ball valve

installation, operation & maintenance

altecnic

ball valve installation, operation and maintenance instructions

Scope

This document applies to Altecnic ball valves with screwed or compression ends.

Valves are available with red levers for hot water and general services and with a blue lever for cold and potable water services.

Valves with red and blue butterfly handle are also available.

Life Cycle

The life of the valve is dependent on its application, frequency of use and freedom from misuse.

The properties of the fluid being transported such as pressure, temperature and the nature of the fluid must be taken into account to minimise or avoid premature failure or failure to operate.

A well-designed system will take into consideration all the factors considered in the valve design, but additionally electrolytic interaction between dissimilar metals in the valve and the system must be considered.

Before commissioning a system, it should be flushed to eliminate debris and chemically cleaned as appropriate to eliminate contamination, all of which will prolong the life of the valve.

Provision of 'Y' strainers or filters will continually collect debris present within the system helping to avoid damage and maintain system efficiency.

Pressure Equipment Directive 97/23/EC & CE Marking

Altecnic AI-373, AI- 171 and EU-00263 ball valves are suitable for Group 2 liquids (non-hazardous) are **categorised as SEP** and do not require the CE mark.

The valves are not necessarily suitable for all liquids in this group, are **not suitable for gas services**, **HTHW services and steam** and are to be used for on-off duty only.

Avoiding Stress Corrosion Cracking

The use of brass valves and fittings is not recommended on chilled water applications.

Stress Corrosion Cracking (SCC) occurs occasionally in brass valves and fittings and almost always on chilled water service where high levels of stress in the component combined with a corrosive environment can cause cracks to propagate.

The most common cause of SCC is the presence of condensation in chilled water systems due to inadequate vapour sealing of the insulation, and which reacts with various ammonia based gases or particles which may be present in the atmosphere or transferred to the valves through the insulation material.

High stresses are commonly introduced by tightening threaded connections and compression nuts and for this reason it is very important that joints are assembled exactly in accordance with these instructions.

On chilled water systems the installer should ensure the insulation and vapour barriers are correctly applied and comply with the requirements of BS 5970: 2001 and BS 5422: 2009.

Pressure - Temperature Rating

These valves are suitable for PN16 compression and PN25 threaded pressure ratings.

They must be installed in a piping system where the normal pressure and temperature do not exceed the ratings specified.

If system testing will subject the valve to pressures in excess of the working pressure rating, this should be within the test pressure for the body, 1.5 times the PN rating with the valve in the open position.

The maximum allowable pressure as specified is for non-shock conditions. Water hammer and impact for example, should be avoided.

If the limits of use specified in these instructions are exceeded or if the valve is used on applications for which it was not designed, a potential hazard could result.

Pressure - Temperature Limits - Liquid

Product Code	Size Range	PN	Non-shock pressure at temperature range	Non-shock pressure at max. temperature
AI-171	¼" - ½" ¾" - 3" 4"	32 25 16	32 bar from 0°C to 80°C 25 bar from 0°C to 80°C 16 bar from 0°C to 80°C	20 bar at 120°C 18 bar at 120°C 13 bar at 120°C
AI-373	15-54	16	16 bar from 0°C to 30°C	6.9 bar at 100°C
EU-00263	15 & 22	16	16 bar from 0°C to 30°C	5 bar at 120°C

Unsuitable for fire testing, hazardous fire environments, corrosive or erosive services, transporting fluids with abrasive solids, fatigue loading or creep conditions.

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End of Line Service and Location

Valve locations should be decided during the system design stage to allow easy access to the valve for operation and adjustment.

Valve and pipe work must be adequately supported to prevent imposing strain on the valve joints.

Threaded end valves can be used on end of line service and it is recommended that a blank plug is fitted to the outlet port.

Compression ended valves are not suitable for end of line service.

Installation

Unpack the valve and check that the flow path and threads are clean and free from debris.

Check the body and lever markings to ensure that the correct valve has been selected for the installation.

Before valve installation, the pipe work to which the valve is to be connected should be inspected for cleanliness and freedom from debris.

Ball valves may be fixed in any orientation, always leaving enough space for the 90° operation of the lever handle.

Altecnic ball valves are manufactured to high quality standards and should not be subjected to misuse.

The following should be avoided:

- Dirt and debris entering the valve through the end ports.
- Careless handling.
- Excessive force during assembly and lever operation.

Adjoining pipework must be supported to avoid imposing pipeline stress on the valve body which may impair its performance.

Ball valves have threaded ends to BS EN 10226-2:ISO 7 Rc or Type A compression ends to BS EN 1254.

Compression ended valves

The compression ends are suitable for copper tube to BS EN 1057: R250 (half hard).

Ensure that the valve and fitting are the correct size for the pipe being used.

