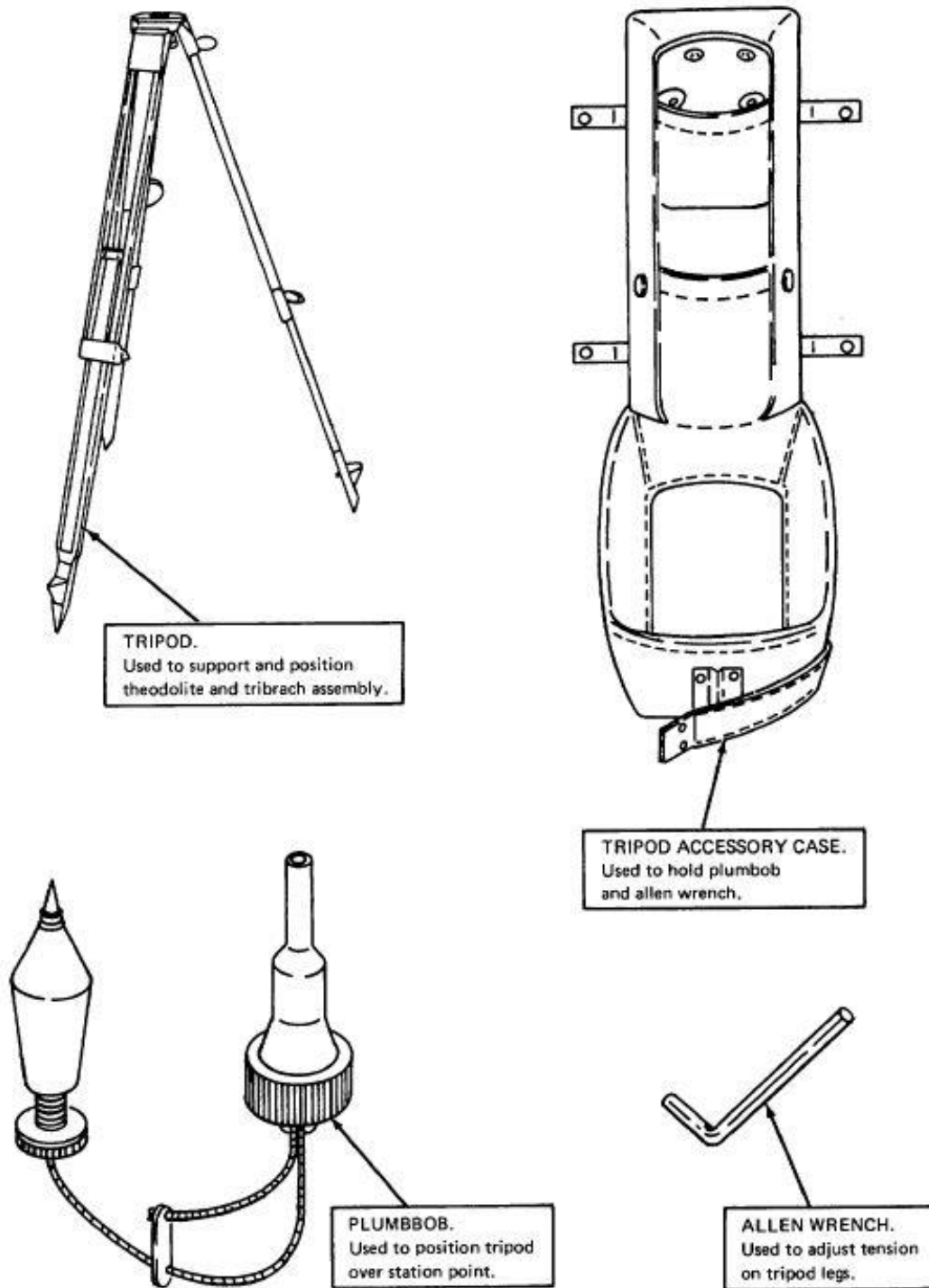


STEP 1. Grasp carrying strap just above lock levers and pull outward to release clamps.

STEP 2. Lift the hood from the base.

