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STUDY:

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Ref. :

Superseding Ref. :

ENGLISH VERSION

**Aerospace series
Bolt – Countersunk head,
Short thread
Inch series**

**Série Aéronautique
Vis, tête fraisée,
filetage court
Série en inch**

**Luft-und Raumfahrt
Senkschraube, Kurzgewinde
Zöllige Reihe**

Master document : en fr de

Sponsor : AIRBUS FRANCE

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1 Scope

This product standard specifies the dimensions, tolerances and the requirements of a countersunk head bolt for aerospace application.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

| | |
|-----------------|--|
| AMS4928 | Titanium alloys bars, wire, forgings, and rings 6AL-4V annealed. ¹⁾ |
| AMS4967 | Titanium alloys bars, wire, forgings, and rings 6.0AL-4.0V annealed, heat treatable. ¹⁾ |
| AMS5662 | Alloy bars, forgings and rings, corrosion and heat resistant. ¹⁾ |
| AMS5962 | Alloy bars, forgings and rings, corrosion and heat resistant. ¹⁾ |
| AMS6322 | Steel bars, forgings and rings. ¹⁾ |
| AMS6325 | Steel bars and forgings. ¹⁾ |
| AMS6327 | Steel bars and forgings. ¹⁾ |
| AMS6349 | Steel bars 0.95Cr – 0.20Mo (0.38 – 0.43C) (SAE 4140). Normalized. ¹⁾ |
| AMS6382 | Steel bars, forgings, and rings, 0.95Cr – 0.20Mo (0.38 – 0.43C) (SAE 4140) (annealed). ¹⁾ |
| AMS6415 | Steel bars, forgings, and tubing 0.80Cr – 1.8Ni - 0.25Mo (0.38 – 0.43C) (SAE 4340). ¹⁾ |
| AMS6484 | Steel bars, forgings, and tubing 0.80Cr – 1.8Ni - 0.25Mo (0.38 – 0.43C) (SAE 4340). Normalized and tempered. ¹⁾ |
| AMS-H-6875 | Heat treatment of steel, raw materials. ¹⁾ |
| AMS-QQ-P-416 | Plating, cadmium (electrodeposited). ¹⁾ |
| ANSI/ASME-B46-1 | Surface texture (surface roughness waviness, and lay). ¹⁾ |
| AS8879 | Aerospace – UNJ threads - General requirements and limit dimensions. ¹⁾ |
| EN2424 | Aerospace series – Marking of aerospace products. ²⁾ |
| EN4473 | Aerospace series – Aluminium pigmented coatings – Technical specification. ²⁾ |
| EN6116 | Aerospace series - Threaded bolts, light weight - Inch series - Technical specification. ²⁾ |
| EN6117 | Specification for lubrication of bolts with cetyl alcohol. ²⁾ |
| EN6118 | Process specification – Aluminium base protection for fasteners. ²⁾ |
| ISO8080 | Aerospace – Anodic treatment of titanium and titanium alloys - Sulfuric acid process. |

¹⁾ Published by : The Engineering Society For Advancing Mobility, Land Sea Air and Space (SAE),
400 Commonwealth drive, Warrendale, PA15096-0001, U.S.A.

²⁾ Published as AECMA Prestandard as the date of publication of this standard.

3 Requirements

3.1 Configuration, dimensions and tolerances

Configuration, dimensions and tolerances shall be in accordance with figure 1, tables 3 and 4.

Dimensions and tolerances for oversizes shall be in accordance with table 5.

Limitation of application: large diameter (-12 to -16) titanium fasteners are not recommended for single shear applications, diameter -18 titanium fasteners are not recommended for single shear applications at all.

3.2 Mass

The calculation of the mass of a bolt shall be provided as per indications hereafter :

CALCULATION OF THE MASS OF A BOLT

Add the mass of the head and threaded part (invariable mass) to the mass of the smooth part (variable mass).

Total mass of the head and threaded part :

1st mass column of table 3

Mass of the smooth part :

Multiply the value of the 2nd mass column of table 3 (value according to the diameter code No.) by the length code No. of the bolt.

EXAMPLES :

BOLT EN6114-4-8

| | | |
|--------------------------|-------------------|--------|
| Invariable mass | | 2,37 |
| Variable mass | $0,39 \times 8 =$ | 3,12 |
| Head mass to be deducted | | -0,46 |
| Total mass | | 5,03 g |

BOLTS EN6114V4-8, EN6114T4-8, EN6114K4-8 or EN6114B4-8

| | | |
|--------------------------|-------------------|--------|
| Invariable mass | | 1,37 |
| Variable mass | $0,22 \times 8 =$ | 1,76 |
| Head mass to be deducted | | -0,27 |
| Total mass | | 2,86 g |

BOLTS EN6114L4-8 or EN6114M4-8

| | | |
|--------------------------|-------------------|--------|
| Invariable mass | | 2,55 |
| Variable mass | $0,42 \times 8 =$ | 3,36 |
| Head mass to be deducted | | -0,49 |
| Total mass | | 5,42 g |

BOLT EN6114L4-8X

| | | |
|--------------------------|-------------------|--------|
| Invariable mass | | 2,55 |
| Variable mass | $0,45 \times 8 =$ | 3,60 |
| Head mass to be deducted | | -0,49 |
| Total mass | | 5,66 g |

3.3 Materials, finishes, lubrication and identifications

Table 1: Materials, finishes, lubrication and identifications

| Code | Material | Finish | Lubrication | Bolt identification |
|------|---|---|--|--|
| T | Titanium alloy 6AL-4V as per AMS4928 or AMS4967 or equivalent Rc min. = 650 Mpa | Sulfuric-acid anodizing as per ISO8080 | Cetyl alcohol as per EN6117 | None |
| V | | IVD as per EN6118 | | |
| K | | Aluminium coating as per specification EN4473 | | A white paint identification at thread end |
| B | | Sulfuric-acid anodizing as per ISO8080 + Aluminium coating as per specification EN4473 on threads | | None |
| - | Alloy steel 4340 (AMS6415 or AMS6484) or 4140 (AMS6382 or AMS6349) or 8740 (AMS6322 or AMS6325 or AMS6327) or equivalent. Rc min. = 740 MPa R = 1 240 to 1 380 MPa (AMS-H-6875) Hardness HRC 40-44 | Cadmium plating as per AMS-QQ-P-416, Type II, class 2 | | A green paint identification at thread end |
| L | Inconel 718 as per AMS5962 or AMS5662 + cold working R = 1 510 MPa | Aluminium coating as per specification EN4473 | | A blue paint identification at thread end |
| M | | IVD as per EN6118 | A black paint identification at thread end | |

