

VANTEC

GENERAL INSTALLATION & TIGHTENING GUIDE

Proper installation is essential to ensure reliable valve performance, prevent leakage and avoid damage caused by excessive mechanical stress.

FLANGED VALVES

BEFORE INSTALLATION

- Ensure mating flanges are **clean, parallel, concentric and correctly aligned**.
- Verify that the valve, flanges, gasket and bolting are suitable for the required pressure, temperature and service.
- Ensure the pipeline is **properly supported** and that no pipe weight or external load is transferred to the valve.
- Never use the valve or flange bolts to pull misaligned pipework into position.

BOLT TIGHTENING PROCEDURE

1. Position the valve correctly between the mating flanges.
2. Centre the gasket and install all bolts.
3. Initially tighten all bolts **finger-tight**.
4. Tighten progressively using a **cross / star pattern**.
5. Apply the required tightening torque gradually in multiple passes: **First Pass approximately 30%, Second Pass approximately 60%, Third Pass 100%** of final torque.
6. Perform a final verification pass to confirm uniform tightening.

IMPORTANT: Do not tighten flange bolts sequentially around the flange. Uniform cross-pattern tightening helps provide even gasket compression and reduces uneven loading on the valve and flange.

FINAL TORQUE

The required final bolt torque depends on:

- Valve size
- Flange type and material
- Bolt diameter and grade
- Gasket type and material
- Pressure rating
- Surface condition
- Lubrication condition

Always follow the approved project bolting procedure or product-specific VANTEC tightening requirements where provided.

BRONZE, BRASS & DZR THREADED VALVES

Applicable to: Gate Valves • Globe Valves • Check Valves • Ball Valves • Y-Strainers • Air Vents • Bib Cocks and other threaded valves.

BEFORE INSTALLATION

- Confirm the correct valve size, pressure rating and thread type.
- Ensure male and female threads are **clean, correctly formed and undamaged**.
- Verify thread compatibility: **BSPP, BSPT or NPT**.
- Never force incompatible thread systems together.
- Ensure the pipeline is correctly aligned and independently supported.
- Remove dirt, metal particles and other debris before installation.

THREAD SEALING

- Apply suitable PTFE tape or approved thread sealant to the **male thread only**, where applicable.

- Do not use excessive sealing material.
- Prevent PTFE tape or sealant from entering the valve bore or internal mechanism.
- Use only sealing materials compatible with the system medium and operating conditions.

CORRECT TIGHTENING METHOD

STEP 1 - HAND ENGAGEMENT

Engage the threaded connection carefully by hand. The fitting should thread smoothly without excessive resistance. **Never use a wrench to overcome cross-threading, damaged threads or incompatible thread forms.**

STEP 2 - CORRECT WRENCH POSITION

Apply the wrench to the **valve end immediately adjacent to the threaded joint being assembled**. Use a second wrench to counter-hold the mating pipe or fitting where required. **Never hold the opposite end of the valve while tightening the connection.** Incorrect wrench positioning can transmit installation torque through the entire valve body and may cause excessive mechanical stress, deformation or cracking.

STEP 3 - CONTROLLED FINAL TIGHTENING

After correct hand engagement, apply only the controlled additional tightening required to obtain a secure, leak-tight connection. Threaded valves shall **not be tightened according to an arbitrary fixed number of turns**.

Required thread engagement and tightening depend on:

- Valve size
- Thread type
- Thread tolerance
- Mating fitting
- Sealing method
- Valve and pipe material

Never continue tightening solely to obtain a preferred valve orientation. If correct orientation cannot be achieved without excessive force, disassemble the connection and correct the joint arrangement.

CRITICAL WARNING - DO NOT OVER-TIGHTEN

Excessive tightening torque may permanently damage bronze, brass and DZR valve bodies and can result in: body cracking, thread splitting or damage, body deformation, internal distortion, leakage and premature valve failure.

NEVER

- Use extension pipes on a wrench to increase leverage.
- Apply excessive tightening force.
- Tighten using the handwheel, lever, stem or bonnet.
- Grip thin or unsupported sections of the valve body.
- Apply tightening torque through the opposite end of the valve.
- Use the valve to correct pipe misalignment.
- Force incompatible threads together.
- Exceed the specified pressure or temperature limits.

AFTER INSTALLATION

- Check valve and pipe alignment.
- Verify all threaded and flanged connections.
- Ensure no external pipe load is acting on the valve.
- Flush the pipeline where required.
- Pressurise the system gradually.
- Check all connections for leakage.
- Operate the valve and verify smooth movement.
- Reinspect the installation after initial commissioning.

QUICK INSTALLATION REFERENCE

FLANGED VALVES

ALIGN → SUPPORT → HAND-TIGHT → CROSS-TIGHTEN → 30% → 60% → 100% → FINAL CHECK

BRONZE / BRASS / DZR THREADED VALVES

CHECK THREAD → APPLY SEALANT → HAND-ENGAGE → SUPPORT PIPE → POSITION WRENCH AT NEAREST VALVE
END → CONTROLLED FINAL TIGHTENING → LEAK TEST

INSTALLATION NOTICE

Installation shall be carried out by suitably qualified personnel using appropriate tools and accepted engineering practices.

Damage resulting from excessive tightening, incorrect wrench positioning, pipe misalignment, unsupported pipework, incompatible threads, excessive external loading or other incorrect installation practices shall be subject to technical investigation and may constitute installation-related damage rather than a manufacturing defect.

Where product-specific torque values, thread-engagement limits or installation requirements are provided by VANTEC, those requirements shall take precedence over this general guide.