



INSTALLATION INSTRUCTIONS

This instruction has been prepared for the safe and leak-tight installation of wide-tolerance APP Type Bends used to change the direction of pipelines made of different materials (Ductile iron, Cast iron, Steel, PVC, PE, GRP, AC, etc.) at the required angle.

1. Pre-Installation Preparation

- **Product Check:** Verify the label information on the elbow (DN size and tolerance range) and ensure it is suitable for the outer diameters of the pipes to be connected.
- **Angle Verification:** Before installation, confirm that the elbow angle matches the required deflection angle of the pipeline.
- **Pipe Cutting:** Cut the pipes perpendicular (approx. 90°) to the pipe axis. Uneven cuts may prevent proper seating of the sealing gasket.
- **Surface Cleaning:** Clean rust, dirt, scale, and old coatings from the pipe ends using a wire brush. The surface in contact with the sealing gasket must be smooth and clean.
- **Chamfering (If Required):** Apply an external chamfer of approximately 30° to the pipe ends if necessary. This prevents damage to the gasket during insertion.

2. Positioning and Marking

- **Insertion Depth Marking:** Measure how far the elbow will engage each pipe end and mark the insertion depth on the pipes. This ensures correct centering of the elbow.
- **Pipe Alignment:** Position the pipes according to the required direction change. APP Type Elbows can typically accommodate up to $\pm 6^\circ$ angular deviation; however, alignment to the intended angle is recommended for optimal performance.

3. Installation Steps

- **Lubrication:** Apply a silicone-based lubricant suitable for potable water to the sealing gasket and pipe ends. (Do not use oil-based lubricants as they may damage the gasket.)
- **Placement:** With the adaptor sections loosened, slide the elbow onto the first pipe. Bring the second pipe into position and insert it into the adaptor section up to the marked reference line. If the elbow is a flanged type, ensure that the bolt holes are perfectly aligned with the mating flange.
- **Gap Control:** Ensure a gap of at least 5–10 mm between the pipe ends and the end of the adaptor section to allow for thermal expansion and settlement.

4. Tightening Procedure (Critical Step)

- **Cross Tightening:** Tighten the bolts in a diagonal (crosswise) sequence (e.g., 12–6 o'clock, 3–9 o'clock). This ensures even load distribution on the gasket.
- **Gradual Tightening:** First hand-tighten all bolts, then tighten gradually in multiple passes using a wrench.

5. Final Check and Testing

- **Visual Inspection:** Ensure that the gap between the pressure flanges and the adaptor body is uniform around the entire circumference.
- **Pressure Test:** Perform a low-pressure leak test before commissioning the pipeline. If leakage is detected, recheck and retighten the bolts.

6. Thrust Block (Anchorage) Requirement

- If the elbow is not a pull-out resistant (restrained) type, internal pressure may cause displacement.
- A concrete thrust block must be installed at the outer bend of the elbow to prevent movement.

SAFETY NOTES

- Wear protective gloves and safety footwear during installation.
- For large-diameter elbows, use pipe supports or blocking elements to prevent excessive load on the adaptor.
- Ensure that the protective coating of bolts (galvanized, Dacromet, etc.) is not damaged to maintain corrosion resistance.

