

MAINTENANCE

The Crane Ball Valve is maintenance free but for optimum and long life service the following points must be considered:

Note: The valve should be at zero pressure and ambient temperature prior to any inspection. Maintenance Engineers & Operators are reminded to use correct fitting tools and equipment. A full risk assessment and methodology statement must be compiled prior to any 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 gland leakage. Over-tightening can cause excessive wear on the stem and packing and make the valve difficult to operate. If leakage persists the packing should be replaced.

- At minimum, annually, 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
- The risk assessment must take into account the possibility of the limits of use being exceeded whereby a potential hazard could result.
- A maintenance program should, therefore, include checks on the development of unforeseen conditions, which could lead to failure.

For the supply of genuine Crane spares or technical assistance please contact us on 0845 604 1790.

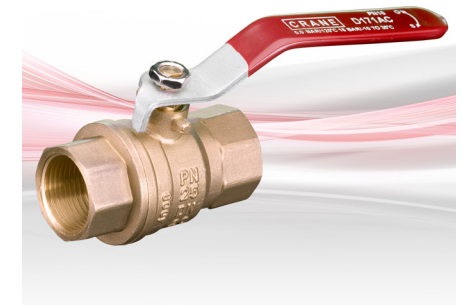
CRANE FLUID SYSTEMS

COPPER ALLOY BALL VALVES

C6000 | D171 | D171A | D171A.PF | D181C | D191 | D191B
PN16 | PN25

Crane Copper Alloy Ball Valves are compact, lightweight units, which are easy to install and operate. Their robust design ensures a long and trouble-free life. The wide range offers full flow with minimum turbulence in the open position and bubble tight seal in the closed position. (Please note the D181C has a reduced bore).

These Ball Valves have a quarter turn operation, from fully open to closed positions. Valves must be installed into a well-designed system and it is recommended that the system is inspected in accordance with the appropriate member state legislation. These products have been classified in accordance with Pressure Equipment Directive 2014/68/EU and the Pressure Equipment (Safety) Regulations 2016.



D171A



To visit our Video Library go to:
www.youtube.com/user/CraneBSU

CRANE FLUID SYSTEMS



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PRESSURE/TEMPERATURE RATING

Fig. No.	Pressure Rating	Connection Ends	Body Material	Size	Maximum Operating Pressure Conditions	Maximum Operating Temperature Conditions
C6000	PN40	Threaded	Brass	1/4" to 3"	41.4 Bar from -18°C to 130°C	6.9 Bar at 204°C
D171A.PF / D171AEXS.PF / D171ALS.PF / D171ATH.PF	PN16	Press-Fit	DZR Brass	15mm – 54mm	16 bar from -10°C to 100°C	13.5 bar at 120°C
D181C	PN16	Compression	DZR Brass	15mm – 22mm	16 bar from -10°C to 30°C	5 bar at 120°C
D171C / D171CEXS / D171CT / D171CLS / D171AC / D171ACEXS / D171ACTH / D171ACLS	PN16	Compression	Bronze	15mm – 54mm	16 bar from -10°C to 30°C	5 bar at 120°C

PRESSURE/TEMPERATURE RATING (CONTINUED)

Fig. No.	Pressure Rating	Connection Ends	Body Material	Size	Maximum Operating Pressure Conditions	Maximum Operating Temperature Conditions
D191	PN25	Threaded	DZR Brass	¼" – 2"	5 bar from -10°C to 60°C (Gas) 25 bar from -10°C to 100°C (Non Gas)	5 bar at 60°C 23.5 bar at 110°C
D191B	PN25	Threaded	Brass	¼" – 4"	25 bar from -10°C to 100°C	10.5 bar at 186°C
D171A / D171ALS / D171ATH / D171AEXS	PN25	Threaded	DZR Brass	¼" – 2"	25 bar from -10°C to 100°C	21.8 bar at 120°C
D171 / D171EXS / D171LS / D171T	PN25	Threaded	Bronze	¼" – 2"	25 bar from -10°C to 100°C	10.5 bar at 186°C

PREPARATION

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

Remove dust caps/flange protectors, where fitted.

The Installation should 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 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.

Piping supports must be carefully aligned and at the correct distance between centres for the size and type of pipe.

LAYOUT & SITING

It should be considered at the design stage where valves will be located to give access for operation, adjustment, maintenance and repair.

Valves must be provided with adequate support. Adjoining pipework must be supported to avoid the imposition of pipeline strains on the valve body, which would impair its performance.

