D-90-60

LAND SEA AIR SPACE

AEROSPACE MATERIAL SPECIFICATION

Society of Automotive Engineers, Inc.
400 COMMONWEALTH DRIVE, WARRENDALE, PA. 15096

AMS 7459C
Superseding AMS 7459B

Issued 6-30-62
Revised 1-15-80

UNS K14675

BOLTS AND SCREWS, STEEL, LOW-ALLOY HEAT-RESISTANT
195,000 psi (1,345 MPa) Tensile Strength
Hardened and Tempered, Roll Threaded

1. SCOPE:

1.1 Type: This specification covers premium-quality bolts and screws made from a low-alloy, heat resistant steel and having threads of UNJ (MIL-S-8879) form.

1.2 Application: Primarily for joining parts where stresses are high and where temperatures up to 900° F (480°C) may be encountered.

2. APPLICABLE DOCUMENTS: The following publications form a part of this specification to the extent specified herein. The latest issue of Aerospace Material Specifications (AMS) and Aerospace Standards (AS) shall apply. The applicable issue of other documents shall be as specified in AMS 2350.

2.1 SAE Publications: Available from Society of Automotive Engineers, Inc., 400 Commonwealth Drive, Warrendale, PA 15096.

2.1.1 Aerospace Material Specifications:

AMS 2350 - Standards and Test Methods
AMS 2373 - Quality Assurance Sampling of Bolts and Screws
AMS 6304 - Steel Bars, Forgings, and Tubing, Low-Alloy, Heat Resistant, 0.95Cr - 0.55Mo - 0.30V (0.40 - 0.50C)

2.1.2 Aerospace Standards:

AS 1132 - Design Parameters for Bolts and Screws, External Wrenching, Unified Thread Inch Series
AS 1177 - Nondestructive Inspection Standards for Bolts and Screws
AS 3062 - Bolts, Screws, and Studs, Screw Thread Requirements
AS 3063 - Bolts, Screws, and Studs, Geometric Control Requirements

2.2 ASTM Publications: Available from American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.

ASTM A370 - Mechanical Testing of Steel Products
ASTM E21 - Elevated Temperature Tension Tests of Metallic Materials
ASTM E139 - Conducting Creep, Creep-Rupture, and Stress-Rupture Tests of Metallic Materials

2.3 Government Publications: Available from Commanding Officer, Naval Publications and Forms Center, 5801 Tabor Avenue, Philadelphia, PA 19120.

2.3.1 Federal Standards:

FED-STD-H28 - Screw Thread Standards for Federal Services

2.3.2 Military Specifications:

MIL-S-8879 - Screw Threads, Controlled Root Radius with Increased Minor Diameter, General Specification for

SAE Technical Board rules provide that: "All technical reports, including standards approved and practices recommended, are advisory only. Their use by anyone engaged in industry or trade or their use by governmental agencies is entirely voluntary. There is no agreement to adhere to any SAE standard or recommended practice, and no commitment to conform to or be guided by any technical report. In formulating and approving technical reports, the Board and its Committees will not investigate or consider patents which may apply to the subject matter. Prospective users of the report are responsible for protecting themselves against liability for infringement of patents."

SAENORM.COM : Click to view the full PDF of ams7459c

Copyright 1980 by Society of Automotive Engineers, Inc. All rights reserved.

Distributed under license from the IHS Archive

Printed in U.S.A.

2.3.3 Military Standards:

MIL-STD-794 - Parts and Equipment, Procedures for Packaging and Packing of
MIL-STD-1312 - Fasteners, Test Methods

3. TECHNICAL REQUIREMENTS:

3.1 Material: Shall be AMS 6304 steel.

3.2 Fabrication:

3.2.1 Blanks: Heads shall be formed by hot forging or cold forging.

3.2.2 Heat Treatment: Headed blanks shall, before finishing the shank and the bearing surface of the head, cold working the head-to-shank fillet radius, and rolling the threads, be heat treated as follows:

3.2.2.1 Heating Equipment: Furnaces may be any type ensuring uniform temperature throughout the parts being heated and shall be equipped with, and operated by, automatic temperature controllers. The heating medium or atmosphere shall cause neither surface hardening nor decarburization other than that permitted by 3.4.3.2 and 3.4.3.3.

