

DEPARTMENT OF THE ARMY TECHNICAL MANUAL

DIRECT SUPPORT,
GENERAL SUPPORT,
AND DEPOT MAINTENANCE

TELESCOPE, ELBOW M16A1D,
M16A1F, M16A1G, M116, AND M116C

This copy is a reprint which includes
current pages from Change 1.

HEADQUARTERS, DEPARTMENT OF THE ARMY

18 MARCH 1964

Technical Manual }
No. 9-1240-288-35 }

HEADQUARTERS,
DEPARTMENT OF THE ARMY
WASHINGTON 25, D.C., 18 March 1964

**TELESCOPE, ELBOW M16A1D, M16A1F,
M16A1G, M116, AND M116C**

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* This manual supersedes so much of TM 9-1604, 6 June 1952, as pertains to telescope, elbow M16A1D, M16A1F, and M16A1G.

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1. Scope

a. This manual contains instructions for field and depot maintenance of telescope, elbow M16A1D, M16A1F, M16A1G, M116, and M116C, which is beyond the scope of the tools, equipment, or supplies normally available to using organizations.

b. A description of the item, use of special tools and equipment, inspection procedures, troubleshooting procedures, repair and overhaul operations of elbow telescope are presented in this manual.

c. The appendix contains a list of current references, including supply and technical manuals, forms, and other available publications applicable to elbow telescope.

2. Comments

Report of errors, omissions and recommendations for improving this publication by the individual user is encouraged. Reports should be submitted on DA Form 2028 (Recommended Changes to DA Publications) and forwarded direct to Commanding Officer, Frankford Arsenal, ATTN: AMSWE-SMF-W3100, Philadelphia, Pa. 19137.

3. Maintenance Allocation and Parts

a. Direct support and general support maintenance responsibilities prescribed in this manual will apply as reflected in the maintenance allocation chart in change 2 of TM 9-325 and as reflected by the allocation of repair parts and tools listed in TM 9-1240-288-35P.

b. Depot maintenance responsibilities will provide for complete overhaul of elbow telescope as reflected by

the IROAN concept for overhauling an unserviceable item.

c. Maintenance repair parts and special tools are listed in TM 9-1240-288-35P. Unlisted parts will be supplied, if available, when complete justification is included on the requisition. Unavailable parts may be fabricated.

4. Maintenance Technique

a. The maintenance technique, IROAN (Inspect, Repair, Only As Necessary), will be used to restore this materiel to serviceable condition.

b. IROAN is the systematic isolation and remedy of a malfunction or defective component through tests, diagnosis, and singular repair. No segment of the materiel is disassembled before the definite need for disassembly has been established.

5. Forms, Records, and Reports

a. *General.* Responsibility for the proper execution of forms, records, and reports rests upon the commanding officers of all units maintaining this equipment. However, the value of accurate records must be fully appreciated by all persons responsible for their compilation, maintenance, and use. Records, reports, and authorized forms are normally utilized to indicate the type, quantity, and condition of materiel to be inspected, to be repaired, or to be used in repair. Properly executed forms convey authorization and serve as records of work performed. The forms, records, and reports establish the work required, the progress of the work, and the status of the materiel upon completion of its repair.

b. Authorized Forms. The forms generally applicable to field and depot maintenance shops maintaining this materiel are listed in the appendix. Refer to current DA Pamphlet 310-2 for complete listing of all forms. For instructions on use of these forms, refer to FM 9-3 and FM 9-4.

c. Report of Accidents. Injury to personnel and/or

damage to materiel must be reported. See AR 385-40 for detailed requirements of the Army safety program.

d. Equipment Improvement Recommendations. Deficiencies detected in the equipment or materials should be reported using the Equipment Improvement Recommendation section of DA Form 2407.

Section II. DESCRIPTION AND DATA

6. Description

a. Elbow telescope M16A1 and M116 series (Fig. 1) are used for direct sighting in elevation as a part of a two-sight, two-man system. They are of the fixed-focus type without filters. The telescope is positioned in a telescope mount with the range lines of its reticle horizontal. The telescope mount is secured to the carriage of the weapon so that the telescope mount and the telescope move with the weapon in elevation. The gunner aims the weapon with the range line of the reticle which represents the desired range.

b. Elbow telescope M16A1D issued with 105-MM howitzer M2A1 and 105-MM howitzer carriages M2A1 and M2A2.

c. Elbow telescope M16A1F is used with 155-MM guns M2 and M2A1.

d. Elbow telescope M16A1G is used with 8-inch howitzer cannons M2 and M2A1 and 8-inch howitzer carriage M1.

e. Elbow telescope M116 is used with 8-inch full-tracked self-propelled howitzer M110 (T236E1).

f. Elbow telescope M116C is used with 175-MM full-tracked self-propelled gun M107 (T235E1).

