



TUBECLO TUBE CLAMPS

Literature





Figure 1 Tube Clamps

Introduction:

Clamps are useful equipment for fastening devices together while working to prevent objects from moving. Tube clamps are made of plastic and have a square shape with a ribbed bore that provides a tight grasp on the item. Tube clamps are encompassed in four parts: clamp shell body, cover plate, hexagon head bolts, and weld plates. Tube clamps are easy to set up and useful for a variety of applications since they serve as fittings for different industrial machines. Tube clamps, for example, are appropriate for cable trays, pipes, hoses, and tubes.

Tube clamp is made in accordance with the DIN 3015 standard. It is used to minimize the harmful effects of mechanical shock and strong vibrations in the hydraulic system. Tube clamps contribute to occupational safety and environmental protection. It provides optimum flexibility by combining single, twin, and heavy clamp designs.

Materials:

Tube clamps are commonly made up of 3 materials which are Polypropylene, Polyamide, and Aluminium. A full clamp body set comprises two identical clamp halves, the top and bottom halves. The combination of these materials leads to great working performance in terms of gripping, stability, and temperature range system. The Polypropylene material, PP (Green) can withstand temperature pressures ranging from -30 0C to +90 0C. The Aluminium material, AL (Silver) can tolerate heat up to 300 0C, whereas the Polyamide material, PA (Black) has a working temperature pressure range of -30 0C to +90 0C. These are the details of three materials for tube clamps as following:

Material Code	Material	Colour	Design
PP	Polypropylene	Green	Profile inside, With tension clearance
PA	Polyamide	Black	Profile inside, With tension clearance
PPH	Polypropylene	Green	Smooth inside, Without tension clearance
PAH	Polyamide	Black	Smooth inside, Without tension clearance
ALU	Aluminium	Aluminium	Profile inside, With tension clearance

Table 1 shows Clamp Body Design and Colour.

On the other hand, the accessories material and surface finishing are available in steel and stainless steel material.

Material Grade	Surface coating	Code
Carbon Steel ST37	Untreated	W1
Carbon Steel ST37	Phosphated	W2
Carbon Steel ST37	Zinc/nickel coated	W3
Stainless Steel A2	1.4301/1.4305 (AISI 304/303)	W4
Stainless Steel A4	1.4401/1.4571 (AISIS 316/316Ti)	W5

Table 2 shows Accessories Materials and Code.

Applications:

Tube clamps are also known as pipe clamps and hydraulic brackets. The core function of a tube clamp is to hold things in place without movement until the work is done. A wide range of tube clamp brackets are offered to meet the needs of various industries. In particular, these are the industries where tube clamps are most commonly used:

- **Shipbuilding** - The construction of an oil tanker, cruise ship, cargo ship, or luxury private yacht. Tube clamps provide ultimate reliability in wind, waves, and poor weather while also enhancing passenger comfort through optimal vibration and noise reduction.
- **Oil and Gas Production** – The tubes or hoses that run above and below water have to be able to withstand extreme loads on a continuous basis. Salt water, oil grease, wind and extensive temperature variations all take their toll on fastening systems, and installation clamp assembly helps to reduce maintenance costs and optimize overall line operation.
- **Railway Rolling Stock Construction** - Passenger trains, trams, and subway trains are all sophisticated transportation systems with numerous hydraulic, water, and electrical lines. Tube clamps assure that every supply network line is installed properly, and they can be tailor to project requirements, such as in the form of a milling or injected design. For example: European railway standard, EN45545.
- **Plant Construction & Industrial Hydraulics** - High performance hydraulic systems and trustworthy power supply are important for industrial machinery when operating efficient production operations on a continuous basis. The tube clamps installation ensures that the hydraulic line and

electrical cable installation at the facilities is adequately secured and maintained while taking up the least amount of space.

- **Mining** - Tube and hose lines are continuously subjected to extreme pressure during tunnel construction or deep mining. Tube clamping reduces maintenance costs and facilitates line operating in confined spaces. It has been utilized in the Panama Canal as well as European railway tunnels.