3.2.2.2 Hardening: Blanks shall be uniformly heated to 1725° F ± 25 (940°C ± 15), held at heat for 60 - 90 min., and quenched in oil.

3.2.2.3 Tempering: Hardened blanks shall be tempered by heating uniformly to a temperature not lower than 1000° F (540°C), holding at heat for not less than 6 hr, and cooling in air.

3.2.3 Oxide and Decarburization Removal: The heat treated blanks, before cold working the fillet radius and rolling the threads, shall have all surfaces free from surface oxide, oxide penetration, and decarburization except as permitted in 3.4.3.3. The removal process shall produce no intergranular attack or corrosion of the blanks. The metal removed from the bearing surface of the head and the full body diameter of the shank shall be as little as practicable to obtain a clean, smooth surface and in no case shall be so great as to produce more cutting of flow lines in the head-to-shank junction than shown in Fig. 1B.

3.2.4 Cold Working of Fillet Radius: After removal of oxide and decarburization as in 3.2.3, the head-to-shank fillet radius of parts having the radius complete throughout the circumference of the part shall be cold worked sufficiently to remove all visual evidence of grinding or tool marks and to produce the fatigue strength of 3.3.5. Distortion due to cold working shall not raise metal more than 0.002 in. (0.05 mm) above the contour at "A" or depress metal more than 0.002 in. (0.05 mm) below the contour at "B" as shown in Fig. 2; distorted areas shall not extend beyond "C" as shown in Fig. 2. In configurations having an undercut associated with the fillet radius, the cold working will be required only for 90 deg of fillet arc, starting at the point of tangency of the fillet radius and the bearing surface of the head.

3.2.5 Thread Rolling: Threads shall be formed on the heat treated and finished blanks by a single rolling process.

SAENORM.COM : Click to view the full PDF of ams7459c

Distributed under license from the IHS Archive

3.3 Properties: Parts shall conform to the requirements of 3.3.1 through 3.3.4. Threaded members of gripping fixtures for tensile tests shall be of sufficient size and strength to develop the full strength of the part without stripping the thread. Finished parts shall be tested in accordance with the following applicable test methods of MIL-STD-1312:

ø

Property	Test Method
Hardness	No. 6
Room Temperature Tensile Strength	No. 8
Stress Rupture	No. 10
Fatigue Strength	No. 11
Elevated Temperature Tensile Strength	No. 18

3.3.1 Tensile Properties:

3.3.1.1 At Room Temperature:

3.3.1.1.1 Finished Parts: Parts having hardness within the range 42 - 46 HRC shall have breaking load not lower than that specified in Table II. If the size or shape of the part is such that failure would occur outside the threaded section but the part can be tested satisfactorily, such as parts having a shank diameter equal to or less than the thread minor diameter or having an undercut, parts shall have tensile strength not lower than 195,000 psi (1345 MPa); for such parts, the diameter on which stress is based shall be the actual measured minimum diameter of the part. Tension fasteners with either standard double-hexagon or hexagon-type heads having a minimum metal condition in the head equal to the design parameters specified in AS 1132 shall not fracture in the head-to-shank fillet radius except when this radius is associated with an undercut.

3.3.1.1.2 Machined Test Specimens: If the size or shape of the part is such that a tensile test cannot be made on the part, tensile tests shall be conducted in accordance with ASTM A370 on specimens prepared as in 4.3.3. Such specimens shall conform to the following requirements:

ø

Tensile Strength, min	195,000 psi (1,345 MPa)
Elongation in 4D, min	10%
Reduction of Area, min	30%

3.3.1.1.2.1 When permitted by purchaser, hardness tests on the end of parts may be substituted for tensile tests of machined specimens.