g. Elbow telescopes are fixed focus instruments and are provided with soft rubber eyeshields. The eyeshield is engaged by an eyeshield adapter (fig. 1) which slips onto the telescope body. The eyeshield protects the eyes of the observer

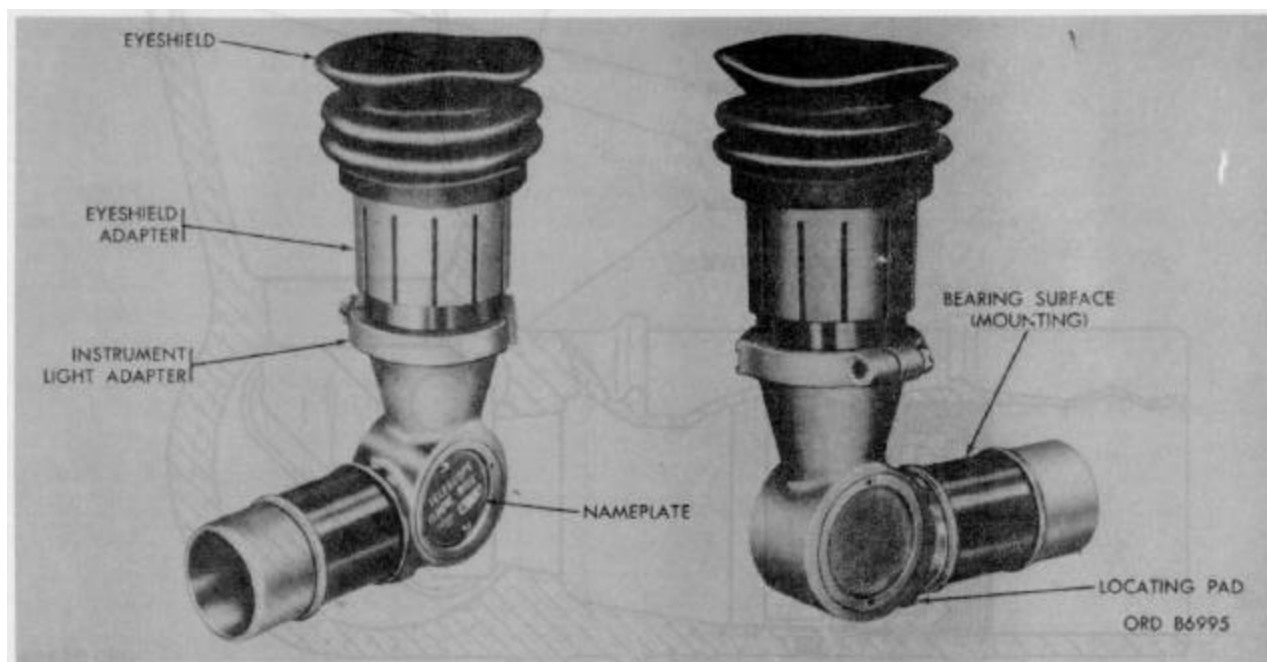
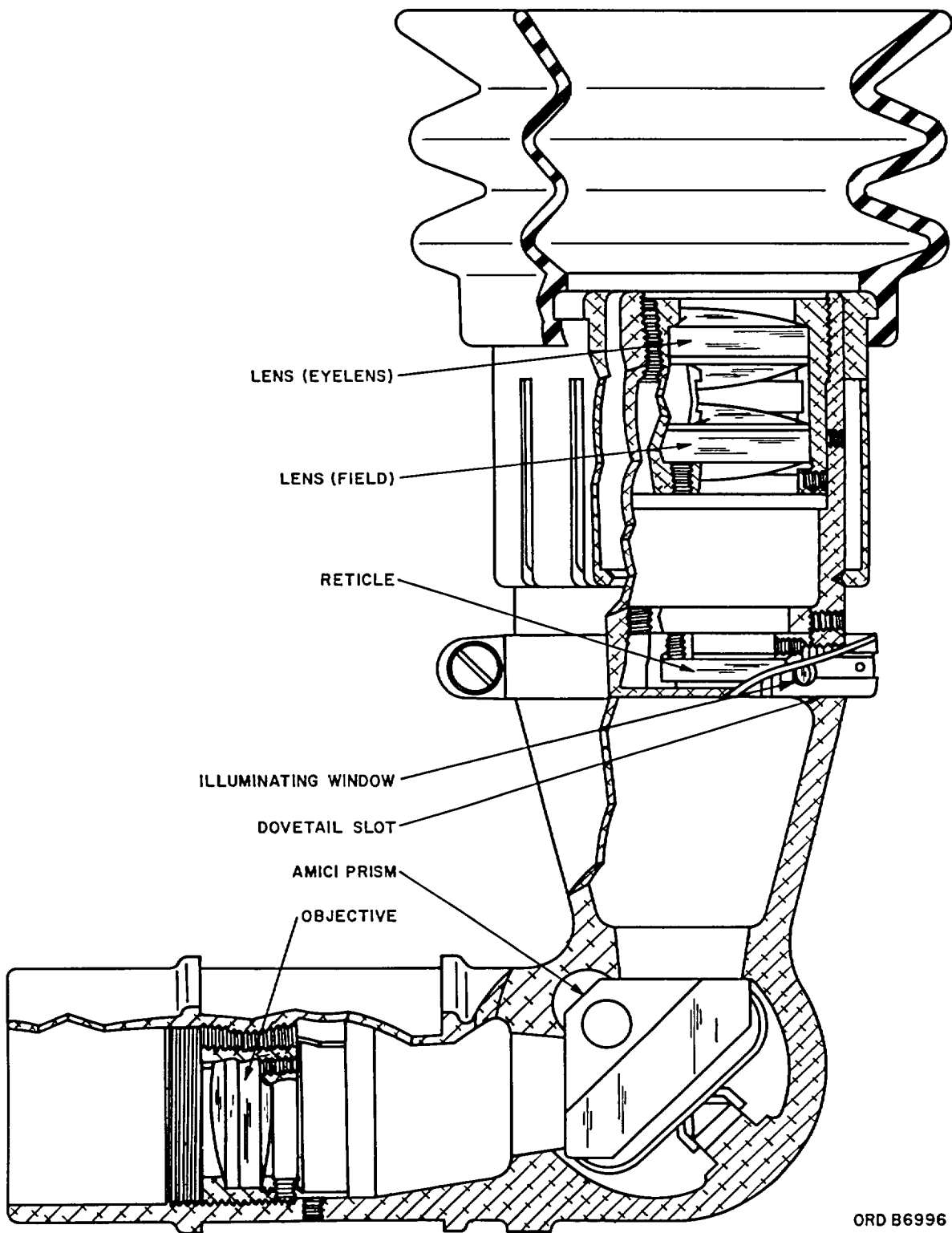