The Ball Valves stated in this document are bi-directional and can be installed in any flow direction.

Hose union valves may also be installed in any orientation but attention should be paid to surrounding structures, ensuring that the hose union connection may be easily accomplished and that the valve lever movement is not impaired.

Care is needed during installation to provide sufficient room to enable the valve to be operated.

In the interests of safety, valves installed on end-of-line service in the closed position with infrequent opening should be fitted with a locking device on the operating mechanism. Alternatively, it should be fitted with a blanking plug or cap on the downstream end connection of the valve.

Ball Valves may be fitted in vertical, horizontal or inclined pipelines.

Flow may be in either direction and the valve may be any way up, on its side or upside down. The position chosen should allow easy access to the operating mechanism. It is important to leave access to the gland nut, if fitted.

GENERAL CONSIDERATIONS

Maximum operating pressure reduces as service temperature increases. Pressure and temperature limitations are shown by the valve body marking or on the lever sleeve, 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.

Where the lever, and therefore the valve identification, is removed for maintenance it must be refitted after the work is completed. The absence of the lever invalidates the valve's CE status.

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

SPECIAL CONSIDERATIONS - SCC

Stress Corrosion Cracking is a known condition which can sometimes occur when certain criteria are met simultaneously.

1. A material susceptible to SCC.
2. Induced stress (arising from incorrect installation) or inherent stress (arising from the manufacturing process)
3. A corrosive environment, for example, arising from chemical dosing of a system, using corrosive species such as Silver Peroxide, or a compound of Silver Nitrate and Hydrogen Peroxide. Also from items such as phenolic foam insulation, which happens when the foam becomes wet and results in the leaching of chloride from the material.

SPECIAL CONSIDERATIONS - SCC (CONTINUED)

Where SCC does occur, the root cause of the stress factor is, typically, as a result of induced torsional stress during installation, hoop-stress during joint formation (particularly on compression fittings), or cyclic flexural stress during operation.

Installation of any Crane product must precisely follow the instructions defined in this IOM, using the correct tools, avoiding the use of augmented jointing material and ensuring over-tightening is avoided.

Crane manufacture these Ball Valves for the Building Services industry and are not system designers or operators. The use of chemicals for system dosing must be determined by the user as all aspects of system variables (biocides, inhibitors, system medium, raw water condition (where used), existing micro-biological processes within the system,

temperature, mechanical configuration, etc) must be established and considered, and the effect of the chemicals used (including compounds arising from chemical combinations) must also be established in order to accurately determine compatibility.

Crane cannot make recommendations regarding chemical compatibility for the system, as a result of the above variables, which includes all components, substances and materials. Any comments from Crane regarding chemical compatibility shall relate solely to the Crane product and does not constitute a recommendation on compatibility for the wider system, resultant chemical compounds, components, substances or materials, in whole or in part.

For further assistance with regards to SCC, please contact the Crane Technical Helpline.

INSTALLATION

Prior to installation, a check of the identification plate and body marking must be made to ensure that the correct valve is being installed.

Valves are precision manufactured items and as such, should not be subjected to misuse such as careless handling, allowing dirt to enter the valve through the end ports, lack of cleaning both

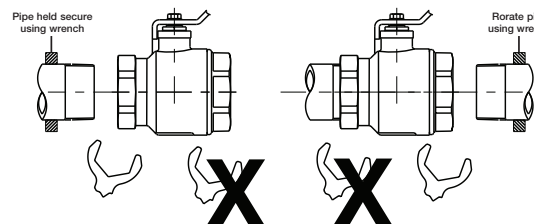
valve and system before operation and excessive force during lever operation. All special packaging material must be removed.

Immediately prior to valve installation, the pipework to which the valve is to be fastened should be checked for cleanliness and freedom from debris.

THREADED END VALVES

When installing a valve with threaded ends to steel pipe;

- Always use the flats on the hexagon at the end being fitted to the pipe.
- Always use a correctly sized spanner or wrench on the flats provided.
- Do not grip around the valve body joint.
- Never drive torque through the main body joint during assembly.
- Screw the pipe into valve and hand tighten, then tighten by the number of turns shown below (up to one additional turn is permitted for alignment).