3.3.1.2 At 900°F (482°C):

3.3.1.2.1 Finished Parts: Parts, heated to 900°F ± 3 (482°C ± 2), held at heat for 30 min. before testing, and tested at 900°F ± 3 (482°C ± 2), shall have breaking load not lower than the value specified in Table II. If the size or shape of the part is such that failure would occur outside the threaded section but the part can be tested satisfactorily, such as parts having a shank diameter equal to or less than the thread minor diameter or having an undercut, parts shall have tensile strength not lower than 145,000 psi (1000 MPa); for such parts, the diameter on which stress is based shall be the actual measured minimum diameter of the part. Tension fasteners with either standard double-hexagon or hexagon-type heads having a minimum metal condition in the head equal to the design parameters specified in AS 1132 shall not fracture in the head-to-shank fillet radius except when this radius is associated with an undercut.

3.3.1.2.2 Machined Test Specimens: If the size or shape of the part is such that a tensile test cannot be made on the part, specimens prepared as in 4.3.3 shall meet the following requirements when heated to 900°F ± 3 (482°C ± 2), held at heat for 30 min. before testing, and tested in accordance with ASTM E21 at 900°F ± 3 (482°C ± 2):

Tensile Strength, min	145,000 psi (1,000 MPa)
Elongation in 4D, min	10%
Reduction of Area, min	30%

SAENORM.COM : Click to view the full PDF of ams7459c

Distributed under license from the IHS Archive

3.3.2 Hardness: Shall be uniform and within the range 42 - 46 HRC or equivalent; hardness of the threaded section and of the head-to-shank fillet area may be higher than that of other areas as a result of the cold working operations.

3.3.3 Stress-Rupture Properties at 900°F (482°C):

3.3.3.1 Finished Parts: Parts, maintained at 900°F ± 3 (482°C ± 2) while the load specified in Table II is applied continuously, shall not rupture in less than 100 hours. If the shank diameter of the part is less than the maximum minor (nominal minor) diameter of the thread but the part can be tested satisfactorily, parts shall conform to the requirements of 3.3.3.1.1.

3.3.3.1.1 Parts having a shank diameter less than the maximum minor (nominal minor) diameter of the part shall be tested as in 3.3.3.1 except that the load shall be as specified in 3.3.3.2. The diameter on which stress is based shall be the actual measured minimum diameter of the part.

3.3.3.2 Machined Test Specimens: If the size or shape of the part is such that a stress-rupture test cannot be made on the part, a test specimen prepared as in 4.3.3, maintained at 900°F ± 3 (482°C ± 2) while a load sufficient to produce an initial axial stress of 105,000 psi (724 MPa) is applied continuously, shall not rupture in less than 100 hours. Tests shall be conducted in accordance with ASTM E139.

3.3.4 Fatigue Strength: Parts tested in tension-tension fatigue at room temperature with maximum load as specified in Table II and minimum load equal to 10% of maximum load shall have average life of not less than 65,000 cycles with no part having life less than 45,000 cycles. Tests need not be run beyond 130,000 cycles. Life of parts which do not fail in less than 130,000 cycles shall be taken as 130,000 cycles for purposes of computing average life. If the shank diameter of the part is less than the minimum pitch diameter of the part, parts shall withstand fatigue testing as above using loads
Ø sufficient to produce a maximum stress of 100,000 psi (690 MPa) and a minimum stress of 10,000 psi (69 MPa). The above requirements apply only to parts 0.138 in. (3.51 mm) and larger in nominal thread size with round, square, hexagonal, or double-hexagonal heads designed for tension applications and not having an undercut and having a head-to-shank fillet radius equal to or larger than that specified in AS 1132; for all parts to which the above requirements do not apply, fatigue test requirements shall be as specified on the part drawing.

3.4 Quality: Parts shall be uniform in quality and condition, clean, sound, smooth, and free from burrs and foreign materials and from internal and external imperfections detrimental to their performance. Parts shall conform to AS 1177.

3.4.1 Dimensional Examination: Parts shall conform to the following:

3.4.1.1 Straightness, Concentricity, and Squareness: Parts shall be within the limits of the drawing, determined in accordance with AS 3063.