3.4 Mechanical characteristics

Table 2: Mechanical characteristics

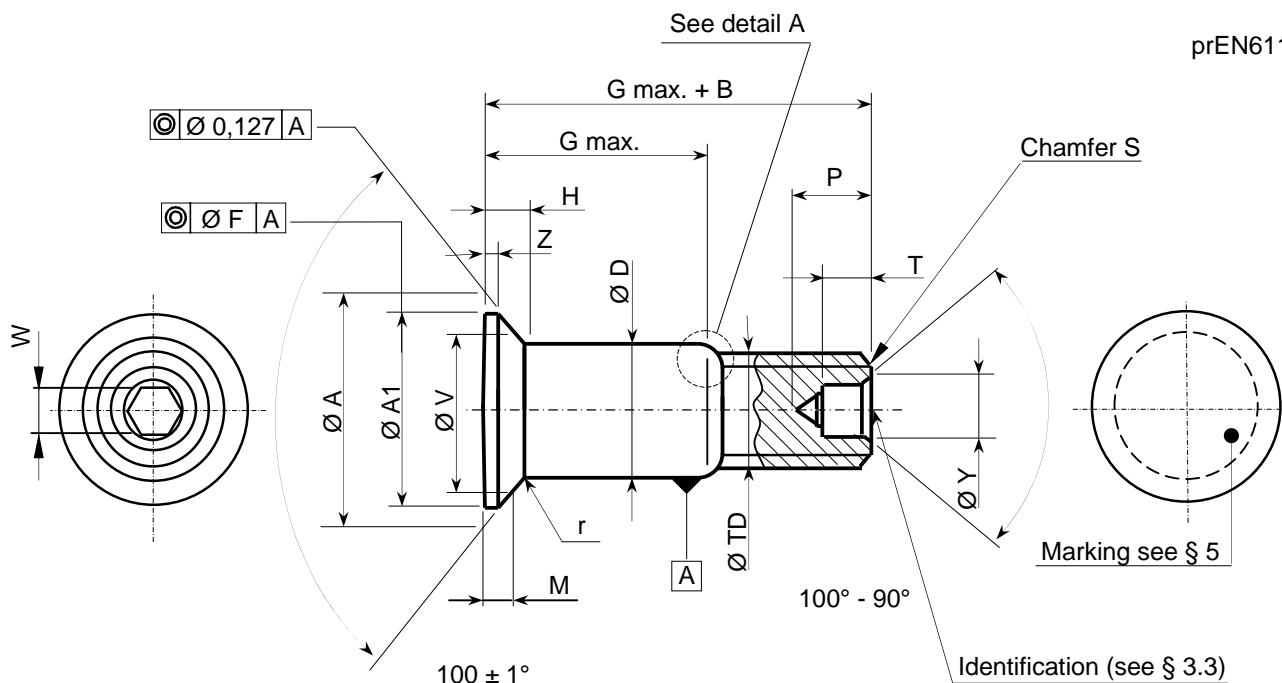
| Dia. code No. | Min. double shear strength (N) | | | Min. tensile strength (N) | | | Max. fatigue load (N) | | |
|---------------|--------------------------------|----------|---------|---------------------------|----------|---------|-----------------------|----------|---------|
| | Steel alloy | Titanium | Inconel | Steel alloy | Titanium | Inconel | Steel alloy | Titanium | Inconel |
| 2 | - | 17 760 | - | - | 7 310 | - | - | 2 340 | - |
| 3 | 27 250 | 23 900 | 31 500 | 11 500 | 10 700 | 14 000 | 4 050 | 4 000 | 4 940 |
| 3A | - | 32 000 | - | - | 14 450 | - | - | 5 050 | - |
| 4 | 47 150 | 41 330 | 54 800 | 22 250 | 20 000 | 27 090 | 7 800 | 7 000 | 9 550 |
| 5 | 73 850 | 64 880 | 85 100 | 33 350 | 30 450 | 40 600 | 11 700 | 10 650 | 14 310 |
| 6 | 106 300 | 93 320 | 123 000 | 48 950 | 45 350 | 59 600 | 17 150 | 15 900 | 21 010 |
| 7 | 144 550 | 127 100 | 167 300 | 63 600 | 58 250 | 77 440 | 22 250 | 20 400 | 27 300 |
| 8 | 188 600 | 165 760 | 218 300 | 88 100 | 80 000 | 107 280 | 30 850 | 28 000 | 37 820 |
| 9 | 238 850 | 209 950 | 276 230 | 109 450 | 100 000 | 126 320 | 38 250 | 35 050 | 44 210 |
| 10 | 294 900 | 259 330 | 341 300 | 137 900 | 129 900 | 167 920 | 48 250 | 45 350 | 59 210 |
| 12 | 424 350 | 373 200* | 491 130 | 213 500 | 186 340 | 259 980 | 74 750 | 65 700 | 91 030 |
| 14 | 573 800 | 493 990* | 664 100 | 289 150 | 250 290 | - | 101 200 | 88 260 | - |
| 16 | 749 500 | 625 970* | 867 450 | 378 100 | 326 340 | - | 132 350 | 115 070 | - |
| 18 | 951 900 | - | - | 487 056 | - | - | 169 024 | - | - |
| 20 | 1 178 800 | - | - | 632 100 | - | - | 214 850 | - | - |
| 22 | 1 423 400 | - | - | 776 200 | - | - | 263 800 | - | - |

Note: - minimum fatigue loads are equal to 10 % of maximum loads
 - this table incorporate preliminary design values
 * ref. paragraph 3.1 for limitation of application

3.5 General characteristics

Surface condition as per ANSI-B46-1.

Thread of steel bolts shall be carried out after heat treatment.



DETAIL A

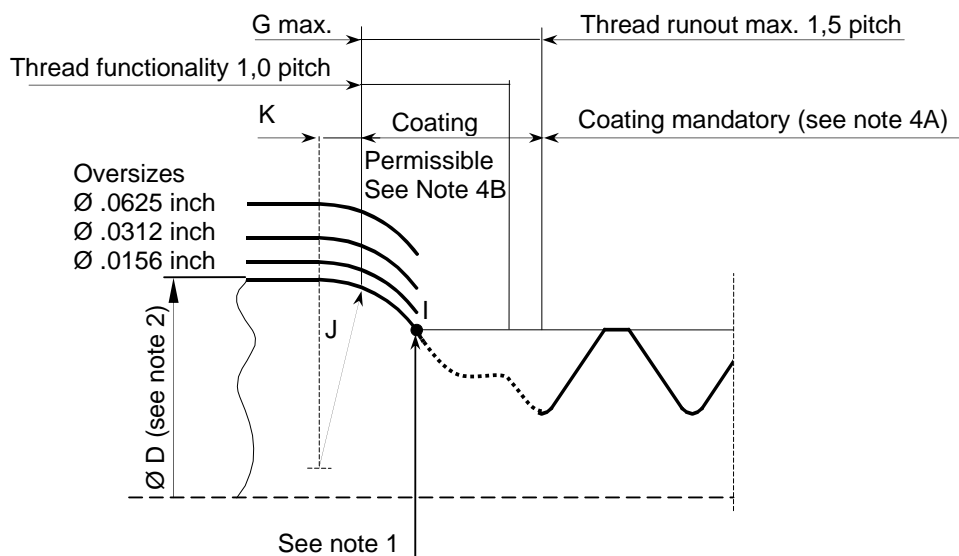


Figure 1: Configuration, dimensions and tolerances

Note 1: For nominal diameter: The diameter measured at point I shall be less than or equal to the max. diameter TD for nominal diameter.

