

Engineering Data Sheet

Document No:- 015MDZ249D799 rev 1

Installation, Operation & Maintenance Instructions for
Fig 249C Copper Alloy and Fig 249 Bronze Double
Check Valves

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Date 25th March 2002

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CE MARKING AND THE PRESSURE EQUIPMENT DIRECTIVE 97/23/EC

This has been implemented in United Kingdom law by the Pressure Equipment Regulations 1999 (SI 1999/2001).

The regulations apply to all valves with a maximum allowable pressure greater than 0.5 bar. Valves with a maximum allowable pressure not exceeding 0.5 bar are outside the scope of the Directive. Valves are categorised in accordance with the maximum working pressure, size and ascending level of hazard, which is dependent on the fluid being transported. Fluids are classified as Group 1, dangerous fluids or Group 2, all other fluids including steam. Categories are SEP (sound engineering practice) and for ascending levels of hazard, I, II, III or IV. All valves designated as SEP do not bear the CE mark nor require a Declaration of Conformity. Categories I, II, III or IV carry the CE mark and require a Declaration of Conformity (Note- all valves up to and including 25mm (1") having a maximum allowable pressure greater than 0.5 bar are designated SEP regardless of fluid group.)

PRODUCT LIFE CYCLE

The life of the valve is dependent on its application, frequency of use and freedom from misuse. Compatibility with the system into which it is installed must be considered. 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 non-operability. 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 examined. 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.

LIMITS OF USE

The valves to which these installation, operation and maintenance instructions apply have been categorised in accordance with the Pressure Equipment Directive.

The fluid to be transported is limited to Group 2 liquids i.e. non-hazardous and on no account must these valves be used on any Group 2 gases, Group 1 liquids or Group 1 Gases.

Fig 249C (compression) and the Fig 249 (threaded) in PN10 pressure ratings and in sizes up to and including 28mm (compression) and 2 inch (threaded) are categorised as SEP and do not require the CE mark

Operating pressures and temperatures

Valve	Non-shock pressure at temperature range	Non-shock pressure at max. temperature
249C	10 bar from -10°C to 65°C	10 bar at 65 °C
249	10 bar from -10°C to 65°C	10 bar at 65 °C

These valves are suitable for PN10 pressure rating, and have a restricted maximum temperature of 65°C for continuous or 90°C for intermittent service conditions.

Not suitable for fatigue loading, creep conditions, fire testing, fire hazard environment, corrosive or erosive service, transporting fluids with abrasive solids.

PRESSURE/TEMPERATURE RATING

These valves must be installed in a piping system where the normal pressure and temperature do not exceed the above ratings.

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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 with the valve.

The maximum allowable pressure in valves as specified in the standards 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.

LAYOUT AND SITING

These valves may be installed in horizontal and vertical pipework.

Check valves having 6 diameters of straight lengths of pipe upstream and 3 diameters downstream are suitable for velocities up to 3 metres/second. If the valve is situated such that turbulent flow enters the valve or is situated close to reciprocating pumps then the velocity should not exceed 2 metres/second.

The valve must be installed with the direction arrow on the body coincident with the direction of the flow in the pipeline.

Valves must be provided with adequate support. Adjoining pipework must be supported to avoid the imposition of pipeline strains on the valve body.

INSTALLATION

Unpack the valve and check the bores are clean and free from foreign material.

Note:- These valves must be installed with the direction arrow on the body coincident with the direction of flow in the pipeline.

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 and lack of cleaning both valve and system before 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.

Fig 249C Compression

These valves are fitted with compression ends to BSEN 1254 Part 2, which are suitable for installation into copper pipework to BSEN1057: Table X and are provided with olives and compression nuts. Compression nuts must be tightened hand tight and then further tightened as per the following recommendation:

	15mm	22mm	28mm
Further Tightening	1 turn	1 turn	1 turn

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Fig 249 Threaded

Confirm that the pipe threading length is correct to avoid excessive penetration of the pipe into the valve, which would otherwise cause damage.

Thread sealing compounds appropriate to the application may be used but excessive use should be avoided, since this increases thread interference and may cause overstressing of the body ends.

Ensure the threads are properly engaged and proceed to tighten the valve onto the pipe. The wrench must only be located on the valve end into which the pipe is being threaded to avoid distortion of the valve.

Confirm that the pipe threading length is correct to avoid excessive penetration of the pipe into the valve which would otherwise cause damage.

Thread sealing compounds appropriate to the application may be used but excessive use should be avoided, since this increases thread interference and may cause overstressing of the body ends.

Ensure the threads are properly engaged and proceed to tighten the valve onto the pipe. The wrench must only be located on the valve end into which the pipe is being threaded to avoid distortion of the valve.

OPERATION

The Fig. 249C and Fig 249 double check valves are self-acting.

Confirmation of positive isolation during backflow is achieved by removal of the central bleed plug.

MAINTENANCE

The Fig. 249C and Fig 249 double check valves are maintenance free.

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.

The risk assessment must take into account the possibility of the limits of use being exceeded whereby a potential hazard could result.

A maintenance programme should therefore include checks on the development of unforeseen conditions, which could lead to failure.

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