INSPECTION

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

In systems where corrosion could be a potential hazard, wall thickness checks on the body and bonnet should be made. This requires the removal of the valve from the pipeline at zero pressure. If the wall thickness has reduced by 25%, the valve must be replaced.

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FM311
ISO 9001

- Designed and manufactured under quality management systems in accordance with BS EN ISO 9001-2008

H_FIG_850_0211
IOM_050M00850D799_rev 6

Cast and Ductile Iron Fig. 860 & 865 Wafer Check Valves

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

Valves must be installed into 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 97/20/C and The Pressure System Safety Regulation 2000.

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.

Fig. 860 & 865 products are categorised for Group 2 liquids i.e. non-hazardous and on no account must these valves be used on any Group 1 liquids or Group 1 and Group 2 gases.

FLUID	GROUP 2 LIQUIDS ONLY		
FIG. NO	PRESSURE RATING	DN	CATEGORY
860	PN16	50-300 350-600	SEP I*
865	PN25	50-200 250-600	SEP I*

*Category I requires CE mark

OPERATING PRESSURES AND TEMPERATURES

PN Rated Valves

VALVE FIG NO.	BODY MATERIAL	SEAT TRIM	NON-SHOCK PRESSURE AT TEMPERATURE RANGE	NON-SHOCK PRESSURE AT MAX TEMPERATURE
860	DN50 - DN150: Cast Iron DN50 - D600: Ductile Iron	EPDM	16 bar from -10˚C to 120˚C	16 bar at 120˚C
865	DN50 - DN600: Ductile Iron	EPDM	25 bar from -10˚C to 120˚C	25 bar at 120˚C

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

PRESSURE/TEMPERATURE RATING

Valves rated at PN16 or PN25 to BS EN 12334 must be installed in a piping system whose normal pressure and temperature do not exceed these ratings.

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 pressure applied upstream of the obturator.

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

The Fig. 860 & 865 check valve may be installed in horizontal pipework and vertical pipework if the flow is in an upwards direction. It is designed for steady flow conditions with a velocity up to 3 metres/second.

For check valves that will be fitted in turbulent flow it is recommended that 6 diameters of straight lengths

of pipe upstream and 3 diameters downstream are fitted. 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.

It should be considered at the design stage where valves will be located to give access for inspection.

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

Heavy valves may need independent support or anchorage.

NOTE: Check valves must not be fitted in vertical pipework with the flow downwards.

INSTALLATION

Unpack the valve and check the bores are clean and free from foreign material and that the disks operate smoothly.

Valves above DN200 are supplied with a thread for fitting of an eye bolt for lifting purposes. This is designed to suit a collared eyebolt to BS EN ISO 3226 with a SWL of 200kg-M8; SWL of 320kg=M10; SWL of 400kg-M12 when used to lift vertically.

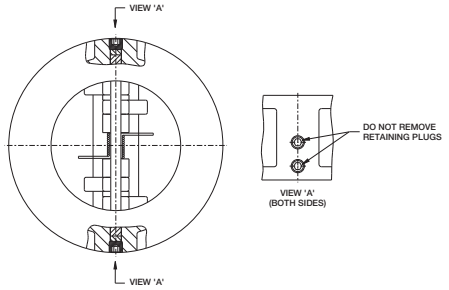
DN200 - 250: M8 | DN300: M10 | DN350 - 600: M12

It is the responsibility of the installer to be aware of the limitations on lifting imposed by BS EN ISO 3226 and / or any other applicable regulatory standards.

The Fig. 860 & 865 check valves are wafer pattern and are designed to fit between flanges, located within the flange bolting.

For horizontal pipework the valve must be installed with the disk shaft vertical, this is indicated by having 2 shaft plug holes on the top i.e. uppermost to the pipework. For vertical pipework the disk shaft can be in any orientation.

PLEASE NOTE: shaft plugs should not be removed to prevent stem movement and leakage. - see the drawing below.



NOTE: The valve must be installed with the direction arrow on the body coincident with the direction of flow in the pipeline. For vertical pipework the flow direction should be upwards only.

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 bolting.

All packaging material must be removed.

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

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

The mating faces of the valve and of the adjoining pipework flanges should be checked for correct gasket contact face, surface finish and condition. If a condition is found which might cause leakage, no attempt to assemble should be made until the condition has been corrected.

The gasket should be suitable for operation conditions or maximum pressure/temperature ratings.

The gaskets should be checked to ensure freedom from defects or damage.

Care should be taken to provide correct alignment of the flanges being assembled and centralise the valve within the flange bolting. Ensure that the inter-bolt gasketry is also centralised and does not protrude into the pipe bore.

Suitable lubricant on bolt threads should be used. In assembly, bolts are tightened sequentially to make the initial contact of flanges and gaskets flat and parallel followed by gradual and uniform tightening in an opposite bolting sequence to avoid bending one pipe flange relative to the other.

Parallel alignment of flanges is especially important in the case of the assembly of a valve into an existing system.

Flanged joints depend on compressive deformation of the gasket material between the flange surfaces.

The bolting must be checked for correct size, length, material and that all connection flange boltholes are utilized.

OPERATING

The Fig. 860 & 865 check valves are self-acting valves.

MAINTENANCE

The Fig. 860 & 865 check valves are maintenance free.