

MIL-P-10088(ORD)

12 January 1950

SUPERSEDING

Frankford Arsenal

FXS-1090

10 January 1949

MILITARY SPECIFICATION

PERISCOPE ML3B1

1. SCOPE

1.1 This specification covers one type of periscope known as Periscope ML3B1.

2. APPLICABLE SPECIFICATIONS AND DRAWINGS

2.1 Specifications. - The following specifications and specifications referenced on the drawing, of the issue in effect on the date of invitation for bids, form a part of this specification:

FEDERAL SPECIFICATIONS

- NN-B-601 - Boxes; Wood-Cleated-Plywood
- NN-B-621 - Boxes; Wood, Nailed and Lock-Corner

MILITARY SPECIFICATIONS

- JAN-P-100 - Packaging and Packing for Overseas Shipment - General Specification
- JAN-P-105 - Packaging and Packing for Overseas Shipment - Boxes; Wood, Cleated, Plywood
- JAN-P-106 - Packaging and Packing for Overseas Shipment - Boxes; Wood, Nailed
- JAN-P-116 - Packaging and Packing for Overseas Shipment - Preservation, Method of
- JAN-P-125 - Packaging and Packing for Overseas Shipment - Barrier-Materials; Waterproof, Flexible

U. S. ARMY SPECIFICATIONS

- 51-7 - Instruments, Fire Control: General Specification Governing the Manufacture and Inspection of
- 51-70-2 - Optical Components for Fire Control Instruments; General Specification Governing the Manufacture, Assembly and Inspection of
- 100-2 - Marking Shipments by Contractors, Standard Specification for

(Copies of specifications should be obtained from the procuring agency or as directed by that agency. Both the title and identifying number should be stipulated when requesting copies.)

2.2 Drawings. - The following drawing and all drawings shown thereon, of the issue in effect on the date of invitation for bids, forms a part of this specification:

ARMY ORDNANCE DEPARTMENT DRAWING:
Class 22, Division 426, Drawing 11

(Copies of drawings should be obtained from the procuring agency or as directed by that agency. Both the title and identifying number should be stipulated when requesting copies.)

3. REQUIREMENTS

3.1 General. - Unless otherwise specified herein, all applicable requirements and associated tests in Specifications 51-7 and 51-70-2 shall apply.

3.2 Material shall be in accordance with the drawings, general specifications and material specifications forming part of this specification. Materials which are not covered by specifications or drawings shall be of the best commercial quality and suitable for the purpose intended.

3.3 Optical Characteristics. - The periscope shall have the following characteristics:

- (1) Resolving power: 1 minute of arc in the resolution area as specified on Drawing C7674830
- (2) Lens power: zero, within plus 0.125 diopter and minus 0.50 diopter
- (3) Astigmatism: not to exceed 0.25 diopter
- (4) Light transmission: not less than 50 percent
- (5) Maximum angular deviation: not to exceed 1 degree (horizontal or vertical)
- (6) Flare: none permitted
- (7) Visual defects: affecting the field of view shall not exceed the values specified in paragraph 3.4

3.4 Visual Defects

3.4.1 Prisms shall conform with the drawings and Specification 51-70-2.

3.4.1.1 Reflecting surfaces of prisms shall be treated in the same manner as the optical surfaces.

3.4.2 Periscope body. - Each surface shall conform with the dig and scratch requirements for optical elements in Specification 51-70-2 except that there may be 6 maximum scratches size 80. Each scratch length may extend across the entire surface. Size 80 scratches shall be separated by at least 3/16 inch but intersecting scratches are permitted. The allowable maximum bubbles and digs shall be a size 50. Inclusions usually not round in nature, lint or other foreign matter, shall not exceed an approximated diameter of 0.040 inch. There shall be no more than 2 maximum and 4 smaller size inclusions permitted. All inclusions shall be scattered.

3.5 Waterproofing. - The two prisms shall be properly sealed so as to exclude the entrance of water into the cavity between the prism surface and the periscope body.

3.5.1 Before sealing, all surfaces shall be cleaned so that smears, lint, or any foreign matter shall not be visible when viewed through the assembled periscope.

3.6 Temperature. - The periscope shall meet the requirements throughout the operating ambient temperature range of -65°F to $+125^{\circ}\text{F}$ (plus maximum solar radiation) and shall not be damaged by exposure to non-operating (storage) limits of -80°F and $+160^{\circ}\text{F}$.

