

PERISCOPES M4 SERIES

Description

GENERAL

1. These periscopes are of rectangular cross section containing a simple optical system and are used for observation and for sighting tank guns. They consist of a pressed steel body assembly, plastic head assembly, metal elbow assembly, sighting telescope, telescope holder, and a telescope adjusting control assembly.

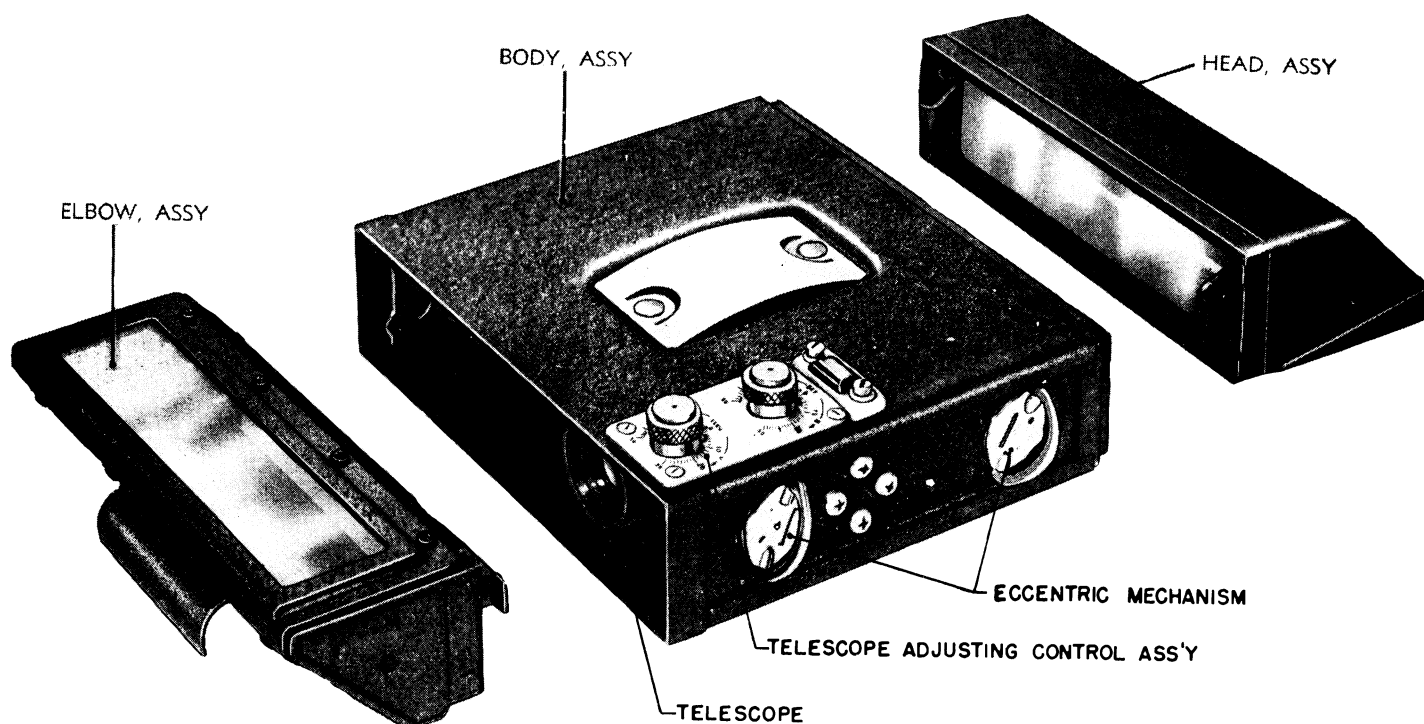


Fig 1 - Periscope M4A1 - Component Assemblies

CONSTRUCTION

Head Assembly

2. The head assembly of the Periscope M4A1 consists of a moulded shatterable plastic head containing a coated 90 degree prism. The prism is adjusted for correct alignment at the time of manufacture by means of set screws contained within the head. The head assembly is fastened to the body assembly by means of two eccentric mechanisms located one each side of the body which engage metal clips extending from the bottom of the head assembly. Gaskets are also provided to seal the joints against the entrance of dust and moisture.

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Body Assembly

3. The body assembly positions the head and elbow assemblies, houses the telescope holder and telescope and supports the telescope adjusting control assembly. It also includes the flat spring, guide strip, stud and locking knob used to mount the periscope. An electrical contact is provided for the purpose of connecting an instrument light.

Elbow Assembly

4. The elbow assembly of the Periscope M4A1 houses a coated 90 degree prism, which is adjusted and sealed during manufacture, so placed that light rays entering the elbow from the head assembly are reflected in a direction parallel to the line of sight. The elbow assembly is fastened to the body assembly by means of eccentric mechanisms similar to those for the head assembly.