Valve Size	Turns
¼" – 1 ½"	1.5
2"	2
2½" – 4"	2.5

COMPRESSION END VALVES

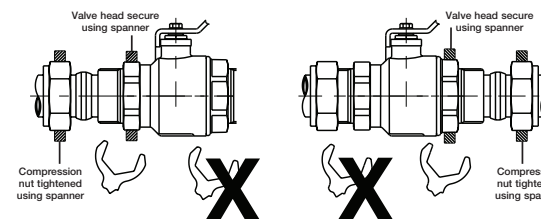
Copper Pipe

These valves are fitted with compression ends to BS EN 1254-2 (formerly BS 864 Part 2), which are suitable for installation onto copper pipework to BS EN 1057: R250 (half hard) and are provided with olives and compression nuts. No pipe jointing compound should be used in the compression joints, a light oil may be used on threads to ease tightening, however, and no lubricant should be used on the pipe or olive.

When installing a valve with compression ends to copper tube;

- Always use a correctly sized spanner or wrench on the flats provided.
- Do not grip around the valve body joint.
- Never drive torque through the main body joint during assembly.

Compression nuts must be hand tightened and then further tightened as per diagrams to the left.



Further Tightening	
Valve Size	Turns
15mm to 54mm	Between ¾ & 1¼ Turns

PRESS-FIT VALVES

For Press-Fit, please refer to the Geberit website www.geberit.co.uk where installation instructions for Press-Fit can be found.

HOSE UNION VALVES

Remove hose union nut and tailpipe taking care not to lose the tail pipe seal.

The valve ends are threaded parallel, therefore, the valve must be fully tightened up to the body shoulder.

Sealing compounds may be used and a sealing washer on the body shoulder would provide additional security.

The wrench must only be located on the valve end into which the pipe is being threaded to avoid distortion of the valve. After installation, the valve may be opened and closed fully to confirm satisfactory operation.

OPERATION

Ball Valves have a quarter turn operation (clockwise to close) providing quick and positive isolation.

To close the valve, the handle or key is rotated clockwise to a positive stop.

To open the valve, the handle or key is rotated anti-clockwise to a positive stop.

Note: The operator should use suitable hand protection at extreme temperature conditions.

Note: Rapid closure of a quarter turn valve on liquid services may cause system water hammer.

Ball Valves have PTFE body seats and should only be used in the full open or closed positions.

For operation purposes, the Ball Valve is provided with either a lever handle, T-handle or Lockshield.

Where a Lockshield is fitted:

- Remove plastic cover to access drive mechanism.
- Valve may be open or closed using standard hex spanners / sockets.
- Replace Lockshield cover after operation.

If valve is to be locked either open or closed:

- Remove retaining nut from drive mechanism
- Lift drive mechanism and turn through 90° ensuring slot in mechanism locates on body stop tang.
- Refit retaining nut
- Replace Lockshield cover

PED CLASSIFICATIONS & LIMITS OF USE

Crane Ball Valves have not been designed as fire safe valves. These valves have been categorised in accordance with the Pressure Equipment Directive 2014/68/EU.

The fluid to be transported is limited to those shown in the product table below.

On no account must these valves be used on any unstable fluids.

Note: Valves that are classified as SEP (Sound Engineering Practice) are not CE marked and, therefore, do not require a declaration of conformity.

Fig. No.	Pressure Rating	Connection Ends	PED Category by Valve Size			Product Applications			
			SEP	CAT 1	CAT 2	Group 1 Gas	Group 2 Gas	Group 1 Liquid	Group 2 Liquid
C6000	PN40	Threaded	1/4" to 1 1/4"	1 1/2"	2" to 3"				Export Only
D171A.PF / D171AEXS.PF / D171ALS.PF / D171ATH.PF	PN16	Press-Fit	15mm – 54mm						✓
D181C	PN16	Compression	15mm – 22mm				✓	✓	✓
D171C / D171CEXS / D171CT / D171CLS / D171AC / D171ACEXS / D171ACTH / D171ACLS	PN16	Compression	15mm – 54mm				✓	✓	✓
D191	PN25	Threaded	1/2" – 1"	1 1/4" – 1 1/2"	1 1/4" – 1 1/2"	✓	✓	✓	✓
D191B	PN25	Threaded	1/4" – 1"	1 1/4" – 1 1/2"	2" – 4"	✓	✓	✓	✓
D171A / D171ALS / D171ATH / D171AEXS	PN25	Threaded	1/2" – 1 1/2"	2"			✓	✓	✓
D171 / D171EXS / D171LS / D171T	PN25	Threaded	1/2" – 1 1/2"	2"			✓	✓	✓