For oversizes diameters: Maximum diameter at point I shall be incremented by .0156, .0312 and .0625 inch for respectively 1st, 2nd and 3rd oversize. The TD diameter stays the same as for nominal diameter.

Note 2: Check concentricity of diameters D (shank) and TD (thread) to avoid interference between the bolt thread and hole when using tight interference fits.

Note 3: The maximum thread runout and functionality for first and second oversizes is incremented by 0,25 mm and 0,5 mm for third oversize.

Note 4: A. Only for B coded fasteners, threads shall be coated with aluminium coating as per EN4473.

B. Only for B coded fasteners, Overspray of EN4473 is permissible in this area.

Dimensions in millimeter.

Table 3: Dimensions, tolerances and mass

Dimensions in millimeter (continued)

| Diameter code No. | Nominal shank diameter | Thread ^{a)} UNJF-3A modified (inch) | Ø A max. | Ø A1 min. | B Ref. | Ø D | | Ø TD | F ^{c)} max. | H ^{d)} Ref. | r |
|-------------------|------------------------|--|----------|-----------|--------|------------------|------------------|------------------|----------------------|----------------------|----------------|
| | | | | | | T or B code | Other code | | | | |
| 2 | 3,97 | .1640-32 ^{b)} | 7,18 | 6,60 | 7,11 | 4,153 4,140 | 4,153 4,128 | 4,051 3,988 | 0,102 | 1,24 | 0,635 0,381 |
| 3 | 4,76 | .1900-32 | 8,32 | 7,44 | 7,37 | 4,813 4,800 | 4,813 4,788 | 4,673 4,597 | 0,127 | 1,42 | 0,762 0,508 |
| 3A | 5,56 | .2160-28 | 9,57 | 8,69 | 7,75 | 5,542 5,529 | 5,542 5,517 | 5,334 5,258 | 0,152 | 1,65 | |
| 4 | 6,35 | .2500-28 | 10,88 | 10,01 | 8,13 | 6,337 6,324 | 6,337 6,312 | 6,197 6,121 | | 1,88 | |
| 5 | 7,94 | .3125-24 | 13,62 | 12,73 | 9,65 | 7,925 7,911 | 7,925 7,899 | 7,772 7,670 | 0,177 | 2,34 | 1,016 0,762 |
| 6 | 9,53 | .3750-24 | 16,29 | 15,42 | 10,67 | 9,512 9,500 | 9,512 9,487 | 9,347 9,245 | 0,203 | 2,79 | |
| 7 | 11,11 | .4375-20 | 18,86 | 17,55 | 12,32 | 11,099 11,087 | 11,099 11,074 | 10,947 10,820 | 0,228 | 3,20 | 1,270 1,016 |
| 8 | 12,70 | .5000-20 | 21,39 | 20,09 | 13,33 | 12,687 12,674 | 12,687 12,662 | 12,522 12,395 | 0,254 | 3,61 | |
| 9 | 14,29 | .5625-18 | 23,62 | 22,38 | 15,24 | 14,262 14,249 | 14,262 14,237 | 14,097 13,970 | | 3,88 | |
| 10 | 15,88 | .6250-18 | 26,52 | 25,27 | 16,26 | 15,849 15,836 | 15,849 15,824 | 15,697 15,545 | | 4,42 | |
| 12 | 19,05 | .7500-16 | 33,02 | 31,78 | 22,73 | 19,024 19,011 | 19,024 18,999 | 18,872 18,719 | 0,304 | 5,82 | |
| 14 | 22,23 | .8750-14 | 38,33 | 37,11 | 25,40 | 22,200 22,187 | 22,200 22,174 | 22,047 21,869 | 0,355 | 6,68 | |
| 16 | 25,40 | 1.0000-12 | 43,69 | 42,44 | 29,46 | 25,375 25,362 | 25,375 25,349 | 25,222 25,044 | | 7,57 | |
| 18 | 28,58 | 1.1250-12 | 49,15 | 47,93 | 33,15 | 28,549 28,537 | 28,549 28,524 | 28,372 28,194 | 0,381 | 8,64 | |
| 20 | 31,75 | 1.2500-12 | 55,00 | 54,00 | 36,54 | 31,725 31,712 | 31,725 31,700 | 31,532 31,232 | | 9,81 | |
| 22 | 34,93 | 1.3750-12 | 61,00 | 60,00 | 39,64 | 34,900 34,887 | 34,900 34,875 | 34,706 34,382 | | 10,96 | |

a) Thread as per AS-8879 except diameter TD.
 b) Thread UNJC-3A.
 c) See figure 1.
 d) Height H is dimensioned based on max. diameter D.

Table 3: Dimensions, tolerances and mass

Dimensions in millimeter (continued)

| Dia. code No. | Nom. shank dia. | Thread ^{a)} UNJF-3A modified (inch) | Z max. | S ^{e)} Ref. | Hexagonal recess | | | M | Ø V | P max. |
|---------------|-----------------|--|--------|----------------------|------------------|------------------|------------------|----------------|------------------|--------|
| | | | | | W | T | Ø Y | | | |
| 2 | 3,97 | .1640-32 ^{b)} | 0,254 | 0,79 | 2,05 2,01 | 2,54 2,04 | 3,02 2,64 | 0,838 0,757 | 5,151 5,146 | 3,43 |
| 3 | 4,76 | .1900-32 | 0,381 | | | | | 0,749 0,668 | 6,502 6,497 | |
| 3A | 5,56 | .2160-28 | | | | | | 0,820 0,744 | 7,574 7,569 | |
| 4 | 6,35 | .2500-28 | 0,381 | 1,19 | 2,46 2,41 | 2,79 2,29 | 3,61 3,10 | 0,576 0,495 | 9,479 9,474 | 3,78 |
| 5 | 7,94 | .3125-24 | | | 3,29 3,23 | 2,99 2,49 | 4,57 4,06 | 0,594 0,503 | 12,169 12,164 | 4,14 |
| 6 | 9,53 | .3750-24 | 0,558 | 1,19 | 4,11 4,02 | 3,68 3,18 | 5,51 5,00 | 0,749 0,657 | 14,473 14,467 | 5,26 |
| 7 | 11,11 | .4375-20 | | | 4,90 4,81 | 4,36 3,86 | 6,43 5,92 | 0,881 0,779 | 16,718 16,713 | 5,97 |
| 8 | 12,70 | .5000-20 | | | 5,69 5,61 | 5,05 4,55 | 7,34 6,83 | 1,280 1,178 | 18,288 18,283 | 6,88 |
| 9 | 14,29 | .5625-18 | 0,558 | 1,59 | 6,49 6,40 | 5,97 5,47 | 8,28 7,77 | 1,353 1,232 | 20,350 20,345 | 8,08 |
| 10 | 15,88 | .6250-18 | | | | | | 1,602 1,496 | 22,611 22,606 | |
| 12 | 19,05 | .7500-16 | | | 8,09 8,00 | 7,34 6,84 | 10,11 9,60 | 1,971 1,818 | 28,254 28,249 | 9,86 |
| 14 | 22,23 | .8750-14 | 0,558 | 1,98 | 9,70 9,60 | 8,94 8,44 | 11,96 11,46 | 1,762 1,579 | 34,137 34,132 | 12,09 |
| 16 | 25,40 | 1.0000-12 | | | 12,95 12,83 | 11,68 11,18 | 15,70 15,19 | 1,567 1,361 | 39,959 39,954 | 15,80 |
| 18 | 28,58 | 1.1250-12 | | | 14,54 14,41 | 13,05 12,55 | 17,60 17,09 | 1,422 1,206 | 45,786 45,781 | 18,14 |
| 20 | 31,75 | 1.2500-12 | 0,558 | 2,10 | 16,13 16,00 | 14,434 13,926 | 19,275 19,075 | 3,870 3,790 | 45,983 45,978 | 19,75 |
| 22 | 34,93 | 1.3750-12 | | 3,21 | 17,73 17,60 | 15,664 15,156 | 21,135 20,935 | 4,735 4,655 | 49,845 49,840 | 21,95 |

