

AERONAUTICAL MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
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BOLTS AND SCREWS, CORROSION AND HEAT RESISTANT Roll Threaded

1. ACKNOWLEDGMENT: A vendor shall mention this specification number in all quotations and when acknowledging purchase orders.
2. APPLICATION: High quality bolts for use over 700 F where corrosion and heat resistance are desired and stresses are low.
3. MATERIAL: Shall be AMS 5645, AMS 5646, AMS 5648, AMS 5651, or AMS 5665 as specified on drawing.
4. FABRICATION: Heads may be formed by cold upsetting or machining. 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, 1B, or 1C. The intersection of the longitudinal axis of the part and the approximate transverse axis of the flow lines shall be not less than $D/4$ in. from the bearing surface for hexagonal, round, and square head bolts and screws and not less than $D/7$ in. from the bearing surface for 12 point head bolts and screws where D is the nominal diameter of the shank after heading.
 - 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 in suitable etchant, 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 countersink and slight flattening of the crest of the thread at the countersink, provided the diameter of the hole is within specified tolerances.

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- 5.4 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.
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.

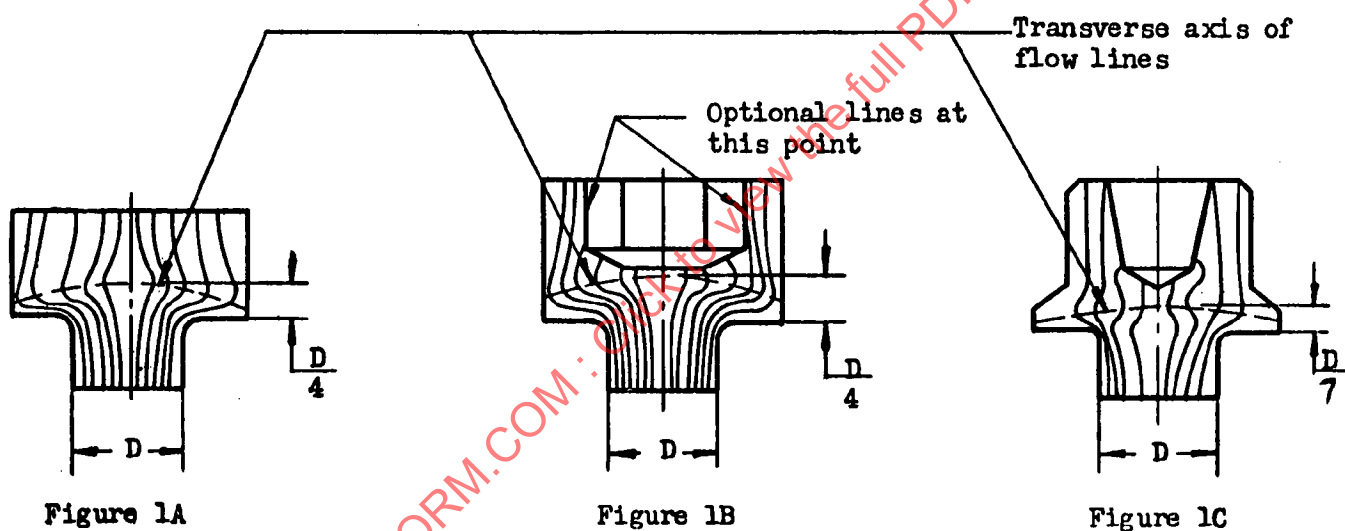




FIGURE 2
PLAN LINES
ROLLED THREAD

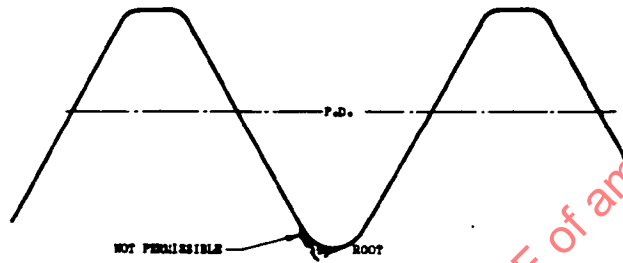


FIGURE 3
ROLLED THREAD

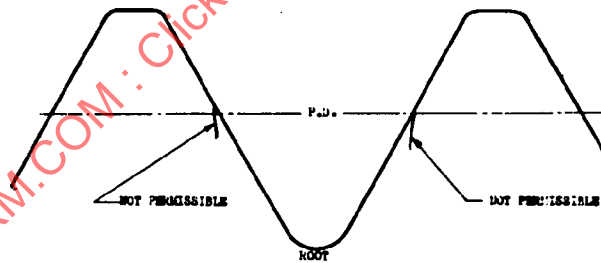


FIGURE 4
ROLLED THREAD

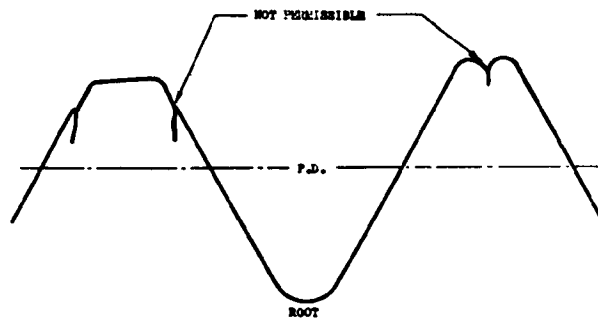


FIGURE 5
ROLLED THREAD