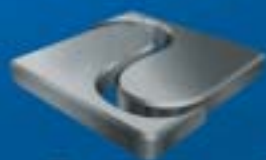




POGGIPOLINI
T I T A N I U M



V I T I & R A C C O R D I
F A S T E N E R S & F I T T I N G S



POGGIPOLINI

T I T A N I U M



TITANIUM – A17075

La Poggipolini srl opera nel settore del TITANIO dal 1975. Attualmente occupa 53 dipendenti su un'area coperta di 3.500 m².

Dispone di un moderno parco macchine per tornitura di precisione, fresatura, rullatura di filetti a freddo e a caldo, piegatura di lamiera e saldatura a TIG in cabina sottovuoto.

A fianco delle più avanzate attrezzature di controllo e misura, opera anche un reparto di consulenza ed assistenza tecnica e di progettazione con stazioni CAD/CAM.

Nel 1994 la Poggipolini srl ha ottenuto la prima qualifica aeronautica AQAP-4, nel 1997 la certificazione ISO 9002 da parte dell'Istituto DEN NORSKE VERITAS.

Poggipolini srl has been operating in the TITANIUM sector since 1975. At the present time it employs 53 people and has a factory of 3,500 m².

It has modern machines for precision turning, milling, cold and hot thread rollings, sheet bending and TIG chamber welding.

Along with the most advanced control and measurement equipment available, or consulting department offers design and technical assistance using advanced CAD/CAM applications.

In 1994 Poggipolini srl obtained its first Aeronautical qualification AQAP-4, in 1997 obtained the ISO 9002 certification from the DEN NORSKE VERITAS Institute.



TITANIUM AND TITANIUM ALLOYS

Titanium is available on the market as commercially pure or as alloys.

Commercially pure titanium has a hexagonal Alfa type crystalline structure and increases its mechanical resistance (ultimate strength psi) with each grade classification (from grade 1 to grade 5). With the addition of alloying elements such as aluminium, vanadium, and molybdenum, titanium alloys are created which have cubic Alfa + Beta crystalline structures. These Alfa + Beta alloys are the most used commercially due to their ductile-weight-mechanical resistance relationships. Of these, the most used titanium alloys are 6Al4V (grade 5) and 3A125V (grade 9) which are used to make bolts, mechanical components and chassis. Schedule # 1 shows the mechanical properties for the titanium alloy 6Al4V in comparison to the most commonly used structural materials found on the market.

TITANIUM APPLICATIONS

Titanium and its alloys are used in all those fields in which one or more of the following factors are important:

- High strength-to-weight ratio
- Mechanical resistance
- Corrosive resistance
- Electrical resistivity

PRINCIPAL TITANIUM MARKETS AND GRADES USED

- Aeronautics and ultra light flight (grade 5)
- Motoring, motor-cycling and cycling (grade 5)
- Oil-chemical condensers and exchangers (grade 2.3.4)
- Turbines and turbo jet engines (grade 2)
- Modelling and accessories (grade 5)
- Restoration and preservation of monumental structures (grade 2)

Below is a list of the most commonly found milled titanium forms

- Titanium bars (2 gr. & 5 gr.) with Ø from 5 to 120 mm
- Titanium sheets (2 gr. & 5 gr.) from 0.9 to 10 mm in thickness
- Titanium pipes (2 gr.) welded, (5 gr.) seamless
- Titanium wire (2 gr. & 5 gr.) with Ø from 1 to 4 mm

Other forms can be obtained upon special request.

Schedule 1 – Comparison between mechanical properties of titanium alloy Ti Al6-V4 and other structural materials

| | | Ti Al6-V4 | Carbon Steel | Alloy Steel | Stainless Steel | Aluminium Alloy (2024) | Super Alloys |
|-----------------------|--------------------|-----------|--------------|-------------|-----------------|------------------------|--------------|
| Density | g/cm ³ | 4.4 | 7.8 | 7.8 | 7.9 | 3.0 | 8.9 |
| UTS | Kg/mm ² | 92 | 45 | 70 | 60 | 45 | 54 |
| Yeld strength | Kg/mm ² | 84 | 30 | 55 | 29 | 35 | 32 |
| Elongation | % | 12 | 30 | 25 | 54 | 9 | 15 |
| Modulus of elasticity | Kg/mm ² | 11.000 | 21.090 | 21.490 | 20.300 | 7.100 | 20.000 |

Avarage value

The titanium that is used in the manufacturing of the products shown in this catalogue is the alloy Ti6Al4V, which is composed of 6% Aluminium and 4% Vanadium. This material is purchased in accordance with industry specifications (ASTM B-348 or AMS 4928) and is accompanied with certifications regarding chemical composition and mechanical characteristics.

DRAWN, ANNEALED TITANIUM 6AI-4V

CHEMICAL ANALYSIS: TYPICAL VALUES

| | | |
|----------|-------------|------------|
| AL. | min. – max. | 5.5 – 6.5 |
| V. | min. – max. | 3.5 – 4.5 |
| C. | | 0.08 max. |
| Fe | | 0.25 max. |
| NITROGEN | | 0.05 max. |
| HYDROGEN | | 0.015 max. |
| OXYGEN | | 0.13 max. |
| TITANIUM | | REMAINDER |

MECHANICAL CHARACTERISTICS: TYPICAL VALUES

| | |
|---|----------|
| Tensile strength min. – max. kp/mm ² | 90 – 105 |
| Elastic Limit 0.2% kp/mm ² | 83 – 88 |
| Elongation % min. | 10 |
| VICKERS HARDNESS | 320 |

If necessary, values appearing in the table of mechanical characteristics may be increased by means of a special age hardening treatment (which can be used to the nth degree, more or less), in order to favour the resistance requirements of the part in question. Our technicians remain at your complete disposition regarding a more detailed explanation of this treatment.

NOTE: The screws appearing in the present catalogue are obtained by electroplating the heads and rolling the threads. Special screw and linkage work in general can also be done at the client's request. Anti-wear lining: E.G. Ceramic lining – Tungsten carbide etc. – Wolfran and Titanium nitrides, can be done to the client's request and design, after due consultation with our expert technicians.

Such particulars may include:
Shock absorber liners and rods, Con-rod shim adjustment, Valve stems, Primary and secondary gearshafts, Gearshift forks, Camshafts, Valve retainer caps, etc.

TITANIUM SURFACE TREATMENT USING PVD

The coating is applied by the PVD ion plating process at the max. temperature of 500°C. This surface treatment must be the last step in the manufacturing cycle of a finished part (either tool or machine component).

The following requirements must be satisfied when applying the coating:

MATERIAL CHARACTERISTICS

The process can only be made on metal parts. Steel tools must undergo a tempering treatment at a temperature of 500°C. Cold-machining steels must undergo at least three tempering treatments for secondary maximum hardness. Brazing materials should not contain cadmium or zinc. Brazing temperature must not exceed 600°C and brazing should not show any cavities or cracks due to shrinkage or contain flux residuals. Parts should not be assembled. Delivery detached parts.

SURFACE CHARACTERISTICS

Surface finish should be as accurate as possible, to ensure the best final result:
No residual of grinding operation
No remnants of diamond paste
No presence of "white coating" due to electroerosion.
Surface must be clear (without residual of hardening) and free from surface treatments based on nickel, chromium, zinc, etc., or not blued, nitrided, sulphided, etc.
No remnants of rust, paint, detergents, sands, or packing compounds such as wax, ribbons, etc.
Cutters must show no burrs. Surfaces must be oiled immediately after machining in order to prevent any oxidation.

PHYSICAL PROPERTIES

| | |
|--|--------|
| Density to X-rays (grs/sq.cm) | 5.43 |
| Melting point (°C) | 2930 |
| Thermal conductivity (Wm ⁻¹ K ⁻¹) | 19 |
| Microhardness (HV 0.03) | 2300 |
| Modulus of elasticity (103 Kp/sq.mm.) | 25.6 |
| Spec. electrical resistivity (10 ⁻⁶ Ω cm) | 25 |
| Density (grs/sq.cm.) | 5.21 |
| Colour | yellow |
| Standard thickness | 3.4 |



MULTIPHASE SUPERALLOYS

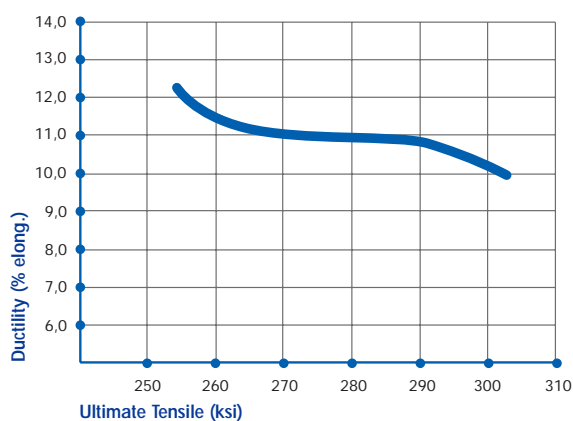
Along with Titanium and Al 7075, another material which is used in our production is a MULTIPHASE superalloy (often known as AMS 5844). This material is used in our (Special Parts) division where high strength mechanical properties and elevated corrosion resistance are fundamental.

APPLICATIONS

This MULTIFASE superalloy is most often found when working with the following applications:

- Connecting Rod applications (Car and Motorcycle racing)
- High-Performance fasteners or Automotive Engines
- Nautical Equipment
- Aerospace
- Aeronautical
- Petrochemical
- Undersea Equipment

This graph shows this particular MULTIPHASE superalloy's ductility-strength ratio



CHEMICAL and PHYSICAL characteristics

| | |
|------------|-----|
| Nickel | 35% |
| Cobalt | 35% |
| Chromium | 20% |
| Molybdenum | 10% |

The term MULTIPHASE is used due to the fact that part of the crystal structure matrix of this alloy is transformed through cold working where face-centred cubic crystal structure (fcc) is manipulated into a hexagonal closed-packed one (hcp).

This MULTIPHASE reaction occurs because of the alloy's high cobalt content. The presence of these two distinct crystal structure, along with aged hardening are the reason why this alloy has unique physical properties.

PROPERTIES

- High Strength
- High Corrosion Resistance
- Operating Temperature 750°F
- High Ductility



APPENDIX 1: PROPERTIES OF TITANIUM GRADES

| Designation | | Commercially Pure Grade 1 | Commercially Pure Grade 2 | Commercially Pure Grade 3 | Commercially Pure Grade 4 |
|--|---|---|--|---|---|
| Chemical Composition (percent) | (Max. values unless range is shown) | 0.08 C; 0.20 Fe; 0.03 N, 0.18 O, 0.015 H (sheet) 0.0125 H (bar) 0,0100 H (billet) | 0.10 C; 0.30 Fe; 0.03 N, 0.25 O, 0.015 H (sheet) 0.0125 H (bar) 0,0100 H (billet) | 0.10 C; 0.30 Fe; 0.05 N, 0.35 O, 0.015 H (sheet) 0.0125 H (bar) 0,0100 H (billet) | 0.10 C; 0.50 Fe; 0.053 N, 0.40 O, 0.015 H (sheet) 0.0125 H (bar) 0,0100 H (billet) |
| Mill Annealed Tensile Properties | | Guar.R.T. Min. | Guar.R.T. Min. | Guar.R.T. Min. | Guar.R.T. Min. |
| Ultimate Strength (psi) | | 35.000 | 50.000 | 65.000 | 80.000 |
| Yield Strength (psi) | | 125.000 | 40.000 | 55.000 | 70.000 |
| 0.2% offset | | | | | |
| Elongation in 2" (%) | | 24 | 20 | 18 | 15 |
| Sheet > 0.025 thick | | | | | |
| Reduction in Area (%) Bar | | 30 | 30 | 30 | 25 |
| Mechanical Properties (Typical) | | | | 800°F | 800°F |
| Stress to Rupture | Stress (psi) | | | 20.000 | 17.000 |
| In Time shown | Time (hrs.) | | | 100 | 450 |
| Stress and Time to Produce Elongation | Stress (psi) | | | | 8.000 |
| Shown (creep) | Time (hrs.) | | | | 150 |
| Charpy V-Notch impact (ft.-lbs.) Rm. Temp. | Creep (%) | | 25-40 | 20-40 | 15 |
| Bend Radius | Under 0.070" thick 0.070" end over | 1.5 x Thickness 2.0 x Thickness | 2.0 x Thickness 2.5 x Thickness | 2.0 x Thickness 2.5 x Thickness | 2.5 x Thickness 3.0 x Thickness |
| Welded Bend Radius | | 1.5 – 2.0 x Thickness | 2.0 – 3.0 x Thickness | 2.0 – 3.0 x Thickness | 3.0 – 5.0 x Thickness |
| Hardness | | RB 70 | RB 80 | RB 90 | RB 100 |
| Physical Properties | | | | | |
| Beta Transus (F±25) | | 1630 | 1675 | 1690 | 1740 |
| Coefficient of Thermal expansion (10-6in/in/F) | 32-212 32-600 32-1000 32-1200 32-1500 | 4.8 5.1 5.4 5.6 5.6 | 4.8 5.1 5.4 5.6 5.6 | 4.8 5.1 5.4 5.6 5.6 | 4.8 5.1 5.4 5.6 5.6 |
| Density (lbs/cu.in.) | | 0.163 | 0.163 | 0.163 | 0.163 |
| Melting Point, Approx. (F) | | 3040 | 3020 | 3020 | 3020 |
| Electrical Resistivity R.T. (Microhms - cm) | | 56 | 56 | 56 | 60 |
| Modulus of Elasticity Tension (106 psi) | | 14.9 | 14.9 | 15.0 | 15.1 |
| Modulus of Elasticity Torsion (106 psi) | | 6.5 | 6.5 | 6.5 | 6.5 |
| Thermal Conductivity (Btu/hr./sq.ft./F/Ft.) | | 9.0 Rm. Temp. | 9.5 Rm. Temp. | 9.5 Rm. Temp. | 9.8 Rm. Temp. |
| Specific Heat (Btu/lb./F) Rm. Temp. | | 0.124 | 0.124 | 0.125 | 0.129 |
| Weldability | | GOOD | GOOD | GOOD | GOOD |
| Annealing | Full | 1300/30Min.- 2Hrs. Air Cool | 1300/30Min.- 2Hrs. Air Cool | 1300/30Min.- 2Hrs. Air Cool | 1300/30Min.- 2Hrs. Air Cool |
| Temp. (F) | Stress Relief | 1000/1100/30Min. Air Cool | 1000/1100/30Min. Air Cool | 1000/1100/30Min. Air Cool | 1000/1100/30Min. Air Cool |
| Forging* | Blocking | 1600-1700 | 1600-1700 | 1600-1700 | 1600-1700 |
| Temp. (F) | Finish | 1500-1600 | 1500-1600 | 1500-1600 | 1500-1600 |
| Available Mill Products | | Bar; Billet; Extrusions; Plate; Sheet; Strip; Wire; Pipe; Tubing | Bar; Billet; Castings; Extrusions; Plate; Sheet; Strip; Wire; Pipe; Tubing | Bar; Billet; Castings; Extrusions; Plate; Sheet; Strip; Wire; Pipe; Tubing | Bar; Billet; Extrusions; Plate; Sheet; Strip; Wire; Pipe; Tubing |
| Typical Applications | | For corrosion resistance in the chemical and marine industries and where maximum ease of formability is desired. | For corrosion resistance in the chemical and marine industries and where a higher strength level and ease of formability is desired. | For corrosion resistance in the chemical and marine industries. | For corrosion resistance in the chemical and marine industries. |
| Industry Specifications | | ASTM B265 Gr 1 ASTM B348 Gr 1 ASTM B337 Gr 1 ASTM B338 Gr 1 ASTM B381 Gr 1 ASTM F67 Gr 1 ASTM F467 Gr 1 ASTM F468 Gr 1 | AMS 4902 ASTM B265 Gr 2 ASTM B337 Gr 2 ASTM B338 Gr 2 ASTM B348 Gr 2 ASTM B367 Gr 2 ASTM B381 Gr 2 ASTM F67 Gr 2 ASTM F46 Gr 2 ASTM F468 Gr 2 | AMS 4900 ASTM B265 Gr 3 ASTM B337 Gr 3 ASTM B338 Gr 3 ASTM B348 Gr 3 ASTM B367 Gr 3 ASTM B381 Gr 3 ASTM F67 Gr 3 | AMS 4901; 4921 ASTM B348 Gr 4 ASTM B381 Gr 4 ASTM F67 Gr 4 ASTM F467 Gr 4 ASTM F468 Gr 4 |

*Maximum Material Temperature in Furnace

APPENDIX 1: PROPERTIES OF TITANIUM GRADES (CONTINUED)

| Designation | | Alpha-Beta Alloy Ti-6Al-4V | Alpha-Beta Alloy Ti-3Al-2.5V | Alpha-Beta Alloy Ti-6Al-6V-2Sn | Beta Alloy Ti-3Al-8V-6Cr-4Zr-4Mo |
|--|-------------------------------------|---|--|---|--|
| Chemical Composition (percent) | (Max. values unless range is shown) | 0.08 C; 0.25 Fe; 0.25 N; 0.020 O; 5.50/6.75 Al; 3.5/4.5 V; 0.0150 H (sheet) 0.0125 H (bar); 0.01 H (bill) | 0.05 C; 0.02 N; 0.30 Fe; 0.12 O; 2.5/3.5 Al; 2.0/3.0 V 0.0150 H (sheet) 0.0125 H (bar) | 0.05 C; 0.04 N; 0.20 O; 5.0/6.0 Al; 0.5/6.0 V; 1.5/2.5 Sn; 0.35/1.0 Fe; 0.35/1.0 Cu; 0.015 H2 (bar, sheet, plate) | 0.05 C; 0.03 N; 0.14 O; 3.0/4.0 Al; 7.5/8.5 V; 5.5/6.5 Cr; 3.5/4.5 Zr; 3.5/4.5 Mo |
| Mill Annealed Tensile Properties | | Guar.R.T. Min. | Guar.R.T. Min. Mill Ann. C.W.S.R.** | Guar.R.T. Min. | Guar.R.T. Min. (S.T.A.) 850- 1000° F8Hrs.Min.Air.Cool |
| Ultimate Strength (psi) | | 130.000 | 90.000 | 125.000 | 150.000 180.000 |
| Yield Strength (psi) .0.2% offset | | 1250.000 | 75.000 | 105.000 | 140.000 170.000 |
| Elongation in 2" (%) Sheet>0.025 thick | | 10 | 15 | 10 | 10 6 |
| Reduction in Area (%) Bar | | 25 | | | 20 |
| Mechanical Properties (Typical) | | 600°F | 600°F | 600°F | |
| Stress to Rupture | Stress (psi) | 98.000 | 50.000 | | |
| In Time shown | Time (hrs.) | 1.000 | 100 | | |
| Stress and Time to Produce Elongation | Stress (psi) | 70.000 | | 100.000 | |
| Shown (creep) | Time (hrs.) | 1.000 | | 150 | |
| Charpy V-Notch impact (ft.-lbs.)Rm. Temp. | Creep (%) | 0.1 | | 0.2 | |
| Bend Radius | | 10-14 | | 10-14 | |
| | Under 0.070° thick | 4.5 x Thickness | | 4.0 x Thickness | 3.0 (S/t only) |
| | 0.070° end over | 5.0 x Thickness | | 4.5 x Thickness | 3.5 (S/t only) |
| Welded Bend Radius | | 6.0 – 10.0 x Thickness | | | |
| Hardness | | RC 36 | | RC 38 | |
| Physical Properties | | | | | |
| Beta Transus (F±25) | | 1830 | 1715 | 1735 | 1460 |
| Coefficient of Thermal expansion (10-6in/in/F) | 32-212 | 5.0 | 5.3 | 5.0 | 4.9 |
| | 32-600 | 5.3 | 5.5 | 5.2 | 5.2 |
| | 32-1000 | 5.6 | 5.5 | 5.3 | 5.4 |
| | 32-1200 | 5.9 | | | |
| | 32-1500 | 6.1 | | | |
| Density (lbs/cu.in.) | | 0.160 | 0.162 | 0.164 | 0.174 |
| Melting Point, Approx. (F) | | 3200 | 3100 | 3100 | 3000 |
| Electrical Resistivity R.T. (Microhms – cm) | | 171 | 126 | 157 | |
| Modulus of Elasticity Tension (106 psi) | | 16.5 | 15.0 | 16.5 | 15.0 |
| Modulus of Elasticity Torsion (106 psi) | | 6.1 | | | |
| Thermal Conductivity (Btu/hr./sq.ft./F/Ft.) | | 3.9 Rm. Temp. | | 4.2 Rm. Temp. | |
| Specific Heat (Btu/lb./F) Rm. Temp. | | 0.135 | | 0.155 | |
| Weldability | | FAIR | GOOD | LIMITED | FAIR |
| Annealing | Full | 1300-1450/15Min.-2Hrs. Air Cool | 1200-1400/1Hr. Air Cool | 1330/1550/2Hrs. Air Cool or FC | 1500/30Min. Air Cool |
| Temp. (F) | Stress Relief | 900/1200/1-4. Hrs. Air Cool | 1000-1200/1Hr Air Cool | 1100/2Hrs Air Cool | 1000/1100/30Min. Air Cool |
| Forging* | Blocking | 1750-1800 | 1600-1650 | 1660-1750 | 1600-1700 |
| Temp. (F) | Finish | 1650-1750 | 1550-1600 | 1550-1650 | 1600-1700 |
| Available Mill Products | | Bar; Billet; Castings; Extrusions; Plate; Sheet; Strip; Wire | Bar; Tubing; Strip | Bar; Billet; Extrusions; Plate; Sheet; Wire | Bar; Billet; Extrusions; Plate; Sheet; Wire; Pipe; Castings |
| Typical Applications | | Jet engine components; air frame forgings; sheet; plate; air frame components | Air frame and jet engines; hydraulic and fuel lines | Rocket engine case air frame applications including forgings, fasteners | Air frame high strength fastener rivets, torsion bars, spring, pipe for oil industry and geothermal applications |
| Industry Specifications | | AMS 4911/28/30/31/35 ASM 4965/67/85/91 ASTM B265 Gr 5 ASTM B348 Gr 5 ASTM B367 Gr 5 ASTM B381 Gr 5 ASTM F467 Gr 5 ASTM F468 Gr 5 | AMS 4943; 4944; 4945 ASTM B337 Gr 9 ASTM B338 Gr 9 ASTM B381 Gr 9 | AMS 4918; 4936; 4971 ASM 4978; 4979 | AMS 4957; 4958 |

