ANSI FLANGE INSTALLATION GUIDE

Proper installation of ANSI flanges is crucial to ensuring a leak-free and secure connection. Follow these steps carefully, referring to the manufacturer's instructions as necessary.

1. Preparation & Gasket:

Cleanliness:

- Ensure the flange faces and gasket are clean and free of debris, oil, rust, or imperfections that could compromise the seal.
- Inspect the flange faces for warping or damage that could prevent proper sealing.

Gasket Selection & Placement:

- Choose the correct gasket type based on the application's pressure, temperature, and fluid type. Some applications may require spiral-wound, full-face, or ring gaskets.
- Place the gasket between the flange faces, ensuring it's centered and does not overlap the flange bore.
- For assembly below 40°F (4°C), a petroleum-free silicone lubricant may be recommended for the gasket to improve sealing performance.

2. Bolt Installation:

Bolt Insertion:

- Insert bolts into the flange bolt holes, ensuring even spacing around the flange.

Lubrication:

- Lubricate bolt threads and nut surfaces with an appropriate anti-seize compound (especially for stainless steel fasteners) to reduce friction, prevent galling, and ensure accurate torque readings.

Hand Tightening:

- Hand-tighten the bolts in a cross-pattern sequence to ensure even pressure distribution before final torqueing.

3. Torqueing:

Initial Tightening:

- Use a properly calibrated torque wrench to tighten the bolts in a cross-pattern sequence to the manufacturer's recommended torque values.
- Refer to the flange manufacturer's specifications for correct torque values, as over-tightening can damage the flange, while under-tightening can cause leaks.

Torque Stages:

Many manufacturers recommend tightening in multiple stages to ensure uniform pressure distribution:

- Stage 1: Tighten to 30-50% of the final torque.
- Stage 2: Tighten to 70-80% of the final torque.
- Stage 3: Tighten to 100% of the final torque.
- Stage 4 (Final Check, if needed): Perform a final pass at 100% torque to confirm uniform clamping force.

Final Torque Check:

- Once all bolts are tightened to full torque, repeat the sequence to ensure none have loosened due to gasket compression.

Re-Torquing After Pressurization:

- Some manufacturers recommend re-torquing the bolts after initial pressurization or allowing a waiting period (e.g., 4 to 24 hours) to accommodate gasket relaxation.

4. Other Important Considerations:

Flange Misalignment:

- Ensure the flanges are properly aligned before tightening. Misalignment can lead to uneven stress distribution and potential leaks.

Proper Support:

- Ensure the flange, attached pipe, fitting, and/or valve are properly supported to eliminate stress on the flange, especially for plastic flanges.

Bolt Size and Material:

- The bolts used must be strong enough to withstand the system's pressure and stresses. Consider material, size, length, and thread type to match the flange rating and application requirements.

Environmental Factors:

- Temperature fluctuations and exposure to certain chemicals can affect gasket material properties. Ensure compatibility with the operating environment.

Torque Wrench Calibration:

- Regularly calibrate your torque wrench to ensure accurate torque application and prevent under/over-tightening.

Manufacturer's Instructions:

- Always refer to the manufacturer's specific installation guide for the particular flanges you are using, as some may have additional requirements or torque specifications.