a) Thread as per AS-8879 except diameter TD.
 b) Thread UNJC-3A.
 c) See figure 1.
 d) Height H is dimensioned based on max. diameter D.
 e) 37° to 45°.

Table 3: Dimensions, tolerances and mass (concluded)

Dimensions in millimeter

| Dia. code No. | Nom. shank dia. | Thread ^{a)} UNJF-3A modified (inch) | DETAIL A | | MASS Ref. (g) | | | | | | | | |
|---------------|-----------------|--|----------------|--------|-----------------|----------|---------|-------------|----------|---------|--------------------------|----------|---------|
| | | | J | K max. | Head and thread | | | Smooth part | | | Head mass to be deducted | | |
| | | | | | Steel | Titanium | Inconel | Steel | Titanium | Inconel | Steel | Titanium | Inconel |
| 2 | 3,97 | .1640-32 ^{b)} | 2,16 1,65 | 0,33 | - | 0,44 | - | - | 0,10 | - | - | 0,07 | - |
| 3 | 4,76 | .1900-32 | 2,67 1,78 | 0,41 | 1,15 | 0,65 | 1,22 | 0,23 | 0,13 | 0,24 | 0,20 | 0,12 | 0,21 |
| 3A | 5,56 | .2160-28 | 2,92 2,41 | 0,48 | - | 0,94 | - | - | 0,17 | - | - | 0,18 | - |
| 4 | 6,35 | .2500-28 | 3,68 3,18 | 0,53 | 2,40 | 1,36 | 2,53 | 0,39 | 0,22 | 0,42 | 0,40 | 0,27 | 0,49 |
| 5 | 7,94 | .3125-24 | 4,45 3,94 | 0,66 | 4,60 | 2,61 | 4,83 | 0,61 | 0,35 | 0,65 | 0,90 | 0,52 | 0,95 |
| 6 | 9,53 | .3750-24 | 5,97 4,06 | 0,76 | 7,64 | 4,32 | 8,02 | 0,88 | 0,50 | 0,93 | 1,55 | 0,88 | 1,63 |
| 7 | 11,11 | .4375-20 | 7,75 7,24 | 0,89 | 11,73 | 6,64 | 12,32 | 1,20 | 0,69 | 1,27 | 2,42 | 1,37 | 2,55 |
| 8 | 12,70 | .5000-20 | 9,14 7,37 | 0,99 | 17,01 | 9,62 | 17,86 | 1,57 | 0,89 | 1,65 | 3,57 | 2,02 | 3,75 |
| 9 | 14,29 | .5625-18 | 9,78 9,27 | | 23,78 | 13,45 | 24,96 | 1,99 | 1,13 | 2,09 | 4,86 | 2,75 | 5,10 |
| 10 | 15,88 | .6250-18 | 10,03 9,40 | 1,04 | 33,22 | 18,80 | 34,86 | 2,45 | 1,39 | 2,58 | 6,83 | 3,87 | 7,17 |
| 12 | 19,05 | .7500-16 | 10,29 9,53 | 1,12 | 67,27 | 38,06 | 70,62 | 3,54 | 2,00 | 3,71 | 12,95 | 7,33 | 13,60 |
| 14 | 22,23 | .8750-14 | 10,41 9,65 | 1,14 | 100,53 | 58,09 | 108,17 | 4,82 | 2,73 | 5,06 | 20,24 | 11,46 | 21,26 |
| 16 | 25,40 | 1.0000-12 | 11,18 10,41 | | 145,41 | 84,36 | 156,45 | 6,29 | 3,56 | 6,61 | 29,97 | 16,96 | 31,47 |
| 18 | 28,58 | 1.1250-12 | 12,95 10,67 | 1,19 | 214,62 | 121,42 | 225,31 | 7,96 | 4,50 | 8,35 | 43,31 | 24,50 | 45,46 |
| 20 | 31,75 | 1.2500-12 | 11,43 | | 297,05 | 168,07 | 311,85 | 9,83 | 5,56 | 10,32 | 60,72 | 34,35 | 63,74 |
| 22 | 34,93 | 1.3750-12 | 11,18 | 1,22 | 400,56 | 226,63 | 420,52 | 11,89 | 6,73 | 12,48 | 81,64 | 46,19 | 85,71 |

a) Thread as per AS-8879 except diameter TD.

b) Thread UNJC-3A.