Cut the pipe to length, making sure that the cut is square and the pipe is not deformed. Remove any burrs from the cut ends.

Make sure that the ball valve is fully open during installation.

Insert the pipe into the fitting without removing the cone, ensuring that the cone is in the correct position and that the pipe makes contact with the stop in the body of the valve.

Or

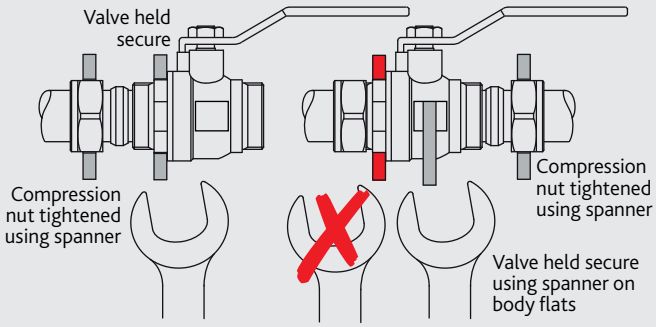
Unscrew the compression nut and cone from the fitting. Slide the compression nut and cone onto the pipe and insert the pipe into the valve as far as the stop.

Compression ended valves

In both cases, hand tighten the compression nut onto the valve. A drop of light machine oil on the threads will facilitate tightening - particularly on the larger size valves.

Jointing compounds or sealants are unnecessary and should not be used with compression ended valves; the use of these materials could impair the efficiency of the joint and may contravene water regulations.

Using a correctly fitting spanner further tighten the compression nut as shown below, locating the spanner on the hexagon, octagon or pad on the body.



Further tighten the compression nut as per the following recommendation.

Nominal Size	Guide to Tightening - No. of Turns
15mm to 28mm	¾ to 1
32mm to 54mm	1 to 1¼

Alternatively the compression nut can be tighten to the following torques

Nominal Size	15	22	28	35	42	54
Torque Nm	50	60	80	80	80	80

Note:

Over tightening will not produce a better joint, and may lead to problems in service.

The valve should be operated from fully open to fully closed to test that it has been correctly installed.

Threaded end valves

Cut the pipe to length, making sure that the cut is square, remove any burrs from the cut ends.

Thread sealing compounds appropriate for the application or PTFE tape may be used but excessive use should be avoided. Coarse fibrous sealing materials should be avoided if possible because with excessive use, they pack the threads and induce high stresses in female connections.

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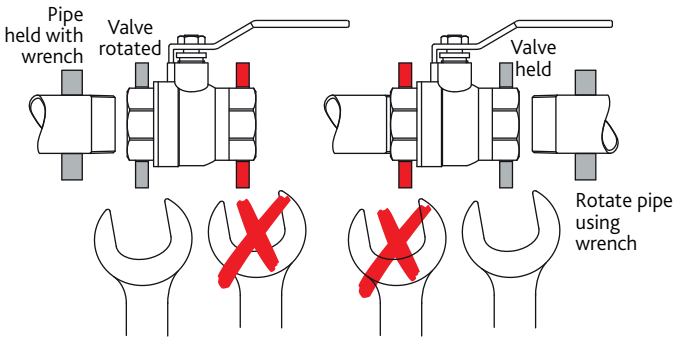
Threaded end valves

Ensure the threads are properly engaged and proceed to tighten the valve onto the pipe. 'Stilson' type wrenches should not be used. A correctly fitting spanner must be located on the end of the valve into which the pipe is being fitted as shown.

Hand tighten onto the valve, then as a guide tighten by the number of turns shown in the table

Excessive tightening force should not be used since this could overstress the valve and cause permanent damage.



Nominal Size	Guide to Tightening - No. of Turns
3/8" to 1½"	1½
2"	2
2½" to 4"	2½

Operation

Ball valves have a quarter turn operation (clockwise to close) providing quick and positive isolation. The lever or butterfly handle will be in line with the pipeline with the valve in the open position.

Caution:

Rapid closure of quarter turn valves on liquid service may cause water hammer in the system.

Suitable hand protection should be worn when operating valves used in extreme temperature applications.

The valve should only be used in the fully open or fully closed position. Altecnic ball valves are unsuitable for regulating and throttling service.

Maintenance

Altecnic ball valves will provide a long service life and no maintenance is required

In the unlikely event that a valve requires replacement then the following should be taken into consideration.

The valve should be at zero pressure and ambient temperature before any valve replacement is carried out.

Correctly fitting tools should be used, eye protection and gloves must be worn for this operation.

As the valve is removed there will be water loss between the two isolation points, therefore unless the pipework has been drained at another location, a means of collecting the discharged water is recommended.

A full risk assessment and methodology statement must be compiled prior to any maintenance.

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