AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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AMS 7472C

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BOLTS AND SCREWS, STEEL, CORROSION RESISTANT
Roll Threaded

1. ACKNOWLEDGMENT: A vendor shall mention this specification number and its revision letter in all quotations and when acknowledging purchase orders.

2. APPLICATION: High quality bolts and screws requiring corrosion resistance for use up to 700 F.

3. COMPOSITION:

		Check Analysis Under Min	Check Analysis Over Max
Carbon	0.15 max	--	0.01
Manganese	2.00 max	--	0.04
Silicon	1.00 max	--	0.05
Phosphorus	0.040 max	--	0.005
Sulfur	0.030 max	--	0.005
Chromium	17.00 - 20.00	0.20	0.20
Nickel	7.00 - 11.00	0.10	0.10

4. FABRICATION: Heads may be formed by cold upsetting or machining. When heads are machined, AMS 5637 steel shall be used. Threads shall be formed by rolling.

5. TECHNICAL REQUIREMENTS:

5.1 Flow Lines: Flow lines of upset heads shall conform to the general arrangement shown in Figure 1A or 1B. The intersection of the longitudinal axis of the part and the approximate transverse axis of the flow lines shall be not less than H/3 in. from the bearing surface.

5.1.1 Examination for Internal Defects: Visual Examination of a longitudinal section of a head and 1/4 in. or more of the shank, after etching for approximately 30 min. in a solution of 1 volume of sulfuric acid (sp gr 1.84) and 3 volumes of water at 160-180 F, shall reveal no cracks, laps or porosity.

5.2 Machining: The metal removed from the bearing surface of the head of upset-head parts shall be as little as practicable to obtain a clean, smooth surface.

5.3 Threads:

5.3.1 Threads shall be produced on the finished blanks by a single rolling. Flow lines at threads shall be continuous, shall follow the general thread contour, and shall be of maximum density at root of thread (see Figure 2).

5.3.2 Threads shall have no multiple or single laps at the root or on the sides (see Figures 3, 4, and 5), except that slight laps are permissible at the crest, on the non-pressure side inside the pitch diameter, and on the sides outside the pitch diameter (see Figures 6, 7, and 8). Slight deviation from thread contour is permissible at the crest of the thread as shown in Figure 9; the incomplete thread at each end of the threaded section may also deviate slightly from contour.

5.3.3 Parts having holes for locking devices are permitted to have slight ovalization of the hole and the contersink and slight flattening of the crest of the thread at the countersink, provided the diameter of the hole is within specified tolerances.

5.4 Parts, after thread rolling, shall be heated at 700 F ± 10 for 3 hr, except that parts made from AMS 5637 steel need not be so heated.

5.5 Cleaning: Parts, after finishing, shall be degreased and then immersed for not less than 20 min. in a solution of 1 volume of nitric acid (sp gr 1.42) and 9 volumes of water at room temperature.

5.6 Ø Tensile Strength: Sample parts shall be capable of meeting the following requirements when based on the area calculated from the mean of the nominal root and pitch diameters of the threads or from the shank diameter, whichever is smaller.

5.6.1 Ø Proof Load: A load of 70,000 psi shall be applied between the full thread section and head for not less than 1 minute. After removing the load the length shall not be increased more than 0.0002 inch.

5.6.2 Ø Ultimate: A load of not less than 125,000 psi shall be applied between the thread and head until failure. The reduction of area shall be not less than 20%.

6. QUALITY: Parts shall be uniform in quality and condition, clean, sound, smooth, and free from burrs and foreign materials and from internal and external defects detrimental to their performance.

