

**SALMARCON** <sup>®</sup>  
We make it seal!

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FASTENERS  
NUTS AND BOLTS



TRUSTED TO  
**DELIVER**  
INNOVATIVE  
**SOLUTIONS**



[www.salmarcon.com](http://www.salmarcon.com)

## About Salmarcon

Established in 2012, as a private owned company, we since have proved to be a succesful growing story. We are specialist in the manufacturing and supply of high-quality industrial sealing products, fluid control, gaskets, fasteners such as stud bolts, nuts, washers and associated services in Turkey. We are more than 100 employees working together in a 15.000m<sup>2</sup> active area located in Çanakkale

### Expert sealing solutions

With a mix of world class products and know - ledgeable people we quickly attracted big clients. Ever since we have proven worthy of the trust, and we have turned into one of the top players of the Turkish gasket industry as well as having entered European supply chains.

### Certified quality

Our products deliver proven user safety.

- » Our products are amongst the most approved and certified products within the industry
- » We deliver certified and trusted products worldwide
- » EN ISO 9001:2015, ISO 14001:2015 as well as ISO 45001:2018 certified
- » Best in market certificates & approvals for all our material.

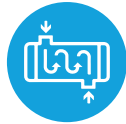
## Our solutions for all applications



Pipes & Flanges



Scrubbers



Heat Exchangers



Food Reactors



Pumps



Compressors



Gas heaters



Steam



Oil + Gas



Chemical



Mining



Petro chemical

## SALMARCON FASTENERS

Fasteners play a critical role in the construction of all industrial equipment. The gaskets need to be compressed to fill the imperfections of the sealing surface, and the torque applied to the bolts is providing the necessary clamping force to seat the gasket.

We are manufacturer of special fasteners and drawing parts for Power generating, Chemical, Petrochemical, Oil & Gas and Heavy Industry, Fertilizers Plant, Valves and actuators. We are able to supply certificated fasteners from Carbon Steel, Alloy Steel, Stainless Steel and special alloys like Monel, Inconel, Duplex, Super Duplex.

Bolts and screws are among the many types of threaded devices referred to collectively as fasteners.

There is some overlap between the definitions of bolts and screws. Generally, if the fastener is designed for use with a nut, and if it is tightened by applying a torque to the nut, then the fastener is a bolt. If it is designed for insertion into a hole with internal threads (as in an engine block), and if it is tightened by applying a torque to its head, then the fastener is a screw. Studs are headless fasteners or threaded rods.



In the chemical industry, where standard pipe flanges are common, through bolts are used almost exclusively. In other industries, most flat-faced flanges are clamped together with tap bolts or cap screws.

### Flanges and bolts

To connect two flanges with each other, also bolts are necessary.

The quantity will be given by the number of bolt holes in a flange, diameter and length of bolts is dependent of flange type and Pressure Class of flange.

The most used bolts in Petro and chemical industry for ASME B16.5 flanges are Stud Bolts. Stud Bolts are made from a threaded rod and using two nuts. The other available type is the machine bolt that using one nut. On this site only Stud Bolts will be discussed.

Dimensions, dimensional tolerances etc. have been defined in the ASME B16.5 and ASME 18.2.2 standard, materials in different ASTM standards. Bolts also manufacturing as in METRIC (ISO/DIN) standarts.

## Bolts and Nuts for flanged connections

### Types of Bolts (INCH-METRIC OR SPECIAL/CUSTOM)

In Petro and chemical industry for flange connections Stud Bolts and Hex Bolts are used. The Stud Bolt is a threaded rod with 2 heavy hexagon nuts, while the Hex Bolt has a head with one nut. Nuts and head are both six sided.

### Stud Bolts general

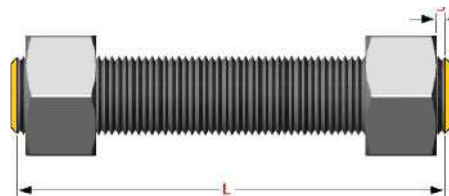
The quantity of bolts for a flange connection will be given by the number of bolt holes in a flange, diameter and length of bolts is dependent of flange type and Pressure Class of flange.

Stud Bolt length are defined in ASME B16.5 standard. The length in inches is equal to the effective thread length measured parallel to the axis, from the first to the first thread without the chamfers (points). First thread is defined as the intersection of the major diameter of the thread with the base of the point.



Studs are measured parallel to the axis (L) from the first to the thread without the chamfers (points)

$S = \text{free threads equals } 1/3 \text{ time bolt dia}$



Hex bolts are measured from under the head to the top of de bolt



To allow the use of hydraulic tensioning equipment, larger dimension studs shall be often one diameter longer than "standard". That bolts to have plastic end cap protection.

### Threads of Stud Bolts

Bolts threading are defined in ASME B1.1 Unified Inch Screw Threads, (UN and UNR Thread Form). The most common thread is a symmetrical form with a V-profile. The included angle is 60°. This form is widely used in the Unified thread (UN, UNC, UNF, UNRC, UNRF) form as the ISO / METRIC threads.