*Maximum Material Temperature in Furnace

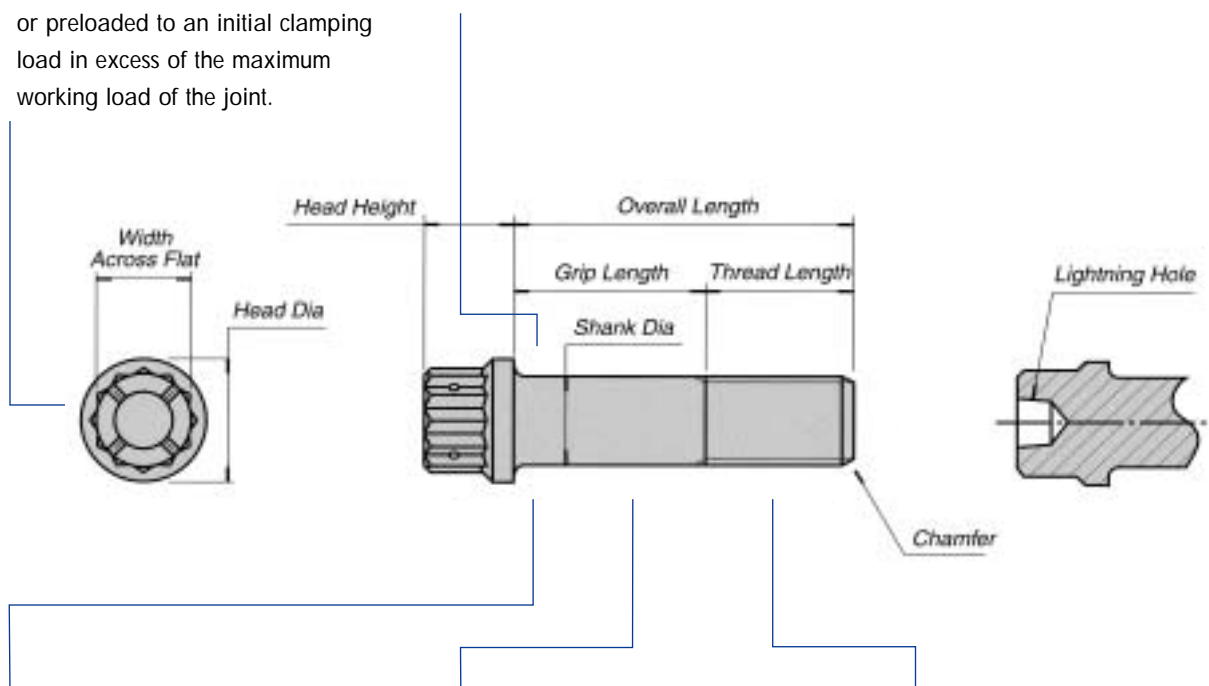
** Cold – Worked Stress Rel. – Tubing only

HEAD

The head is designed to provide a wrenching surface to tighten the bolt to the proper preload. Its size of bearing area depends on the stress level and the hardness of the material being fastened. There must be enough bearing surface to prevent indentation of the material under preload. To minimize the effects of fatigue, a bolt should be tightened or preloaded to an initial clamping load in excess of the maximum working load of the joint.

FILLET

This area of structural discontinuity is a critical point of stress concentration. The radius where head and shank meet must be smooth and free from flaws. It should be as large as practical, and still provide the necessary bearing area under the head. To combat fatigue, the fillet should be prestressed by compressive cold-working.



GRIP LENGTH

Minimum grip length for protruding head bolts shall not be less than the head-to-shank fillet radius. For 100 degree head bolts, minimum grip length shall not be less than the head height plus the head-to-shank fillet radius.

SHANK

The shank must be fully concentric with the thread and with the head. To reduce bending moments, the angle between head and shank axis must be kept to a minimum. The fit between bolt shank and mating hole must be kept to a very close tolerance to maximize shear strength.

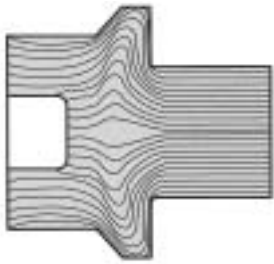
THREAD

The two most critical thread factors for high strength/high fatigue rating are a generous root radius to minimize notch effect, and compressive prestressing achieved by rolling threads after heat treatment. The pitch diameters must also be closely controlled for high fatigue applications. Where lock nuts will be used, thread point chamfer must be kept to a minimum. Where thread run-out flares into the shank, there should be no abrupt changes in the cross sectional area.

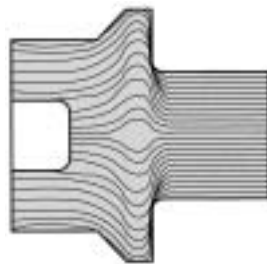
IMPORTANT POINTS IN PROCESSING

1 • HEAD FORGING

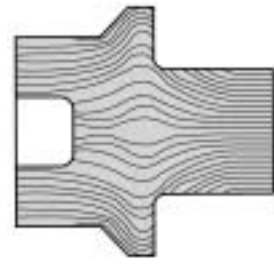
Ordinarily, head parts are cold processed by using header or press, but in case of bad plastic processibility material such as Titanium-alloy and heat resting steel (Inconel 718, Waspalloy, etc.), head parts are processed by hot forging. In order to control head part processing, fiber flow at head parts is checked usually.



A • Satisfactory grain flow



B • Minimum acceptable standard



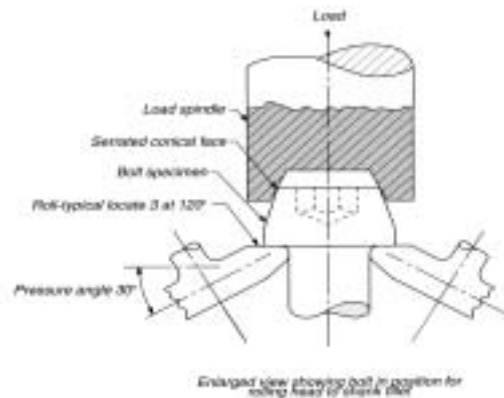
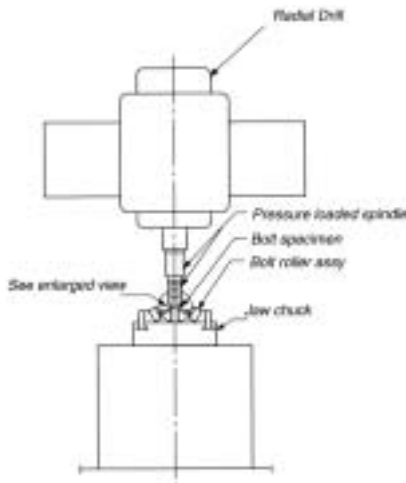
C • Unacceptable grain flow

2 • STRESS RELIEVING AFTER GRINDING

After bolts are ground, there are residual stress by grinding processing and residual stress by grinding heat on the surface. As this phenomena affect bolt strength in case of bolts whose strength is more than 180 ksi, before coldpressing of underheat filled and before thread rolling, baking is executed for one hour at the temperature by 50 degree in Fahrenheit (28 degree in Celsius) lower than tempering temperature.

3 • COLF PROCESSING FOR UNDERHEAD FILLET

Almost all the bolts rolled after head treatment will break down at the head parts by the tension- tension fatigue test. In order to make the strength of head parts and thread parts balance, the strength of head parts shall be increased. To realize above purpose, by cold processing under heat fillet surface roughness is improved by vanishing effect. As a result of this processing residual compression stress is given and fatigue strength of head parts is heightened.



4 • THREAD ROLLING

Bolt for aeroplane is processed by one time rolling after heat treatment. By rolling thread after heat treatment the surface of the thread is given hardening by cold processing. Particular, the root parts of thread is given residual compression stress. Thread is made precise by rolling and the vanishing effects by rolling, the surface of thread is made smooth. In case of rolling, the surface of thread is free of divergence and free of toolmark in comparison with case of thread by cutting machine. So that fatigue strength of thread by rolling will become higher.

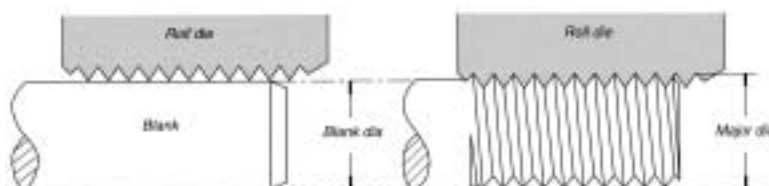
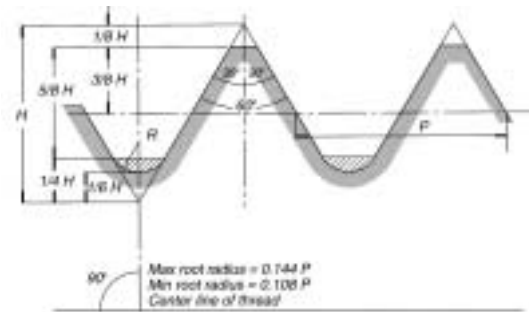


Figure (A)

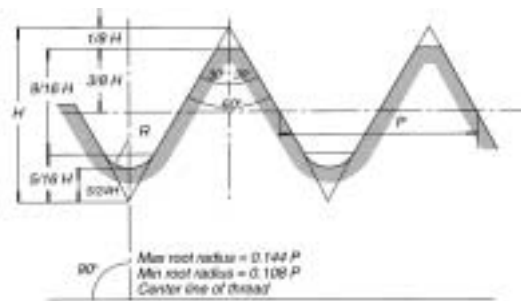
shows basic profile of thread with maximum root radius of $0.144P$ (P means thread pitch) as per MIL-S-7742 (BS 1580).

Figure (B)

shows basic profile of thread with maximum root radius of $0.180P$ as per MIL-S-8879 (BS 4084). The root in MIL-S-8879 is slightly bigger since, as shown in both figures, the basic profile in MIL-S-7742 is same in major diameter of thread and pitch diameter as one in MIL-S-8879 but different in root radius. Compared with both root radiuses, the thread with $0.150 \sim 0.180P$ in MIL-S-8879 is bigger than one with $0.108 \sim 0.144P$ in MIL-S-7742. This big radius lightens the stress concentrating on the root and slightly bigger minor diameter of thread increases fatigue strength of bolt. Therefore, it is clear that the basic profile of thread in MIL-S-8879 is superior in strength.



A • MIL-S-7742 BASIC THREAD DESIGN FORM (BS 1580)



B • MIL-S-8879 BASIC THREAD DESIGN FORM (BS 4084)

GRAIN FLOW

The grain flow in the threads shall be continuous and shall follow the general thread contour with the maximum density at the bottom of the root radius as shown in the following figure.



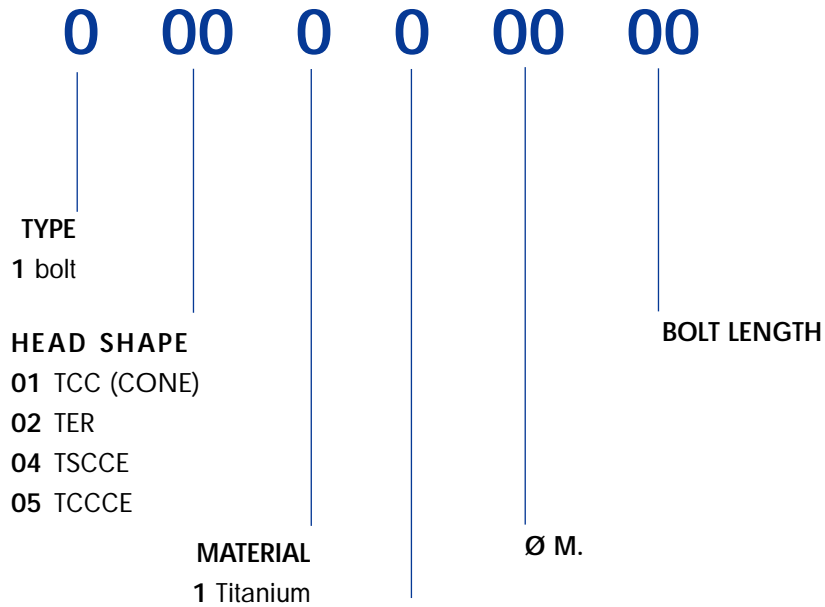
THE FOLLOWING TREATMENTS CAN BE MADE ON TITANIUM PARTS: _____

| CODE | TREATMENT |
|--------------------|---|
| 0000 1 0000 | ANODIZING |
| 0000 2 0000 | AGENING |
| 0000 3 0000 | P.V.D. COATINGS WITH TITANIUM NITRIDE, HARDNESS 2.800 VICKERS |
| 0000 5 0000 | P.V.D. COATINGS WITH WOLFRAMIUM NITRIDE, HARDNESS 3.900 VICKERS |

RECOMMENDED TIGHTENING TORQUE FOR TITANIUM AND ALLOY BOLTS _____

| BOLT Ø | M (Nm) Tit gr5 | M (Nm) 7075 T6 Alloy |
|--------|----------------|----------------------|
| M3 | 1.73 | 0.75 |
| M4 | 3.57 | 1.50 |
| M5 | 6.90 | 3.00 |
| M6 | 11.10 | 5.20 |
| M8 | 28.30 | 12.30 |
| M10 | 57.60 | 25.00 |
| M12 | 97.50 | 42.40 |
| M14 | 155.20 | 67.50 |
| M16 | 235.70 | 102.50 |

TITANIUM BOLT CODING SYSTEM



For example:

6 Al-4V tcc m8 x 25 ti-screw

Will be coded in the following way:

1 01 1 0 08 25

TREATMENT

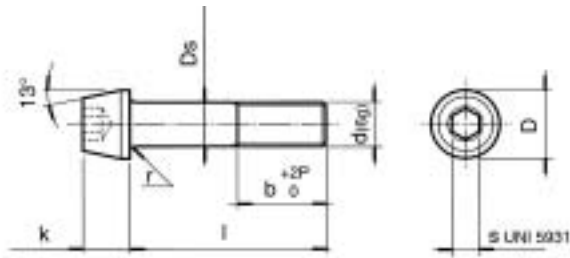
- 0 Nothing
- 1 Anodizing
- 2 Ageing
- 3 Nitriding (Ti)





TCC-SOCKET HEAD CAP BOLTS

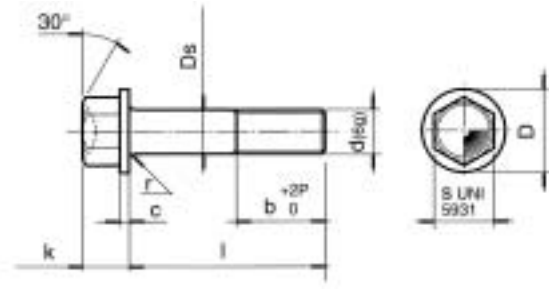
TITANIUM



| | Code | d | l | D | s | Ds | b | k | r. |
|-----------|------------|------------|-----------|-----|----|----|----|-----|-----|
| M4 | 101100410 | M4 X 0.7 | 10 | 7 | 3 | 4 | | 4 | 0.3 |
| | 101100415 | M4 X 0.7 | 15 | 7 | 3 | 4 | | 4 | 0.3 |
| | 101100425 | M4 X 0.7 | 25 | 7 | 3 | 4 | 20 | 4 | 0.3 |
| | 101100430 | M4 X 0.7 | 30 | 7 | 3 | 4 | 20 | 4 | 0.3 |
| M5 | 101100510 | M5 X 0.8 | 10 | 8.5 | 4 | 5 | | 5 | 0.3 |
| | 101100515 | M5 X 0.8 | 15 | 8.5 | 4 | 5 | | 5 | 0.3 |
| | 101100520 | M5 X 0.8 | 20 | 8.5 | 4 | 5 | | 5 | 0.3 |
| | 101100525 | M5 X 0.8 | 25 | 8.5 | 4 | 5 | 20 | 5 | 0.3 |
| | 101100530 | M5 X 0.8 | 30 | 8.5 | 4 | 5 | 20 | 5 | 0.3 |
| | 101100535 | M5 X 0.8 | 35 | 8.5 | 4 | 5 | 20 | 5 | 0.3 |
| | 101100540 | M5 X 0.8 | 40 | 8.5 | 4 | 5 | 25 | 5 | 0.3 |
| M6 | 101100610 | M6 X 1 | 10 | 10 | 5 | 6 | | 6 | 0.3 |
| | 101100615 | M6 X 1 | 15 | 10 | 5 | 6 | | 6 | 0.3 |
| | 101100620 | M6 X 1 | 20 | 10 | 5 | 6 | | 6 | 0.3 |
| | 101100625 | M6 X 1 | 25 | 10 | 5 | 6 | 22 | 6 | 0.3 |
| | 101100630 | M6 X 1 | 30 | 10 | 5 | 6 | 22 | 6 | 0.3 |
| | 101100635 | M6 X 1 | 35 | 10 | 5 | 6 | 25 | 6 | 0.3 |
| | 101100640 | M6 X 1 | 40 | 10 | 5 | 6 | 25 | 6 | 0.3 |
| | 101100645 | M6 X 1 | 45 | 10 | 5 | 6 | 25 | 6 | 0.3 |
| | 101100650 | M6 X 1 | 50 | 10 | 5 | 6 | 25 | 6 | 0.3 |
| | 101100655 | M6 X 1 | 55 | 10 | 5 | 6 | 25 | 6 | 0.3 |
| | 101100660 | M6 X 1 | 60 | 10 | 5 | 6 | 25 | 6 | 0.3 |
| | 101100665 | M6 X 1 | 65 | 10 | 5 | 6 | 25 | 6 | 0.3 |
| | 101100670 | M6 X 1 | 70 | 10 | 5 | 6 | 25 | 6 | 0.3 |
| | 101100675 | M6 X 1 | 75 | 10 | 5 | 6 | 25 | 6 | 0.3 |
| 101100680 | M6 X 1 | 80 | 10 | 5 | 6 | 25 | 6 | 0.3 | |
| M8 | 101100810 | M8 X 1.25 | 10 | 13 | 6 | 8 | | 8 | 0.4 |
| | 101100815 | M8 X 1.25 | 15 | 13 | 6 | 8 | | 8 | 0.4 |
| | 101100820 | M8 X 1.25 | 20 | 13 | 6 | 8 | | 8 | 0.4 |
| | 101100825 | M8 X 1.25 | 25 | 13 | 6 | 8 | 22 | 8 | 0.4 |
| | 101100830 | M8 X 1.25 | 30 | 13 | 6 | 8 | 25 | 8 | 0.4 |
| | 101100835 | M8 X 1.25 | 35 | 13 | 6 | 8 | 25 | 8 | 0.4 |
| | 101100840 | M8 X 1.25 | 40 | 13 | 6 | 8 | 25 | 8 | 0.4 |
| | 101100845 | M8 X 1.25 | 45 | 13 | 6 | 8 | 25 | 8 | 0.4 |
| | 101100850 | M8 X 1.25 | 50 | 13 | 6 | 8 | 25 | 8 | 0.4 |
| | 101100855 | M8 X 1.25 | 55 | 13 | 6 | 8 | 25 | 8 | 0.4 |
| | 101100860 | M8 X 1.25 | 60 | 13 | 6 | 8 | 25 | 8 | 0.4 |
| | 101100865 | M8 X 1.25 | 65 | 13 | 6 | 8 | 25 | 8 | 0.4 |
| | 101100870 | M8 X 1.25 | 70 | 13 | 6 | 8 | 25 | 8 | 0.4 |
| | M10 | 101101020 | M10 X 1.5 | 20 | 16 | 8 | 10 | | 10 |
| 101101025 | | M10 X 1.5 | 25 | 16 | 8 | 10 | | 10 | 0.4 |
| 101101030 | | M10 X 1.5 | 30 | 16 | 8 | 10 | 26 | 10 | 0.4 |
| 101101035 | | M10 X 1.5 | 35 | 16 | 8 | 10 | 30 | 10 | 0.4 |
| 101101040 | | M10 X 1.5 | 40 | 16 | 8 | 10 | 30 | 10 | 0.4 |
| 101101045 | | M10 X 1.5 | 45 | 16 | 8 | 10 | 30 | 10 | 0.4 |
| 101101050 | | M10 X 1.5 | 50 | 16 | 8 | 10 | 30 | 10 | 0.4 |
| 101101120 | | M10 X 1.25 | 20 | 16 | 8 | 10 | | 10 | 0.4 |
| 101101125 | | M10 X 1.25 | 25 | 16 | 8 | 10 | | 10 | 0.4 |
| 101101130 | | M10 X 1.25 | 30 | 16 | 8 | 10 | 26 | 10 | 0.4 |
| 101101135 | | M10 X 1.25 | 35 | 16 | 8 | 10 | 30 | 10 | 0.4 |
| 101101140 | | M10 X 1.25 | 40 | 16 | 8 | 10 | 30 | 10 | 0.4 |
| 101101145 | | M10 X 1.25 | 45 | 16 | 8 | 10 | 30 | 10 | 0.4 |
| 101101150 | | M10 X 1.25 | 50 | 16 | 8 | 10 | 30 | 10 | 0.4 |