Table 4: Dimensions and tolerances

Dimensions in millimeter

| Length code No. ¹⁾ | G ± 0,127 | LENGTH (G max. + B ref.) ± 0,254 | | | | | | | | | | | | | | | |
|-------------------------------|-----------|----------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | | 2 | 3 | 3A | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 12 | 14 | 16 | 18 | 20 | 22 |
| 1 | 1,59 | 8,70 | 8,95 | 9,34 | 9,72 | 11,24 | - | - | - | - | - | - | - | - | - | - | - |
| 2 | 3,18 | 10,29 | 10,54 | 10,93 | 11,31 | 12,83 | 13,85 | - | - | - | - | - | - | - | - | - | - |
| 3 | 4,76 | 11,87 | 12,12 | 12,51 | 12,89 | 14,41 | 15,43 | 17,08 | - | - | - | - | - | - | - | - | - |
| 4 | 6,35 | 13,46 | 13,71 | 14,10 | 14,48 | 16,00 | 17,02 | 18,67 | 19,68 | - | - | - | - | - | - | - | - |
| 5 | 7,94 | 15,05 | 15,30 | 15,69 | 16,07 | 17,59 | 18,61 | 20,26 | 21,27 | 23,18 | - | - | - | - | - | - | - |
| 6 | 9,52 | 16,63 | 16,88 | 17,27 | 17,65 | 19,17 | 20,19 | 21,84 | 22,85 | 24,76 | 25,77 | - | - | - | - | - | - |
| 7 | 11,11 | 18,22 | 18,47 | 18,86 | 19,24 | 20,76 | 21,78 | 23,43 | 24,44 | 26,35 | 27,36 | 33,84 | - | - | - | - | - |
| 8 | 12,70 | 19,81 | 20,06 | 20,45 | 20,83 | 22,35 | 23,37 | 25,02 | 26,03 | 27,94 | 28,95 | 35,43 | 38,10 | - | - | - | - |
| 9 | 14,29 | 21,4 | 21,65 | 22,04 | 22,42 | 23,94 | 24,96 | 26,61 | 27,62 | 29,53 | 30,54 | 37,02 | 39,69 | 43,75 | - | - | - |
| 10 | 15,88 | 22,99 | 23,24 | 23,63 | 24,01 | 25,53 | 26,55 | 28,20 | 29,21 | 31,12 | 32,13 | 38,61 | 41,28 | 45,34 | 49,03 | - | - |
| 11 | 17,46 | 24,57 | 24,82 | 25,21 | 25,59 | 27,11 | 28,13 | 29,78 | 30,79 | 32,70 | 33,71 | 40,19 | 42,86 | 46,92 | 50,61 | 54,00 | - |
| 12 | 19,05 | 26,16 | 26,41 | 26,80 | 27,18 | 28,70 | 29,72 | 31,37 | 32,38 | 34,29 | 35,30 | 41,78 | 44,45 | 48,51 | 52,20 | 55,59 | 58,69 |
| 13 | 20,64 | 27,75 | 28,00 | 28,39 | 28,77 | 30,29 | 31,31 | 32,96 | 33,97 | 35,88 | 36,89 | 43,37 | 46,04 | 50,10 | 53,79 | 57,18 | 60,28 |
| 14 | 22,22 | 29,33 | 29,58 | 29,97 | 30,35 | 31,87 | 32,89 | 34,54 | 35,55 | 37,46 | 38,47 | 44,95 | 47,62 | 51,68 | 55,37 | 58,76 | 61,86 |
| 15 | 23,81 | 30,92 | 31,17 | 31,56 | 31,94 | 33,46 | 34,48 | 36,13 | 37,14 | 39,05 | 40,06 | 46,54 | 49,21 | 53,27 | 56,96 | 60,35 | 63,45 |
| 16 | 25,40 | 32,51 | 32,76 | 33,15 | 33,53 | 35,05 | 36,07 | 37,72 | 38,73 | 40,64 | 41,65 | 48,13 | 50,80 | 54,86 | 58,55 | 61,94 | 65,04 |
| 17 | 26,99 | 34,10 | 34,35 | 34,74 | 35,12 | 36,64 | 37,66 | 39,31 | 40,32 | 42,23 | 43,24 | 49,72 | 52,39 | 56,45 | 60,14 | 63,53 | 66,63 |
| 18 | 28,58 | 35,69 | 35,94 | 36,33 | 36,71 | 38,23 | 39,25 | 40,90 | 41,91 | 43,82 | 44,83 | 51,31 | 53,98 | 58,04 | 61,73 | 65,12 | 68,22 |
| 19 | 30,16 | 37,27 | 37,52 | 37,91 | 38,29 | 39,81 | 40,83 | 42,48 | 43,49 | 45,40 | 46,41 | 52,89 | 55,56 | 59,62 | 63,31 | 66,70 | 69,80 |
| 20 | 31,75 | 38,86 | 39,11 | 39,50 | 39,88 | 41,40 | 42,42 | 44,07 | 45,08 | 46,99 | 48,00 | 54,48 | 57,15 | 61,21 | 64,90 | 68,29 | 71,39 |
| 21 | 33,34 | 40,45 | 40,70 | 41,09 | 41,47 | 42,99 | 44,01 | 45,66 | 46,67 | 48,58 | 49,59 | 56,07 | 58,74 | 62,80 | 66,49 | 69,88 | 72,98 |
| 22 | 34,92 | 42,03 | 42,28 | 42,67 | 43,05 | 44,57 | 45,59 | 47,24 | 48,25 | 50,16 | 51,17 | 57,65 | 60,32 | 64,38 | 68,07 | 71,46 | 74,56 |
| 23 | 36,51 | 43,62 | 43,87 | 44,26 | 44,64 | 46,16 | 47,18 | 48,83 | 49,84 | 51,75 | 52,76 | 59,24 | 61,91 | 65,97 | 69,66 | 73,05 | 76,15 |
| 24 | 38,10 | 45,21 | 45,46 | 45,85 | 46,23 | 47,75 | 48,77 | 50,42 | 51,43 | 53,34 | 54,35 | 60,83 | 63,50 | 67,56 | 71,25 | 74,64 | 77,74 |
| 25 | 39,69 | 46,80 | 47,05 | 47,44 | 47,82 | 49,34 | 50,36 | 52,01 | 53,02 | 54,93 | 55,94 | 62,42 | 65,09 | 69,15 | 72,84 | 76,23 | 79,33 |
| 26 | 41,28 | 48,39 | 48,64 | 49,03 | 49,41 | 50,93 | 51,95 | 53,60 | 54,61 | 56,52 | 57,53 | 64,01 | 66,68 | 70,74 | 74,43 | 77,82 | 80,92 |
| 27 | 42,86 | 49,97 | 50,22 | 50,61 | 50,99 | 52,51 | 53,53 | 55,18 | 56,19 | 58,10 | 59,11 | 65,59 | 68,26 | 72,32 | 76,01 | 79,40 | 82,50 |
| 28 | 44,45 | 51,56 | 51,81 | 52,20 | 52,58 | 54,10 | 55,12 | 56,77 | 57,78 | 59,69 | 60,70 | 67,18 | 69,85 | 73,91 | 77,60 | 80,99 | 84,09 |
| 29 | 46,04 | 53,15 | 53,40 | 53,79 | 54,17 | 55,69 | 56,71 | 58,36 | 59,37 | 61,28 | 62,29 | 68,77 | 71,44 | 75,50 | 79,19 | 82,58 | 85,68 |

(continued)

Table 4: Dimensions and tolerances (concluded)