The advantage of a symmetrical threads is that they are easier to produce and inspect compared with non-symmetrical threads. These are typically used in general-purpose fasteners.

Thread series cover designations of diameter/pitch combinations that are measured by the number of threads per inch (TPI) applied to a single diameter.

8 - Thread series (8UN) is the specified thread forming method for several ASTM standards including A193 B7, A193 B8/B8M, and A320. This series is mostly used for diameters one inch and above.

### Materials for Stud Bolts

Dimensions from Stud Bolts are defined in the ASME B16.5 standard. The material qualities for studs are defined in the different ASTM standards, and are indicated by Grade. Frequently used grades are A193 for thread rods and A194 for the nuts.

ASTM A193 covers alloy and stainless steel bolting material for pressure vessels, Valves, flanges, and fittings for high temperature or high pressure service, or other special purpose applications.

ASTM A194 covers a variety of carbon, alloy, and martensitic and austenitic stainless steel nuts. These nuts are intended for high-pressure or high-temperature service, or both.

- In accordance with ASTM /ASME / BSI / ISO / NACE / AFNOR / DIN / AISI standards
- Carbon steels
- Stainless steels
- Special steels
- Duplex / Super duplex
- Alloys / Super alloys

### Marking of Stud Bolts

Thread rods and nuts must be marked by the manufacturer with a unique identifier to identify the manufacturer or private label distributor, as appropriate. Below a number of ASTM examples.

Grades of Stud Bolts Below a table with materials and grades for flanges, thread rods (bolts) and nuts, arranged on design temperature, flanges, thread rods and recommended nuts.

DESIGN TEMP.	FLANGES	GRADE THREAD RODS	GRADE NUTS
-195° to 102°C	ASTM A182 Gr. F304, F304L, F316, F316L, F321, F347	A320 Gr.B8 Class2	A194 Gr.8A
-101° to -47°C	ASTM A350 Gr.LF3	A320 Gr.L7	A194 Gr.7
-46° to -30°C	ASTM A350 Gr.LF2	A320 Gr.L7	A194 Gr.7
-29° to 427°C	ASTM A105 ASTM A182	A193 Gr.B7	A194 Gr.2H
428° to 537°C	Gr.F11, F22 ASTM A182	A193 Gr.B16	A194 Gr.2H
538° to 648°C	Gr.F11, F22 ASTM A182	A193 Gr.B8 Class1	A194 Gr.8A
649° to 815°C	Gr. F304H, F316H	A193 Gr.B8 Class1	A194 Gr.8A

Note: Materials in the table are being provided for guidance purposes

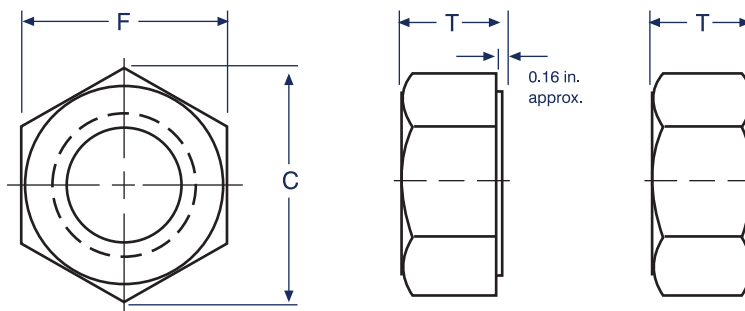
### Heavy Hex Nuts

Heavy Hex nuts (dimensional data) are defined in ASME B18.2.2, and even as bolts the threading in ASME B1.1. Depending on a customer specification, nuts must be both sites chamfered or with on one side a washer-face. Heavy hex nuts produce as in METRIC (DIN/ISO) standarts.


Finished Hex Nuts; Heavy Hex Nuts; Hex Machine Screw Nuts; Cap Nuts; Coupling Nuts; Tee Nuts; Jam Nuts, Finished, and Heavy Slotted Nuts and Castle Nuts in a range of materials.



Dimensions of Heavy Hex Nuts ASME B18.2.2 used with Stud Bolts ASME B16.5



SIZE	Width Across Flats			Width Across Corners	
	F			C	
	Basic	Max	Min	Max	Min
1/2	7/8	0.875	0.850	1.010	0.969
5/8	1.1/16	1.062	1.031	1.227	1.175
3/4	1.1/4	1.250	1.212	1.443	1.382
7/8	1.7/16	1.438	1.394	1.660	1.589
1.0	1.5/8	1.625	1.575	1.876	1.796
1.1/8	1.13/16	1.812	1.756	2.093	2.002
1.1/4	2.0	2.000	1.938	2.309	2.209
1.3/8	2.3/16	2.188	2.119	2.526	2.416
1.1/2	2.3/8	2.375	2.300	2.742	2.622
1.5/8	2.9/16	2.562	2.481	2.959	2.828
1.3/4	2.3/4	2.750	2.662	3.175	3.035
1.7/8	2.15/16	2.938	2.844	3.392	3.242
2.0	3.1/8	3.125	3.025	3.608	3.449
2.1/4	3.1/2	3.500	3.388	4.041	3.862
2.1/2	3.7/8	3.875	3.750	4.474	4.275
2.3/4	4 1/4	4.250	4.112	4.907	4.688
3.0	4.5/8	4.625	4.475	5.340	5.102
3.1/4	5.0	5.000	4.838	5.774	5.515
3.1/2	5.3/8	5.375	5.200	6.207	5.928
3.3/4	5.3/4	5.750	5.562	6.640	6.341
4.0	6.1/8	6.125	5.925	7.073	6.755

