

INCH POUND

MIL-R-6771B
INT. AMENDMENT 3 (AR)
23 APRIL 1990
SUPERSEDING
AMENDMENT 2
23 AUGUST 1966

MILITARY SPECIFICATION

REFLECTORS: GUNSIGHT GLASS

This interim amendment is approved for use within the U.S. Army Armament, Munitions and Chemical Command, with MIL-R-6771B, dated 20 September 1954.

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Under SCOPE: Delete and substitute "1.1 Scope. This specification covers glass in the form of plates to be used in fabricating gunsight glass reflectors.

"1.2 Classification. Gunsight reflectors specified herein shall be classed as follows:

a. Type I: Single glass plate

b. Type II: Combinations of two glass plates".

- * 2.1, under SPECIFICATIONS, Federal: Delete "DD-G-451" and substitute "ASTM-C-1036".

Add "PPP-B-621 Boxes, Wood, Nailed and Lock-Corner".

Add "PPP-B-636 boxes, Fiberboard".

2.1, under SPECIFICATIONS, Military:

- * Delete "JAN-G-174" and substitute "MIL-G-174".

Delete "JAN-P-106 Packaging and packing for Overseas Shipment-Boxes; Wood, Nailed".

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Delete "JAN-P-108 Packaging and packing for Overseas Shipment-Boxes, Fiberboard (V-Board and W-Board), Exterior and Interior".

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- * 3.1: Delete "DD-G-451 and JAN-G-174" and substitute "ASTM-C-1036 and MIL-G-174".
- 3.2: Delete "of a single plate glass" and substitute "of plate glass or glasses".

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- 4.4.2.1 through 4.4.2.1.3 inclusive: Delete in its entirety and substitute the following:

"4.4.2.1 Radius of curvature. The reflector plate shall be tested to determine whether the curvature radius of each surface of the critical area is in accordance with the limits specified in 3.4.3.2. Any suitable method approved by the procuring activity may be used. One suggested method shall be as specified herein.

4.4.2.1.1 Step 1 - test setup. The test apparatus shall be setup on figure 2 where:

S = monochromatic source of light

T = thin transparent plate of glass

O = optical flat

R = reflector plate under test

M = microscope of low-magnifying power

The light from S shall be so reflected downward by T that it falls on R and O. The observer looking through M will then see the interference fringes formed by the air film between R and O.

a. If the lower surface of R is plane, then straight parallel fringes equally spaced will result.

b. If this surface is cylindrical, then straight parallel fringes not equally spaced, or curved fringes, will result.

c. If unequally spaced straight fringes are seen, then the plate shall be moved until curved fringes are visible.

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d. If the surface R is curved in any other manner, curved fringes will be visible.

4.4.2.1.1.2 Step 2 - fringe count. To determine the number of fringes crossed from the point of tangency the following formula may be used:

H = distance from point of tangency = 1 inch

N = number of fringes crossed

L = wavelength of the light used

B = measured separation at distance H

S = permissible separation the value of which has been approximated parabolically by $H^2 / 2R$

B = N L/2

R = Radius of Curvature

A straight edge shall be placed over the portion of the critical area which reveals the most highly curved fringes. The straight edge shall be placed tangent to the most highly curved fringe at its peak, and a count shall be made of the number of fringes that it crosses from the point of tangency."

4.4.2.1.2 Calculation of N. If sodium light of wavelength 5895.9 angstroms is used, the maximum allowable value on N may be computed as follows for a distance of 1 inch from the point of tangency; i.e. H=1 inch:

$S = (H^2) / 12,000 \text{ inch} = 1 / 12,000 \text{ inch} = 0.000083 \text{ inch}$ (for glass 1/4 inch thick or more)

$S = 1 / 8640 \text{ inch} = .000116 \text{ inch}$ (for glass less than 1/4 inch thick)

B = 0.0000116 N inch

So that B does not exceed S, then N may not be greater than 7 for plates 1/4 inch thick or more, no greater than 10 for plates less than 1/4 inch thick. Therefore, when sodium light is used and the straight edge crosses more than 7 fringes per inch indicating a radius of curvature of less than 500 feet or crosses more than 10 fringes per inch indicating a radius of curvature of less than 360 feet, the plates shall be rejected.

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4.4.2.1.3 Type I reflector plate. The type I reflector plate shall be tested to determine whether the radius of curvature of each surface of the critical area is in accordance with the limits specified in 4.4.2.1.2:"

4.4.2.1.4 Type II reflector plates. The type II reflector plates shall be examined by placing a transparent optical flat, not less than 6 inches in diameter area, on all regions of the usable area of both surfaces of the glass. The number of fringes, per inch, shall be not more than 3 for each surface of each glass."

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4.4.2.2.2, lines 5 and 7: Delete "0.001" and substitute "0.0001".

4.4.2.2.3, line 3: Delete "1 minute".

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5.2.1, line 2: Delete "JAN-P-108" and substitute "PPP-B-636".

5.3.2, line 2: Delete "JAN-P-106" and substitute "PPP-B-621".

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6.1: Delete and substitute:

"6.1 Intended use. The type I reflector glass specified herein is intended for use on collimating-type gunsights requiring single plate installation. The type II reflector glass is intended for use on gunsight aiming point camera installations requiring parallel plates."

* 6.4: Delete "DD-G-451 and JAN-G-174" and substitute "ASTM-C-1036 and MIL-G-174".

The margins of this amendment are marked with asterisks or vertical lines to indicate where changes (additions, modifications, corrections, deletions) from the previous amendment were made. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations and relationship to last previous amendment.

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