

# **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.

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# 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.