Dimensions in millimeter

| Length code No. ^{f)} | G ± 0,127 | LENGTH (G max. + B ref.) ± 0,254 | | | | | | | | | | | | | | | |
|-------------------------------|-----------|----------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | 2 | 3 | 3A | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 12 | 14 | 16 | 18 | 20 | 22 |
| 30 | 47,62 | 54,73 | 54,98 | 55,37 | 55,75 | 57,27 | 58,29 | 59,94 | 60,95 | 62,86 | 63,87 | 70,35 | 73,02 | 77,08 | 80,77 | 84,16 | 87,26 |
| 31 | 49,21 | 56,32 | 56,57 | 56,96 | 57,34 | 58,86 | 59,88 | 61,53 | 62,54 | 64,45 | 65,46 | 71,94 | 74,61 | 78,67 | 82,36 | 85,75 | 88,85 |
| 32 | 50,80 | 57,91 | 58,16 | 58,55 | 58,93 | 60,45 | 61,47 | 63,12 | 64,13 | 66,04 | 67,05 | 73,53 | 76,20 | 80,26 | 83,95 | 87,34 | 90,44 |
| 34 | 53,98 | 61,09 | 61,34 | 61,73 | 62,11 | 63,63 | 64,65 | 66,30 | 67,31 | 69,22 | 70,23 | 76,71 | 79,38 | 83,44 | 87,13 | 90,52 | 93,62 |
| 36 | 57,15 | 64,26 | 64,51 | 64,90 | 65,28 | 66,80 | 67,82 | 69,47 | 70,48 | 72,39 | 73,40 | 79,88 | 82,55 | 86,61 | 90,30 | 93,69 | 96,79 |
| 38 | 60,32 | 67,43 | 67,68 | 68,07 | 68,45 | 69,97 | 70,99 | 72,64 | 73,65 | 75,56 | 76,57 | 83,05 | 85,72 | 89,78 | 93,47 | 96,86 | 99,96 |
| 40 | 63,50 | 70,61 | 70,86 | 71,25 | 71,63 | 73,15 | 74,17 | 75,82 | 76,83 | 78,74 | 79,75 | 86,23 | 88,90 | 92,96 | 96,65 | 100,04 | 103,14 |
| 42 | 66,68 | 73,79 | 74,04 | 74,43 | 74,81 | 76,33 | 77,35 | 79,00 | 80,01 | 81,92 | 82,93 | 89,41 | 92,08 | 96,14 | 99,83 | 103,22 | 106,32 |
| 44 | 69,85 | 76,96 | 77,21 | 77,60 | 77,98 | 79,50 | 80,52 | 82,17 | 83,18 | 85,09 | 86,10 | 92,58 | 95,25 | 99,31 | 103,00 | 106,39 | 109,49 |
| 46 | 73,02 | 80,13 | 80,38 | 80,77 | 81,15 | 82,67 | 83,69 | 85,34 | 86,35 | 88,26 | 89,27 | 95,75 | 98,42 | 102,48 | 106,17 | 109,56 | 112,66 |
| 48 | 76,20 | 83,31 | 83,56 | 83,95 | 84,33 | 85,85 | 86,87 | 88,52 | 89,53 | 91,44 | 92,45 | 98,93 | 101,60 | 105,66 | 109,35 | 112,75 | 115,84 |
| 50 | 79,38 | 86,49 | 86,74 | 87,13 | 87,51 | 89,03 | 90,05 | 91,70 | 92,71 | 94,62 | 95,63 | 102,11 | 104,78 | 108,84 | 112,53 | 115,92 | 119,02 |
| 52 | 82,55 | 89,66 | 89,91 | 90,30 | 90,68 | 92,20 | 93,22 | 94,87 | 95,88 | 97,79 | 98,80 | 105,28 | 107,95 | 112,01 | 115,70 | 119,09 | 122,19 |
| 54 | 85,72 | 92,83 | 93,08 | 93,47 | 93,85 | 95,37 | 96,39 | 98,04 | 99,05 | 100,96 | 101,97 | 108,45 | 111,12 | 115,18 | 118,87 | 122,26 | 125,36 |
| 56 | 88,90 | 96,01 | 96,26 | 96,65 | 97,03 | 98,55 | 99,57 | 101,22 | 102,23 | 104,14 | 105,15 | 111,63 | 114,30 | 118,36 | 122,05 | 125,44 | 128,54 |
| 58 | 92,08 | 99,19 | 99,44 | 99,83 | 100,21 | 101,73 | 102,75 | 104,40 | 105,41 | 107,32 | 108,33 | 114,81 | 117,48 | 121,54 | 125,23 | 128,62 | 129,72 |
| 60 | 95,25 | 102,36 | 102,61 | 103,00 | 103,38 | 104,90 | 105,92 | 107,57 | 108,58 | 110,49 | 111,50 | 117,98 | 120,65 | 124,71 | 128,40 | 131,79 | 134,89 |
| 62 | 98,43 | 105,54 | 105,80 | 106,18 | 106,56 | 108,08 | 109,10 | 110,75 | 111,76 | 113,67 | 114,69 | 121,16 | 123,83 | 127,89 | 131,58 | 134,97 | 138,07 |
| 64 | 101,60 | 108,71 | 108,97 | 109,35 | 109,73 | 111,25 | 112,27 | 113,92 | 114,93 | 116,84 | 117,86 | 124,33 | 127,00 | 131,06 | 134,75 | 138,62 | 141,24 |
| 66 | 104,78 | 111,89 | 112,15 | 112,53 | 112,91 | 114,43 | 115,45 | 117,10 | 118,11 | 120,02 | 121,04 | 127,51 | 130,18 | 134,24 | 137,93 | 141,32 | 144,42 |
| 68 | 107,95 | 115,06 | 115,32 | 115,70 | 116,08 | 117,60 | 118,62 | 120,27 | 121,28 | 123,19 | 124,21 | 130,68 | 133,35 | 137,41 | 141,10 | 144,49 | 147,59 |
| 70 | 111,13 | 118,24 | 118,50 | 118,88 | 119,26 | 120,78 | 121,80 | 123,45 | 124,46 | 126,37 | 127,39 | 133,86 | 136,53 | 140,59 | 144,28 | 147,67 | 150,77 |
| 72 | 114,30 | 121,41 | 121,67 | 122,05 | 122,43 | 123,95 | 124,97 | 126,62 | 127,63 | 129,54 | 130,56 | 137,03 | 139,70 | 143,76 | 147,45 | 150,84 | 153,94 |
| 74 | 117,48 | 124,59 | 124,85 | 125,23 | 125,61 | 127,13 | 128,15 | 129,80 | 130,81 | 132,72 | 133,74 | 140,21 | 142,88 | 146,94 | 150,63 | 154,02 | 157,12 |
| 76 | 120,65 | 127,76 | 128,02 | 128,40 | 128,78 | 130,30 | 131,32 | 132,97 | 133,98 | 135,89 | 136,91 | 143,38 | 146,05 | 150,11 | 153,80 | 157,19 | 160,29 |
| 78 | 123,83 | 130,94 | 131,20 | 131,58 | 131,96 | 133,48 | 134,50 | 136,15 | 137,16 | 139,07 | 140,09 | 146,56 | 149,23 | 153,29 | 156,98 | 160,37 | 163,47 |
| 80 | 127,00 | 134,11 | 134,37 | 134,75 | 135,13 | 136,65 | 137,67 | 139,32 | 140,33 | 142,24 | 143,26 | 149,73 | 152,40 | 156,46 | 160,15 | 163,54 | 166,64 |

f) Intermediate grip lengths may be purchased in 1,5875 mm (0.0625 inch) increment if necessary.

