

# Engineering Data Sheet

Document No:- 006B00770D799 rev 1

Installation, Operation & Maintenance Instructions for  
Fig 770 and Fig 771 De-aerators

Page 1 of 3

Date 16<sup>th</sup> April 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 piping products with a maximum allowable pressure greater than 0.5 bar. Piping products with a maximum allowable pressure not exceeding 0.5 bar are outside the scope of the Directive. Piping products 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 piping products 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 piping products 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 piping products 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 piping products design, but additionally electrolytic interaction between dissimilar metals in the piping products 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 piping products.

## LIMITS OF USE

The products 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 test points be used on any Group 2 gases, Group 1 liquids or Group 1 gases.**

**Fig 770 and Fig 771 de-aerators in sizes up to 150mm are categorised as SEP and do not require the CE mark**

## Operating pressures and temperatures

PN	Non-shock pressure at temperature range	Non-shock pressure at max. temperature
-	10 bar from -10°C to 120°C	10 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

De-aerators are suitable for use up to 10 bar pressure rating. They must be installed into a piping system where the normal pressure and temperature do not exceed the above ratings.

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Page 2 of 3

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The maximum allowable pressure 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 de-aerator is used on applications for which it was not designed, a potential hazard could result.

## **LAYOUT AND SITING**

Care should be taken regarding orientation of the de-aerator. The recommended maximum velocity of 1.2 m/s (Fig 770) and 1.5m/s (Fig 771) will enable full efficiency to expel air from the system.

It should be considered at the design stage where the de-aerator will be located to give access for inspection maintenance and repair.

## **INSTALLATION**

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

De-aerators 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.

All special packaging material must be removed.

De-aerators must be fitted into horizontal pipework with the air vent vertical.

De-aerators 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.

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

### **Fig 770 threaded end**

Thread sealing compounds appropriate to the application must 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.

### **Fig 771 flanged end**

Valve end protectors should only be permanently removed immediately before installation. The valve interior should be inspected through the end ports to determine whether it is clean and free from foreign matter.

The mating flange (both de-aerator and 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.

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Page 3 of 3

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Care should be taken to provide correct alignment of the flanges being assembled. 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 flange relative to the other, particularly on flanges with raised faces. Parallel alignment of flanges is especially important in the case of the assembly of a de-aerator 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 bolt holes are utilized.

## **OPERATING**

These de-aerators are self-acting. However, an anti-vacuum cap is fitted which needs opening anti-clockwise to allow the release of air automatically.

## **MAINTENANCE**

These de-aerators are maintenance free.

However, the system 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.

For the supply of genuine Hattersley spares or technical assistance contact:

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