5-6675-312-14/2-7

Figure 2-7. Removal of metal carrying case hood.

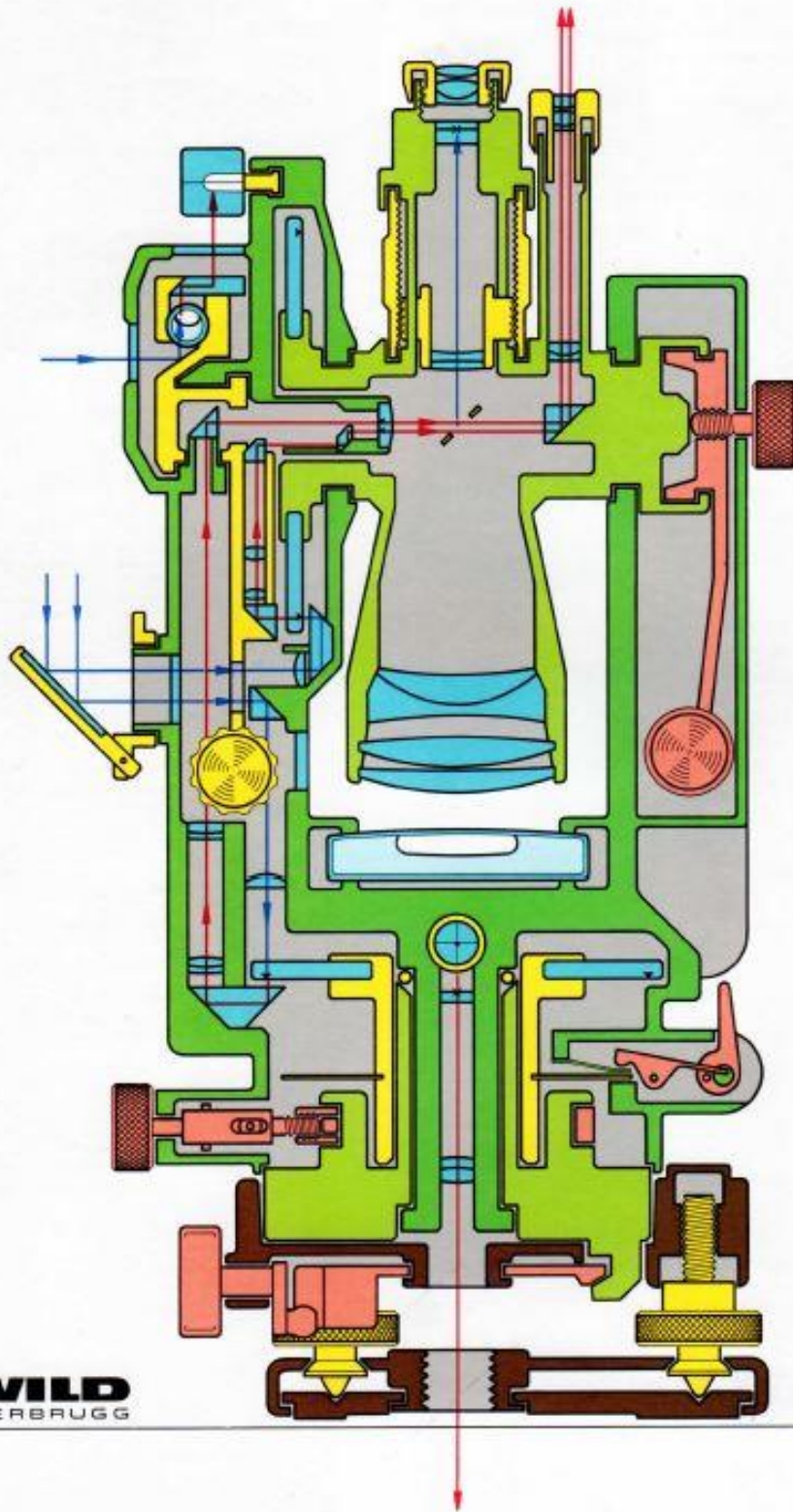


5-6675-312-14/1-1.3

Figure 1-1. Location and description of major components (Sheet 3 of 8)