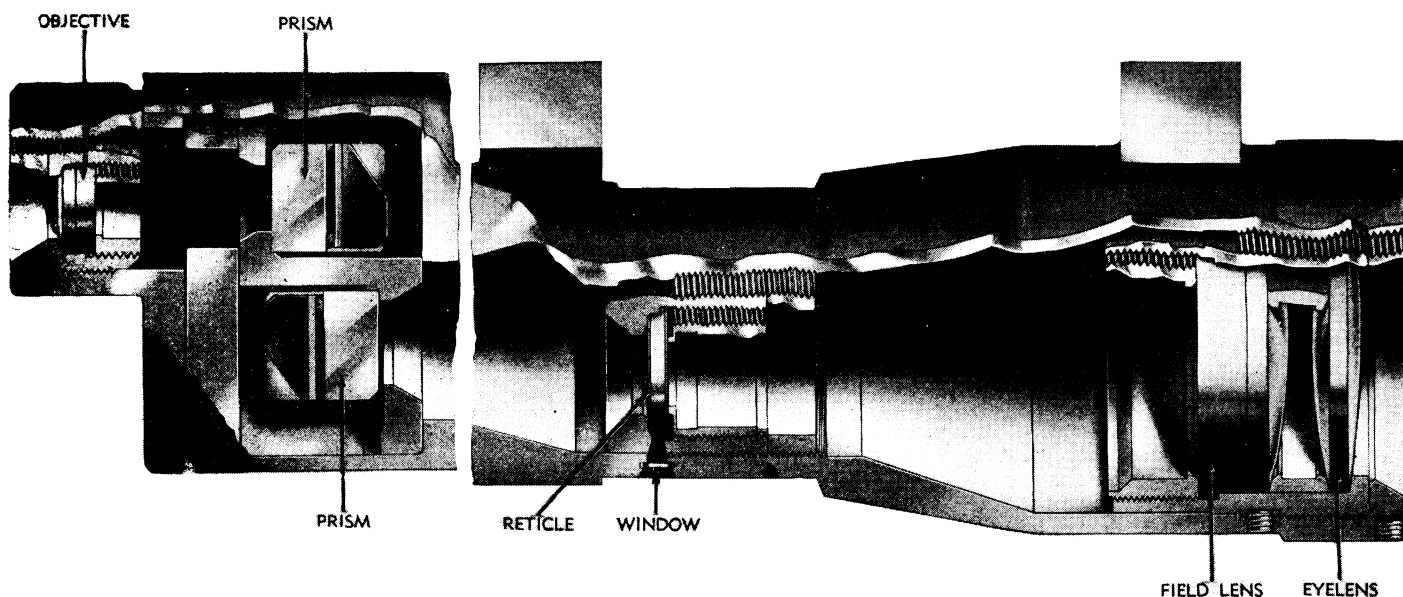


Fig 2 - Cross-sectional View of Typical Telescope

Eccentric Mechanism

5. The eccentric mechanisms at each end of the body consist of an eccentric latch, a handle and attaching parts. The eccentric mechanisms secure the metal clamps of the head and elbow assemblies to the body. The latch handles permit easy operation by hand. Slots in the handle plates allow clamping by means of a screwdriver if the handles become damaged.

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Telescope

6. The telescope used with these periscopes is of the fixed focus type having a magnification of 1.44 and a field of view of 9 degrees. They are of tubular shape, 5 17/64 inches long and are identical except for the reticle pattern. The optical system consists of an objective, a two piece prism erecting system, an etched reticle, a field lens and an eyelens. A window in the telescope body allows the reticle to be illuminated by means of an instrument light. A telescope holder assembly is used to mount the telescope inside the body of the periscope and a bracket assembly fitted with elevation and deflection mechanisms provides for the adjustment of the telescope.

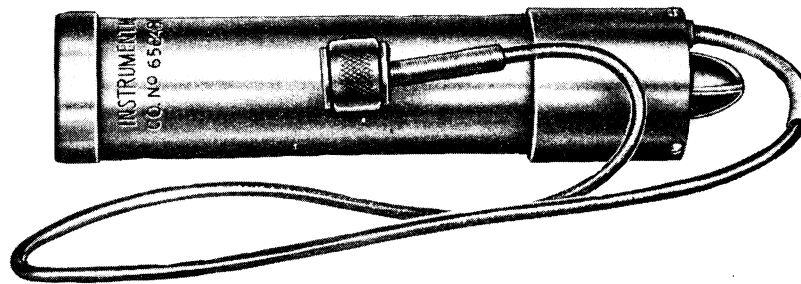


Fig 3 - Light Instrument M30

Telescope Adjusting Control Assembly

7. The telescope adjusting control assembly consists of a plate and two cams fitted with a knob and a pointer. The scales on the plate are graduated in 1 mil divisions, each having a range of 33 mils, the upper scale in deflection and the lower scale in elevation. A detent on each knob is used to lock the knob after adjustment has been made thereby preventing accidental rotation. To make settings the knob is pushed inward and while maintaining pressure rotated the desired amount; when pressure is released a spring pushes the knob outward to engage the detent.

Light Instrument M30

8. The instrument light consists of a cylindrical shaped case which is used to contain two dry cell batteries. A cover assembly is fitted to one end of the case and a cap assembly to the other end. A rheostat is fitted into the cover assembly and provides variable control of the illumination. A flexible lead from the rheostat is provided for connection to the periscope.

END