

MIL-R-6771B
Amendment 2

23 AUGUST 1966

Superseding
Amendment 1
18 April 1961

MILITARY SPECIFICATION

REFLECTORS: GUNSIGHT GLASS

(This amendment forms a part of Military Specification MIL-R-6771B, 20 September 1954, and is mandatory for use by all Departments and Agencies of the Department of Defense.)

Page 1, 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".

Page 1, paragraph 2.1, under "SPECIFICATION, Federal": Add:

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

"PPP-B-636 - Boxes, Fiberboard".

Page 1, paragraph 2.1, under "SPECIFICATIONS, Military": Delete:

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

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

Page 2, paragraph 3.2: Delete and substitute:

"3.2 Component Parts. The gunsight reflectors shall consist of plate glass or glasses from which surface irregularities have been removed by precision grinding to produce surfaces that are plane and parallel, in order to meet the optical requirements."

Page 5 and 6, paragraphs 4.4.2.1 through 4.4.2.1.3 inclusive: Delete and substitute:

FSC 1270

"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."

"4.4.2.1.1 One suggested method shall be as specified herein."

"4.4.2.1.1 Step 1 - test setup. The test apparatus shall be setup as shown 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.

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 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:

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

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

$$B = 0.0000116 N \text{ inch}$$

So that B does not exceed S, then N may not be greater than 7 for plates 1/4 inch thick or more, nor 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".

"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 and certified to be flat to within 1/5 of one wavelength over a 6-inch 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."

Page 6, paragraph 4.4.2.2.2., lines 5 and 7: Delete "0.001" and substitute "0.0001."

Page 6, paragraph 4.4.2.2.3, line 3: Delete "1 minute".

Page 8, paragraph 5.2.1, line 2: Delete "JAN-P-108" and substitute "PPP-B-636".

Page 8, paragraph 5.3.2, line 2: Delete "JAN-P-106" and substitute "PPP-B-621".

Page 9, paragraph 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."

Custodians:
Army - WC
Navy - OS
Air Force - 84
Reviewer:
Air Force 84

Preparing activity:
Air Force - 84

Page 3
of 3 pages