

PIPE STRESS BEST PRACTICES



✓ **FACT: Pipe stress is a primary cause of induced soft foot on pumps.**



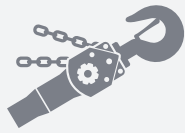
SAFETY

Ensure no liquid/gas remains in pipeline by shutting off the necessary valves.



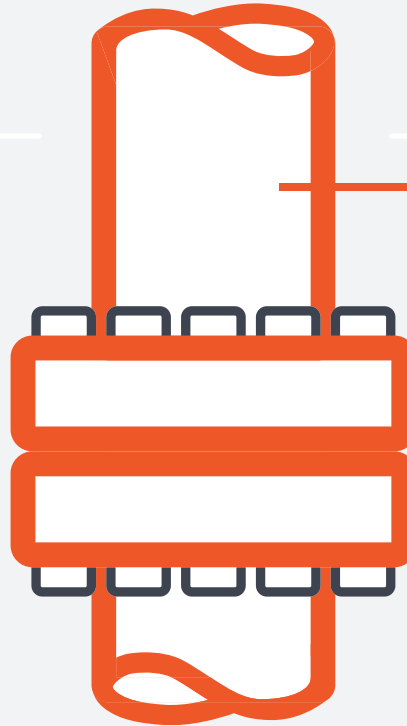
CLEANING

Brush and clean pipe and pump flanges around the bolts and mating surfaces.



ALIGNMENT

Cable pullers, come-a-longs, or long bars should not be used when aligning a flange which is connected to a pump.



FORCES

If piping is well fitted, no more than 2 mils of stress-induced soft foot should occur. However, other soft foot may still be present.



GAP

Pipe flanges attached to pumps must be aligned so that the gap does not exceed the thickness of two gaskets or tolerance established by your company's engineering standards.



TOLERANCE

ANSI B31.3 states, "Flanged joints shall be aligned to the design plane within 1/16" per foot across any diameter. Flanged bolt holes shall be aligned within 1/8" max offset".



THERMAL EFFECT

Use expansion joints or bellow joints to allow flexibility in the pipeline.



INSTALLATION

Pipe flange bolts must drop in without assistance.



PRE-ALIGNMENT

Eliminate pipe stress before performing alignment.



TORQUE

After installation, torque bolts to 100% of the recommended torque values for the size and grade flange bolts used.



CHECKING

Measure movement when loosening pipe flanges with a laser system or dial indicator at the pipe flanges, or at the coupling.