TER - HEX-HEAD FLANGE BOLTS

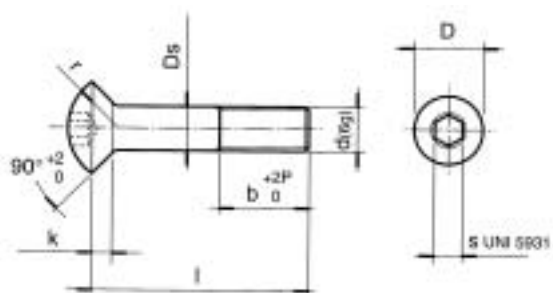
TITANIUM



| | Code | d | l | D | c | s | Ds | b | k | r. |
|-----------|------------|------------|-----------|------|------|-----|----|----|-----|------|
| M5 | 102100510 | M5 X 0.8 | 10 | 10 | 1 | 7 | 5 | | 5 | 0.2 |
| | 102100515 | M5 X 0.8 | 15 | 10 | 1 | 7 | 5 | | 5 | 0.2 |
| | 102100520 | M5 X 0.8 | 20 | 10 | 1 | 7 | 5 | | 5 | 0.2 |
| | 102100525 | M5 X 0.8 | 25 | 10 | 1 | 7 | 5 | 20 | 5 | 0.2 |
| | 102100530 | M5 X 0.8 | 30 | 10 | 1 | 7 | 5 | 20 | 5 | 0.2 |
| M6 | 102100610 | M6 X 1 | 10 | 11 | 1.3 | 8 | 6 | | 5.5 | 0.25 |
| | 102100615 | M6 X 1 | 15 | 11 | 1.3 | 8 | 6 | | 5.5 | 0.25 |
| | 102100620 | M6 X 1 | 20 | 11 | 1.3 | 8 | 6 | | 5.5 | 0.25 |
| | 102100625 | M6 X 1 | 25 | 11 | 1.3 | 8 | 6 | 22 | 5.5 | 0.25 |
| | 102100630 | M6 X 1 | 30 | 11 | 1.3 | 8 | 6 | 22 | 5.5 | 0.25 |
| | 102100635 | M6 X 1 | 35 | 11 | 1.3 | 8 | 6 | 25 | 5.5 | 0.25 |
| | 102100640 | M6 X 1 | 40 | 11 | 1.3 | 8 | 6 | 25 | 5.5 | 0.25 |
| | 102100645 | M6 X 1 | 45 | 11 | 1.3 | 8 | 6 | 25 | 5.5 | 0.25 |
| | 102100650 | M6 X 1 | 50 | 11 | 1.3 | 8 | 6 | 25 | 5.5 | 0.25 |
| | 102100655 | M6 X 1 | 55 | 11 | 1.3 | 8 | 6 | 25 | 5.5 | 0.25 |
| | 102100660 | M6 X 1 | 60 | 11 | 1.3 | 8 | 6 | 25 | 5.5 | 0.25 |
| | 102100665 | M6 X 1 | 65 | 11 | 1.3 | 8 | 6 | 25 | 5.5 | 0.25 |
| | 102100670 | M6 X 1 | 70 | 11 | 1.3 | 8 | 6 | 25 | 5.5 | 0.25 |
| M8 | 102100810 | M8 X 1.25 | 10 | 13.5 | 1.3 | 10 | 8 | | 6.5 | 0.4 |
| | 102100815 | M8 X 1.25 | 15 | 13.5 | 1.3 | 10 | 8 | | 6.5 | 0.4 |
| | 102100820 | M8 X 1.25 | 20 | 13.5 | 1.3 | 10 | 8 | | 6.5 | 0.4 |
| | 102100825 | M8 X 1.25 | 25 | 13.5 | 1.3 | 10 | 8 | 22 | 6.5 | 0.4 |
| | 102100830 | M8 X 1.25 | 30 | 13.5 | 1.3 | 10 | 8 | 25 | 6.5 | 0.4 |
| | 102100835 | M8 X 1.25 | 35 | 13.5 | 1.3 | 10 | 8 | 25 | 6.5 | 0.4 |
| | 102100840 | M8 X 1.25 | 40 | 13.5 | 1.3 | 10 | 8 | 25 | 6.5 | 0.4 |
| | 102100845 | M8 X 1.25 | 45 | 13.5 | 1.3 | 10 | 8 | 25 | 6.5 | 0.4 |
| | 102100850 | M8 X 1.25 | 50 | 13.5 | 1.3 | 10 | 8 | 25 | 6.5 | 0.4 |
| | 102100855 | M8 X 1.25 | 55 | 13.5 | 1.3 | 10 | 8 | 25 | 6.5 | 0.4 |
| | 102100860 | M8 X 1.25 | 60 | 13.5 | 1.3 | 10 | 8 | 25 | 6.5 | 0.4 |
| | 102100865 | M8 X 1.25 | 65 | 13.5 | 1.3 | 10 | 8 | 25 | 6.5 | 0.4 |
| | 102100870 | M8 X 1.25 | 70 | 13.5 | 1.3 | 10 | 8 | 25 | 6.5 | 0.4 |
| | M10 | 102101020 | M10 X 1.5 | 20 | 16.5 | 1.5 | 12 | 10 | | 8.0 |
| 102101025 | | M10 X 1.5 | 25 | 16.5 | 1.5 | 12 | 10 | | 8.0 | 0.4 |
| 102101030 | | M10 X 1.5 | 30 | 16.5 | 1.5 | 12 | 10 | 26 | 8.0 | 0.4 |
| 102101035 | | M10 X 1.5 | 35 | 16.5 | 1.5 | 12 | 10 | 30 | 8.0 | 0.4 |
| 102101040 | | M10 X 1.5 | 40 | 16.5 | 1.5 | 12 | 10 | 30 | 8.0 | 0.4 |
| 102101045 | | M10 X 1.5 | 45 | 16.5 | 1.5 | 12 | 10 | 30 | 8.0 | 0.4 |
| 102101050 | | M10 X 1.5 | 50 | 16.5 | 1.5 | 12 | 10 | 30 | 8.0 | 0.4 |
| 102101120 | | M10 X 1.25 | 20 | 16.5 | 1.5 | 12 | 10 | | 8.0 | 0.4 |
| 102101125 | | M10 X 1.25 | 25 | 16.5 | 1.5 | 12 | 10 | | 8.0 | 0.4 |
| 102101130 | | M10 X 1.25 | 30 | 16.5 | 1.5 | 12 | 10 | 26 | 8.0 | 0.4 |
| 102101135 | | M10 X 1.25 | 35 | 16.5 | 1.5 | 12 | 10 | 30 | 8.0 | 0.4 |
| 102101140 | | M10 X 1.25 | 40 | 16.5 | 1.5 | 12 | 10 | 30 | 8.0 | 0.4 |
| 102101145 | | M10 X 1.25 | 45 | 16.5 | 1.5 | 12 | 10 | 30 | 8.0 | 0.4 |
| 102101150 | | M10 X 1.25 | 50 | 16.5 | 1.5 | 12 | 10 | 30 | 8.0 | 0.4 |
| 102101155 | | M10 X 1.25 | 55 | 16.5 | 1.5 | 12 | 10 | 30 | 8.0 | 0.4 |
| 102101160 | | M10 X 1.25 | 60 | 16.5 | 1.5 | 12 | 10 | 30 | 8.0 | 0.4 |

TSCCE COUNTERSUNK HEAD BOLTS

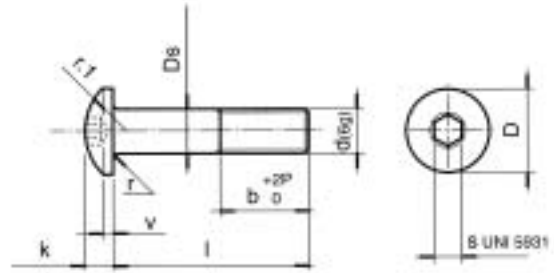
TITANIUM



| | Code | d | l | D | b | k | s | r | Ds |
|-----------|-----------|-----------|----|----|----|-----|---|----|----|
| M5 | 104100510 | M5 X 0.8 | 10 | 10 | | 2.5 | 3 | 15 | 5 |
| | 104100515 | M5 X 0.8 | 15 | 10 | | 2.5 | 3 | 15 | 5 |
| | 104100520 | M5 X 0.8 | 20 | 10 | 16 | 2.5 | 3 | 15 | 5 |
| | 104100525 | M5 X 0.8 | 25 | 10 | 16 | 2.5 | 3 | 15 | 5 |
| | 104100530 | M5 X 0.8 | 30 | 10 | 16 | 2.5 | 3 | 15 | 5 |
| M6 | 104100610 | M6 X 1 | 10 | 12 | | 3 | 4 | 18 | 6 |
| | 104100615 | M6 X 1 | 15 | 12 | | 3 | 4 | 18 | 6 |
| | 104100620 | M6 X 1 | 20 | 12 | | 3 | 4 | 18 | 6 |
| | 104100625 | M6 X 1 | 25 | 12 | 18 | 3 | 4 | 18 | 6 |
| | 104100630 | M6 X 1 | 30 | 12 | 18 | 3 | 4 | 18 | 6 |
| | 104100635 | M6 X 1 | 35 | 12 | 18 | 3 | 4 | 18 | 6 |
| | 104100640 | M6 X 1 | 40 | 12 | 18 | 3 | 4 | 18 | 6 |
| M8 | 104100810 | M8 X 1.25 | 10 | 16 | | 4 | 5 | 25 | 8 |
| | 104100815 | M8 X 1.25 | 15 | 16 | | 4 | 5 | 25 | 8 |
| | 104100820 | M8 X 1.25 | 20 | 16 | | 4 | 5 | 25 | 8 |
| | 104100825 | M8 X 1.25 | 25 | 16 | 18 | 4 | 5 | 25 | 8 |
| | 104100830 | M8 X 1.25 | 30 | 16 | 22 | 4 | 5 | 25 | 8 |
| | 104100835 | M8 X 1.25 | 35 | 16 | 22 | 4 | 5 | 25 | 8 |
| | 104100840 | M8 X 1.25 | 40 | 16 | 22 | 4 | 5 | 25 | 8 |

TCCCE - BUTTON HEAD BOLTS

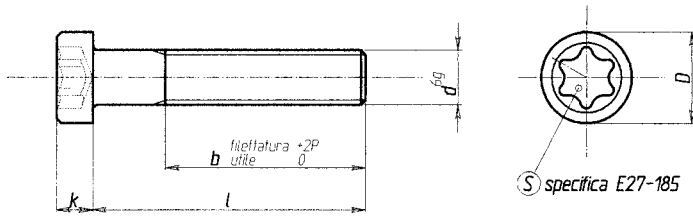
TITANIUM



| | Code | d | l | D | b | k | v | s | r | Ds | r.1 |
|-----------|-----------|-----------|----|----|----|-----|-----|-----|------|----|-----|
| M4 | 105100410 | M4 X 0.7 | 10 | 10 | | 2.5 | 0.5 | 2.5 | 0.2 | 4 | 6.9 |
| | 105100415 | M4 X 0.7 | 15 | 10 | | 2.5 | 0.5 | 2.5 | 0.2 | 4 | 6.9 |
| | 105100420 | M4 X 0.7 | 20 | 10 | | 2.5 | 0.5 | 2.5 | 0.2 | 4 | 6.9 |
| M5 | 105100510 | M5 X 0.8 | 10 | 12 | | 3.0 | 1 | 3 | 0.2 | 5 | 9.4 |
| | 105100515 | M5 X 0.8 | 15 | 12 | | 3.0 | 1 | 3 | 0.2 | 5 | 9.4 |
| | 105100520 | M5 X 0.8 | 20 | 12 | | 3.0 | 1 | 3 | 0.2 | 5 | 9.4 |
| | 105100525 | M5 X 0.8 | 25 | 12 | 16 | 3.0 | 1 | 3 | 0.2 | 5 | 9.4 |
| | 105100530 | M5 X 0.8 | 30 | 12 | 16 | 3.0 | 1 | 3 | 0.2 | 5 | 9.4 |
| M6 | 105100610 | M6 X 1 | 10 | 16 | | 3.5 | 1.2 | 4 | 0.25 | 6 | 14 |
| | 105100615 | M6 X 1 | 15 | 16 | | 3.5 | 1.2 | 4 | 0.25 | 6 | 14 |
| | 105100620 | M6 X 1 | 20 | 16 | | 3.5 | 1.2 | 4 | 0.25 | 6 | 14 |
| | 105100625 | M6 X 1 | 25 | 16 | 18 | 3.5 | 1.2 | 4 | 0.25 | 6 | 14 |
| | 105100630 | M6 X 1 | 30 | 16 | 18 | 3.5 | 1.2 | 4 | 0.25 | 6 | 14 |
| | 105100635 | M6 X 1 | 35 | 16 | 18 | 3.5 | 1.2 | 4 | 0.25 | 6 | 14 |
| | 105100640 | M6 X 1 | 40 | 16 | 18 | 3.5 | 1.2 | 4 | 0.25 | 6 | 14 |
| M8 | 105100810 | M8 X 1.25 | 10 | 16 | | 3.5 | 1.3 | 5 | 0.4 | 8 | 14 |
| | 105100815 | M8 X 1.25 | 15 | 16 | | 3.5 | 1.3 | 5 | 0.4 | 8 | 14 |
| | 105100820 | M8 X 1.25 | 20 | 16 | | 3.5 | 1.3 | 5 | 0.4 | 8 | 14 |
| | 105100825 | M8 X 1.25 | 25 | 16 | | 3.5 | 1.3 | 5 | 0.4 | 8 | 14 |
| | 105100830 | M8 X 1.25 | 30 | 16 | 22 | 3.5 | 1.3 | 5 | 0.4 | 8 | 14 |
| | 105100835 | M8 X 1.25 | 35 | 16 | 22 | 3.5 | 1.3 | 5 | 0.4 | 8 | 14 |
| | 105100840 | M8 X 1.25 | 40 | 16 | 22 | 3.5 | 1.3 | 5 | 0.4 | 8 | 14 |
| | 105100845 | M8 X 1.25 | 45 | 16 | 22 | 3.5 | 1.3 | 5 | 0.4 | 8 | 14 |
| | 105100850 | M8 X 1.25 | 50 | 16 | 22 | 3.5 | 1.3 | 5 | 0.4 | 8 | 14 |