Figure 1. Elbow telescope M16A1 or M116 series-left front and right rear views.



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Figure 2. Elbow telescope M16A1 or M116 series-cutaway view.

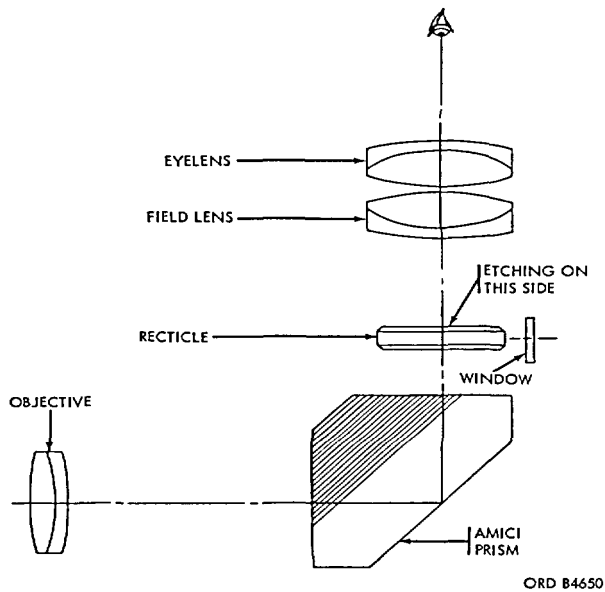


Figure 3. Elbow telescope M16A1 or M116 series-optical system.

from stray light and wind and helps to maintain proper eye distance.

h. Magnification of the reticle pattern and target image by the eyepiece assembly (figs. 2 and 3) is accomplished through two identical compound type lenses. The two lenses, their spacer, and retaining ring are mounted in an eyepiece cell.

i. The reticle (figs. 2 and 3) is seated in a cell and secured in position by a retaining ring. The reticle cell is slotted for illumination. Form adjusting setscrews provide lateral and vertical movement of the assembly when collimating; the assembly can be rotated when plumbing the reticle.

j. An instrument light adapter (fig. 1) is designed with a dovetail slot for engaging a lamp bracket. This adapter is positioned so that the opening in the slot is directly over the window in the telescope body.

k. The amici prism (figs. 2 and 3) is mounted in the elbow portion of the telescope body. It is a one-piece prism which deviates the light rays through a 90-degree angle and, at the same time, erects the image.

l. The compound type objective lens (figs. 2 and 3) is mounted in a cell and secured in place with a retaining ring. The objective assembly is located inside the telescope body.

7. Data

a. Optical Characteristics.

Magnification.....	3X
Field of view.....	13°, 20 min.
Effective focal length:	
Objective	4.123 in.
Eyepiece.....	1.374 in.

b. Physical Characteristics.

Length.....	4-1/4 in.
Height	5-3/4 in.
Weight	2.35 lb

8. Differences Between Models

Elbow telescopes M16A1D, M16A1F, M16A1G, M116, and M116C are identical except for differences in reticle patterns and name plate designations. See figure 4 for various reticle patterns.