Cast Steel Globe Valves

- Globe valves have many advantages. They usually require fewer turns to operate than a gate valve and the seats do not slide against each other, so are less prone to wear. They are recommended where frequent operation is required. If a plug type disc is fitted, they are particularly suitable for throttling and are less prone to erosion and wire drawing, although they should not be used in the nearly closed position. The main disadvantages of globe valves are a relatively high resistance to flow and a higher cost.
- Flow direction is usually with pressure under the disc on closure, but may be reversed on hard seated valves to help guarantee a tight shut off. This may be advantageous if the valve is subject to extreme temperature variations, or if its condition deteriorates with time. Closing torques are also reduced. Globe valves used for permanent end of line service, should be installed with the pressure on top of the disc on closure.
- Crane globe valves have not been designed as fire safe valves.
- Service temperature and pressure indicated on the identification plate or body marking, should not be exceeded.
- Valves must be installed into a well-designed system and it is recommended that the system be inspected in accordance with the appropriate member state legislation. In the UK –The Pressure Equipment Directive 97/23/EC and The Pressure Systems Safety Regulations 2000.

STORAGE

• On receipt valves should be stored in a clean, dry environment until immediately prior to installation. Flange protectors should be left in place until the valve is ready to be installed.

INSTALLATION

Preparation

• Ensure valve is suitable for service conditions e.g. pressure, temperature, service media.

• When valves are to be installed remove the flange protectors and ensure valves are free of any foreign matter.

• If slinging the valve using rope, chain or wire (make sure breaking strain is correct for valve weight) only sling through yoke legs. Never sling through valve bore or under/through spokes of handwheel.

• The complete piping system must be flushed through prior to commissioning to ensure all foreign matter is removed.

Subsequent valve failure is frequently caused by dirt and other matter left in the pipeline.

• The Installation shall be designed to provide adequate means of draining and venting to avoid harmful effects such as water hammer, vacuum collapse, corrosion and uncontrolled chemical reactions and to permit cleaning, inspection and maintenance in the correct manner.

• The product has not been designed to include corrosion, erosion or abrasion allowances. Any queries regarding service applications should be addressed to the Crane Fluid Systems - Technical Sales Department.

• The valves have been designed for loadings, appropriate to its intended use and other reasonably foreseeable operating conditions. Loadings caused by traffic, wind and earthquake have not been taken into account.

• It is the responsibility of the installer to ensure that the valves do not exceed the allowable limits of pressure. However the equipment is designed to withstand a momentary pressure surge of up to 10% above the maximum working pressure.

• The piping system shall be so designed to reduce the risk of fatigue due to vibration of pipes.

Valve Location

• Valves should be located to ensure ease and safety of operation.

• Valves should be located to allow access for subsequent maintenance of the valve

• Valves should be located to allow access for gland adjustment and re-packing.

Piping Supports

These must be carefully aligned and at the correct distance between centres for the size and type of pipe. The following publications provide details of correct spans and installation details:

BS3974, Specification for Pipe Supports (Available from BSI)

DOI Directorate of M & E Engineering Services, M & E No. 3 (Available from HMSO)

Flange Joints

• Effective flange joints require compression of a gasket between mating flange faces. The mechanical forces required to maintain compression of the gasket over the full operational pressure and temperature range of the valve must be provided by the bolting. It is important that the correct bolting is used and that matching flanges and gaskets are equally suitable.

Assembly

• Make sure the mating faces are free of any defect that can lead to leakage. All flange faces must be clean and free of foreign bodies. The valve must be well supported. Take care to ensure alignment of the flanges. Use a suitable lubricant on bolt threads. Sequence the bolt tightening to ensure the contact between flanges and

gasket is flat and parallel. Tighten bolts (not in rotation but by the cross over method) gradually and uniformly to avoid any tendancy to twist one flange relative to another.

OPERATION

Cast Steel globe valves are designed to seat with the Crane standard handwheel. Levers, wrenches or other tools should not be used to operate a valve. Excessive torque can cause damage to seating faces and/or stem/handwheel. With valves DN200 and above, the use of a 'pinch bar' is acceptable providing the bar length does not exceed 1.5 x the handwheel diameter.

ROUTINE MAINTENANCE

• Check for leaks at gland. If gland is leaking tighten the gland nut(s). The gland nut(s) should be tightened only enough to prevent stuffing box leakage. Over-tightening can cause excessive wear on stem and packing and make valve difficult to operate. If leakage is still occurring add additional or new packing.

• Valves with back-seating rising stems are constructed so that packing can be replaced when the valve is fully open. It is strongly recommended that the pipeline is isolated when re-packing the stuffing box.

• Check for leaks at the body/bonnet joint. To remedy, tighten down the nuts on the bonnet bolts in the vicinity of the leak. If leakage still occurs renew the bonnet gasket. The pipeline must be sealed off before removing the valve bonnet to fit the new gasket

• Lubricate the stem threads checking first that the working conditions permit the application of a lubricant.

• All valves are designed to permit inspection without removing the valve body from the pipeline. The portion of the pipeline on which the valve is installed must be sealed off and drained before any dismantling and inspection is carried out.

• Seat leakage can be caused by dirt on the seating faces or by foreign matter in the pipeline. To remove dirt, flush the valve seats by slowly seating the disc then slowly open the valve by one handwheel turn; repeat this procedure several times if required. If a leak is still evident, it will be necessary to remove the bonnet to inspect the sealing faces for damage.

• Occasionally operate valves that remain open or closed for long periods to ensure they are in good working order, thus avoiding the possibility of being inoperable in a time of emergency.

GENERAL CONSIDERATIONS

• Maximum operating pressure reduces as service temperature increases. Pressure and temperature limitations are shown by the valve body marking or on the identifica-

tion plate, and must not be exceeded.

• Valves are not designed to operate under high shock loadings. Where pressure increases occur due to shock loading (water hammer), they should be added to the working pressure to obtain the total pressure acting on the valve. The total must not exceed the pressure rating of the valve. A pressure surge, or shock, is usually caused by the rapid closure of a check valve or quarter turn valve resulting in a sudden reduction in flow rate.

• It is bad practise to install valves with the hand wheels pointing downwards, as damage may be caused to the gland packing and stem seal, by debris in the system.

• The surfaces of valves in service may be subject to extreme temperatures; care should be taken when handling.

	PED Category by Size			Product Applications			
Fig No	Cat 1	Cat 2	Cat 3	Group 1 Gas	Group 2 Gas	Group 1 Liquid	Group 2 Liquid
143XU	2 – 2.1/2	3 – 8	10 – 12	✓	✓	✓	✓
151XU	-	2 – 4	5 – 12	✓	✓	✓	✓

The above products are not suitable for use with unstable fluids.

CRANE® FLUID SYSTEMS

Nacton Road • Ipswich • Suffolk • IP3 9QH • United Kingdom
Technical Helpline Tel: +44 (0)1473 277400 Fax: +44 (0)1473 277411
Email: enquiries@cranefs.com Website: http://www.cranefs.com
A Crane Co company.