Direct Reading Theodolite

Wild T16

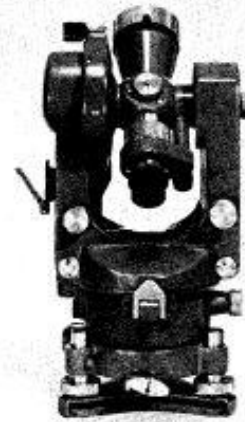


WILD
HEERBRUGG

The Wild T16 (T16E) Direct Reading Theodolite

The Wild T16 (T16E) Direct Reading Theodolite has been designed as a tachymetric theodolite suitable for all low-order triangulations, tachymetric detail and traverse surveys, mine surveys, property surveys, building site measurements, marking out, etc. The easily read scales of the horizontal and vertical circles allow work to be carried out quickly, with estimation to one tenth of a graduation interval (one minute of arc) accomplished without difficulty. All clamps and drive screws are placed logically so that they can be manipulated safely and comfortably. The combination of the simple circle scale reading and the operation of the instrument itself makes the T16 a most useful instrument for use by trainees.

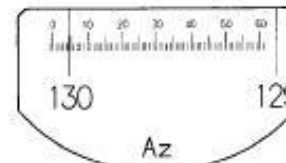
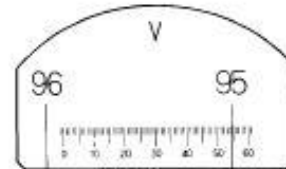
The T16ED has the extra facility of a horizontal circle with double numbering (360° circle only), allowing angles to be read or set out either to the left ("North to West") or, in the normal fashion, to the right ("North to East"). The detachable tribrach ensures that the T16 can be used with all Wild traversing equipment and, of course, the normal accessories and attachments all provide additional uses and accuracies for the instrument. — For full description see brochure G1 241e.



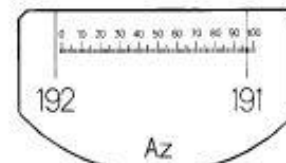
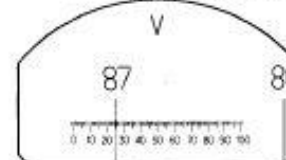
Technical Data

Telescope:	
Magnification	28x
Clear objective aperture	1.6 in (40 mm)
Field of view at 1000 ft (m)	29 ft (m)
Shortest focussing distance T16	5 ft (1.5 m)
Shortest focussing distance T16E (erect image)	7.2 ft (2.2 m)
Multiplication constant	100
Additive constant	0
Length	6 in (150 mm)
Sensitivity of plate level, per 2 mm	30"
Sensitivity of index level, per 2 mm	1'
Sensitivity of circular bubble, per 2 mm	8"
Glass circles	
	360° or 400°
Diameter of horizontal circle	3.1 in (79 mm)
Diameter of vertical circle	3.1 in (79 mm)
Graduation interval (both circles)	1° or 10'
Optical scale interval	1' or 1°
Reading by estimation to	0.1' or 0.2°
Weight of T16	10.3 lb (4.7 kg)
Weight of container	4.4 lb (2.0 kg)
Average height of tilting axis	8 in (204 mm)