106 TCTX BOLTS

TITANIUM

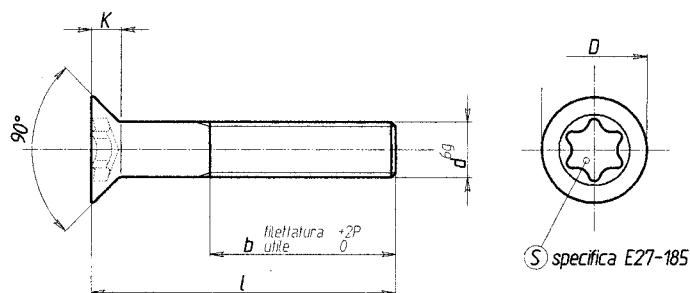


| | Code | d | l | D | b | k | S |
|-----------|-----------|-----------|-----------|-----|-----|-----|-------------|
| M4 | 106100408 | M4 x 0.7 | 08 | 7.0 | | 3.0 | impronta 25 |
| | 106100410 | M4 x 0.7 | 10 | 7.0 | | 3.0 | impronta 25 |
| | 106100412 | M4 x 0.7 | 12 | 7.0 | | 3.0 | impronta 25 |
| | 106100414 | M4 x 0.7 | 14 | 7.0 | | 3.0 | impronta 25 |
| | 106100416 | M4 x 0.7 | 16 | 7.0 | | 3.0 | impronta 25 |
| | 106100418 | M4 x 0.7 | 18 | 7.0 | | 3.0 | impronta 25 |
| | 106100420 | M4 x 0.7 | 20 | 7.0 | | 3.0 | impronta 25 |
| | 106100422 | M4 x 0.7 | 22 | 7.0 | | 3.0 | impronta 25 |
| | 106100425 | M4 x 0.7 | 25 | 7.0 | | 3.0 | impronta 25 |
| | 106100430 | M4 x 0.7 | 30 | 7.0 | | 3.0 | impronta 25 |
| | 106100435 | M4 x 0.7 | 35 | 7.0 | 20 | 3.0 | impronta 25 |
| | 106100440 | M4 x 0.7 | 40 | 7.0 | 20 | 3.0 | impronta 25 |
| | M5 | 106100508 | M5 x 0.8 | 08 | 8.5 | | 3.5 |
| 106100510 | | M5 x 0.8 | 10 | 8.5 | | 3.5 | impronta 30 |
| 106100512 | | M5 x 0.8 | 12 | 8.5 | | 3.5 | impronta 30 |
| 106100514 | | M5 x 0.8 | 14 | 8.5 | | 3.5 | impronta 30 |
| 106100516 | | M5 x 0.8 | 16 | 8.5 | | 3.5 | impronta 30 |
| 106100518 | | M5 x 0.8 | 18 | 8.5 | | 3.5 | impronta 30 |
| 106100520 | | M5 x 0.8 | 20 | 8.5 | | 3.5 | impronta 30 |
| 106100522 | | M5 x 0.8 | 22 | 8.5 | | 3.5 | impronta 30 |
| 106100525 | | M5 x 0.8 | 25 | 8.5 | | 3.5 | impronta 30 |
| 106100530 | | M5 x 0.8 | 30 | 8.5 | 20 | 3.5 | impronta 30 |
| 106100535 | | M5 x 0.8 | 35 | 8.5 | 20 | 3.5 | impronta 30 |
| 106100540 | | M5 x 0.8 | 40 | 8.5 | 20 | 3.5 | impronta 30 |
| 106100545 | | M5 x 0.8 | 45 | 8.5 | 25 | 3.5 | impronta 30 |
| 106100550 | | M5 x 0.8 | 50 | 8.5 | 25 | 3.5 | impronta 30 |
| M6 | | 106100610 | M6 x 1.00 | 10 | 10 | | 4.0 |
| | 106100612 | M6 x 1.00 | 12 | 10 | | 4.0 | impronta 40 |
| | 106100614 | M6 x 1.00 | 14 | 10 | | 4.0 | impronta 40 |
| | 106100616 | M6 x 1.00 | 16 | 10 | | 4.0 | impronta 40 |
| | 106100618 | M6 x 1.00 | 18 | 10 | | 4.0 | impronta 40 |
| | 106100620 | M6 x 1.00 | 20 | 10 | | 4.0 | impronta 40 |
| | 106100622 | M6 x 1.00 | 22 | 10 | | 4.0 | impronta 40 |
| | 106100625 | M6 x 1.00 | 25 | 10 | 20 | 4.0 | impronta 40 |
| | 106100630 | M6 x 1.00 | 30 | 10 | 20 | 4.0 | impronta 40 |
| | 106100635 | M6 x 1.00 | 35 | 10 | 20 | 4.0 | impronta 40 |
| | 106100640 | M6 x 1.00 | 40 | 10 | 20 | 4.0 | impronta 40 |
| | 106100645 | M6 x 1.00 | 45 | 10 | 25 | 4.0 | impronta 40 |
| | 106100650 | M6 x 1.00 | 50 | 10 | 25 | 4.0 | impronta 40 |
| | 106100660 | M6 x 1.00 | 60 | 10 | 25 | 4.0 | impronta 40 |
| | 106100665 | M6 x 1.00 | 65 | 10 | 30 | 4.0 | impronta 40 |
| | 106100670 | M6 x 1.00 | 70 | 10 | 30 | 4.0 | impronta 40 |
| | M8 | 106100812 | M8 x 1.25 | 12 | 13 | | 5.0 |
| 106100814 | | M8 x 1.25 | 14 | 13 | | 5.0 | impronta 50 |
| 106100816 | | M8 x 1.25 | 16 | 13 | | 5.0 | impronta 50 |
| 106100818 | | M8 x 1.25 | 18 | 13 | | 5.0 | impronta 50 |
| 106100820 | | M8 x 1.25 | 20 | 13 | | 5.0 | impronta 50 |
| 106100822 | | M8 x 1.25 | 22 | 13 | | 5.0 | impronta 50 |
| 106100825 | | M8 x 1.25 | 25 | 13 | 20 | 5.0 | impronta 50 |
| 106100830 | | M8 x 1.25 | 30 | 13 | 20 | 5.0 | impronta 50 |
| 106100835 | | M8 x 1.25 | 35 | 13 | 20 | 5.0 | impronta 50 |
| 106100840 | | M8 x 1.25 | 40 | 13 | 20 | 5.0 | impronta 50 |
| 106100845 | | M8 x 1.25 | 45 | 13 | 25 | 5.0 | impronta 50 |
| 106100850 | | M8 x 1.25 | 50 | 13 | 25 | 5.0 | impronta 50 |
| 106100860 | | M8 x 1.25 | 60 | 13 | 25 | 5.0 | impronta 50 |
| 106100865 | | M8 x 1.25 | 65 | 13 | 30 | 5.0 | impronta 50 |
| 106100870 | | M8 x 1.25 | 70 | 13 | 30 | 5.0 | impronta 50 |
| 106100880 | | M8 x 1.25 | 80 | 13 | 35 | 5.0 | impronta 50 |
| 106100890 | | M8 x 1.25 | 90 | 13 | 35 | 5.0 | impronta 50 |

107 TSTX BOLTS

TITANIUM

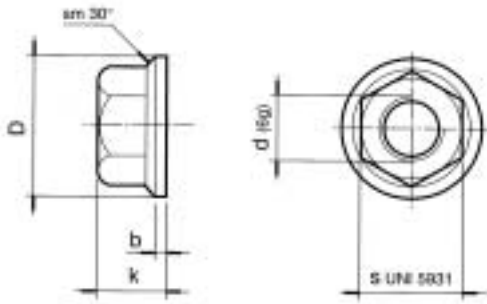
new



| | Code | d | l | D | b | k | S |
|-----------|-----------|-----------|----|------|----|------|-------------|
| M4 | 107100412 | M4 x 0.7 | 12 | 8.0 | | 1.90 | impronta 20 |
| | 107100414 | M4 x 0.7 | 14 | 8.0 | | 1.90 | impronta 20 |
| | 107100416 | M4 x 0.7 | 16 | 8.0 | | 1.90 | impronta 20 |
| | 107100418 | M4 x 0.7 | 18 | 8.0 | | 1.90 | impronta 20 |
| | 107100420 | M4 x 0.7 | 20 | 8.0 | | 1.90 | impronta 20 |
| | 107100422 | M4 x 0.7 | 22 | 8.0 | | 1.90 | impronta 20 |
| | 107100425 | M4 x 0.7 | 25 | 8.0 | | 1.90 | impronta 20 |
| M5 | 107100512 | M5 x 0.8 | 12 | 10.0 | | 2.30 | impronta 25 |
| | 107100514 | M5 x 0.8 | 14 | 10.0 | | 2.30 | impronta 25 |
| | 107100516 | M5 x 0.8 | 16 | 10.0 | | 2.30 | impronta 25 |
| | 107100518 | M5 x 0.8 | 18 | 10.0 | | 2.30 | impronta 25 |
| | 107100520 | M5 x 0.8 | 20 | 10.0 | | 2.30 | impronta 25 |
| | 107100522 | M5 x 0.8 | 22 | 10.0 | | 2.30 | impronta 25 |
| | 107100525 | M5 x 0.8 | 25 | 10.0 | | 2.30 | impronta 25 |
| | 107100530 | M5 x 0.8 | 30 | 10.0 | | 2.30 | impronta 25 |
| | 107100535 | M5 x 0.8 | 35 | 10.0 | 20 | 2.30 | impronta 25 |
| M6 | 107100612 | M6 x 1.00 | 12 | 12.0 | | 2.80 | impronta 30 |
| | 107100614 | M6 x 1.00 | 14 | 12.0 | | 2.80 | impronta 30 |
| | 107100616 | M6 x 1.00 | 16 | 12.0 | | 2.80 | impronta 30 |
| | 107100618 | M6 x 1.00 | 18 | 12.0 | | 2.80 | impronta 30 |
| | 107100620 | M6 x 1.00 | 20 | 12.0 | | 2.80 | impronta 30 |
| | 107100622 | M6 x 1.00 | 22 | 12.0 | | 2.80 | impronta 30 |
| | 107100625 | M6 x 1.00 | 25 | 12.0 | | 2.80 | impronta 30 |
| | 107100630 | M6 x 1.00 | 30 | 12.0 | | 2.80 | impronta 30 |
| | 107100635 | M6 x 1.00 | 35 | 12.0 | 20 | 2.80 | impronta 30 |
| | 107100640 | M6 x 1.00 | 40 | 12.0 | 20 | 2.80 | impronta 30 |
| | 107100645 | M6 x 1.00 | 45 | 12.0 | 25 | 2.80 | impronta 30 |
| M8 | 107100812 | M8 x 1.25 | 12 | 16.0 | | 3.60 | impronta 45 |
| | 107100814 | M8 x 1.25 | 14 | 16.0 | | 3.60 | impronta 45 |
| | 107100816 | M8 x 1.25 | 16 | 16.0 | | 3.60 | impronta 45 |
| | 107100818 | M8 x 1.25 | 18 | 16.0 | | 3.60 | impronta 45 |
| | 107100820 | M8 x 1.25 | 20 | 16.0 | | 3.60 | impronta 45 |
| | 107100822 | M8 x 1.25 | 22 | 16.0 | | 3.60 | impronta 45 |
| | 107100825 | M8 x 1.25 | 25 | 16.0 | | 3.60 | impronta 45 |
| | 107100830 | M8 x 1.25 | 30 | 16.0 | | 3.60 | impronta 45 |
| | 107100835 | M8 x 1.25 | 35 | 16.0 | 20 | 3.60 | impronta 45 |
| | 107100840 | M8 x 1.25 | 40 | 16.0 | 20 | 3.60 | impronta 45 |
| | 107100845 | M8 x 1.25 | 45 | 16.0 | 25 | 3.60 | impronta 45 |
| | 107100850 | M8 x 1.25 | 50 | 16.0 | 25 | 3.60 | impronta 45 |

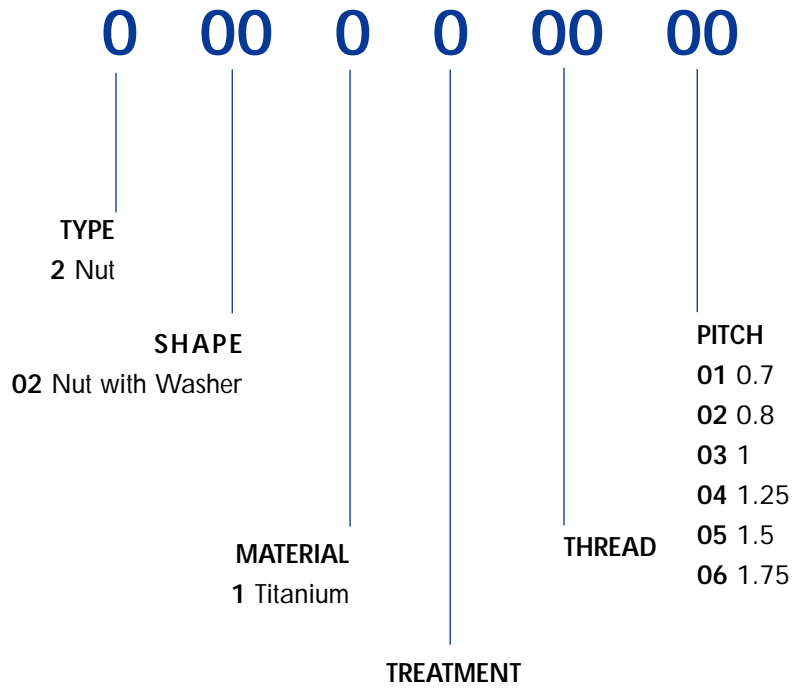
TER NUTS

TITANIUM



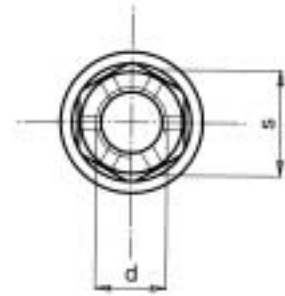
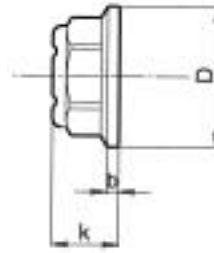
| Code | d | k | b | s | D |
|-----------|------------|----|-----|----|------|
| 202140401 | M4 X 0.7 | 4 | 0.9 | 7 | 10 |
| 202140502 | M5 X 0.8 | 5 | 1 | 8 | 11 |
| 202140603 | M6 X 1 | 6 | 1.1 | 8 | 13 |
| 202140804 | M8 X 1.25 | 8 | 1.2 | 12 | 16 |
| 202141004 | M10 X 1.25 | 10 | 1.5 | 14 | 20 |
| 202141005 | M10 X 1.5 | 10 | 1.5 | 14 | 20 |
| 202141205 | M12 X 1.5 | 11 | 1.8 | 17 | 24 |
| 202141405 | M14 X 1.5 | 12 | 2.1 | 19 | 27.5 |
| 202141605 | M16 X 1.5 | 13 | 2.4 | 22 | 32 |
| 202141805 | M18 X 1.5 | 14 | 2.6 | 24 | 35 |
| 202142005 | M20 X 1.5 | 15 | 3 | 27 | 39 |

TITANIUM NUT CODING SYSTEM



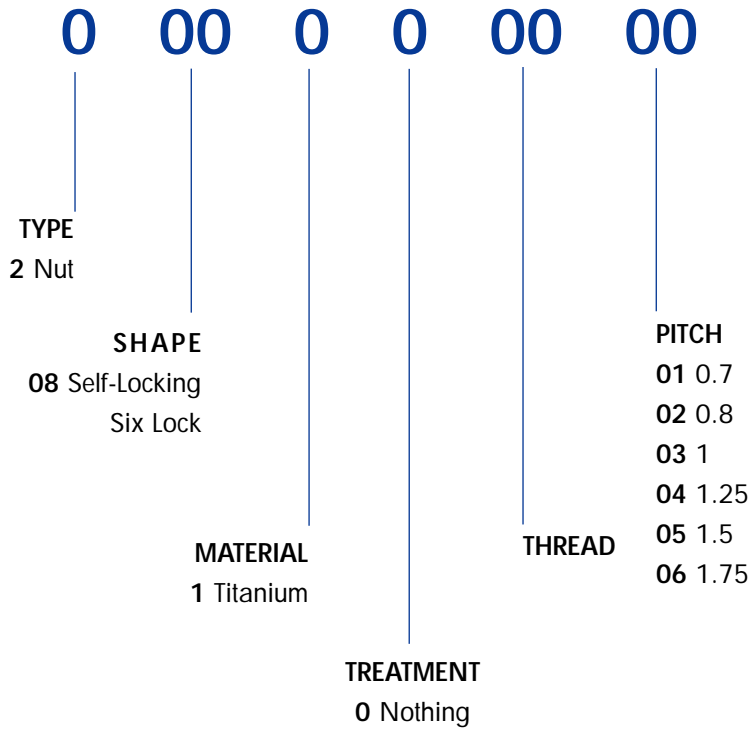
SIX-LOCK SELF-LOCKING NUTS

TITANIUM



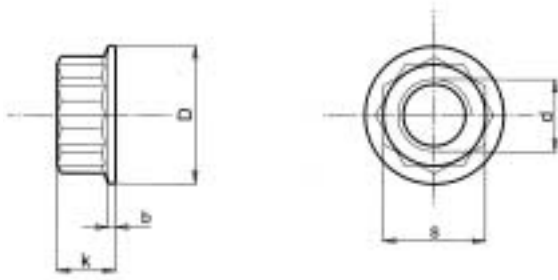
| Code | d | k | b | s | D |
|-----------|------------|-----|-----|----|----|
| 208100603 | M6 X 1 | 6.5 | 1.0 | 10 | 13 |
| 208100804 | M8 X 1.25 | 7.5 | 1.3 | 12 | 16 |
| 208101004 | M10 X 1.25 | 9.5 | 1.3 | 14 | 20 |
| 208101005 | M10 X 1.50 | 9.5 | 1.3 | 14 | 20 |

TITANIUM NUT CODING SYSTEM



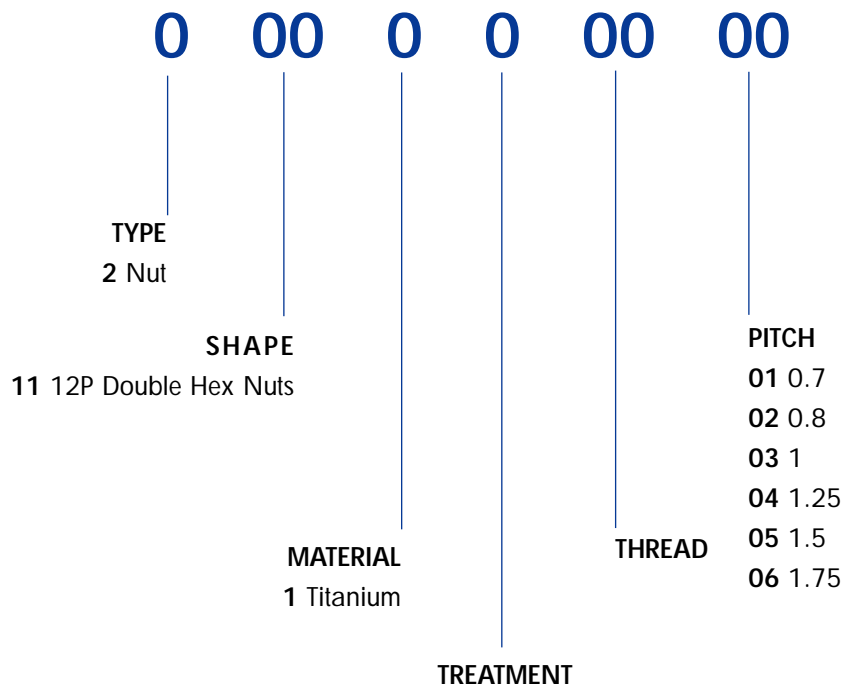
12P DOUBLE HEX NUTS

TITANIUM



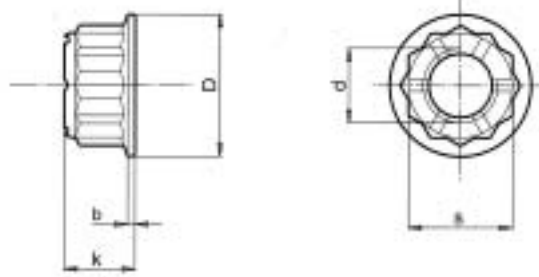
| Code | d | k | b | s | D |
|-----------|------------|-----|-----|----|----|
| 211101004 | M10 X 1.25 | 8.0 | 1.0 | 14 | 19 |
| 211101005 | M10 X 1.5 | 8.0 | 1.0 | 14 | 19 |

TITANIUM NUT CODING SYSTEM



12P SIX-LOCK SELF-LOCKING NUTS

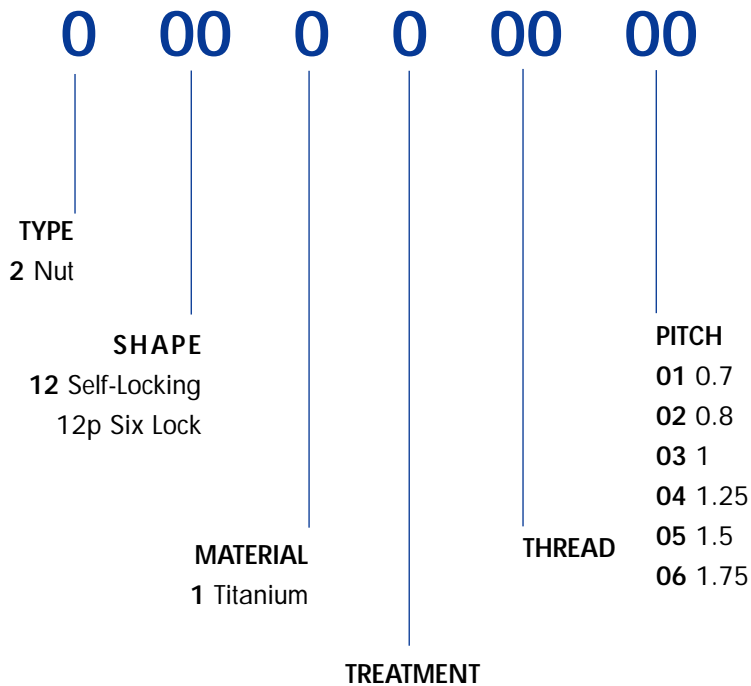
TITANIUM



| Code | d | k | b | S _{h13} | D |
|-----------|------------|-----|-----|------------------|------|
| 212101004 | M10 X 1.25 | 9.5 | 1.0 | 14 | 19.0 |
| 212101005 | M10 X 1.5 | 9.5 | 1.0 | 14 | 19.0 |

