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STAUFF CLAMPS

Literature

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Introduction:

Figure 1 Twin Series Stauff Clamps

Stauff clamps or pipe clamps are devices that are used to grip and support mechanical and structural parts. The Stauff clamps are manufactured in accordance with the specifications of the Deutsches Institut für Normung, abbreviated as DIN. They are made in accordance with DIN 3015 standards. The purpose of using pipe clamps is to reduce the vibration and noise throughout the systems. Their noise and vibration reduction features significantly contribute to environmental conservation as well as occupational health and safety.

Pipe clamps are usually used for tube, pipe, and hose installations in applications such as offshore, hydraulics, general industrial pipe construction, mining industry, nuclear reactor construction, instrumentation and control technology, process and chemical industry, and pneumatics.

Typically, pipe clamps are supplied with four components which is clamp shell body, cover plate, weld plate, and hexagon head bolts.

Material:

The most used materials for the clamp body are Polypropylene (PP), Polyamide (PA), and Aluminium (AL). There are different colours for different materials: green for polypropylene, black for polyamide, and silver for aluminium. The different colours help to differentiate which type of materials are being used. Meanwhile, different materials will lead to different temperature ranges. Other materials for clamp bodies are also available upon request. For the parts of tube clamps such as cover plate, weld plate, and hexagon hex bolts, they are normally available in steel or stainless steel SS316.

Figure 2 Materials of Stauff Clamps

MATERIAL CODE	MATERIAL	BODY COLOURS	TEMPERATURE RANGE
PP	Polypropylene	Green	-30˚C to +90˚C
PA	Polyamide	Black	-40˚C to +120˚C
AL	Aluminium	Silver	Up to 300˚C

MATERIAL CODE	MATERIAL GRADE	SURFACE FINISHING
W1	Carbon steel ST37.4	Untreated
W2	Carbon steel ST37.4	Phosphated
W3	Carbon steel ST37.4	Zinc/nickel plated
W4	Stainless steel A2	1.4301/1.4305 (AISI 304/303)
W5	Stainless steel A4	1.4401/1.4571 (AISI 316/316Ti)
W10	Carbon steel ST37.4	Weld plate phosphated, all other parts zinc/ nickel coated
W11	Carbon steel ST37.4	Rail nut untreated, all other parts zinc/ nickel coated

Size Range & Pressure Rating:

There are 3 main series of tube clamps: standard series (STD), heavy series (HVY), and twin series (TWN).

SERIES	SIZE RANGE
Standard	6mm to 102mm
Heavy	6mm to 406mm
Twin	6mm to 42mm

Table above shows the available size range for each series.

Before deciding which clamp series is appropriate to use, we need to measure the external diameter of the tube, pipe or hose that are intending to have pipe clamps installed onto. There are 3 types of reading measurement which are metric sizes, inches outer diameter sizes, and inches nominal bore sizes. By the measurements of tube, pipe or hose, an appropriate clamp series can then be recommended.

Differences Among Stauff Clamps Series:

- Standard Series

  Standard series clamps are commonly used in installations with moderate vibration and average load. This implies that the work load will not be too high, and the working pressure going through is just normal. Mobile equipment, machine tools, and instrumentation plumbing are the most common applications for these clamps. These clamps are suitable for tubes with an outer diameter of 102mm and a size up to 4 inches.

- Heavy Series

  Heavy series clamps are ideal for installations with higher loads and vibrations. As a result, these heavy series clamps are available for pipes with an outer diameter up to 406mm and a length up to 16 inches. Heavy series clamps can be applied in metal manufacturing and mining equipment.

- Twin Series

  Twin series clamps are smaller because they only fit tubes with an outer diameter of 42mm. They are designed for installations with closely placed lines, allowing them to be fitted more effectively than two separate standard series clamps. This is primarily for general industrial use and applications with moderate vibration that are closer to a series clamp.