Maximum Weight for a Tube Clamp:

Tube clamps are designed with maximum and minimum weights that the user may adjust according to the tube size and clamp design for the machinery.

Group	Hexagon Head Bolt	Polypropylene Maximum Loads (kN)	Polypropylene Maximum Loads (lbf)	Polyamide Maximum Loads (kN)	Polyamide Maximum Loads (lbf)	Aluminium Maximum Loads (kN)	Aluminium Maximum Loads (lbf)
1	M6 or 1/4-20 UNC	0.6	135	0.6	135	3.5	787
1A	M6 or 1/4-20 UNC	1.1	247	0.7	157	4.2	949
2	M6 or 1/4-20 UNC	1.3	292	0.8	180	4.3	967
3	M6 or 1/4-20 UNC	1.4	315	1.6	360	4.9	1101
4	M6 or 1/4-20 UNC	1.5	337	1.7	382	5.0	1124
5	M6 or 1/4-20 UNC	1.9	427	2.0	450	7.3	1641
6	M6 or 1/4-20 UNC	2.0	450	2.5	562	8.9	2000

7	M6 or 1/4-20 UNC	2.3	517	3.2	719	-	-
8	M6 or 1/4-20 UNC	2.6	585	3.5	787	-	-

Table 3 shows maximum Load in a straight direction pipe for **Standard Series Clamps**.

Group	Hexagon Head Bolt	Polypropylene Maximum Loads (kN)	Polypropylene Maximum Loads (lbf)	Polyamide Maximum Loads (kN)	Polyamide Maximum Loads (lbf)	Aluminium Maximum Loads (kN)	Aluminium Maximum Loads (lbf)
3S	M10 or 3/8-16 UNC	1.6	360	4.2	944	12.1	2720
4S	M10 or 3/8-16 UNC	2.9	652	4.5	1044	15.1	3395
5S	M10 or 3/8-16 UNC	3.3	742	5.1	1146	15.5	3485
6S	M12 or 7/16-14 UNC	8.2	1843	9.3	2090	29.5	6609
7S	M16 or 5/8-11 UNC	11.0	2472	15.8	3551	34.9	7805
8S	M20 or 3/4-10 UNC	14.0	3147	21.0	4772	50.0	11240

9S	M24 or 7/8-9 UNC	28.0	6300	32.0	7193	70.6	15871
10S	M30 or 1 1/8-7 UNC	40.0	8992	48.0	10790	84.5	18996
11S	M30 or 1 1/4-7 UNC	119.0	26752	125.0	27650	181.5	40802
12S	M30 or 1 1/4-7 UNC	168.0	37767	180.0	40465	244.5	54965

Table 4 shows maximum load in a straight direction pipe for **Heavy Series Clamps**.

Group	Hexagon Head Bolt	Polypropylene Maximum Loads (kN)	Polypropylene Maximum Loads (lbf)	Polyamide Maximum Loads (kN)	Polyamide Maximum Loads (lbf)
1D	M6 or 1/4-20 UNC	0.9	202	0.9	202
2D	M8 or 5/16-18 UNC	2.1	472	2.2	495
3D	M8 or 5/16-18 UNC	1.9	427	2.0	450
4D	M8 or 5/16-18 UNC	2.7	607	2.9	652
5D	M8 or 5/16-18 UNC	1.7	382	2.5	562

Table 5 maximum load in straight direction Pipe for **Twin Series Clamps**.

Recommended Distance Between Clamps:

For tube clamps installations, below table was a recommended distance between clamps.

PIPE O.D. - MM	DISTANCE (M)
6.0 - 12.7	1.0
12.7 - 22.0	1.2
22.0 - 32.0	1.5
32.0 - 38.0	2.0
38.0 - 57.0	2.7
57.0 - 75.0	3.0
75.0 - 76.1	3.5
76.1 - 88.9	3.7
88.9 - 102.0	4.0
102.0 - 114.0	4.5
114.0 - 168.0	5.0
168.0 - 219.0	6.0
219.0 - 324.0	6.7
324.0 - 356.0	7.0
356.0 - 406.0	7.5

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