3.4.1.2 Threads: Shall be as specified on the drawing and shall conform to AS 3062.

3.4.2 Macroscopic Examination: Parts or sections of parts, as applicable, etched in a solution consisting of approximately 50% hydrochloric acid (sp gr 1.19) and 50% water for sufficient time to reveal flow lines but not longer than 15 min., shall be examined at a magnification of approximately 20X to determine conformance to the following requirements, except that examination for the thread imperfections of 3.4.2.3 may be made by microscopic examination of specimens polished and etched as in 3.4.3.

3.4.2.1 Flow Lines:

SAENORM.COM : Click to view the full PDF of ams7459c

Distributed under license from the IHS Archive

3.4.2.1.1 Examination of a longitudinal section through the part shall show flow lines in the shank, head-to-shank fillet, and bearing surface which follow the contour of the part as shown in Fig. 1A, except that slight cutting of flow lines by the oxide and decarburization removal process of 3.2.3 is permissible, as shown in Fig. 1B; excessive cutting of flow lines in the shank, head-to-shank fillet, and bearing surface, as shown in Fig. 1C, is not permissible except when an undercut is associated with the fillet radius. The head style shown in Figs. 1A through 1C is for illustrative purposes only but other symmetrical head styles shall conform to the above requirements. Flow lines in upset heads on parts having special heads, such as Dee- or Tee-shaped heads or thinner-than-standard heads as in AS 1132, shall be as agreed upon by purchaser and vendor.

3.4.2.1.2 Flow lines in threads shall be continuous, shall follow the general thread contour, and shall be of maximum density at root of thread (See Fig. 3).

3.4.2.2 Internal Defects: Examination of longitudinal sections of the head and shank and of the threads shall reveal no cracks or other injurious imperfections. The head and shank section shall extend not less than D/2 from the bearing surface of the head and the threaded section shall extend not less than D/2 beyond the thread runout where "D" is the nominal diameter of the shank after heading. If the two sections would overlap, the entire length of the part shall be sectioned and examined as a whole.

3.4.2.3 Threads:

3.4.2.3.1 Root defects such as notches, slivers, folds, roughness, and oxide scale are not permissible (See Fig. 4).

3.4.2.3.2 Multiple laps on the flanks of threads are not permissible regardless of location. Single laps on the flanks of threads that extend toward the root are not permissible (See Figs. 5 and 6).

3.4.2.3.3 There shall be no laps along the flank of the thread below the pitch diameter (See Fig. 7). A single lap is permissible along the flank of the thread above the pitch diameter on either the pressure or nonpressure flank (one lap at any cross section through the thread) provided it extends toward the crest and generally parallel to the flank (See Fig. 7).

3.4.2.3.4 Crest craters, crest laps, or a crest lap in combination with a crest crater are permissible, provided that the imperfections do not extend deeper than 20% of the basic thread height (See Table I) as measured from the thread crest when the thread major diameter is at minimum size (See Fig. 8). The major diameter of the thread shall be measured prior to sectioning. As the major diameter of the thread approaches maximum size, values for depth of crest crater and crest lap imperfections listed in Table I may be increased by one-half of the difference between the minimum major diameter and the actual major diameter as measured on the part.

3.4.3 Microscopic Examination: Specimens cut from parts shall be polished, etched in 2% Nital, and examined at not lower than 100X magnification to determine conformance to the requirements of 3.4.3.1, 3.4.3.2, and 3.4.3.3.

3.4.3.1 Microstructure: Parts shall have microstructure of tempered martensite.

3.4.3.2 Surface Hardening: Parts shall have no surface hardening except as produced during cold working of the head-to-shank fillet radius and during rolling of threads. There shall be no evidence of carburization, recarburization, or nitriding. In case of dispute over results of the microscopic examination, microhardness testing shall be used as a referee method; a Vickers hardness reading within 0.003 in. (0.08 mm) of the surface more than 30 points higher than the reading in the core will be evidence of nonconformance to this requirement.

3.4.3.3 Decarburization:

3.4.3.3.1 The bearing surface of the head, the head-to-shank fillet radius, the shank, and the threads shall be free from decarburization.

