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Welding Clamps

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WELDING CLAMPS

THE NEED

Welding and pipefitting are related skills. While welding technology has advanced in recent years, methods of fitting pipe remained primitive. Traditional methods of pipe fit-up which use brute force are still common: welding lugs on pipe for alignment, knocking them off with a hammer, cleaning up the spot, and patching the pipe. These unsafe methods cause quality control rejections, which means lost productivity, aggravation, and frustration.

THE TECHNOLOGY

In general, clamps are used to align and reform pipe for welding. Old cage clamps are a modest improvement from the traditional methods, but still require hammering, causing the clamps to go out of shape.



FIGURE 1 CAGE CLAMP

This deformity is brought to the next fit-up. Cage clamps are also limited to one size of pipe and lack versatility (see Figure 1). Chain Clamps from Mathey Dearman can fit-up elbows, tees, flanges and other pipe fittings. Chain Clamps are reforming clamps, able to take out "Hi-Lo" without wedges. Generally chain clamps are recommended for alignment and moderate reforming of nominally standard, light, and medium wall thickness. Universal Chain Clamps offer the most versatility of any clamp available.



Sliding jackbars allow for a wide range of applications. Recommended for use with miter and flange fit-ups.



FIGURE 2 SINGLE JACKSCREW CHAIN CLAMP

Single Chain Clamps will typically align and reform out-of-round pipe up to schedule 40 wall thickness. Where no reforming is required, pipe over schedule 40 can be aligned with Single Chain Clamps. Depending upon the type of pipe and the out-of-round condition, minor reforming of pipe over schedule 40 may be possible with this clamp. It features a single jackscrew on each jack bar (see Figure 2). Optional spacing screws allow the gap to be set quickly and precisely. Double jackscrews allow for reforming pressure to be applied to either side of the weld (see Figure 3).



FIGURE 3 DOUBLE JACKSCREW CHAIN CLAMP

Double Chain Clamps (vessel clamps) will typically align and reform out-of-round pipe up to schedule 80 wall thickness, depending on the type of pipe and out-of-round condition (see Figure 4). Where heavy-duty



reforming is required, Rim Clamps are recommended. The jackscrews exert pressure on specified high points for precise alignment. Ideal for application where 100% weld and grind is needed without releasing clamp pressure.



FIGURE 4 DOUBLE CHAIN CLAMP

THE BENEFITS

Chain Clamps are versatile: each clamp can fit-up elbows, tees, flanges, and other pipe fittings. All carbon steel Chain Clamps are zinc plated to resist spatter and corrosion.

On the average, one Chain Clamp costs about 40% less and weighs about 77% less than the required number of cage clamps to cover the same range of pipe diameter. These benefits make the Chain Clamp very portable.

The Rim Clamp is ideal for applications where the user needs 100 % weld and grind without releasing clamp pressure. The Rim Clamp removes Hi-Low up to 2-1/2" wall thickness. This prevents cracking of partially completed welds. The Rim Clamp allows the user to weld, grind, and reweld before removing the clamp.

STATUS

Chain Clamps and Rim Clamps from Mathey Dearman have been used in various fields and applications such as cooling towers, air conditioning systems, refineries, power plants, environmental protection equipment, public utilities, berths or docks, boiler equipment, offshore platforms, etc.



POINT OF CONTACT

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REFERENCES

1. Mathey Dearman Main Catalog, available on Mathey Dearman Web site: <http://www.mathey.com/>
2. Mathey Dearman Chain Clamp Catalog, available on Mathey Dearman Web site: <http://www.mathey.com/>

REVIEWERS

Peer reviewed as an emerging construction technology

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