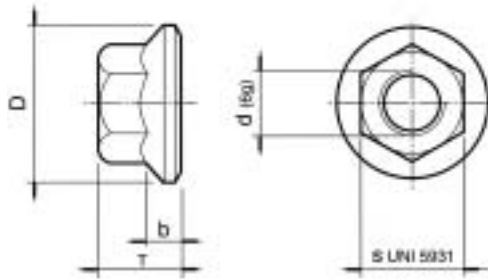
VITI | FASTENERS

TITANIUM NUT CODING SYSTEM



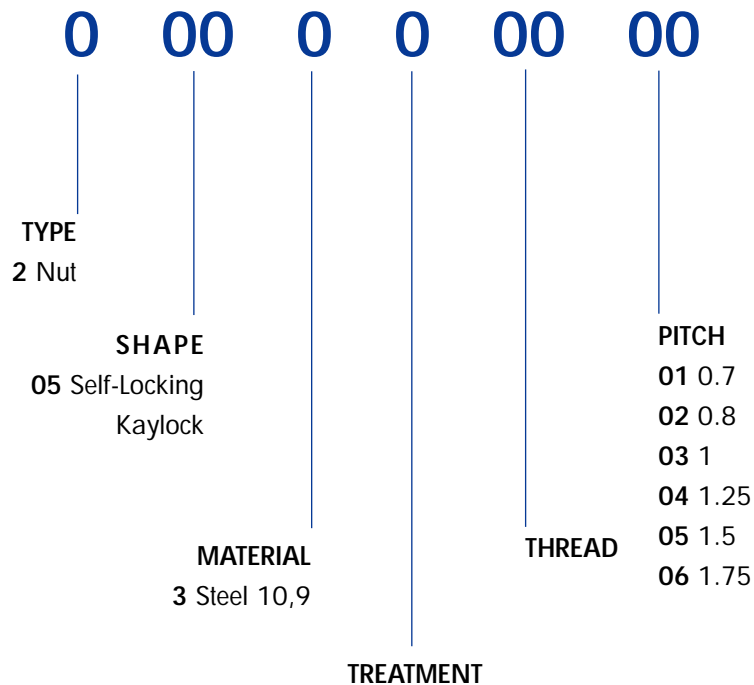
KAYLOCK SELF-LOCKING STEEL NUTS

STEEL



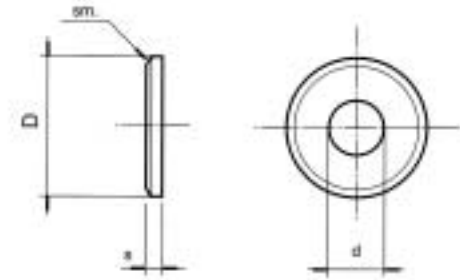
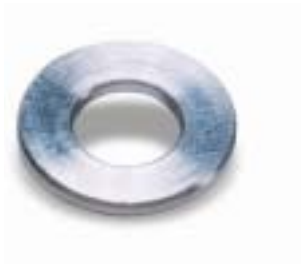
| Code | d | T | b | s | D |
|-----------|------------|------|-----|----|------|
| 205300401 | M4 X 0.7 | 3.8 | 1.6 | 5 | 8 |
| 205300502 | M5 X 0.8 | 5 | 2 | 6 | 9 |
| 205300603 | M6 X 1 | 5.3 | 2.2 | 7 | 10.5 |
| 205300804 | M8 X 1.25 | 7 | 2.3 | 10 | 13.5 |
| 205301004 | M10 X 1.25 | 8.5 | 3 | 12 | 16.5 |
| 205301005 | M10 X 1.5 | 8.5 | 3 | 12 | 16.5 |
| 205301205 | M12 X 1.5 | 10.7 | 4.3 | 14 | 19.8 |
| 205301405 | M14 X 1.5 | 12.0 | 4.3 | 16 | 23.0 |

KAYLOCK NUT CODING SYSTEM



WASHERS

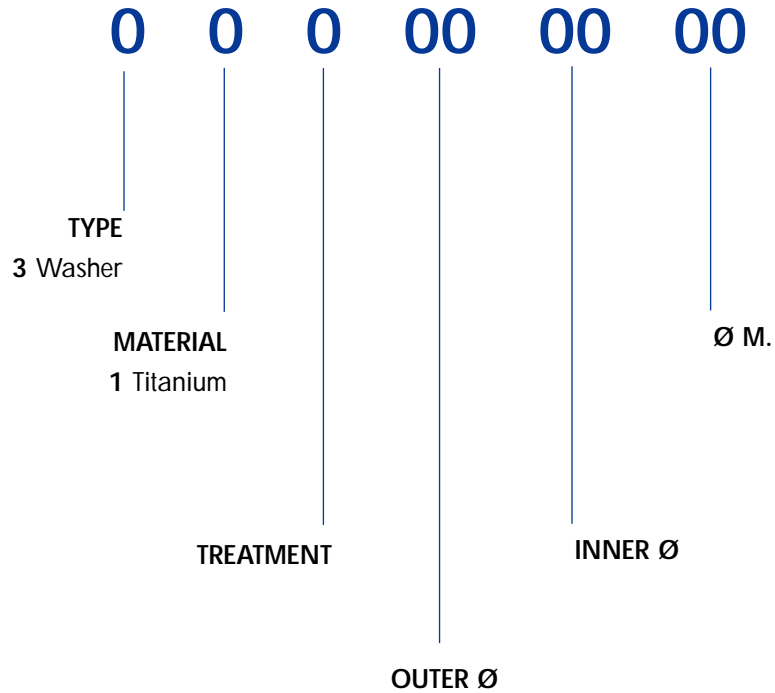
TITANIUM



| Code | Ø M | d | D | s | Sm x 45° |
|-----------|-----|-------|------|-----|----------|
| 310090404 | M4 | 4.20 | 9 | 0.8 | 0.2 |
| 310110505 | M5 | 5.20 | 10 | 1 | 0.2 |
| 310130606 | M6 | 6.20 | 12.5 | 1.6 | 0.5 |
| 310180606 | M6L | 6.20 | 17 | 1.6 | 0.5 |
| 310180808 | M8 | 8.20 | 17 | 1.6 | 0.5 |
| 310221010 | M10 | 10.30 | 21 | 2.0 | 1 |
| 310241212 | M12 | 12.40 | 24 | 2.5 | 1 |
| 310261414 | M14 | 14.50 | 28 | 2.5 | 1 |
| 310301616 | M16 | 16.50 | 30 | 3 | 1.5 |
| 310321818 | M18 | 18.50 | 34 | 3 | 1.5 |
| 310352020 | M20 | 20.50 | 37 | 3 | 1.5 |

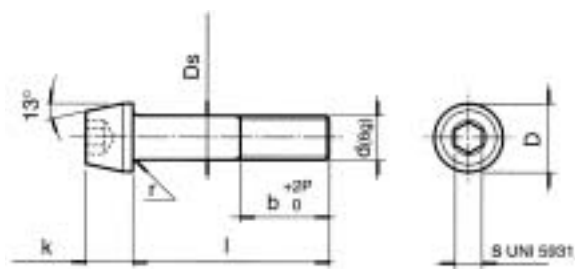
VITI | FASTENERS

TITANIUM WASHER CODING SYSTEM



TCC – SOCKET HEAD CAP BOLTS

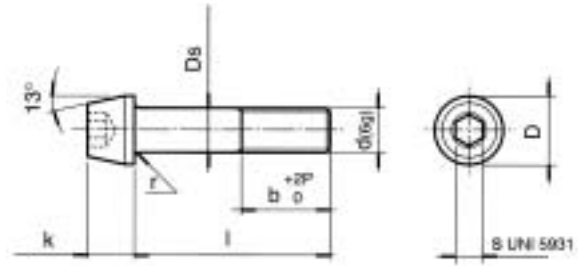
Al 7075



| | Code | d | l | D | s | Ds | b | k | r. |
|-----------|-----------|-----------|-----|-----|---|----|----|-----|-----|
| M4 | 10120410x | M4 X 0.7 | 10 | 7 | 3 | 4 | | 4 | 0.3 |
| | 10120415x | M4 X 0.7 | 15 | 7 | 3 | 4 | | 4 | 0.3 |
| | 10120420x | M4 X 0.7 | 20 | 7 | 3 | 4 | | 4 | 0.3 |
| | 10120430x | M4 X 0.7 | 30 | 7 | 3 | 4 | 20 | 4 | 0.3 |
| M5 | 10120510x | M5 X 0.8 | 10 | 8.5 | 4 | 5 | | 5 | 0.3 |
| | 10120515x | M5 X 0.8 | 15 | 8.5 | 4 | 5 | | 5 | 0.3 |
| | 10120520x | M5 X 0.8 | 20 | 8.5 | 4 | 5 | | 5 | 0.3 |
| | 10120525x | M5 X 0.8 | 25 | 8.5 | 4 | 5 | 20 | 5 | 0.3 |
| | 10120530x | M5 X 0.8 | 30 | 8.5 | 4 | 5 | 20 | 5 | 0.3 |
| | 10120535x | M5 X 0.8 | 35 | 8.5 | 4 | 5 | 20 | 5 | 0.3 |
| | 10120540x | M5 X 0.8 | 40 | 8.5 | 4 | 5 | 25 | 5 | 0.3 |
| | 10120545x | M5 X 0.8 | 45 | 8.5 | 4 | 5 | 25 | 5 | 0.3 |
| | 10120550x | M5 X 0.8 | 50 | 8.5 | 4 | 5 | 25 | 5 | 0.3 |
| | 10120555x | M5 X 0.8 | 55 | 8.5 | 4 | 5 | 25 | 5 | 0.3 |
| 10120560x | M5 X 0.8 | 60 | 8.5 | 4 | 5 | 25 | 5 | 0.3 | |
| M6 | 10120610x | M6 X 1 | 10 | 10 | 5 | 6 | | 6 | 0.3 |
| | 10120615x | M6 X 1 | 15 | 10 | 5 | 6 | | 6 | 0.3 |
| | 10120620x | M6 X 1 | 20 | 10 | 5 | 6 | | 6 | 0.3 |
| | 10120625x | M6 X 1 | 25 | 10 | 5 | 6 | 22 | 6 | 0.3 |
| | 10120630x | M6 X 1 | 30 | 10 | 5 | 6 | 22 | 6 | 0.3 |
| | 10120635x | M6 X 1 | 35 | 10 | 5 | 6 | 25 | 6 | 0.3 |
| | 10120640x | M6 X 1 | 40 | 10 | 5 | 6 | 25 | 6 | 0.3 |
| | 10120645x | M6 X 1 | 45 | 10 | 5 | 6 | 25 | 6 | 0.3 |
| | 10120650x | M6 X 1 | 50 | 10 | 5 | 6 | 25 | 6 | 0.3 |
| | 10120655x | M6 X 1 | 55 | 10 | 5 | 6 | 25 | 6 | 0.3 |
| | 10120660x | M6 X 1 | 60 | 10 | 5 | 6 | 25 | 6 | 0.3 |
| | 10120665x | M6 X 1 | 65 | 10 | 5 | 6 | 25 | 6 | 0.3 |
| | 10120670x | M6 X 1 | 70 | 10 | 5 | 6 | 25 | 6 | 0.3 |
| | 10120675x | M6 X 1 | 75 | 10 | 5 | 6 | 25 | 6 | 0.3 |
| | 10120680x | M6 X 1 | 80 | 10 | 5 | 6 | 25 | 6 | 0.3 |
| | 10120685x | M6 X 1 | 85 | 10 | 5 | 6 | 25 | 6 | 0.3 |
| 10120690x | M6 X 1 | 90 | 10 | 5 | 6 | 25 | 6 | 0.3 | |
| M8 | 10120810x | M8 X 1.25 | 10 | 13 | 6 | 8 | | 8 | 0.4 |
| | 10120815x | M8 X 1.25 | 15 | 13 | 6 | 8 | | 8 | 0.4 |
| | 10120820x | M8 X 1.25 | 20 | 13 | 6 | 8 | | 8 | 0.4 |
| | 10120825x | M8 X 1.25 | 25 | 13 | 6 | 8 | 22 | 8 | 0.4 |
| | 10120830x | M8 X 1.25 | 30 | 13 | 6 | 8 | 25 | 8 | 0.4 |
| | 10120835x | M8 X 1.25 | 35 | 13 | 6 | 8 | 25 | 8 | 0.4 |
| | 10120840x | M8 X 1.25 | 40 | 13 | 6 | 8 | 25 | 8 | 0.4 |
| | 10120845x | M8 X 1.25 | 45 | 13 | 6 | 8 | 25 | 8 | 0.4 |
| | 10120850x | M8 X 1.25 | 50 | 13 | 6 | 8 | 25 | 8 | 0.4 |
| | 10120855x | M8 X 1.25 | 55 | 13 | 6 | 8 | 25 | 8 | 0.4 |
| | 10120860x | M8 X 1.25 | 60 | 13 | 6 | 8 | 25 | 8 | 0.4 |
| | 10120865x | M8 X 1.25 | 65 | 13 | 6 | 8 | 25 | 8 | 0.4 |
| | 10120870x | M8 X 1.25 | 70 | 13 | 6 | 8 | 25 | 8 | 0.4 |
| | 10120875x | M8 X 1.25 | 75 | 13 | 6 | 8 | 25 | 8 | 0.4 |
| | 10120880x | M8 X 1.25 | 80 | 13 | 6 | 8 | 25 | 8 | 0.4 |
| | 10120885x | M8 X 1.25 | 85 | 13 | 6 | 8 | 25 | 8 | 0.4 |
| 10120890x | M8 X 1.25 | 90 | 13 | 6 | 8 | 25 | 8 | 0.4 | |

TCC – SOCKET HEAD CAP BOLTS

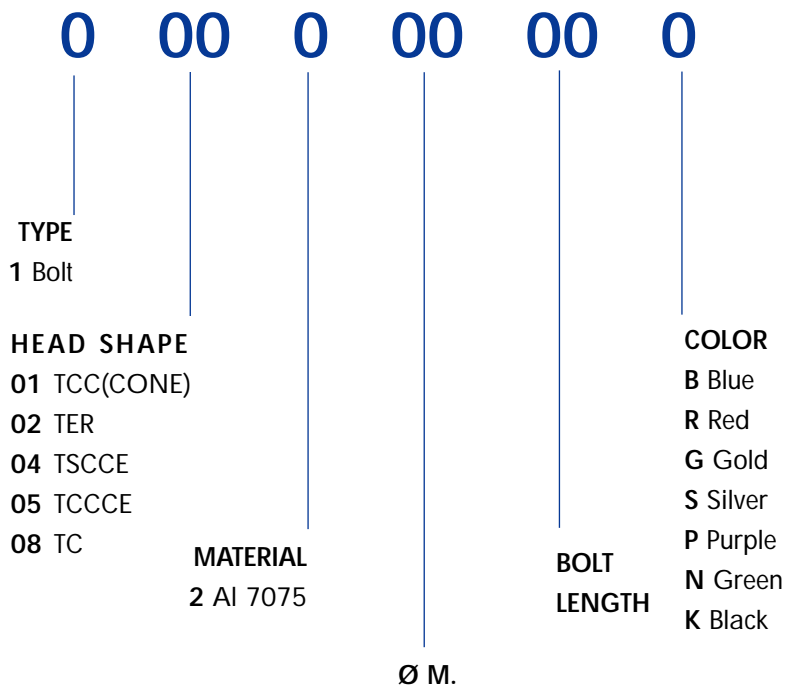
Al 7075



| | Code | d | l | D | s | Ds | b | k | r. |
|------------|-----------|------------|----|----|---|----|----|----|-----|
| M10 | 10121020x | M10 X 1.5 | 20 | 16 | 8 | 10 | | 10 | 0.4 |
| | 10121025x | M10 X 1.5 | 25 | 16 | 8 | 10 | | 10 | 0.4 |
| | 10121030x | M10 X 1.5 | 30 | 16 | 8 | 10 | 26 | 10 | 0.4 |
| | 10121035x | M10 X 1.5 | 35 | 16 | 8 | 10 | 30 | 10 | 0.4 |
| | 10121040x | M10 X 1.5 | 40 | 16 | 8 | 10 | 30 | 10 | 0.4 |
| | 10121045x | M10 X 1.5 | 45 | 16 | 8 | 10 | 30 | 10 | 0.4 |
| | 10121050x | M10 X 1.5 | 50 | 16 | 8 | 10 | 30 | 10 | 0.4 |
| | 10121120x | M10 X 1.25 | 20 | 16 | 8 | 10 | | 10 | 0.4 |
| | 10121125x | M10 X 1.25 | 25 | 16 | 8 | 10 | | 10 | 0.4 |
| | 10121130x | M10 X 1.25 | 30 | 16 | 8 | 10 | 26 | 10 | 0.4 |
| | 10121135x | M10 X 1.25 | 35 | 16 | 8 | 10 | 30 | 10 | 0.4 |
| | 10121140x | M10 X 1.25 | 40 | 16 | 8 | 10 | 30 | 10 | 0.4 |
| | 10121145x | M10 X 1.25 | 45 | 16 | 8 | 10 | 30 | 10 | 0.4 |
| | 10121150x | M10 X 1.25 | 50 | 16 | 8 | 10 | 30 | 10 | 0.4 |

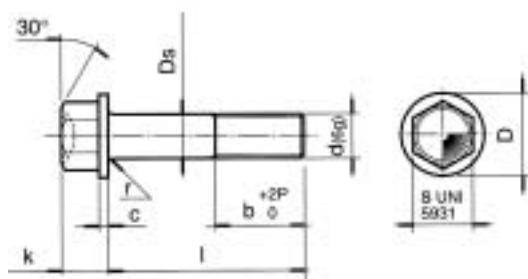
VITI | FASTENERS

AL 7075 BOLT CODING SYSTEM



TER - HEX-HEAD FLANGE BOLTS

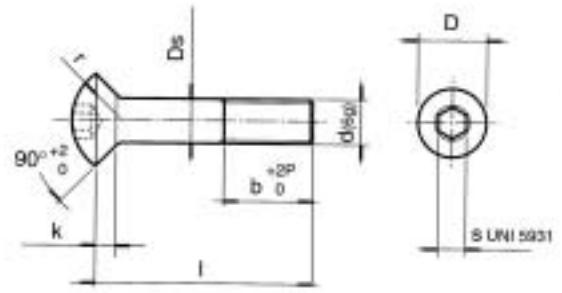
Al 7075



| | Code | d | l | D | c | s | Ds | b | k | r. |
|------------|-----------|-----------|----|------|-----|----|----|----|-----|------|
| M5 | 10220510x | M5 X 0.8 | 10 | 10 | 1 | 7 | 5 | | 5 | 0.2 |
| | 10220515x | M5 X 0.8 | 15 | 10 | 1 | 7 | 5 | | 5 | 0.2 |
| | 10220520x | M5 X 0.8 | 20 | 10 | 1 | 7 | 5 | | 5 | 0.2 |
| | 10220525x | M5 X 0.8 | 25 | 10 | 1 | 7 | 5 | 20 | 5 | 0.2 |
| | 10220530x | M5 X 0.8 | 30 | 10 | 1 | 7 | 5 | 20 | 5 | 0.2 |
| M6 | 10220610x | M6 X 1 | 10 | 11 | 1.3 | 8 | 6 | | 5.5 | 0.25 |
| | 10220615x | M6 X 1 | 15 | 11 | 1.3 | 8 | 6 | | 5.5 | 0.25 |
| | 10220620x | M6 X 1 | 20 | 11 | 1.3 | 8 | 6 | | 5.5 | 0.25 |
| | 10220625x | M6 X 1 | 25 | 11 | 1.3 | 8 | 6 | 22 | 5.5 | 0.25 |
| | 10220630x | M6 X 1 | 30 | 11 | 1.3 | 8 | 6 | 22 | 5.5 | 0.25 |
| | 10220635x | M6 X 1 | 35 | 11 | 1.3 | 8 | 6 | 25 | 5.5 | 0.25 |
| | 10220640x | M6 X 1 | 40 | 11 | 1.3 | 8 | 6 | 25 | 5.5 | 0.25 |
| | 10220645x | M6 X 1 | 45 | 11 | 1.3 | 8 | 6 | 25 | 5.5 | 0.25 |
| | 10220650x | M6 X 1 | 50 | 11 | 1.3 | 8 | 6 | 25 | 5.5 | 0.25 |
| | 10220655x | M6 X 1 | 55 | 11 | 1.3 | 8 | 6 | 25 | 5.5 | 0.25 |
| | 10220660x | M6 X 1 | 60 | 11 | 1.3 | 8 | 6 | 25 | 5.5 | 0.25 |
| | 10220665x | M6 X 1 | 65 | 11 | 1.3 | 8 | 6 | 25 | 5.5 | 0.25 |
| | 10220670x | M6 X 1 | 70 | 11 | 1.3 | 8 | 6 | 25 | 5.5 | 0.25 |
| | 10220675x | M6 X 1 | 75 | 11 | 1.3 | 8 | 6 | 25 | 5.5 | 0.25 |
| | 10220680x | M6 X 1 | 80 | 11 | 1.3 | 8 | 6 | 25 | 5.5 | 0.25 |
| M8 | 10220810x | M8 X 1.25 | 10 | 13.5 | 1.3 | 10 | 8 | | 6.5 | 0.4 |
| | 10220815x | M8 X 1.25 | 15 | 13.5 | 1.3 | 10 | 8 | | 6.5 | 0.4 |
| | 10220820x | M8 X 1.25 | 20 | 13.5 | 1.3 | 10 | 8 | | 6.5 | 0.4 |
| | 10220825x | M8 X 1.25 | 25 | 13.5 | 1.3 | 10 | 8 | 22 | 6.5 | 0.4 |
| | 10220830x | M8 X 1.25 | 30 | 13.5 | 1.3 | 10 | 8 | 25 | 6.5 | 0.4 |
| | 10220835x | M8 X 1.25 | 35 | 13.5 | 1.3 | 10 | 8 | 25 | 6.5 | 0.4 |
| | 10220840x | M8 X 1.25 | 40 | 13.5 | 1.3 | 10 | 8 | 25 | 6.5 | 0.4 |
| | 10220845x | M8 X 1.25 | 45 | 13.5 | 1.3 | 10 | 8 | 25 | 6.5 | 0.4 |
| | 10220850x | M8 X 1.25 | 50 | 13.5 | 1.3 | 10 | 8 | 25 | 6.5 | 0.4 |
| | 10220855x | M8 X 1.25 | 55 | 13.5 | 1.3 | 10 | 8 | 25 | 6.5 | 0.4 |
| | 10220860x | M8 X 1.25 | 60 | 13.5 | 1.3 | 10 | 8 | 25 | 6.5 | 0.4 |
| M10 | 10221020x | M10 X 1.5 | 20 | 16.5 | 1.5 | 12 | 10 | | 8.0 | 0.4 |
| | 10221025x | M10 X 1.5 | 25 | 16.5 | 1.5 | 12 | 10 | | 8.0 | 0.4 |
| | 10221030x | M10 X 1.5 | 30 | 16.5 | 1.5 | 12 | 10 | 26 | 8.0 | 0.4 |
| | 10221035x | M10 X 1.5 | 35 | 16.5 | 1.5 | 12 | 10 | 30 | 8.0 | 0.4 |
| | 10221040x | M10 X 1.5 | 40 | 16.5 | 1.5 | 12 | 10 | 30 | 8.0 | 0.4 |
| | 10221045x | M10 X 1.5 | 45 | 16.5 | 1.5 | 12 | 10 | 30 | 8.0 | 0.4 |
| | 10221050x | M10 X 1.5 | 50 | 16.5 | 1.5 | 12 | 10 | 30 | 8.0 | 0.4 |