SAENORM.COM : Click to view the full PDF of ams7459c

Distributed under license from the IHS Archive

3.4.3.3.2 Depth of decarburization on those surfaces of the head which are the original surfaces of the bar shall be not greater than that permitted by the applicable material specification.

3.4.3.3.3 Depth of decarburization on the OD of the head of cylindrical head parts is not restricted.

3.4.3.3.4 Depth of decarburization at any point on any surface not covered by 3.4.3.3.1, 3.4.3.3.2, or 3.4.3.3.3 shall not exceed 0.002 in. (0.05 mm).

4. QUALITY ASSURANCE PROVISIONS:

4.1 Responsibility for Inspection: The vendor of parts shall supply all samples and shall be responsible for performing all required tests. Results of such tests shall be reported to the purchaser as required by 4.4. Purchaser reserves the right to perform such confirmatory testing as he deems necessary to ensure that the parts conform to the requirements of this specification.

4.2 Classification of Tests:

4.2.1 Acceptance Tests: Tests to determine conformance to requirements for room-temperature tensile properties (3.3.1.1), hardness (3.3.2), and quality (3.4) are classified as acceptance tests and shall be performed on each lot.
Ø

4.2.2 Periodic Tests: Tests to determine conformance to requirements for elevated-temperature tensile properties (3.3.1.2), stress-rupture properties (3.3.3), and fatigue strength (3.3.4) are classified as periodic tests and shall be performed at a frequency selected by the vendor unless frequency of testing is specified by purchaser.
Ø

4.3 Sampling: Shall be in accordance with the following; a lot shall be all parts of one size and configuration made from a single heat of steel processed in one continuous run and submitted for vendor's inspection at one time:
Ø

4.3.1 For Acceptance Tests: AMS 2373.

4.3.2 For Periodic Tests: As agreed upon by purchaser and vendor.

4.3.3 Specimens for tensile and stress-rupture testing of machined test specimens shall be of standard proportions in accordance with ASTM A370 with either 0.250 in. (6.25 mm) diameter at the reduced parallel gage section or smaller specimens proportional to the standard when required. Specimens shall be machined from finished parts or from coupons of the same heat of steel processed with the parts.
Ø

4.4 Reports: The vendor of parts shall furnish with each shipment three copies of a report stating that the chemical composition of the parts conforms to the applicable material specification, showing the results of tests to determine conformance to the hardness and room temperature tensile strength requirements and stating that the parts conform to the other technical requirements of this specification. This report shall include the purchase order number, this specification number and its revision letter, contractor or other direct supplier of material, part number, nominal size, and quantity.

4.5 Resampling and Retesting: If any part or specimen used in the above tests fails to meet the specified requirements, disposition of the parts may be based on the results of testing three additional parts or specimens for each original nonconforming specimen. Failure of any retest part or specimen to meet the specified requirements shall be cause for rejection of the parts represented and no additional testing shall be permitted. Results of all tests shall be reported.

5. PREPARATION FOR DELIVERY:

5.1 Packaging and Identification:

SAENORM.COM : Click to view the full PDF of ams7459c

Distributed under license from the IHS Archive

5.1.1 Parts having different part numbers shall be packaged in separate containers.

5.1.2 Each container of parts shall be marked to show not less than the following information:

FASTENERS, LOW-ALLOY, HEAT-RESISTANT STEEL
AMS 7459C
PART NUMBER____________________
PURCHASE ORDER NUMBER____________________
QUANTITY____________________
MANUFACTURER'S IDENTIFICATION____________________

5.1.3 Ø Containers of parts shall be prepared for shipment in accordance with commercial practice and in compliance with applicable rules and regulations pertaining to the handling, packaging, and transportation of the parts to ensure carrier acceptance and safe delivery. Packaging shall conform to carrier rules and regulations applicable to the mode of transportation.

5.1.4 Ø For direct U.S. Military procurement, packaging shall be in accordance with MIL-STD-794, Level A or Level C, as specified in the request for procurement. Commercial packaging as in 5.1.1 and 5.1.3 will be acceptable if it meets the requirements of Level C.

