



Installation, Operating, Maintenance and Storage Manual

Type of Product: API 6D Ball Valve



Introduction

Ball valves are mainly used for on-off applications in industrial pipelines for petroleum, gas and chemicals. It is not suitable to be used for applications requiring flow controlling or constant adjusting.

The ball turns around with the vertical axis by 90 degrees between fully open and fully closed. This valve has a quick open and close time. For larger size valves, it is supplied with a floating ring and fixed ball which provides the characteristics of lower torque and easier operation.

Typical Range of Available Valves

Valves can be provided with a variety of pressure and temperature capabilities as listed below, depending on design and materials.

Typical Operating Temperature Ranges (°C):

- -29~200
- -29~425
- -29~595
- -46~345
- -196~600

Nominal Pressure Classes (Lb./Sq.in)

- 150 - 2500



List of Main Components and Materials

The below table is a list of the most common materials of construction of component. Refer to the name plate and or certification supplied for specific details of the valve.

No.	Parts	Material		
		Standard	Non-Standard	Stainless steel
1	Body	<input type="checkbox"/> A105 <input type="checkbox"/> A 216 WCB <input type="checkbox"/> A 352 LCB <input type="checkbox"/> A 350 LF2	<input type="checkbox"/> A 352 LC3 <input type="checkbox"/> A 217 WC6 <input type="checkbox"/> A 217 WC9 <input type="checkbox"/> B381 F2	<input type="checkbox"/> A 182 F304 <input type="checkbox"/> A 182 F316 <input type="checkbox"/> A 351 CF8 <input type="checkbox"/> A 351 CF8M <input type="checkbox"/> A 351 CF3 <input type="checkbox"/> A 351 CF3M
2	Ball	<input type="checkbox"/> A182 F316	<input type="checkbox"/> MONEL <input type="checkbox"/> Weld Overlay	<input type="checkbox"/> A 182 F304 <input type="checkbox"/> A 182 F316 <input type="checkbox"/> A 351 CF8 <input type="checkbox"/> A 351 CF8M <input type="checkbox"/> A 351 CF3 <input type="checkbox"/> A 351 CF3M
3	seat	<input type="checkbox"/> A182 F316 <input type="checkbox"/> A 216 WCB	<input type="checkbox"/> A350LF2+ENP	<input type="checkbox"/> A 182 F304+RPTFE <input type="checkbox"/> A 182 F316+RPTFE <input type="checkbox"/> A 351 CF3M
4	Seat ring	<input type="checkbox"/> PTFE <input type="checkbox"/> BUNA-N <input type="checkbox"/> VITON		
5	Stem	<input type="checkbox"/> 4140+ENP <input type="checkbox"/> 17-4PH <input type="checkbox"/> A 182 F316 <input type="checkbox"/> MONEL B381 F2		
6	Bolts /nut	<input type="checkbox"/> A 193 B7/A 194 2H <input type="checkbox"/> A 193 B8/A 194-8 <input type="checkbox"/> A 320 L7/A 194-4 <input type="checkbox"/> A 193 B8M/A 194-8M		

Installation

The valve shall be installed in a convenient position to allow for easy operation and maintenance. The following must be checked to ensure the correct valve has been selected for installation.

- Pressure class
- Temperature rating
- Materials of construction
- Name plate is affixed
- Tag number, if applicable
- Installation direction, if applicable

Before installation, check for any dirt or rust that may be in the cavity and on the sealing face. If present, this shall be removed. NOTE: valves are packed and shipped in a clean condition with sufficient protection to ensure contamination is avoided. Subsequent, inspection, testing or storage at site should be done in a manner to prevent contamination with dirt, water, etc.

Check whether the bolts on the cover flange and the packing gland have loosened or are still tight. Check the smoothness of the operation by opening and closing the valve at least once. For valves with actuators, check the travel position to ensure the sealing but without overload.

If everything is acceptable, the valve can be fitted into the pipeline using appropriate sized bolts for the valve and pressure class.

Operation

The valve shall be used for on-off applications and is not suitable for flow control or partial opening conditions. It is not permitted to operate the valve above the temperature and pressure limitation specified on the name plates.

For high temperature application, the bolts should be checked periodically to prevent it from leaking. For low temperature application, the use of impact wrenches that may cause stress concentrations are not permitted.

New lubricating oil, sealing grease or soft packing material should be added periodically in order to ensure the valve continues to operate without leakage.

For hand operated valves, the stem shall move clockwise for the closed direction and anti-clockwise for the open direction. For the other operation types, the control device indication for open/close shall be consistent with the open/close direction of the valve.

Maintenance

The valve should be operated periodically to prevent it from rust and jamming. If complete open-close operation is not possible, at least partial operation should be done as far as possible.

If leakage is found from the packing areas, check the bolts are tight. If tightening the bolts does not prevent leaking the packing may need to be changed to prevent further leakage. If leakage is observed from the centre or top flange, check the bolts are tight. If tightening does not rectify the problem, the valve will need to be removed from service for repair of the seals.

If the internal leakage of the sealing faces is found, check whether the valve is at fully closed position, adjusting the gearbox stops or actuator limits may be required. Injected sealing grease when it is at fully closed position may also assist.

When the valve is due for routine maintenance, all parts should be cleaned again to remove the dirt and rust, worn or damaged gaskets and sealing rings should be replaced using genuine FLV components. After any maintenance the valve should be pressure tested to ensure valve is leak free.

If the valve is fitted with a safety device, the set pressure of the safety device should be re-set as less than 1.1 times of the pressure-temperature rating of the valve.

Storage

The valve should be stored in a dry warehouse or facility. Stacking or storing in open air is forbidden. The valve ends should be fitted with covers for protection against dust ingress. If the valve is not fitted with an operator, the exposed stem should be protected by oil paper and bubble/plastic wrap to prevent damage.

For long periods in storage, i.e. greater than 6 months, the valve should be maintained periodically: to remove any ingress of dirt and removal of any rust, operate the valve and to re-coat the internals with anti-rust oil/grease as applicable. The valve should operate smoothly without any restriction.





Safety Tips and Warnings

- Read completely and understand all instructions provided prior or beginning installation or maintenance.
- Before installation confirm that valve is suitable for the intended service.
- Make sure that line is depressurized and drains are open/monitored during installation
- Before working on valve being in service make sure that service media has been flushed and line is safe.
- Make sure that all applicable MSDS sheets are available.
- Follow all safety related procedures.
- Before disassembly valve shall be cycled several times to assure there is no pressure trapped in body cavity.
- During assembly make sure that all threaded connections are safe and have proper engagement.
- During the pressure test of reassembled valve follow all safety precautions to avoid possible injury. (Use of proper test equipment, correct components, following test procedures, etc.)
- While the line is under pressure DO NOT remove the packing or any other valve parts.
- All activities shall be conducted by suitably experienced/trained personnel.