3.7 Workmanship shall be in accordance with Specification 51-7 and best commercial practices.

4. INSPECTION AND TEST PROCEDURE

4.1 Inspection. - Unless otherwise specified, each periscope shall be inspected for conformance with this specification and the applicable requirements of Specification 51-7 and 51-70-2.

4.2 Test Procedure

4.2.1 Definition, Power. - Resolving power for a parallel bar test object shall be 1 minute of arc. The test object shall be of the pattern illustrated in Specification 51-70-2, Figure VI-A. The image shall be viewed with the aid of a 3 power, 5mm aperture auxiliary telescope of approved design, scaled in diopters. The test pattern shall be resolved in each of the four meridians by an adjustment of the auxiliary telescope not to exceed $\pm 1/8$ diopter from the setting for best focus on the numeral in the center of the test field. The diopter scale reading for position of best focus shall fall within the limits ± 1.25 to -0.50 diopter.

4.2.2 Light Transmission. - One periscope out of every 50 shall be tested for light transmission by a conventional method.

4.2.3 Flare. - When a small bright source, such as a condensed filament lamp, is viewed through the finished periscope there shall be no diffractive bands visible over the resolution area.

4.2.4 Waterproofing Test. - Three periscopes out of the first 10 followed by 1 periscope in 25 shall be submersed to a depth of two feet of water for two minutes. After 24 hours, they shall be visually examined for the presence of moisture. The above test shall be performed after the vibration test.

4.2.5 Temperature test shall be in accordance with Temperature, Type II, Specification 51-7, except that the temperature values in paragraph 3.6 shall be used.

5. PREPARATION FOR DELIVERY

5.1 Packaging

5.1.1 The periscope shall be cleaned in accordance with Specification JAN-P-116 (For Method II pack). All glass surfaces shall be covered with at least four thicknesses of neutral tissue paper.

5.1.2 Each periscope shall be unit packed in accordance with Specification JAN-P-116, Method II (use Type I moisture vaporproof barrier material and Type V, Grade A desiccant). Unit packs shall be overwrapped with waterproof barrier material conforming to Specification JAN-P-125. Immobilize the contents of each pack. Packaging materials and containers shall conform to the general requirements of Specification JAN-P-100.

5.1.3 Unit packs and waterproof overwraps shall have the following information printed or marked (in a legible manner) either directly on the unit containers and overwraps or on labels and attached to the containers and overwraps:

QUANTITY _____
NOMENCLATURE _____
ORD DWG NO _____
STOCK NO _____
SERIAL NO _____
MFD BY _____
DATE PACKED MONTH _____ YEAR _____

5.2 Packing

5.2.1 For Domestic Shipment. - Periscope packaged as described in paragraph 5.1 shall be packed in substantial commercial wood containers conforming to Specifications NN-B-621 or NN-B-601.

5.2.2 For Overseas Shipment. - Periscopes packaged as described in paragraph 5.1 shall be packed in shipping containers conforming to the applicable requirements of Specifications JAN-P-106 or JAN-P-105. Each box shall contain a waterproof bag or case liner (in which the contents are packed) fabricated from material conforming to the applicable requirements of Specification JAN-P-125. Strap each box in accordance with the requirements of the applicable box specification.

5.2.3 The contents of both domestic and export shipping containers shall be immobilized.

5.3 Method II Labels

5.3.1 Method II labels (add date packed) shall be affixed to each unit container, waterproof overwrap and shipping container.

5.4 Marking. - In addition to any special marking required by the contract or order, shipments shall be marked in accordance with the applicable requirements of Specification 100-2.

6. NOTES

6.1 Intended Use. - This periscope is intended for use in combat vehicles.

6.2 Ordering Data. - Invitation for bids and contracts shall specify the following:

(a) Title, number and date of this specification.

(b) Domestic or overseas packing.

6.3 NOTICE: This specification, together with specifications and drawings pertaining to it and bearing a "NOTICE" of similar restrictions is intended for use only in connection with procurement by the United States Government and shall not be reproduced either wholly or in part except when authorized in connection with Government procurement, nor be used for any other purpose except when specifically authorized by the Chief of Ordnance.

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