Configuration:

The assemblies of clamps can be available in few types:

- Cover plate, single weld plate and hexagon head bolts

- Cover plate, elongated weld plate and hexagon head bolts

- Cover plate, hexagon head bolts and hexagon rail nuts

- Cover plate, safety locking plate and stacking bolts

- Single weld plate and socket cap screws

Different types of assembly are available to suit different installation types. For any installation on weld plates, it is recommended to mark the location first for the alignment of the weld plate. Then push on the bottom half of the clamp, install a pipe, mount the top half of the clamp together with a cover plate and bolts. In order to avoid damaging the clamp body, it is recommended to weld the weld plates first before mounting the clamp body.

For pipe clamps installations, below table was a recommended distance between pipe clamps. It is to ensure that clamps are installed at a proper distance and perform well in reducing vibration and noise.

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

Installation:

STAUFF Clamps offer fast, easy, and secure installation of pipes, tubes, hoses, cables, and other flexible and stiff components with outer diameters up to 1016 mm / 40.00 inch. Hence, this feature allows Stauff clamps to be readily disassembled.

There are several types of weld base plates built in accordance with DIN 3015 that may be installed in a variety of customized special clamp designs. Please refer to the following three installation procedures based on the work requirements:

Installation Option 1: Base plate installation

The most common fundamental use is base plate installation. The base plate is used to mount to the wall or ceiling, and the clamps may be simply inserted before final tightening with the cover plate and bolts and screws. To tighten the entire set of clamps, two typical thread types are used: Metric thread (M) and UNC thread (U).
Step 1: Placing the base plate in the indicated places, making sure that the placements are appropriate for the system's projected loads.

Step 2: Marking the base plate positions to assure the best system alignment.

Step 3: Welding the base plate into place. Alternatively, an extended base plate can be mounted to their positions using two screws or bolts at both ends without any welding job.

Step 4: Pressing the clamp's one halves onto the base plate's bottom.

Step 5: Connecting the pipe, tube, wire, hose, or other line.

Step 6: Placing the second halves of the Stauff clamp and covering plate on top. Mount the full clamp installation with bolts and screws.

During the clamp assembly, the bolts length relates to the installation of the base plate and mounting rails, as well as the stacking level.

Installation Option 2: Installation on mounting rail

In order to arrange multiple sets of clamps along the pipe or tube, mounting rails are utilized during installation. The clamps can be readily adjusted before final tightening using mounting rails, and additional sets of clamps can be added or withdrawn without difficulty. Rail nuts have been designed to optimize and adapt the shape. Both ends of the bottom portion were gently chamfered, and the rail nuts could be screwed in further to increase the contact surface area with the mounting rail. Before being firmly attached, the rail nut actual locations of the clamp assemblies can be changed.

Step 1: Positioning the mounting rail in the designated location, taking into account the anticipated loads.

Step 2: Labelling the mounting rail positions to assure the best system alignment.

Step 3: Welding the mounting rails into place or use side-mounting brackets with bolts or screws to mount it.

Step 4: Inserting rail nuts into the mounting rail and changing the position until they are locked at the mounting rail for standard and twin series, whereas rail nuts for heavy series have been fitted by sliding in from the mounting rail's end.

Step 5: Placing one halves of the clamp body on the rail nuts.

Step 6: Inserting the pipe, tube, cable, hose, or other line.

Step 7: Mounting the whole clamp installation with bolts and screws by placing the second parts of the clamp and cover plate on top.

Installation Option 3:

Multiple clamp bodies of the same size can be mounted directly on top of one another with the use of safety locking plates and stacking bolts in clamp installation. Stacking clamps allow installers to be more flexible in the design and placement of pipeline systems. This is due to the fact that numerous lines running closely together no longer have to be placed side by side. To prevent stacking bolts from turning around, safety locking plates are inserted between clamp levels. Stacking clamps can be installed on either mounting rails or a base plate.

Step 1: Assembling the bottom clamp halves to the base plate or rails nuts.

Step 2: Connecting the pipe, tube, cable, hose, or other line.

Step 3: Installing the clamp's second halves.

Step 4: During assembly, insert one stacking bolt into each single bolt hole on the clamp and tighten using the tightening torques.

Step 5: Placing the safety locking plate on top of the clamp body assembly's first level.

Step 6: Moving on to the next level. When you reach the upper level of the clamp assembly, insert the cover plate and hexagon head bolts. Tighten the bolts using the tightening torques table as a guideline.

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