Wild T16



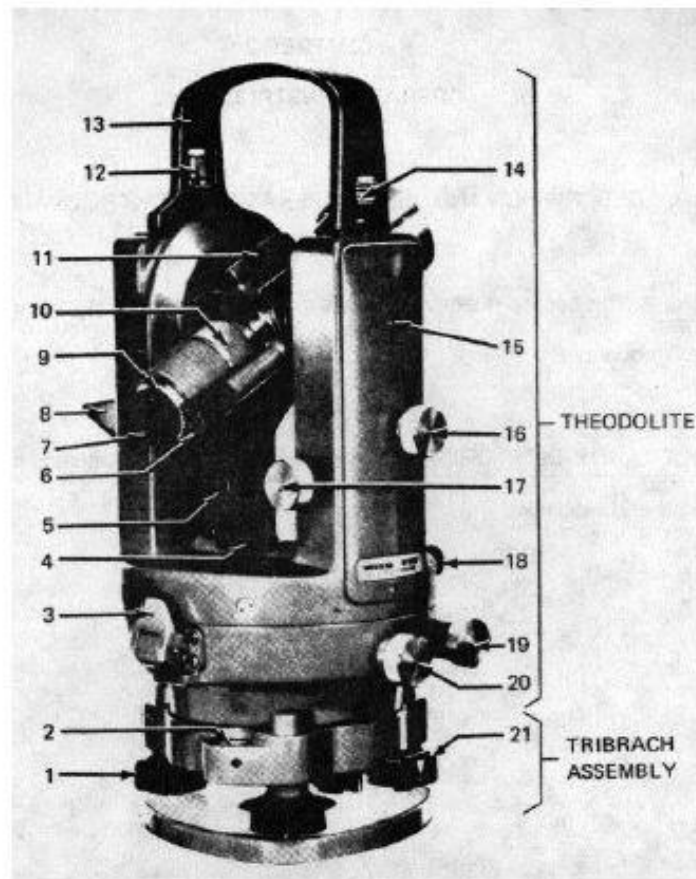
360° Readings: vertical circle 95° 54.4'
horizontal circle 130° 04.6'



400° Readings: vertical circle 87.254°
horizontal circle 191.966°

Wild Heerbrugg Ltd., CH-9435 Heerbrugg, Switzerland
Precision Engineering, Optics and Electronics
Telephone (071) 70 31 31, 72 24 33
Cables: Wico Heerbrugg / Telex 77191

WILD
HEERBRUGG



Key	Control or Indicator	Function
1	Footscrew assembly	The three footscrew assemblies are used to level the theodolite.
2	Circular level vial	Provides indication of preliminary leveling of theodolite and tribrach assembly.

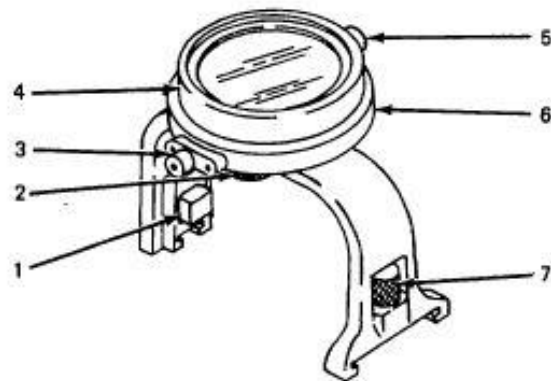
5-6675-312-14/2-1.1

Figure 2-1. Theodolite and tribrach assembly controls and indicators (Sheet 1 of 2)

Key	Control or Indicator	Function
3	Clamp lever assembly	Locks horizontal circle in position.
4	Plate level	Used for precision theodolite leveling.
5	Window	Illuminates plate level when electric illumination is used.
6	Reading microscope eyepiece	Used to read horizontal (Hz) and vertical (V) circle scales.
7	Telescope eyepiece	Used for viewing target.
8	Illumination mirror	Directs light upon horizontal and vertical circles during daylight operation.
9	Bayonet locking	Locks eyepiece in position.
10	Focusing sleeve	Focuses target in telescope. Has coarse and fine motion.
11	Optical sight	Used for aiming telescope.
12	Carrying handle locking screw	Secures carrying handle to theodolite.
13	Carrying handle	Used to carry theodolite and tribrach assembly
14	Carrying handle safety catch	Secures carrying handle to theodolite.
15	White dot	Indicates tilting axis.
16	Vertical clamp	Locks telescope in vertical position.
17	Vertical drive screw	Provides precision vertical adjustment of telescope.
18	Optical plummet	Used to position theodolite and tribrach assembly over station point.
19	Horizontal drive screw	Provides precision horizontal adjustment.
20	Horizontal clamp	Locks theodolite in horizontal position.
21	Locking knob	Locks theodolite to tribrach assembly.