TSCCE COUNERSUNK HEAD BOLTS

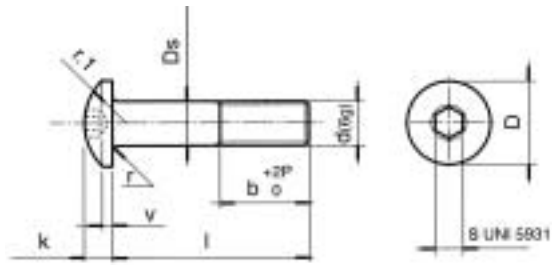
Al 7075



| | Code | d | l | D | b | k | s | r | Ds |
|-----------|-----------|-----------|----|----|----|-----|-----|----|----|
| M4 | 10420410x | M4 X 0.7 | 10 | 8 | | 2 | 2.5 | 12 | 4 |
| | 10420415x | M4 X 0.7 | 15 | 8 | | 2 | 2.5 | 12 | 4 |
| | 10420420x | M4 X 0.7 | 20 | 8 | 14 | 2 | 2.5 | 12 | 4 |
| M5 | 10420510x | M5 X 0.8 | 10 | 10 | | 2.5 | 3 | 15 | 5 |
| | 10420515x | M5 X 0.8 | 15 | 10 | | 2.5 | 3 | 15 | 5 |
| | 10420520x | M5 X 0.8 | 20 | 10 | 16 | 2.5 | 3 | 15 | 5 |
| | 10420525x | M5 X 0.8 | 25 | 10 | 16 | 2.5 | 3 | 15 | 5 |
| | 10420530x | M5 X 0.8 | 30 | 10 | 16 | 2.5 | 3 | 15 | 5 |
| M6 | 10420610x | M6 X 1 | 10 | 12 | | 3 | 4 | 18 | 6 |
| | 10420615x | M6 X 1 | 15 | 12 | | 3 | 4 | 18 | 6 |
| | 10420620x | M6 X 1 | 20 | 12 | | 3 | 4 | 18 | 6 |
| | 10420625x | M6 X 1 | 25 | 12 | 18 | 3 | 4 | 18 | 6 |
| | 10420630x | M6 X 1 | 30 | 12 | 18 | 3 | 4 | 18 | 6 |
| | 10420635x | M6 X 1 | 35 | 12 | 18 | 3 | 4 | 18 | 6 |
| | 10420640x | M6 X 1 | 40 | 12 | 18 | 3 | 4 | 18 | 6 |
| | 10420645x | M6 X 1 | 45 | 12 | 18 | 3 | 4 | 18 | 6 |
| | 10420650x | M6 X 1 | 50 | 12 | 18 | 3 | 4 | 18 | 6 |
| M8 | 10420815x | M8 X 1.25 | 15 | 16 | | 4 | 5 | 25 | 8 |
| | 10420820x | M8 X 1.25 | 20 | 16 | | 4 | 5 | 25 | 8 |
| | 10420825x | M8 X 1.25 | 25 | 16 | 18 | 4 | 5 | 25 | 8 |
| | 10420830x | M8 X 1.25 | 30 | 16 | 22 | 4 | 5 | 25 | 8 |
| | 10420835x | M8 X 1.25 | 35 | 16 | 22 | 4 | 5 | 25 | 8 |
| | 10420840x | M8 X 1.25 | 40 | 16 | 22 | 4 | 5 | 25 | 8 |

TCCCE - BUTTON HEAD BOLTS

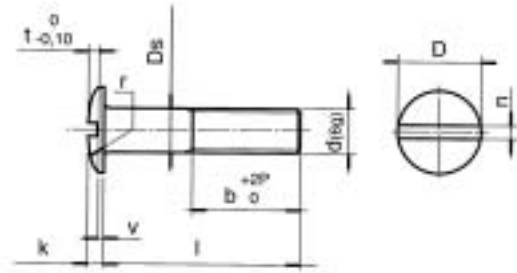
Al 7075



| | Code | d | l | D | b | k | v | s | r | Ds | r.1 |
|-----------|-----------|-----------|----|----|-----|-----|-----|-----|------|-----|-----|
| M4 | 10520410x | M4 X 0.7 | 10 | 10 | | 2.5 | 0.5 | 2.5 | 0.2 | 4 | 6.9 |
| | 10520415x | M4 X 0.7 | 15 | 10 | | 2.5 | 0.5 | 2.5 | 0.2 | 4 | 6.9 |
| | 10520420x | M4 X 0.7 | 20 | 10 | | 2.5 | 0.5 | 2.5 | 0.2 | 4 | 6.9 |
| | 10520425x | M4 X 0.7 | 25 | 10 | 14 | 2.5 | 0.5 | 2.5 | 0.2 | 4 | 6.9 |
| | 10520430x | M4 X 0.7 | 30 | 10 | 14 | 2.5 | 0.5 | 2.5 | 0.2 | 4 | 6.9 |
| | 10520435x | M4 X 0.7 | 35 | 10 | 14 | 2.5 | 0.5 | 2.5 | 0.2 | 4 | 6.9 |
| 10520440x | M4 X 0.7 | 40 | 10 | 14 | 2.5 | 0.5 | 2.5 | 0.2 | 4 | 6.9 | |
| M5 | 10520510x | M5 X 0.8 | 10 | 12 | | 3.0 | 1 | 3 | 0.2 | 5 | 9.4 |
| | 10520515x | M5 X 0.8 | 15 | 12 | | 3.0 | 1 | 3 | 0.2 | 5 | 9.4 |
| | 10520520x | M5 X 0.8 | 20 | 12 | | 3.0 | 1 | 3 | 0.2 | 5 | 9.4 |
| | 10520525x | M5 X 0.8 | 25 | 12 | 16 | 3.0 | 1 | 3 | 0.2 | 5 | 9.4 |
| | 10520530x | M5 X 0.8 | 30 | 12 | 16 | 3.0 | 1 | 3 | 0.2 | 5 | 9.4 |
| | 10520535x | M5 X 0.8 | 35 | 12 | 16 | 3.0 | 1 | 3 | 0.2 | 5 | 9.4 |
| | 10520540x | M5 X 0.8 | 40 | 12 | 16 | 3.0 | 1 | 3 | 0.2 | 5 | 9.4 |
| | 10520545x | M5 X 0.8 | 45 | 12 | 16 | 3.0 | 1 | 3 | 0.2 | 5 | 9.4 |
| 10520550x | M5 X 0.8 | 50 | 12 | 16 | 3.0 | 1 | 3 | 0.2 | 5 | 9.4 | |
| M6 | 10520610x | M6 X 1 | 10 | 16 | | 3.5 | 1.2 | 4 | 0.25 | 6 | 14 |
| | 10520615x | M6 X 1 | 15 | 16 | | 3.5 | 1.2 | 4 | 0.25 | 6 | 14 |
| | 10520620x | M6 X 1 | 20 | 16 | | 3.5 | 1.2 | 4 | 0.25 | 6 | 14 |
| | 10520625x | M6 X 1 | 25 | 16 | 18 | 3.5 | 1.2 | 4 | 0.25 | 6 | 14 |
| | 10520630x | M6 X 1 | 30 | 16 | 18 | 3.5 | 1.2 | 4 | 0.25 | 6 | 14 |
| | 10520635x | M6 X 1 | 35 | 16 | 18 | 3.5 | 1.2 | 4 | 0.25 | 6 | 14 |
| | 10520640x | M6 X 1 | 40 | 16 | 18 | 3.5 | 1.2 | 4 | 0.25 | 6 | 14 |
| M8 | 10520810x | M8 X 1.25 | 10 | 16 | | 4 | 1.3 | 5 | 0.4 | 8 | 12 |
| | 10520815x | M8 X 1.25 | 15 | 16 | | 4 | 1.3 | 5 | 0.4 | 8 | 12 |
| | 10520820x | M8 X 1.25 | 20 | 16 | | 4 | 1.3 | 5 | 0.4 | 8 | 12 |
| | 10520825x | M8 X 1.25 | 25 | 16 | | 4 | 1.3 | 5 | 0.4 | 8 | 12 |
| | 10520830x | M8 X 1.25 | 30 | 16 | 22 | 4 | 1.3 | 5 | 0.4 | 8 | 12 |
| | 10520835x | M8 X 1.25 | 35 | 16 | 22 | 4 | 1.3 | 5 | 0.4 | 8 | 12 |
| | 10520840x | M8 X 1.25 | 40 | 16 | 22 | 4 | 1.3 | 5 | 0.4 | 8 | 12 |

TC - SINGLE-SLOT BOLTS

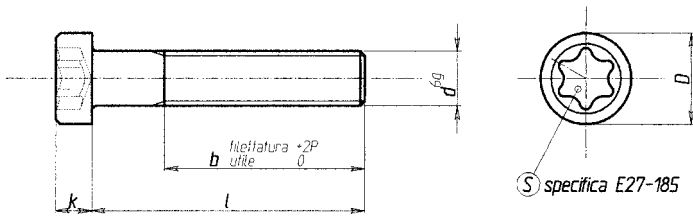
Al 7075



| | Code | d | l | D | k | V | Ds | t | r | n |
|-----------|-----------|-----------|----|----|-----|-----|----|-----|------|-----|
| M5 | 10820510x | M5 X 0.8 | 10 | 14 | 3.0 | 1.3 | | 2.0 | 13 | 1.3 |
| | 10820515x | M5 X 0.8 | 15 | 14 | 3.0 | 1.3 | | 2.0 | 13 | 1.3 |
| | 10820520x | M5 X 0.8 | 20 | 14 | 3.0 | 1.3 | 5 | 2.0 | 13 | 1.3 |
| | 10820525x | M5 X 0.8 | 25 | 14 | 3.0 | 1.3 | 5 | 2.0 | 13 | 1.3 |
| M6 | 10820610x | M6 X 1 | 10 | 18 | 3.7 | 1.5 | 6 | 2.2 | 19.5 | 1.5 |
| | 10820615x | M6 X 1 | 15 | 18 | 3.7 | 1.5 | 6 | 2.2 | 19.5 | 1.5 |
| | 10820620x | M6 X 1 | 20 | 18 | 3.7 | 1.5 | 6 | 2.2 | 19.5 | 1.5 |
| | 10820625x | M6 X 1 | 25 | 18 | 3.7 | 1.5 | 6 | 2.2 | 19.5 | 1.5 |
| | 10820630x | M6 X 1 | 30 | 18 | 3.7 | 1.5 | 6 | 2.2 | 19.5 | 1.5 |
| M8 | 10820810x | M8 X 1.25 | 10 | 22 | 4.2 | 1.8 | 8 | 2.4 | 26 | 1.8 |
| | 10820815x | M8 X 1.25 | 15 | 22 | 4.2 | 1.8 | 8 | 2.4 | 26 | 1.8 |
| | 10820820x | M8 X 1.25 | 20 | 22 | 4.2 | 1.8 | 8 | 2.4 | 26 | 1.8 |

106 TCTX BOLTS

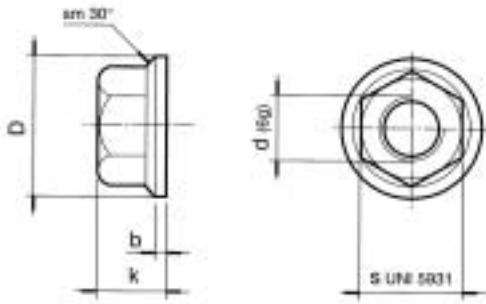
Al 7075



| | Code | d | l | D | b | k | S | |
|-----------|-----------|-----------|----------|-----|-----|-----|-------------|-------------|
| M4 | 10620408x | M4 x 0.7 | 08 | 7.0 | | 3.0 | impronta 25 | |
| | 10620410x | M4 x 0.7 | 10 | 7.0 | | 3.0 | impronta 25 | |
| | 10620412x | M4 x 0.7 | 12 | 7.0 | | 3.0 | impronta 25 | |
| | 10620414x | M4 x 0.7 | 14 | 7.0 | | 3.0 | impronta 25 | |
| | 10620416x | M4 x 0.7 | 16 | 7.0 | | 3.0 | impronta 25 | |
| | 10620418x | M4 x 0.7 | 18 | 7.0 | | 3.0 | impronta 25 | |
| | 10620420x | M4 x 0.7 | 20 | 7.0 | | 3.0 | impronta 25 | |
| | 10620422x | M4 x 0.7 | 22 | 7.0 | | 3.0 | impronta 25 | |
| | 10620425x | M4 x 0.7 | 25 | 7.0 | | 3.0 | impronta 25 | |
| | 10620430x | M4 x 0.7 | 30 | 7.0 | | 3.0 | impronta 25 | |
| | 10620435x | M4 x 0.7 | 35 | 7.0 | | 20 | 3.0 | impronta 25 |
| | 10620440x | M4 x 0.7 | 40 | 7.0 | | 20 | 3.0 | impronta 25 |
| | M5 | 10620508x | M5 x 0.8 | 08 | 8.5 | | 3.5 | impronta 30 |
| 10620510x | | M5 x 0.8 | 10 | 8.5 | | 3.5 | impronta 30 | |
| 10620512x | | M5 x 0.8 | 12 | 8.5 | | 3.5 | impronta 30 | |
| 10620514x | | M5 x 0.8 | 14 | 8.5 | | 3.5 | impronta 30 | |
| 10620516x | | M5 x 0.8 | 16 | 8.5 | | 3.5 | impronta 30 | |
| 10620518x | | M5 x 0.8 | 18 | 8.5 | | 3.5 | impronta 30 | |
| 10620520x | | M5 x 0.8 | 20 | 8.5 | | 3.5 | impronta 30 | |
| 10620522x | | M5 x 0.8 | 22 | 8.5 | | 3.5 | impronta 30 | |
| 10620525x | | M5 x 0.8 | 25 | 8.5 | | 3.5 | impronta 30 | |
| 10620530x | | M5 x 0.8 | 30 | 8.5 | | 20 | 3.5 | impronta 30 |
| 10620535x | | M5 x 0.8 | 35 | 8.5 | | 20 | 3.5 | impronta 30 |
| 10620540x | | M5 x 0.8 | 40 | 8.5 | | 20 | 3.5 | impronta 30 |
| 10620545x | | M5 x 0.8 | 45 | 8.5 | | 25 | 3.5 | impronta 30 |
| 10620550x | M5 x 0.8 | 50 | 8.5 | | 25 | 3.5 | impronta 30 | |
| M6 | 10620610x | M6 x 1.00 | 10 | 10 | | 4.0 | impronta 40 | |
| | 10620612x | M6 x 1.00 | 12 | 10 | | 4.0 | impronta 40 | |
| | 10620614x | M6 x 1.00 | 14 | 10 | | 4.0 | impronta 40 | |
| | 10620616x | M6 x 1.00 | 16 | 10 | | 4.0 | impronta 40 | |
| | 10620618x | M6 x 1.00 | 18 | 10 | | 4.0 | impronta 40 | |
| | 10620620x | M6 x 1.00 | 20 | 10 | | 4.0 | impronta 40 | |
| | 10620622x | M6 x 1.00 | 22 | 10 | | 4.0 | impronta 40 | |
| | 10620625x | M6 x 1.00 | 25 | 10 | | 20 | 4.0 | impronta 40 |
| | 10620630x | M6 x 1.00 | 30 | 10 | | 20 | 4.0 | impronta 40 |
| | 10620635x | M6 x 1.00 | 35 | 10 | | 20 | 4.0 | impronta 40 |
| | 10620640x | M6 x 1.00 | 40 | 10 | | 20 | 4.0 | impronta 40 |
| | 10620645x | M6 x 1.00 | 45 | 10 | | 25 | 4.0 | impronta 40 |
| | 10620650x | M6 x 1.00 | 50 | 10 | | 25 | 4.0 | impronta 40 |
| | 10620660x | M6 x 1.00 | 60 | 10 | | 25 | 4.0 | impronta 40 |
| | 10620665x | M6 x 1.00 | 65 | 10 | | 30 | 4.0 | impronta 40 |
| 10620670x | M6 x 1.00 | 70 | 10 | | 30 | 4.0 | impronta 40 | |
| M8 | 10620812x | M8 x 1.25 | 12 | 13 | | 5.0 | impronta 50 | |
| | 10620814x | M8 x 1.25 | 14 | 13 | | 5.0 | impronta 50 | |
| | 10620816x | M8 x 1.25 | 16 | 13 | | 5.0 | impronta 50 | |
| | 10620818x | M8 x 1.25 | 18 | 13 | | 5.0 | impronta 50 | |
| | 10620820x | M8 x 1.25 | 20 | 13 | | 5.0 | impronta 50 | |
| | 10620822x | M8 x 1.25 | 22 | 13 | | 5.0 | impronta 50 | |
| | 10620825x | M8 x 1.25 | 25 | 13 | | 20 | 5.0 | impronta 50 |
| | 10620830x | M8 x 1.25 | 30 | 13 | | 20 | 5.0 | impronta 50 |
| | 10620835x | M8 x 1.25 | 35 | 13 | | 20 | 5.0 | impronta 50 |
| | 10620840x | M8 x 1.25 | 40 | 13 | | 20 | 5.0 | impronta 50 |
| | 10620845x | M8 x 1.25 | 45 | 13 | | 25 | 5.0 | impronta 50 |
| | 10620850x | M8 x 1.25 | 50 | 13 | | 25 | 5.0 | impronta 50 |
| | 10620860x | M8 x 1.25 | 60 | 13 | | 25 | 5.0 | impronta 50 |
| | 10620865x | M8 x 1.25 | 65 | 13 | | 30 | 5.0 | impronta 50 |
| | 10620870x | M8 x 1.25 | 70 | 13 | | 30 | 5.0 | impronta 50 |
| | 10620880x | M8 x 1.25 | 80 | 13 | | 35 | 5.0 | impronta 50 |
| | 10620890x | M8 x 1.25 | 90 | 13 | | 35 | 5.0 | impronta 50 |