Table 5: Oversizes

Dimensions in millimeter (continued)

| Thread ^{a)} UNJF-3A modified (inch) | .015625 inch oversize shank 0,396 mm ^{b)} | | | | | | MASS Ref. (g) | | | | | | | | |
|---|--|--------------|-----------|------------------|------------------|-----------|-----------------|---------------|--------------|-------------|---------------|--------------|-----------------------------|---------------|--------------|
| | Dia. code No. | Nom. dia. | B ref. | Ø D | | H ref. | Head and thread | | | Smooth part | | | Head mass to be deducted | | |
| | | | | T or B code | Other code | | Steel | Tita- nium | Inco- nel | Steel | Tita- nium | Inco- nel | Steel | Tita- nium | Inco- nel |
| .1900-32 | 3X | 5,16 | 7,62 | 5,146 5,134 | 5,146 5,121 | 1,32 | 1,13 | 0,65 | 1,22 | 0,24 | 0,14 | 0,26 | 0,20 | 0,12 | 0,22 |
| .2160-28 | 3AX | 5,95 | 8 | 5,939 5,927 | 5,939 5,914 | 1,50 | - | 0,94 | - | - | 0,18 | - | - | 0,18 | - |
| .2500-28 | 4X | 6,75 | 8,38 | 6,734 6,722 | 6,734 6,708 | 1,73 | 2,37 | 1,37 | 2,55 | 0,41 | 0,23 | 0,45 | 0,46 | 0,27 | 0,49 |
| .3125-24 | 5X | 8,33 | 9,91 | 8,321 8,309 | 8,321 8,296 | 2,21 | 4,52 | 2,61 | 4,86 | 0,64 | 0,37 | 0,69 | 0,90 | 0,52 | 0,97 |
| .3750-24 | 6X | 9,92 | 10,92 | 9,909 9,897 | 9,909 9,883 | 2,67 | 7,49 | 4,32 | 8,06 | 0,92 | 0,53 | 0,99 | 1,54 | 0,89 | 1,66 |
| .4375-20 | 7X | 11,51 | 12,57 | 11,496 11,484 | 11,496 11,471 | 3,07 | 11,61 | 6,70 | 12,49 | 1,24 | 0,71 | 1,34 | 2,41 | 1,39 | 2,59 |
| .5000-20 | 8X | 13,10 | 13,58 | 13,084 13,072 | 13,084 13,058 | 3,48 | 16,35 | 9,43 | 17,59 | 1,61 | 0,93 | 1,73 | 3,55 | 2,05 | 3,82 |
| .5625-18 | 9X | 14,68 | 15,49 | 14,658 14,646 | 14,658 14,633 | 3,73 | 23,35 | 13,47 | 25,12 | 2,02 | 1,17 | 2,18 | 4,83 | 2,78 | 5,20 |
| .6250-18 | 10X | 16,27 | 16,51 | 16,246 16,234 | 16,246 16,220 | 4,27 | 32,63 | 18,83 | 35,11 | 2,50 | 1,45 | 2,70 | 6,79 | 3,92 | 7,31 |
| .7500-16 | 12X | 19,45 | 22,98 | 19,421 19,409 | 19,421 19,396 | 5,64 | 66,01 | 37,60 | 71,02 | 3,59 | 2,05 | 3,87 | 12,89 | 7,34 | 13,87 |
| .8750-14 | 14X | 22,62 | 25,65 | 22,596 22,584 | 22,596 22,571 | 6,53 | 100,53 | 57,26 | 108,17 | 4,88 | 2,78 | 5,24 | 20,14 | 11,47 | 21,67 |
| 1.0000-12 | 16X | 25,80 | 29,72 | 25,771 25,759 | 25,771 25,746 | 7,42 | 145,41 | 82,83 | 156,45 | 6,36 | 3,63 | 6,85 | 29,83 | 16,99 | 32,10 |
| 1.1250-12 | 18X | 28,97 | 33,40 | 28,945 28,933 | 28,945 28,920 | 8,48 | 214,62 | 121,42 | 225,31 | 8,02 | 4,56 | 8,47 | 43,31 | 24,50 | 45,46 |
| 1.2500-12 | 20X | 32,15 | 36,79 | 32,121 32,109 | 32,121 32,097 | 9,64 | 297,05 | 168,07 | 311,85 | 9,95 | 5,63 | 10,45 | 60,72 | 34,35 | 63,74 |
| 1.3750-12 | 22X | 35,32 | 39,89 | 35,296 35,284 | 35,296 35,272 | 10,80 | 400,56 | 226,63 | 420,52 | 12,03 | 6,81 | 12,62 | 81,64 | 46,19 | 85,71 |

a) Thread as per AS-8879 except diameter TD.
b) For dia. code 3X, shank diameter is incremented by .01311 inch (0.333 mm)

Table 5: Oversizes

Dimensions in millimeter (continued)

| Thread ^{a)} UNJF-3A modified (inch) | .03125 inch oversize shank 0,792 mm | | | | | | MASS Ref. (g) | | | | | | | | | |
|---|-------------------------------------|--------------|-----------|------------------|------------------|-----------|-----------------|---------------|--------------|-------------|---------------|--------------|-----------------------------|---------------|--------------|---|
| | Dia. code No. | Nom. dia. | B ref. | Ø D | | H ref. | Head and thread | | | Smooth part | | | Head mass to be deducted | | | |
| | | | | T or B code | Other code | | Steel | Tita- nium | Inco- nel | Steel | Tita- nium | Inco- nel | Steel | Tita- nium | Inco- nel | |
| .1900-32 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| .2160-28 | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - | - |
| .2500-28 | 4Y | 7,14 | 8,38 | 7,130 7,118 | 7,130 7,104 | 1,52 | 2,37 | 1,37 | 2,55 | 0,44 | 0,25 | 0,47 | 0,46 | 0,27 | 0,49 | |
| .3125-24 | 5Y | 8,73 | 9,91 | 8,717 8,705 | 8,717 8,692 | 2,01 | 4,52 | 2,61 | 4,86 | 0,67 | 0,39 | 0,73 | 0,90 | 0,52 | 0,97 | |
| .3750-24 | 6Y | 10,32 | 10,92 | 10,305 10,293 | 10,305 10,279 | 2,46 | 7,49 | 4,32 | 8,06 | 0,95 | 0,55 | 1,03 | 1,54 | 0,89 | 1,66 | |
| .4375-20 | 7Y | 11,91 | 12,57 | 11,892 11,880 | 11,892 11,867 | 2,90 | 11,61 | 6,70 | 12,49 | 1,29 | 0,74 | 1,38 | 2,41 | 1,39 | 2,59 | |
| .5000-20 | 8Y | 13,49 | 13,58 | 13,480 13,468 | 13,480 13,454 | 3,25 | 16,35 | 9,43 | 17,59 | 1,66 | 0,96 | 1,79 | 3,55 | 2,05 | 3,82 | |
| .5625-18 | 9Y | 15,08 | 15,49 | 15,055 15,043 | 15,055 15,029 | 3,56 | 23,35 | 13,47 | 25,12 | 2,08 | 1,20 | 2,24 | 4,83 | 2,78 | 5,20 | |
| .6250-18 | 10Y | 16,67 | 16,51 | 16,642 16,630 | 16,642 16,617 | 4,09 | 32,63 | 18,83 | 35,11 | 2,56 | 1,48 | 2,76 | 6,79 | 3,92 | 7,31 | |
| .7500-16 | 12Y | 19,84 | 22,98 | 19,817 19,805 | 19,817 19,792 | 5,46 | 66,01 | 37,60 | 71,02 | 3,67 | 2,09 | 3,95 | 12,89 | 7,34 | 13,87 | |
| .8750-14 | 14Y | 23,02 | 25,65 | 22,992 22,980 | 22,992 22,967 | 6,10 | 100,53 | 57,26 | 108,17 | 4,96 | 2,83 | 5,33 | 20,14 | 11,47 | 21,67 | |
| 1.0000-12 | 16Y | 26,19 | 29,72 | 26,167 26,155 | 26,167 26,142 | 7,24 | 145,41 | 82,83 | 156,45 | 6,46 | 3,68 | 6,95 | 29,83 | 16,99 | 32,10 | |
| 1.1250-12 | 18Y | 29,37 | 33,40 | 29,342 29,330 | 29,342 29,317 | 8,31 | 214,62 | 121,42 | 225,31 | 8,13 | 4,63 | 8,58 | 43,31 | 24,50 | 45,46 | |
| 1.2500-12 | 20Y | 32,54 | 36,79 | 32,517 32,505 | 32,517 32,493 | 9,48 | 297,05 | 168,07 | 311,85 | 10,08 | 5,70 | 10,58 | 60,72 | 34,35 | 63,74 | |
| 1.3750-12 | 22Y | 35,72 | 39,89 | 35,692 35,680 | 35,692 35,668 | 10,63 | 400,56 | 226,63 | 420,52 | 12,16 | 6,88 | 12,76 | 81,64 | 46,19 | 85,71 | |