5-6675-312-14/2-1.2

Figure 2-1. Theodolite and tribrach assembly controls and indicators (Sheet 2 of 2)



Key	Control or Indicator	Function
1	Circular compass assembly safety catch	Secures compass assembly to theodolite.
2	Spring loaded knob	When released, lifts and clamps pivot so that pivot will not be damaged during transit.
3	Clamp assembly	Used to lock compass housing at desired amount of declination.
4	Compass housing	Used to select compass heading.
5	Eyepiece assembly	Used for viewing compass heading.
6	Metal circle	Indicates declination.
7	Circular compass assembly locking screw	Secures circular compass assembly to theodolite.

56675-312-14/2-2

Figure 2-2. Circular compass assembly controls and indicators

Section II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

2-3. GENERAL

- a. Before you operate. Always keep in mind the CAUTIONS and WARNINGS.

Perform you before (B) PMCS.

- b. While you operate. Always keep in mind the CAUTIONS and WARNINGS. Perform your during (D) PMCS.

- c. After you operate. Be sure to perform your after (A) PMCS.

d. If your equipment fails to operate. Troubleshoot with proper equipment. Report any deficiencies using the proper forms, see TM 38-750.

2-4. PREVENTIVE MAINTENANCE CHECKS AND PROCEDURES The operator preventive maintenance checks and services are listed in [table 2-1](#)

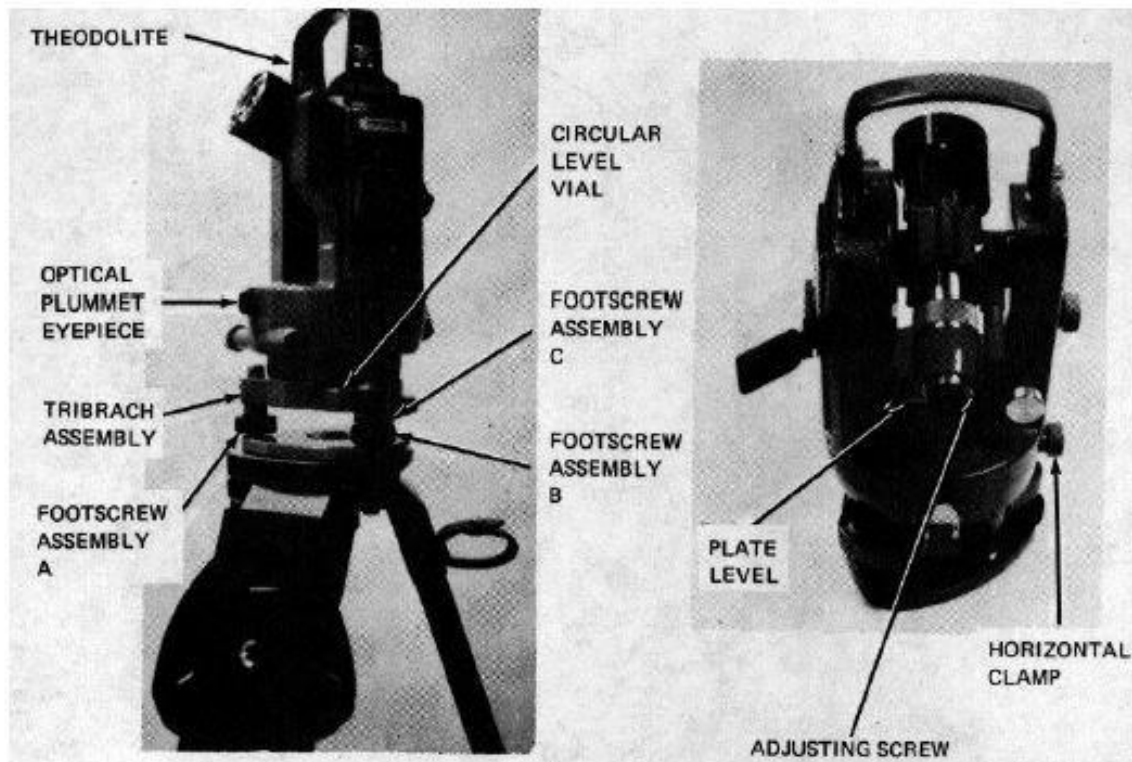
Table 2-1. Operator Preventive Maintenance Checks and Services

NOTE: Within designated interval these checks are to be performed in the order listed.