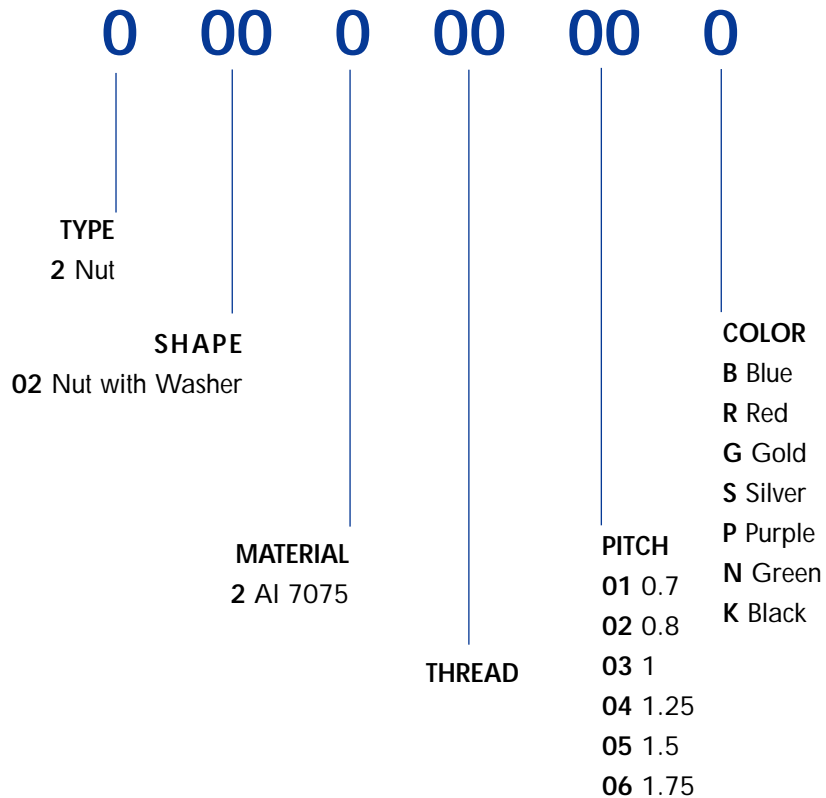
TER NUTS

AI 7075



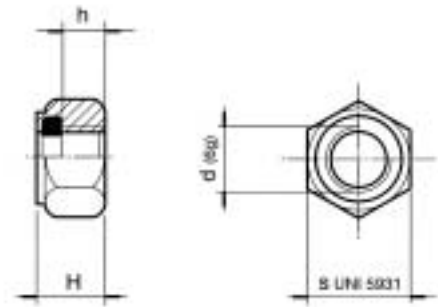
| Code | d | k | b | s | D |
|-----------|------------|----|-----|----|------|
| 20220401x | M4 X 0.7 | 4 | 0.9 | 7 | 10 |
| 20220502x | M5 X 0.8 | 5 | 1 | 8 | 11 |
| 20220603x | M6 X 1 | 6 | 1.1 | 8 | 13 |
| 20220804x | M8 X 1.25 | 8 | 1.2 | 12 | 16 |
| 20221004x | M10 X 1.25 | 10 | 1.5 | 14 | 20 |
| 20221005x | M10 X 1.5 | 10 | 1.5 | 14 | 20 |
| 20221204x | M12 X 1.25 | 11 | 1.8 | 17 | 24 |
| 20221205x | M12 X 1.5 | 11 | 1.8 | 17 | 24 |
| 20221405x | M14 X 1.5 | 12 | 2.1 | 19 | 27.5 |
| 20221605x | M16 X 1.5 | 13 | 2.4 | 22 | 32 |
| 20221805x | M18 X 1.5 | 14 | 2.6 | 24 | 35 |
| 20222005x | M20 X 1.5 | 15 | 3 | 27 | 39 |

AI 7075 NUT CODING SYSTEM



SELF-LOCKING NUTS

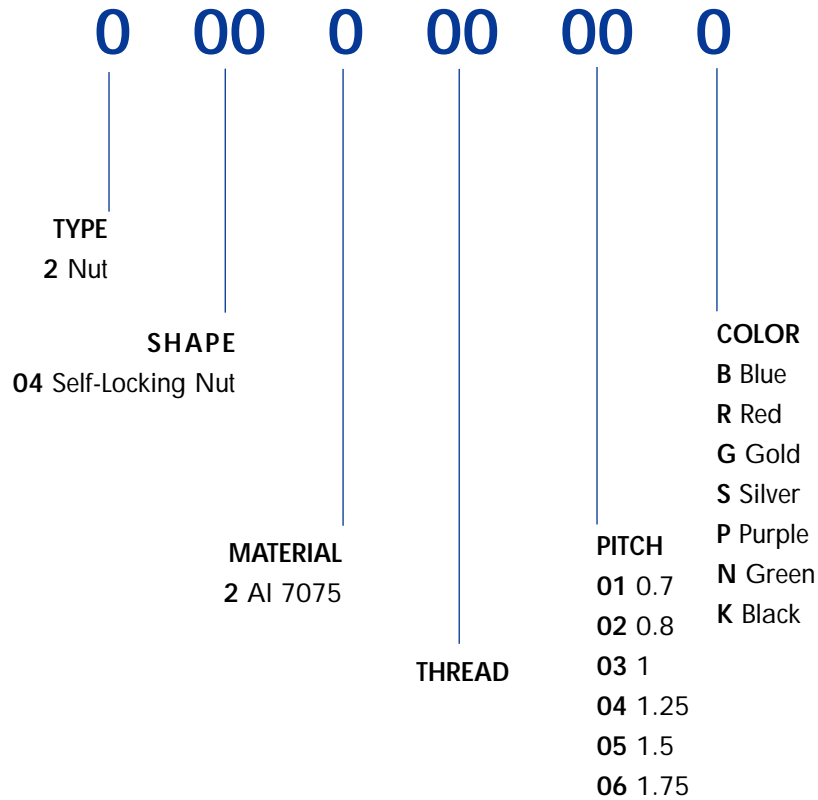
AI 7075



| Code | d | H | h | s |
|-----------|----------|-----|-----|----|
| 20420401x | M4 x 0.7 | 4.8 | 3 | 7 |
| 20420502x | M5 x 0.8 | 5.5 | 3.5 | 8 |
| 20420603x | M6 x 1 | 7.6 | 4.8 | 10 |

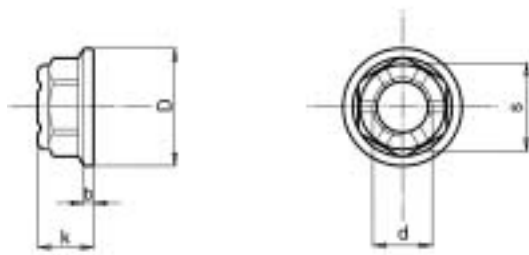
VITI | FASTENERS

AI 7075 NUT CODING SYSTEM



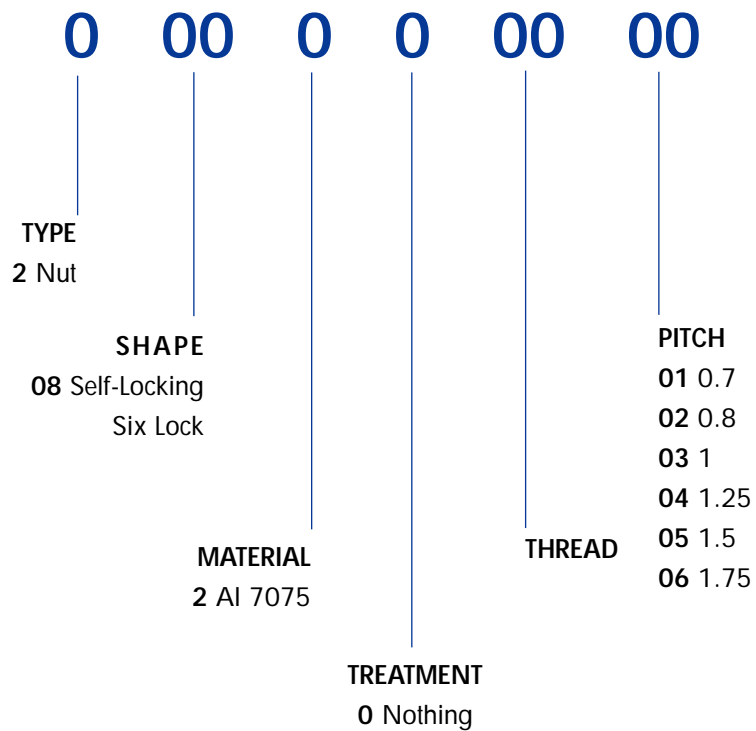
SIX-LOCK SELF-LOCKING NUTS

AI 7075



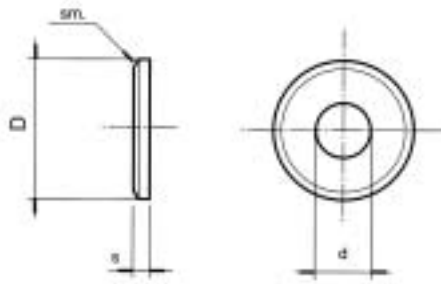
| Code | d | K | b | s | D |
|-----------|------------|------|-----|----|----|
| 20820603x | M6 X 1.00 | 8.0 | 0.8 | 10 | 13 |
| 20820804x | M8 X 1.25 | 9.0 | 1.5 | 13 | 17 |
| 20821004x | M10 X 1.25 | 10.5 | 1.7 | 17 | 22 |
| 20821005x | M10 X 1.50 | 10.5 | 1.7 | 17 | 22 |

AI 7075 NUT CODING SYSTEM



WASHERS

AI 7075



| Code | Ø M | d | D | s | Sm x 45° |
|-----------|-----|-------|------|-----|----------|
| 32090404x | M4 | 4.20 | 9 | 0.8 | 0.2 |
| 32110505x | M5 | 5.20 | 10 | 1 | 0.2 |
| 32160606x | M6 | 6.20 | 12.5 | 1.6 | 0.5 |
| 32180606x | M6L | 6.20 | 17 | 1.6 | 0.5 |
| 32180809x | M8 | 8.20 | 17 | 1.6 | 0.5 |
| 32221010x | M10 | 10.30 | 21 | 2.0 | 1 |
| 32241212x | M12 | 12.40 | 24 | 2.5 | 1 |
| 32261414x | M14 | 14.50 | 28 | 2.5 | 1 |
| 32321818x | M18 | 18.50 | 34 | 3 | 1.5 |
| 32352020x | M20 | 20.50 | 37 | 3 | 1.5 |

AI 7075 WASHER CODING SYSTEM

0 0 00 00 00 0

TYPE
3 Washer

MATERIAL
2 AI 7075

OUTER Ø

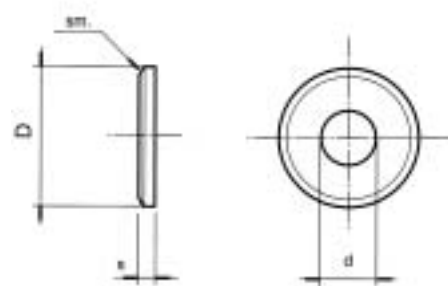
INNER Ø

Ø M.

COLOR
B Blue
R Red
G Gold
S Silver
P Purple
N Green
K Black

WASHERS

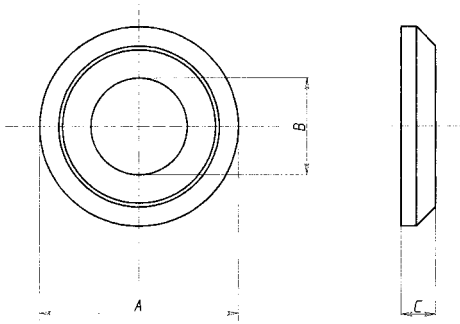
NYLON



| Code | Ø M | d | D | s | Sm x 45° |
|-----------|-----|------|------|-----|----------|
| 390120404 | M4 | 4.20 | 9 | 0.8 | 0.2 |
| 390120505 | M5 | 5.20 | 10 | 1 | 0.2 |
| 390130606 | M6 | 6.20 | 12.5 | 1.6 | 0.5 |
| 390180606 | M6L | 6.20 | 17 | 1.6 | 0.5 |
| 390180808 | M8 | 8.20 | 17 | 1.6 | 0.5 |

TSTX WASHERS

AI 7075



| Code | A | B | C |
|-----------|-------|------|------|
| 32020904x | 9.00 | 4.20 | 1.50 |
| 32021105x | 11.00 | 5.25 | 2.00 |
| 32021306x | 13.00 | 6.30 | 2.25 |
| 32021608x | 16.00 | 8.50 | 2.60 |

AI 7075 WASHER CODING SYSTEM

0 0 00 00 00 0

TYPE
3 Washer

MATERIAL
2 AI 7075

OUTER Ø

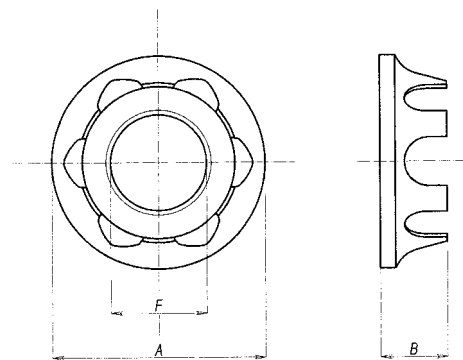
INNER Ø

Ø M.

COLOR
B Blue
R Red
G Gold
S Silver
P Purple
N Green
K Black

TCTX WASHERS

Al 7075



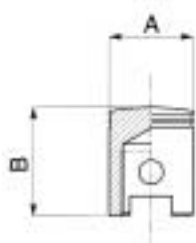
| Code | A | B | F |
|-----------|-------|------|------|
| 32051004x | 9.00 | 3.30 | 4.20 |
| 32051205x | 11.00 | 3.90 | 5.25 |
| 32051406x | 13.00 | 4.40 | 6.30 |
| 32051808x | 16.00 | 5.00 | 8.50 |

VALVE CAPS

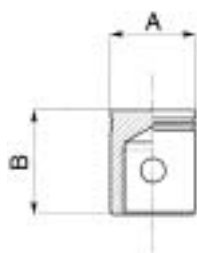
Al 7075



| Code | ØA | B | ØC |
|-----------|------|------|-----|
| 52420001x | 10.4 | 13.0 | 9.0 |



| Code | ØA | B |
|-----------|------|------|
| 52420014x | 10.4 | 13.6 |




| Code | ØA | B |
|-----------|------|------|
| 52420015x | 10.4 | 13.0 |

FAIRING BOLTS

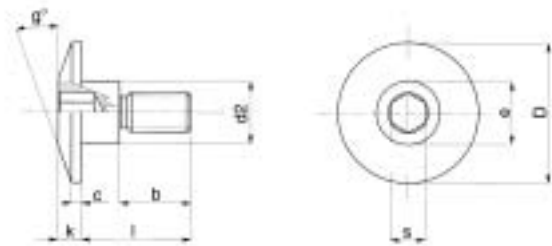
Al 7075




| Code |  | l | b | k | c | s | D | d2 | R | R1 |
|-----------|---|----|------|-----|-----|---|----|------|------|------|
| 52420002x | M6 x 1.00 | 18 | 8.0 | 4.0 | 1.0 | 4 | 16 | 8.0 | 0.20 | 11.5 |
| 52420003x | M5 x 0.8 | 15 | 11.5 | 3.5 | 1.2 | 4 | 16 | 8.0 | 0.20 | 14.0 |
| 52420004x | M6 x 1.00 | 18 | 12.0 | 4.0 | 1.2 | 5 | 23 | 10.0 | 0.30 | 24.0 |

FAIRING BOLTS

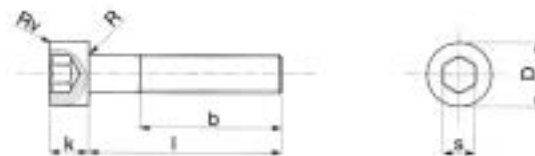
Al 7075




| Code |  | l | b | k | c | e | s | D | d2 | g° |
|-----------|---|----|------|-----|-----|------|---|------|------|----|
| 52420005x | M7 x 1.00 | 19 | 12.4 | 4.0 | 1.7 | 11.0 | 6 | 24.3 | 10.8 | 20 |

GAS CAP BOLTS

Al 7075

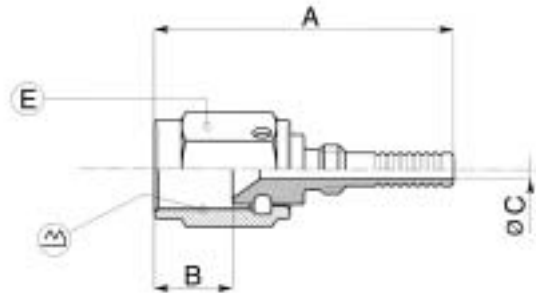




| Code |  | l | b | k | s | D | RV | R |
|-----------|---|----|----|-----|---|-----|---------|------|
| 52020001x | M4 x 0.7 | 9 | 9 | 6.0 | 3 | 9.5 | max 0.4 | 0.30 |
| 52020002x | M4 x 0.7 | 21 | 12 | 6.0 | 3 | 9.5 | max 0.4 | 0.30 |
| 52020003x | M5 x 0.8 | 10 | 10 | 5.0 | 3 | 8.5 | max 0.5 | 0.30 |
| 52020004x | M5 x 0.8 | 15 | 15 | 5.0 | 4 | 8.5 | max 0.5 | 0.30 |
| 52020005x | M5 x 0.8 | 25 | 25 | 5.0 | 4 | 8.5 | max 0.5 | 0.30 |
| 52020013x | M6 x 1.0 | 9 | 9 | 9.0 | 3 | 9.5 | max 0.4 | 0.30 |



HOSE FITTINGS 518

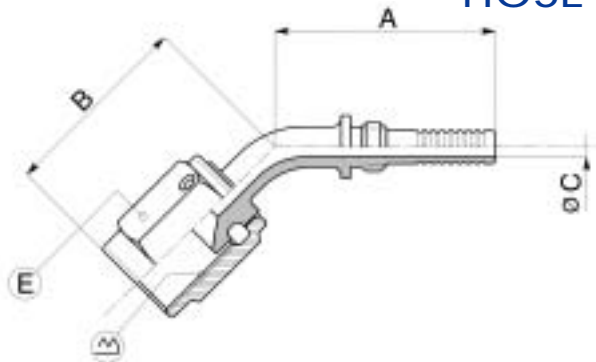
TITANIUM





| Code | Size |  | A max | B | Cmax | E  | gr. |
|-----------|------|---|-------|-----|------|---|------|
| 518140300 | 03 | 3/8-24UNF | 32.4 | 7.4 | 2.00 | 11 | 4.5 |
| 518140400 | 04 | 7/16-20UNF | 34.6 | 9.2 | 3.50 | 14 | 8.5 |
| 518140500 | 05 | 1/2-20UNF | 37.2 | 9.2 | 4.75 | 16 | 12.0 |
| 518140600 | 06 | 9/16-18UNF | 39.7 | 9.3 | 6.80 | 18 | 18.5 |

HOSE FITTINGS 518 45°

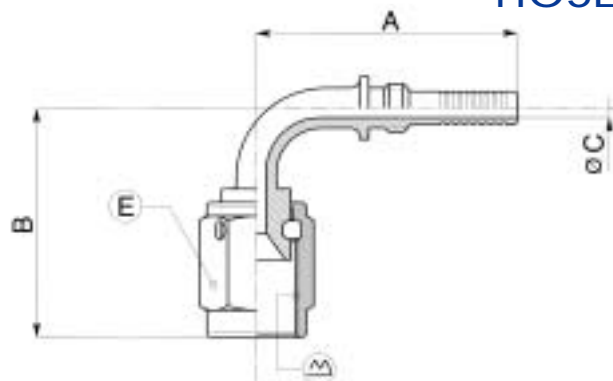
TITANIUM





| Code | Size |  | A max | B | Cmax | E  | gr. |
|-----------|------|---|-------|------|------|---|------|
| 518140345 | 03 | 3/8-24UNF | 27.2 | 23.9 | 2.00 | 11 | 6.0 |
| 518140445 | 04 | 7/16-20UNF | 30.8 | 30.0 | 3.50 | 14 | 10.5 |
| 518140545 | 05 | 1/2-20UNF | 35.0 | 33.0 | 4.75 | 16 | 15.5 |
| 518140645 | 06 | 9/16-18UNF | 41.0 | 36.0 | 6.80 | 18 | 22.0 |