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

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

8. NOTES:

8.1 Marginal Indicia: The phi (Ø) symbol is used to indicate technical changes from the previous issue of this specification.

8.2 For direct U.S. Military procurement, purchase documents should specify not less than the following:

Title, number, and date of this specification
Part number or size of parts desired
Quantity of parts desired
Applicable level of packaging (See 5.1.4).

SAENORM.COM : Click to view the full PDF of ams7459c

Distributed under license from the IHS Archive

TABLE I

Threads Per Inch	Basic Thread Height Ref (See Note 1) Inch	Basic Thread Height Ref (See Note 1) (Millimetres)	20% Basic Thread Height Inch	20% Basic Thread Height (Millimetres)
80	0.0081	(0.206)	0.0016	(0.041)
72	0.0090	(0.229)	0.0018	(0.046)
64	0.0102	(0.259)	0.0020	(0.051)
56	0.0116	(0.295)	0.0023	(0.058)
48	0.0135	(0.343)	0.0027	(0.069)
44	0.0148	(0.376)	0.0030	(0.076)
40	0.0162	(0.411)	0.0032	(0.081)
36	0.0180	(0.457)	0.0036	(0.091)
32	0.0203	(0.516)	0.0041	(0.104)
28	0.0232	(0.589)	0.0046	(0.117)
24	0.0271	(0.688)	0.0054	(0.137)
20	0.0325	(0.826)	0.0065	(0.165)
18	0.0361	(0.917)	0.0072	(0.183)
16	0.0406	(1.031)	0.0081	(0.206)
14	0.0464	(1.179)	0.0093	(0.236)
13	0.0500	(1.270)	0.0100	(0.254)
12	0.0541	(1.374)	0.0108	(0.274)
11	0.0590	(1.499)	0.0118	(0.300)
10	0.0650	(1.651)	0.0130	(0.330)
9	0.0722	(1.834)	0.0144	(0.366)
8	0.0812	(2.062)	0.0163	(0.414)

Note 1. Basic thread height is defined as being equivalent to 0.650 times the pitch.

SAENORM.COM : Click to view the full PDF of ams7459c

Distributed under license from the IHS Archive

TABLE II

Bolt Size	Tensile Breaking Load Pounds, min Room Temperature	Tensile Breaking Load Pounds, min 900°F	Maximum Fatigue Test Load, lb	Stress Rupture Test Load, lb
0.112 -40	1,180	876	543	570
0.112 -48	1,290	896	607	639
0.138 -32	1,770	1,320	816	857
0.138 -40	1,980	1,470	936	982
0.164 -32	2,730	2,030	1,290	1,350
0.164 -36	2,870	2,140	1,370	1,440
0.190 -32	3,900	2,900	1,860	1,950
0.250 -28	7,100	5,280	3,420	3,590
0.3125-24	11,300	8,410	5,490	5,760
0.375 -24	17,100	12,800	8,390	8,810
0.4375-20	23,100	17,200	11,300	11,900
0.500 -20	31,200	23,200	15,400	16,100
0.5625-18	39,600	29,400	19,500	20,500
0.625 -18	49,900	37,100	24,700	25,900
0.750 -16	72,700	54,100	36,800	37,900
0.875 -14	99,300	73,800	49,300	51,800
1.000 -12	129,000	96,100	64,200	67,500

TABLE II (SI)

Bolt Size	Tensile Breaking Load Newtons, min Room Temperature	Tensile Breaking Load Newtons, min 482°C	Maximum Fatigue Test Load, N	Stress Rupture Test Load, N
0.112 -40	5,250	3,900	2,420	2,530
0.112 -48	5,740	3,980	2,700	2,840
0.138 -32	7,870	5,870	3,630	3,810
0.138 -40	8,810	6,540	4,160	4,370
0.164 -32	12,100	9,030	5,740	6,000
0.164 -36	12,800	9,520	6,090	6,400
0.190 -32	17,300	12,900	8,270	8,670
0.250 -28	31,600	23,500	15,200	16,000
0.3125-24	50,300	37,400	24,400	25,600
0.375 -24	76,100	56,900	37,300	39,200
0.4375-20	103,000	76,500	50,300	52,900
0.500 -20	139,000	103,000	68,500	71,600
0.5625-18	176,000	131,000	86,700	91,200
0.625 -18	222,000	165,000	110,000	115,000
0.750 -16	323,000	241,000	164,000	169,000
0.875 -14	442,000	328,000	219,000	230,000
1.000 -12	574,000	427,000	286,000	300,000