B - Before
D - During

A - After
W - Weekly

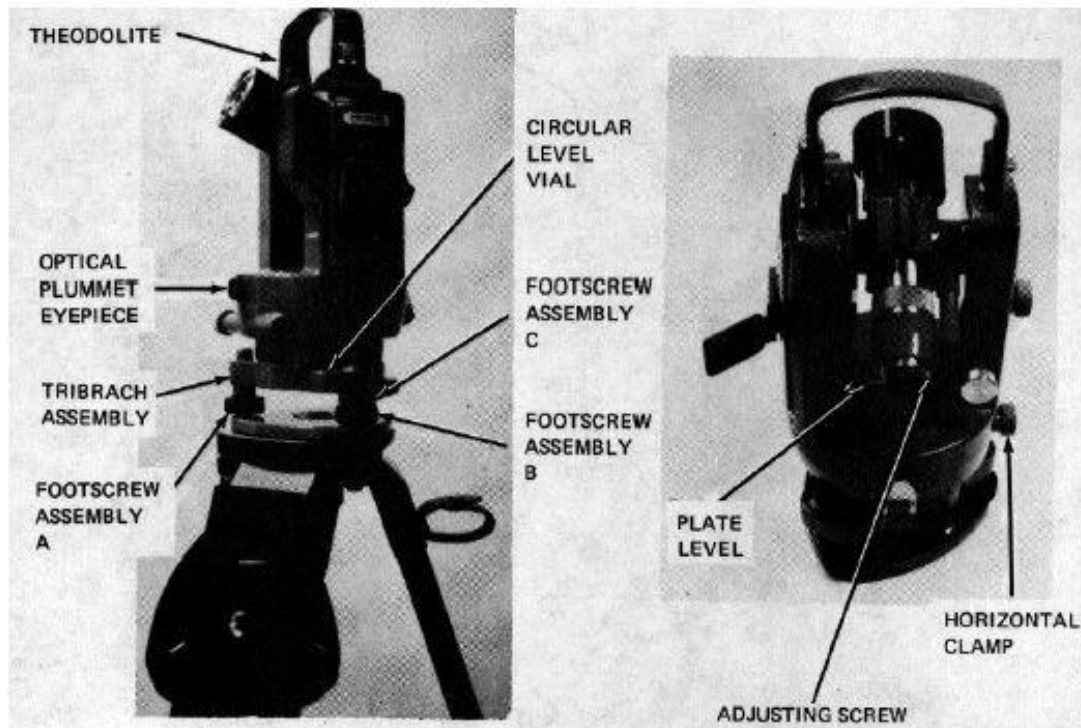
Item No.	Interval				Item to be inspected	Procedures Check for and have repaired or adjusted as necessary	For readiness reporting, equipment is not ready/ available if:
	B	D	A	W			
1	○	○	○	○	Metal Carrying Case	Inspect for service-ability. Check desiccant for proper color	



- STEP 1. Install tripod (refer to [figure 2-9](#)).
- STEP 2. Center theodolite and tribrach assembly using plumbbob (refer to [figure 2-19](#)).
- STEP 3. Remove plumbbob assembly by rotating bayonet socket one-quarter turn counter-clockwise and pulling down.
- STEP 4. Level theodolite and tribrach assembly (refer to [figure 2-21](#)).
- STEP 5. Turn optical plummet eyepiece to focus cross hairs.
- STEP 6. Pull out or push in optical plummet eyepiece to focus station point.
- STEP 7. Loosen central fixing screw and move theodolite and tribrach assembly until cross hairs coincide with station point. Do not rotate theodolite and tribrach assembly in relation to tripod or level will be disturbed. Tighten central fixing screw.
- STEP 8. Relevel theodolite (refer to [figure 2-21](#)).
- STEP 9. Repeat steps 4, 5, and 6.
- STEP 10. Release horizontal clamp, rotate theodolite 1800°.
- STEP 11. Loosen central fixing screw and move theodolite to take up one-half of the deviation.
- STEP 12. Relevel theodolite (refer to [figure 2-21](#)).
- STEP 13. Centering is correct when, for a full rotation (3600) of the theodolite, the cross hairs remain on the station point.