HOSE FITTINGS 518 90°

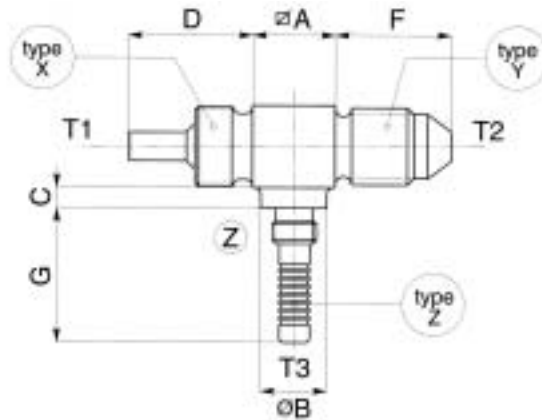
TITANIUM



| Code | Size |  | A max | B | Cmax | E  | gr. |
|-----------|------|---|-------|------|------|---|------|
| 518140390 | 03 | 3/8-24UNF | 27.2 | 23.9 | 2.00 | 11 | 6.5 |
| 518140490 | 04 | 7/16-20UNF | 30.8 | 30.0 | 3.50 | 14 | 11.0 |
| 518140590 | 05 | 1/2-20UNF | 35.0 | 33.0 | 4.75 | 16 | 16.5 |
| 518140690 | 06 | 9/16-18UNF | 41.0 | 36.0 | 6.80 | 18 | 23.0 |

THREE WAY FORGED HOSE FITTINGS 513

TITANIUM



| Size | A | B | C | D | F | G |
|------|-----|------|------|-------|-------|-------|
| 02 | 8.0 | 4.1 | 1.95 | 13.40 | | 16.00 |
| 03 | 10 | 9.6 | 2.0 | 14.15 | 14.00 | 16.30 |
| 04 | 10 | 9.6 | 2.0 | | | 17.70 |
| 05 | 13 | 12.0 | 3.0 | | | 19.30 |
| 06 | 13 | 12.0 | 3.0 | | | 21.00 |

TABLE TO FILL OUT REQUEST OF COUPLING

INCLUDING HEAT TREATMENTS - COLORING BY ANODIC OXIDATION AND WEAR-RESISTANT INSERTS

5 00 0 00 000

TYPE

5 Hose Fitting

SHAPE

13 Three exits

MATERIAL

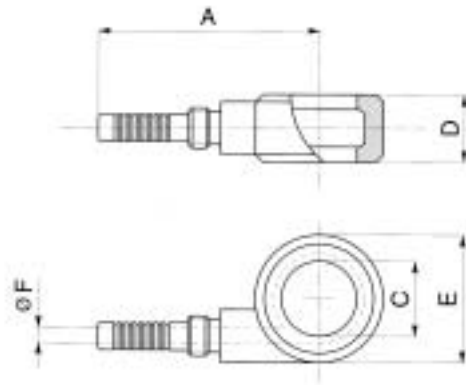
1 Titanium

TREATMENT

00 Nothing
01 Oxidation
02 Nitriding

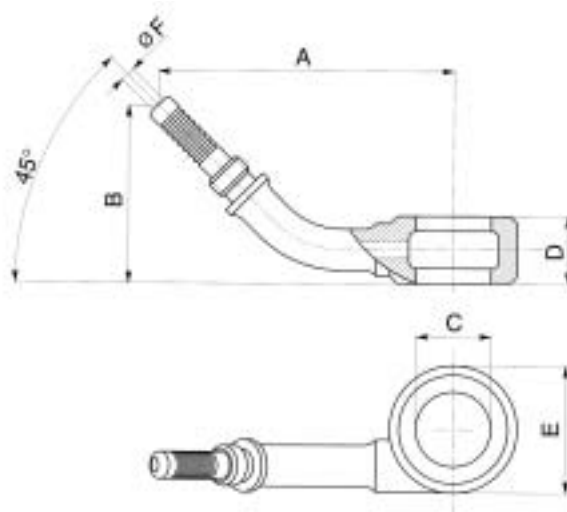
| TYPE | T1-T2-T3 | DIMEN. |
|------|--|--------|
| X | 1 5/16-32 2 3/8- 32 | D |
| Y | 3 3/8- 24 | F |
| Z | 4 Crimp sz 3 5 Crimp sz 4 6 Crimp sz 5 7 Crimp sz 6 8 Crimp sz 2 | G |


BANJO CRIMP TITANIUM



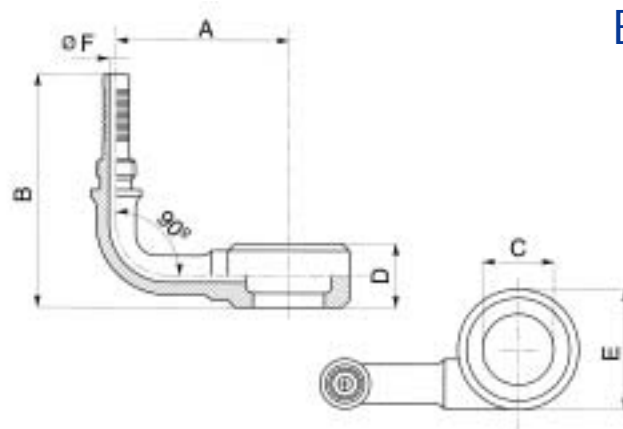
| Code | Size | A | C | D | E | F | gr. |
|-----------|------|------|------|-----|----|-----|-----|
| 599132300 | 03 | 29.5 | 10.0 | 9.0 | 17 | 2.0 | 6.0 |


BANJO CRIMP 45° TITANIUM



| Code | Size |  | A | B | C | D | E | F | gr. |
|-----------|------|---|------|------|------|-----|----|-----|-----|
| 599132345 | 03 | 12-32 UNEF | 39.5 | 23.8 | 10.0 | 9.0 | 17 | 2.0 | 6.8 |

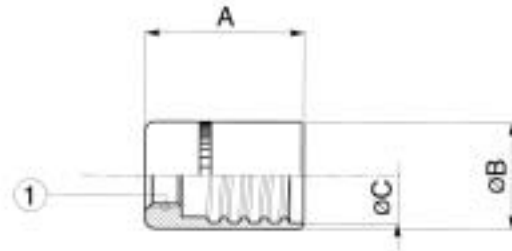
BANJO CRIMP 90° TITANIUM




| Code | Size |  | A | B | C | D | F | gr. |
|-----------|------|---|------|------|------|-----|-----|-----|
| 599132390 | 03 | 12-32 UNEF | 21.5 | 31.5 | 10.0 | 9.0 | 2.0 | 7.0 |

LOCKRING

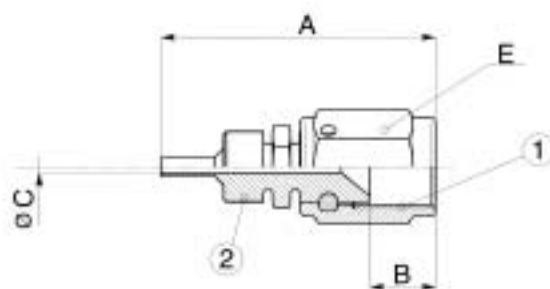
STAINLESS STEEL 304






| Code | Size |  | A | B | C | gr. |
|-----------|------|---|------|------|-------|------|
| 518340003 | 03 | 12-32 UNEF | 15.0 | 9.75 | 6.90 | 4.5 |
| 518340004 | 04 | 9/32-32 UNEF | 17.4 | 11.8 | 9.30 | 7.0 |
| 518340005 | 05 | 23/64-28 UNEF | 17.4 | 12.9 | 10.40 | 7.5 |
| 518340006 | 06 | 27/64-28 UNEF | 20.7 | 15.2 | 12.35 | 10.5 |

FORGED HOSE FITTINGS 519

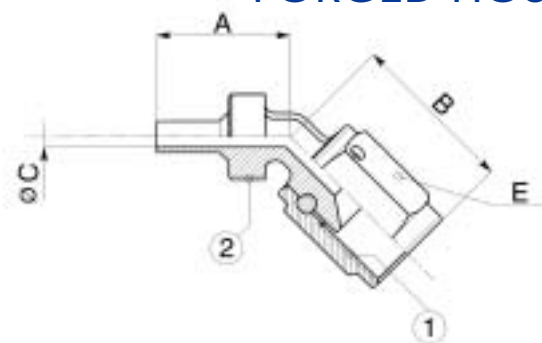
TITANIUM






| Code | Size |  1 |  2 | A max | B | Cmax | E  | gr. |
|-----------|------|---|---|-------|-----|------|---|-----|
| 519140200 | 02 | 5/16-24UNF | 5/16-32UNEF | 28.7 | 6.3 | 1.3 | 9.5 | 6.0 |
| 519140300 | 03 | 3/8-24UNF | 3/8-32UNEF | 31.1 | 7.3 | 2.3 | 11.0 | 6.5 |
| 519140301 | 3/2 | 3/8-24UNF | 5/16-32UNEF | 30.5 | 7.3 | 1.3 | 11.0 | 6.3 |

FORGED HOSE FITTINGS 519 45°

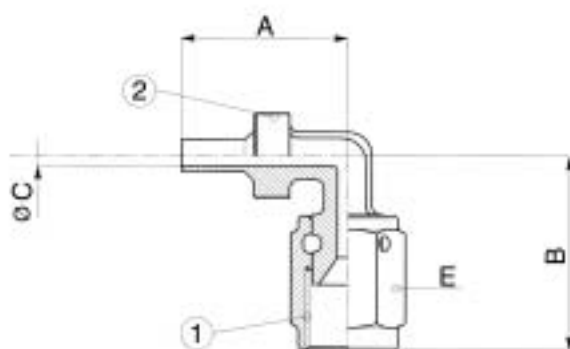
TITANIUM






| Code | Size |  1 |  2 | A max | B | Cmax | E  | gr. |
|-----------|------|---|---|-------|------|------|---|-----|
| 519140245 | 02 | 5/16-24UNF | 5/16-32UNEF | 13.4 | 17.2 | 1.3 | 9.5 | 6.5 |
| 519140345 | 03 | 3/8-24UNF | 3/8-32UNEF | 14.8 | 18.5 | 2.3 | 11.0 | 7.0 |
| 519140346 | 3/2 | 3/8-24UNF | 5/16-32UNEF | 14.2 | 18.5 | 1.3 | 11.0 | 7.3 |

FORGED HOSE FITTINGS 519 90°

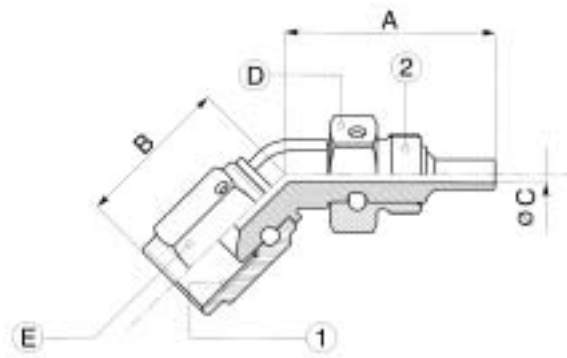
TITANIUM







| Code | Size |  1 |  2 | A max | B | Cmax | E  | gr. |
|-----------|------|---|---|-------|------|------|---|-----|
| 519140290 | 02 | 5/16-24UNF | 5/16-32UNEF | 19.0 | 20.0 | 1.3 | 9.5 | 7.0 |
| 519140390 | 03 | 3/8-24UNF | 3/8-32UNEF | 18.5 | 21.7 | 2.3 | 11.0 | 7.5 |
| 519140391 | 3/2 | 3/8-24UNF | 5/16-32UNEF | 17.2 | 21.7 | 1.3 | 11.0 | 7.8 |

DOUBLE SWIVEL FORGED HOSE FITTINGS 506 45°

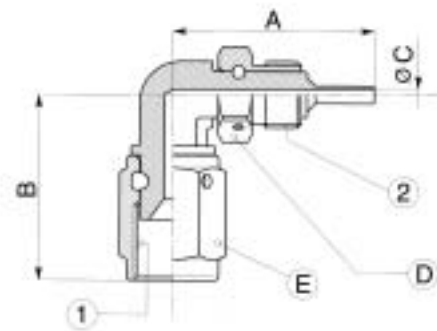
TITANIUM







| Code | Size |  1 |  2 | A max | B | Cmax | D  | E  | gr. |
|-----------|------|---|---|-------|------|------|---|---|------|
| 506140245 | 3/2 | 3/8-24UNF | 5/16-32UNEF | 24.0 | 18.3 | 1.3 | 10 | 11 | 10.5 |
| 506140345 | 03 | 3/8-24UNF | 3/8-32UNEF | 24.6 | 18.3 | 2.3 | 12 | 11 | 12.0 |

DOUBLE SWIVEL FORGED HOSE FITTINGS 506 90°

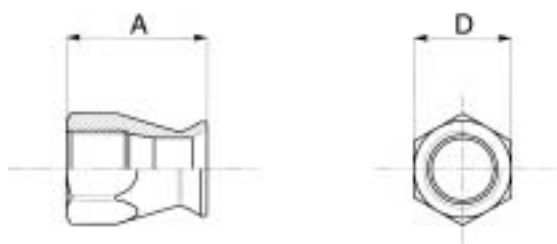
TITANIUM





| Code | Size |  1 |  2 | A max | B | Cmax | D  | E  | gr. |
|-----------|------|---|---|-------|------|------|---|---|------|
| 506140290 | 3/2 | 3/8-24UNF | 5/16-32UNEF | 24.0 | 22.3 | 1.3 | 10 | 11 | 11.0 |
| 506140390 | 03 | 3/8-24UNF | 3/8-32UNEF | 24.6 | 22.3 | 2.3 | 12 | 11 | 12.5 |

SOCKET

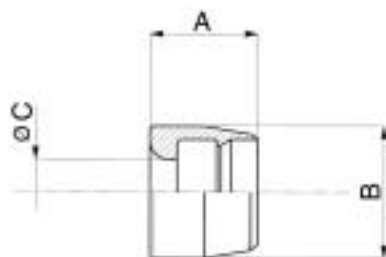
TITANIUM



| Code | Size |  | Amax | D  | gr. |
|-----------|------|---|-------|---|------|
| 503140200 | 02 | 5/16-32UNEF | 13.70 | 9.5 | 2.00 |
| 503140300 | 03 | 3/8-32UNEF | 15.80 | 11.0 | 2.50 |
| 503140400 | 04 | 1/2-28UNEF | 19.80 | 14.0 | 3.50 |

OLIVE

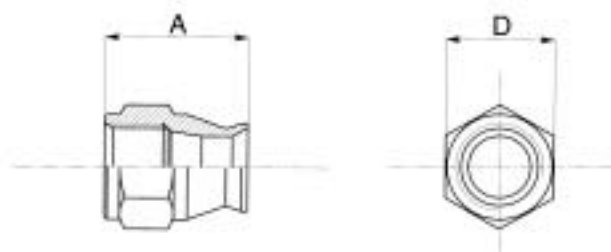
BRASS





| Code | Size | Amax | B | C | gr. |
|-----------|------|------|------|------|------|
| 504400200 | 02 | 5.9 | 6.10 | 2.60 | 0.50 |
| 504400300 | 03 | 6.1 | 7.40 | 3.70 | 0.80 |
| 504400400 | 04 | 7.4 | 9.50 | 5.40 | 1.00 |

SOCKET

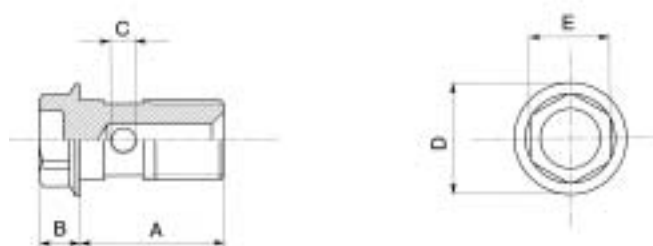
Al 7075





| Code | Size |  | Amax | D  | gr. |
|-----------|------|---|-------|---|------|
| 50320300X | 03 | 1/8-28 GAS | 15.90 | 12 | 2.30 |

SINGLE TAKE OFF BANJO BOLT w/WASHER

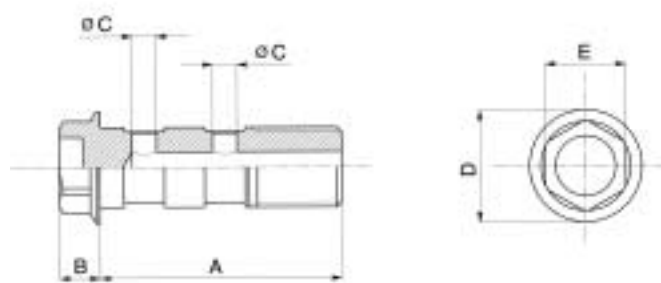
Al 7075





| Code |  | A | B | C | D | E  | gr. |
|-----------|---|------|-----|-----|----|---|-----|
| 501241000 | M10 x 1.00 | 18.0 | 5.0 | 3.0 | 14 | 10 | 5.0 |
| 501241025 | M10 x 1.25 | 18.0 | 5.0 | 3.0 | 14 | 10 | 5.0 |

DOUBLE TAKE OFF BANJO BOLT w/WASHER

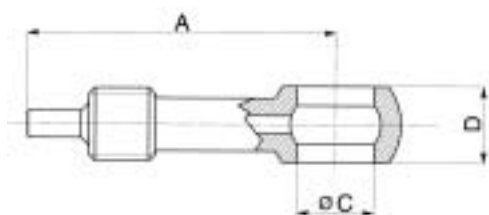
Al 7075




| Code |  | A | B | C | D | E  | gr. |
|-----------|---|------|-----|-----|----|---|-----|
| 502241000 | M10 x 1.00 | 30.0 | 5.0 | 3.0 | 14 | 10 | 5.0 |
| 502241025 | M10 x 1.25 | 30.0 | 5.0 | 3.0 | 14 | 10 | 5.0 |

BANJO

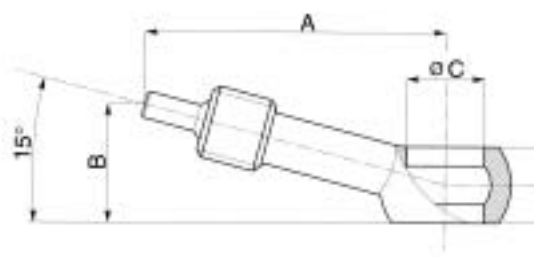
Al 7075



| Code | Size |  | A | C | D | gr. |
|-----------|------|---|------|----|----|-----|
| 50720000x | 03 | 1/8-28GAS | 40.0 | 10 | 10 | 6.0 |

BANJO 15°

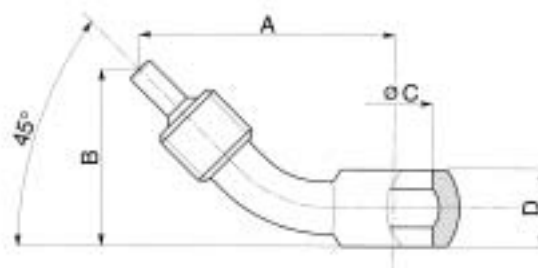
Al 7075



| Code | Size |  | A | B | C | D | gr. |
|-----------|------|---|------|------|----|----|-----|
| 50720015x | 03 | 1/8-28GAS | 38.6 | 15.4 | 10 | 10 | 6.0 |

BANJO 45°

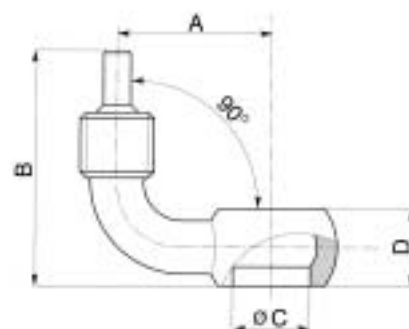
Al 7075



| Code | Size |  | A | B | C | D | gr. |
|-----------|------|---|------|------|----|----|-----|
| 50720045x | 03 | 1/8-28GAS | 33.0 | 23.0 | 10 | 10 | 6.0 |

BANJO 90°

Al 7075



| Code | Size |  | A | B | C | D | gr. |
|-----------|------|---|------|------|----|----|-----|
| 50720090x | 03 | 1/8-28GAS | 20.0 | 30.5 | 10 | 10 | 6.0 |

POGGIPOLINI GROUP