7. REJECTIONS: Parts not conforming to this specification or to authorized modifications will be subject to rejection.

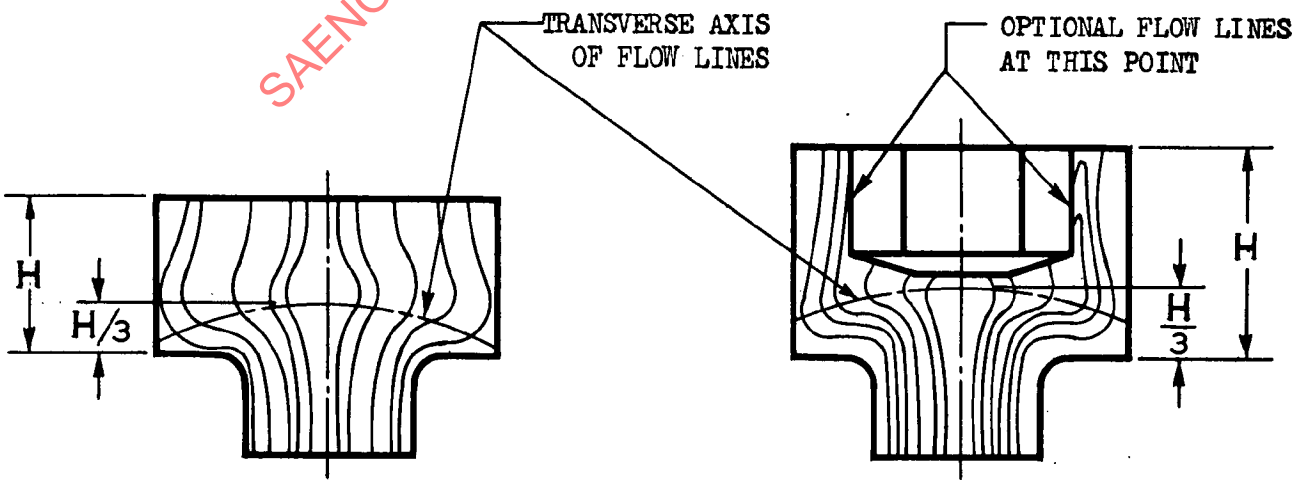

FIGURE 1A FIGURE 1B

FLOW LINES

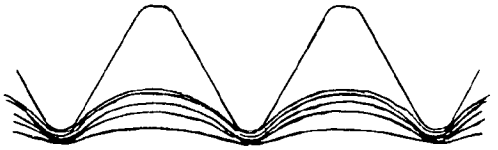

FIGURE 2
FLOW LINES
ROLLED THREAD

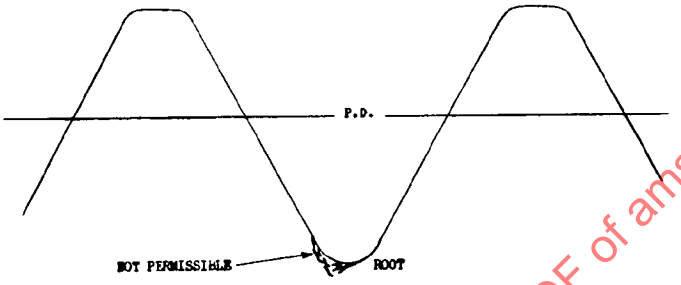

FIGURE 3
ROLLED THREAD

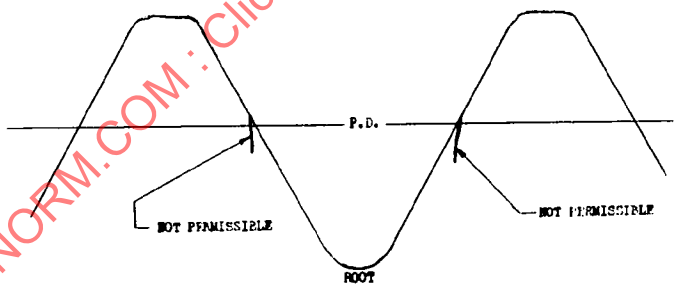

FIGURE 4
ROLLED THREAD

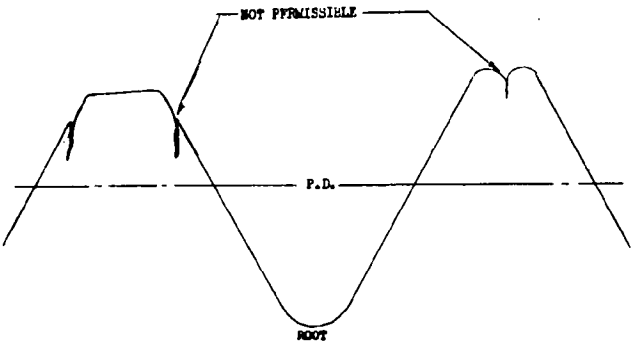

FIGURE 5
ROLLED THREAD