Fig No.	Material	PED Category By Valve Size (DN)				Product Applications			
		SEP (Not CE Marked)	1	2	3	Group 1 Gas	Group 2 Gas	Group 1 Liquid	Group 2 Liquid
C6000	Brass	8-32	40	50-80			✓	✓	✓
D171*	Bronze	8-40	50-80				✓	✓	✓
D171A*	DZR Brass	8-40	50				✓	✓	✓
D171A.PF	DZR Brass	15-54							✓
D191	DZR Brass	8-25	32-40	50		✓	✓	✓	✓
D191B	Brass	8-25	32-40	50-100		✓	✓	✓	✓
D181C* (reduced bore)	DZR Brass	15-22					✓	✓	✓

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

* WRAS Approved for use on wholesome (potable) water

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. 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.
- 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.

CRANE FLUID SYSTEMS

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FM311 ISO 9001

- Approved to BS EN 331: 1998
- Designed and manufactured under quality management systems in accordance with BS EN ISO 9001:2008

CFS_COPPER_0212
IOM_OA03670S_rev_2

CRANE FLUID SYSTEMS

COPPER ALLOY BALL VALVES

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

The Crane range of copper alloy ball valves consists of compact, lightweight units, which are easy to install and operate; yet their robust construction ensures long, trouble free life. They offer full flow with minimum turbulence in the open position and bubble tight closure in the closed position (Please note the D181C has a reduced bore). Only a quarter turn is required to fully open or close the valve. Crane ball valves have not been designed as fire safe valves. 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.

INSTALLATION / PREPARATION

- Ensure valve is suitable for service conditions e.g. pressure, temperature, 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 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 takeninto 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

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.

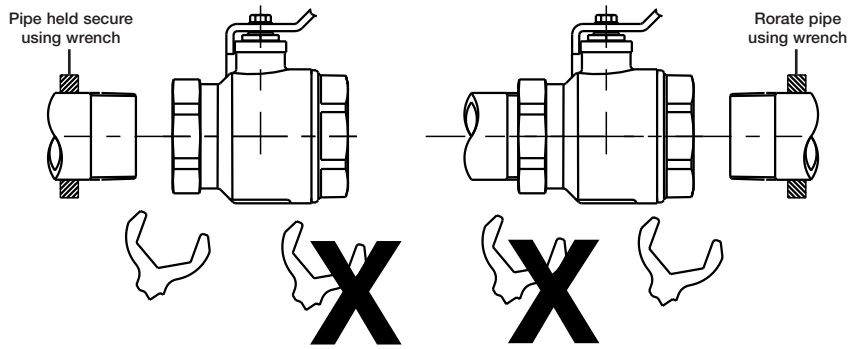
PIPING SUPPORTS

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)

(Standards relevant at the time of design)

THREADED END VALVES

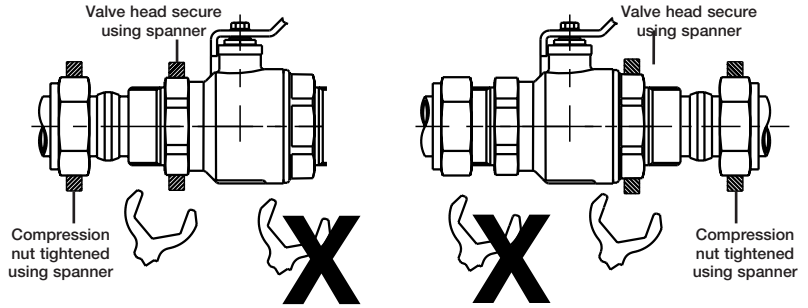
- The valves are supplied with taper threads and, with the use of a thread sealant, will give a pressure tight seal. To avoid distortion of the valve when fitting and tightening pipe, the valve must be held securely using the flats provided at the end of the valve to which the pipe is being fitted.
- Care should be taken to avoid 'pipe ending'. This is a condition that occurs when the pipe is screwed in too far resulting in distortion to the valve seat.
- The male thread on the pipe must have fully formed, undamaged threads.
- 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	VALVE SIZE	TURNS	VALVE SIZE	TURNS
1/4" - 1 1/2"	1.5	2"	2	2 1/2" - 4"	2.5

COMPRESSION END VALVES

When using compression type connections, make sure the pipe ends are cut square and free from burrs. The pipe must pass through the olive (compression ring) until it seats firmly in the bottom of the valve housing. The compression nut should be tightened sufficiently to firmly grip and slightly indent the pipe. This will occur at between 3/4 and 1 1/4 turns from hand tight. A light oil may be used on threads to ease tightening but no lubricant should be used on the pipe or olive.



	15mm	22mm	28mm	35mm	42mm	54mm
FURTHER TIGHTENING	BETWEEN 3/4 AND 1 1/4 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.

OPERATION

- Crane ball valves are designed to be operated using the operating mechanism provided with the valve, additional aids should not be necessary.
- Valves, which normally remain inoperative for long periods in service, should, if possible, be periodically operated through the full 90° of travel. Operation monthly or more frequently, will help to ensure that valves remain in good working order. It should be noted that soft seated PTFE ball valves may suffer a reduction in the seating performance if left in the part open or part closed position.

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 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.
  Note: Ensure valve and pipeline have been depressurised, drained and the valve isolated before attempting to replace gland packing.
- 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.