Figure 2-20. Centering with optical plummet.

5-6675-31 2-14/2-20



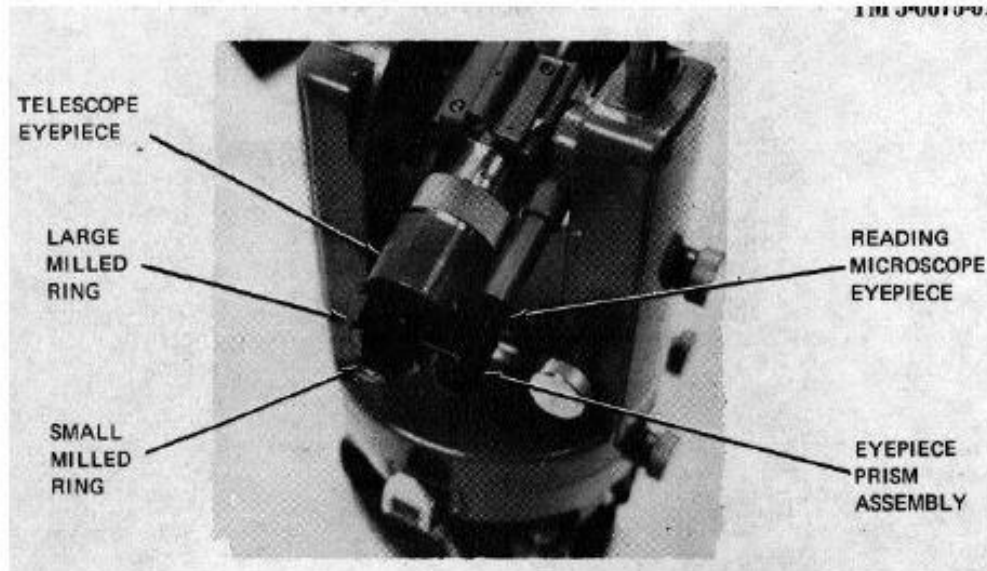
- STEP 1. Adjust footscrew assemblies, A, B, and C to center bubble in circular level vial.
- STEP 2. Release horizontal clamp and rotate theodolite so that optical plummet eyepiece is over any one of the footscrew assemblies which will become footscrew assembly A.
- STEP 3. Rotate footscrew assemblies B and C in equal but opposite directions to center the plate level bubble.
- STEP 4. Rotate the theodolite 90° clockwise and center the bubble in plate level using footscrew assembly A.
- STEP 5. Rotate the theodolite 90° clockwise and note the position of the bubble in plate level. Bring the bubble in plate level to a point halfway between noted position and center position (mean position) by rotating footscrew assemblies B and C in equal but opposite directions.
- STEP 6. Rotate theodolite 90° clockwise and set the bubble in plate level to the mean (halfway position noted in step 5) using the footscrew assembly A.
- STEP 7. Rotate the theodolite slowly through 360° and observe that the bubble in plate level remains in the mean position.
- STEP 8. If the bubble in plate level does not remain in the mean position throughout 360°, repeat this procedure but use the mean position observed in step 5.

NOTE

The theodolite is level when the bubble in plate level remains in the same, though not necessarily the center position, for all directions of the theodolite.

- STEP 9. Using adjusting pin adjust plate level adjusting screw to center the bubble in plate level.

Figure 2-21. Leveling.
2-34



- STEP 1. Push eyepiece prism assembly onto telescope eyepiece and reading microscope eyepiece.
 STEP 2. Select yellow, green, or black filter by rotating the small milled ring.
 STEP 3. Position the face of the prisms, as required by rotating the large milled ring.