SIZE	Thickness				
	T				
	Basic	Max	Min	mm	mm
1/2	31/64	0.504	0.464	22	22.23
5/8	39/64	0.631	0.587	27	26.99
3/4	47/64	0.758	0.710	32	31.75
7/8	55/64	0.885	0.833	36	36.51
1.0	63/64	1.012	0.956	41	41.28
1.1/8	1.7/64	1.139	1.079	46	46.04
1.1/4	1.7/32	1.251	1.187	51	50.8
1.3/8	1.11/32	1.378	1.310	56	55.56
1.1/2	1.15/32	1.505	1.433	60	60.33
1.5/8	1.19/32	1.632	1.556	65	65.09
1.3/4	1.23/32	1.759	1.679	70	69.85
1.7/8	1.27/32	1.886	1.802	75	74.61
2.0	1.31/32	2.013	1.925	79	79.37
2.1/4	2.13/64	2.251	2.155	89	88.9
2.1/2	2.29/64	2.505	2.401	98	98.42
2.3/4	2.45/64	2.759	2.647	108	107.95
3.0	2.61/64	3.013	2.893	117	117.48
3.1/4	3.3/16	3.252	3.124	127	127
3.1/2	3.7/16	3.506	3.370	137	136.53
3.3/4	3.11/16	3.760	3.616	146	146.05
4.0	3.15/16	4.014	3.862	156	155.57

Notes

- All dimensions are given in inches unless otherwise indicated.
- Heavy hex nuts are slightly larger and thicker than standard (finished) hex nuts. There are numerous grades and the heavy pattern is typically used for large diameter and high strength bolts.

Important.. the Across Flat sizes in Millimeters shown in the table should be used as a guide only. Individual sizes should be checked before specifying any equipment.

### Coating of Fasteners

All surface coatings which we provide are in accordance with ASTM / ASME / ISO / BSI standards.

- Electrolytic galvanizing , Hot-dip galvanizing and Mechanical galvanizing
- Zinc phosphating and Magnesium phosphating
- Cadmium plating
- Zinc-Nickel anticorrosion treatment
- Electroless Nickel plating and Electrolytic Nickel plating
- Burnishing
- GEOMET
- PTFE Teflon Xylan coating and Carbon-ceramic coatings (Xylar + Xylan)



## Special pieces

Special pieces, custom designs, tie rods, hex bolts, screws and nuts producing according to the customer's specifications and drawings. Special pieces can be manufactured as in ASME/DIN standards (INCH/METRIC) or specialized custom dimensions or threads.

### Washers:

Washers come in a broad amount of variants such as, but not limited to, Plain Flat, Spring lock, Tab, Square, Hex and many more. Our offer is based on investigating the actual need.

Plain Washers (also called as Flat Washers) are simple circular discs with a center hole for bolt allowance. These flat washers are the most standard choice for most fastening applications. As the name suggests these washers have almost flat surface with perfect grip for the bolting joint.

Plain washers are manufactured in metric and imperial size with standard and heavy thickness for high strength bolting. Flat washers are produced by die punching sheets, plates or strips of required material specification and trimmed for rough edges or sometimes can be machined from bar stock.

Spring Lock Washer (also known as helical spring washer or helical lock washer) are second most widely used washer type for fastening systems. This type of washer is also called as split washer referring to the shape. These spring washers are believed to be superior to flat / plain washer and prove efficient in the bolting joint.

Depending upon the bolting application, these lock washers can be supplied in hardened condition or as formed condition. We offer spring lock washers in both metric and imperial sizes with wide choice of material.

Many more types available per request and need.

Washer Specifications

**Forming** Hot & Cold Forged

**Metric Size** M6 to M100

**Inch Size** 5/16" to 6" in accordance with ASME/ANSI standards

**Thickness** Standard and Custom

**Standards** DIN, ASME and ISO

**Dimension Standards** DIN 125A / 125B / 126 / 433 / 7349 / 9021

ISO 7089 / 7090 / 7091 / 7092 / 7093

ASTM A36 / A167 / 240 / A283 / A387 / A516 ...

Many more available per request





Salmarcon Endüstriyel San. ve Tic. A.Ş.  
Merkez/Fabrika (Center/Factory):  
Çanakkale Organize Sanayi Bölgesi,  
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17100 ÇANAKKALE/TÜRKİYE

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