a) Thread as per AS-8879 except diameter TD.

Table 5: Oversizes

Dimensions in millimeter (continued)

| Thread ^{a)} UNJF-3A modified (inch) | .0625 inch oversize shank 1,5875 mm | | | | | | | | | | |
|---|-------------------------------------|--------------|-----------|------------------|------------------|-----------|-------------|--------------|-----------|----------------|------------------|
| | Dia. code No. | Nom. dia. | B ref. | Ø D | | H ref. | Ø A max. | Ø A1 min. | Z max. | M | Ø V |
| | | | | T or B code | Other code | | | | | | |
| .6250-18 | 10Z | 17,46 | 16,76 | 17,437 17,424 | 17,437 17,412 | 5,31 | 30,09 | 28,76 | 0,558 | 3,140 3,060 | 22,611 22,606 |
| .7500-16 | 12Z | 20,64 | 23,23 | 20,612 20,599 | 20,612 20,587 | 6,24 | 35,49 | 34,16 | | 3,036 2,909 | 28,254 28,249 |
| .8750-14 | 14Z | 23,81 | 25,90 | 23,787 23,775 | 23,787 23,762 | 7,18 | 40,90 | 39,57 | | 2,837 2,716 | 34,137 34,132 |
| 1.0000-12 | 16Z | 26,99 | 29,96 | 26,962 26,950 | 26,962 26,937 | 8,11 | 46,29 | 44,96 | | 2,656 2,529 | 39,959 39,954 |

a) Thread as per AS-8879 except diameter TD.

Table 5: Oversizes (concluded)

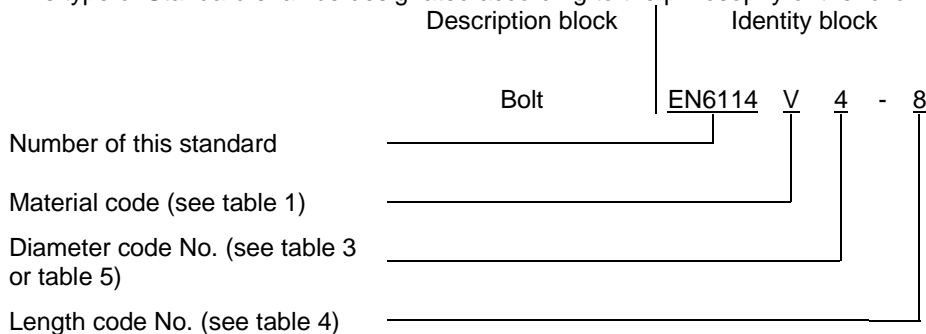
Dimensions in millimeter

| Thread ^{a)} UNJF-3A modified (inch) | MASS Ref. (g) | | | | | | | | |
|---|-----------------|----------|---------|-------------|----------|---------|--------------------------|----------|---------|
| | Head and thread | | | Smooth part | | | Head mass to be deducted | | |
| | Steel | Titanium | Inconel | Steel | Titanium | Inconel | Steel | Titanium | Inconel |
| .6250-18 | 32,63 | 18,83 | 35,11 | 2,68 | 1,55 | 2,89 | 6,79 | 3,92 | 7,31 |
| .7500-16 | 66,01 | 37,60 | 71,02 | 3,81 | 2,18 | 4,11 | 12,89 | 7,34 | 13,87 |
| .8750-14 | 100,53 | 57,26 | 108,17 | 5,13 | 2,93 | 5,52 | 20,14 | 11,47 | 21,67 |
| 1.0000-12 | 145,41 | 82,83 | 156,45 | 6,65 | 3,79 | 7,16 | 29,83 | 16,99 | 32,10 |

a) Thread as per AS-8879 except diameter TD.

4 Designation

This type of Standard shall be designated according to the philosophy of the following example:



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5 Marking

Parts shall be marked as per EN2424, style B.
Marking shall be recessed with max. depth of 0,25 mm.

6 Technical specification

EN6116.

RECORD OF REVISIONS

| Edition | Clause modified | Description of modification |
|------------|--|---|
| 1 06/02 | | New standard. |
| 2 07/02 | § 2 Tables 3, 4 and 5 | Normative references updated. Introduction of diameter code Nos 20 and 22. Data for P max. |
| 3 08/03 | § 3.1 Table 2 | Limitation of application: Large diameter (-12 to -18) titanium fasteners Addition of mechanical characteristics for -12 Inconel fasteners. |
| 4 07/04 | § 3.1 Tables 3 and 5 | Limitation of grip length. Addition of third oversize. |
| 5 01/08 | § 3.2 Table 1 Table 2 § 3.5 Figure 1 Table 3 Table 5 | New references added. Code B added. Reference updated. Inconel mechanical properties updated for dia. code No. 9. Drawing with oversizes updated. Note 4 added for code B. Note 1 modified. Headings and masses updated. Headings updated. Mass added for oversizes dimensions. |
| | | |