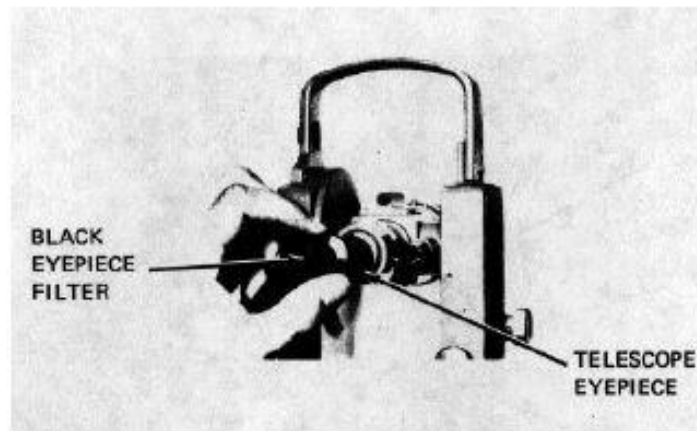
Figure 2-22. Eyepiece prism assembly installation

5-6675-31 2-14/2-22

WARNING

Severe eye damage can result from performing observations against direct sunlight if the black eyepiece filter is not used.

- (6) If necessary, install black eyepiece filter [fig. 2-23](#).

**WARNING**

Severe eye damage can result from performing observations against direct sunlight if the black eyepiece filter is not used. 5-6675-312-14/2-23

Figure 2-23. Black eyepiece filter installation.

- (7) Center and level the theodolite.
- (8) Focus the telescope as follows:
 - (a) Direct the telescope toward a uniformly lighted background. Adjust the telescope eyepiece (fig. 2-1) until the cross hairs are sharp and black.

NOTE

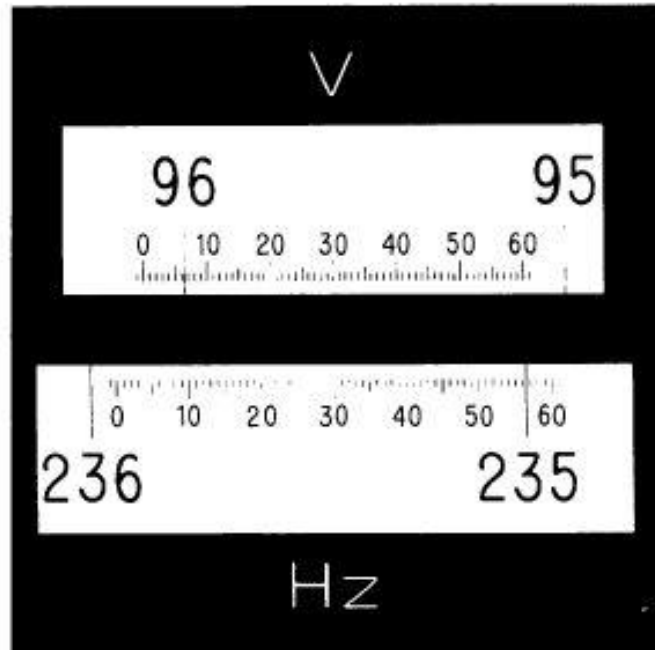
Observe the setting on the telescope eyepiece (fig. 2-1). This setting will remain constant for the same observer but will change for other observers.

- (b) Adjust the focusing sleeve (fig. 2-1) to bring into view a clear, sharp image of the object being sighted.
- (9) Loosen vertical and horizontal clamps (fig. 2-) and sight theodolite on target using optical sight. Tighten vertical and horizontal clamps.
- (10) Sighting through the telescope, adjust vertical and horizontal drive screws (fig. 2-1) to place cross hairs on target.

- (11) Look into reading microscope eyepiece (fig. 2-1) and, if necessary, adjust position of illumination mirror (fig. 2-1) for maximum brightness. Observe both the vertical (V) and horizontal (Hz) circle reading scales indications (fig. 2-24).

Vertical (V) circle – $96^{\circ} 06.5'$ ($96^{\circ} 06'30''$)

Horizontal (Hz) circle – $235^{\circ} 56.4'$ ($235^{\circ} 56'26''$)



5-6675-312-14/2-24

Figure 2-24. Vertical and horizontal circle reading scales.