SAENORM.COM : Click to view the full PDF of ams7459c

Distributed under license from the IHS Archive

Note 1. Area upon which stress for tensile breaking load requirements is based is the tensile stress area as defined in FED-STD-H28 and calculated from the equation:

$$A = 0.7854 (D - 0.9743/n)^2$$

where, A = Tensile stress area
D = Maximum major (nominal major) diameter
n = Number of threads per inch (25.4 mm)

Area upon which stress for maximum fatigue test load and stress-rupture test requirements is based is the area at the maximum minor (nominal minor) diameter, calculated from the equation:

$$A = 0.7854 (D - 4H/3)^2$$

where, A = Area at maximum minor (nominal minor) diameter
D = Maximum major (nominal major) diameter
H = Height of sharp-Vee thread

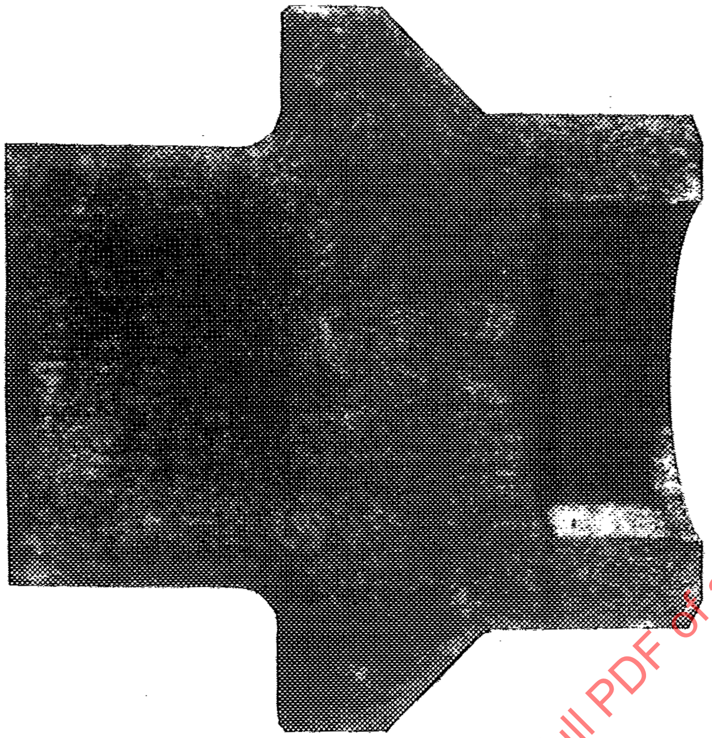
Load requirements are based on:

195,000 psi (1,345 MPa) for tensile breaking loads at room temperature
145,000 psi (1,000 MPa) for tensile breaking loads at 900°F (482°C)
100,000 psi (690 MPa) for maximum fatigue test loads
105,000 psi (724 MPa) for stress-rupture test loads

Note 2. For sizes not shown, tensile breaking loads, maximum fatigue test loads, and stress-rupture test loads for parts tested as parts, not as specimens machined from parts or from coupons of the stock, shall be based upon the respective areas and stresses given in Note 1 above.

SAENORM.COM : Click to view the full PDF of ams7459c

Distributed under license from the IHS Archive



SATISFACTORY GRAIN FLOW
FIGURE 1A

SAENORM.COM : Click to view the full PDF of ams7459c

MINIMUM ACCEPTABLE STANDARD

Showing maximum permissible cutting of flow lines after machining to remove oxide and decarburization as in 3.2.3.

FIGURE 1B

Distributed under license from the IHS Archive