

**BSS**

<b><i>Installation, Operating and Maintenance Instructions</i></b>		
<b><i>PRODUCT DATA SHEET</i></b>	<b><i>PRODUCT TYPE</i></b>	
<b><i>VALVES PACKAGE</i></b>	<b><i>Fig 968S Lever handle ball valves</i></b>	
<b><i>DATE:</i></b>	<b><i>PAGES</i></b>	<b><i>LEAFLET CODE</i></b>
<b><i>10<sup>th</sup> July 2003</i></b>	<b><i>1 OF: 3.</i></b>	<b><i>968SIOM10.07.03</i></b>

### **THE PRESSURE EQUIPMENT DIRECTIVE 97/23/EC and CE MARKING**

The Pressure Equipment Regulations 1999 (SI 1999/2001) have now been introduced into United Kingdom law.

Valves with a maximum allowable pressure greater than 0.5 bar are covered by these new Regulations. Valves are categorised according to their maximum working pressure, size and rising level of hazard. The level of hazard varies according to the fluid being carried. Fluids are classified as Group 1, dangerous fluids or Group 2, all other fluids including steam. The Categories designated are SEP (sound engineering practice). Valves up to and including 25mm (1") are designated SEP regardless of the fluid group. Those identified as having increased hazard are Categorised as, 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. Valves classified from the piping chart would not be included in Category IV.

### **CE MARKING AND THE ATEX Directive 94/9/EC**

**Concerning equipment and protection systems intended for use in potentially explosive atmospheres.**


This has been implemented in United Kingdom law by the Equipment and Protective Systems Intended for Use in Potentially Explosive Atmosphere Regulations 1996(SI 1996/192) and amended by The Equipment and Protective Systems (amendment) Regulations 2001 (SI2001/3766).

The regulations apply to all valves where each valve:

- has its own potential source of ignition.
- operates in a potentially explosive atmosphere created by:
  - o the presence of air/dust mixtures external to the valve.
  - o The presence of gases, vapours, mists released from the valve through leakage.

The regulations will not apply to a valve without a potential source of ignition, which operates in a dust free environment and the fluid being transported is cold, inert gas or non –flammable liquid.

The requisite level of protection for valves not exempt from the regulations is defined as Group II category 2 and shall bear the following markings:

 II 2 GD X

### **VALVE SELECTION**

It is important that the valve selected is suitable for the required service conditions. Providing it is installed correctly and receives adequate preventative maintenance it should give years of trouble-free service.

Boss™ valves are not suitable for fatigue loading, creep conditions, fire testing, fire hazard environment, corrosive or erosive service, or for carrying fluids containing abrasive solids. There is no allowance for corrosion in the design of these valves. Designs for this valve do not allow for decomposition of unstable fluids and must not be used where this could occur.

Boss™ valves are not designed to withstand the effects of fire, wind, earthquakes and traffic.

When Boss™ valves are fitted with pressure equipment or assemblies', suitable protective devices may be required.

Boss™ Fig 968S Red Lever valves are suitable for:

Steam	Water	Oil	Air †	Gas	Gas	Gas	Gas
				Inert	Combustible*	Corrosive**	Oxygen
YES	YES	YES	YES	YES	YES	YES	NO

\* The valves are suitable for British Gas Applications Family Gases 1, 2 and 3 (tested to EN331)

\*\*Suitable in applications where moisture is completely absent.

† 10 bar Maximum air.

Gas application conditions

-20°C to +60°C maximum 5 bar. British Gas (MOP5)

For LPG: maximum 5 bar

Vacuum conditions at 10-3 torr.

### **OPERATIONAL LIMITS**

The valves to which these installation, operation and maintenance instructions apply have been:

- categorized in accordance with the Pressure Equipment directive.
- designated with the requisite level of protection in the ATEX Directive as Group II Category 2 non-electrical equipment.

### **Pressure and temperature limitations for PN rated valves**

PN	Non-shock pressure at temperature range	Non-shock pressure at Maximum temperature
16	16 bar -10°C up to 30°C#	5bar at 120°C#

### **Boss™ Ball Valve PED Categorisation**

Fig.967S Red Lever ball valve

15mm	22mm	28mm	35mm	42mm	54mm
SEP	SEP	SEP	SEP	SEP	SEP

# The maximum surface temperature under normal use is given in the table. The auto-ignition temperature of a surrounding potentially explosive atmosphere must exceed the equipment surface temperature by at least 25% (BS EN 1127-1 clause 6.4.2)

### **PRESSURE/TEMPERATURE RATING**

Valves rated at PN16 must be installed in a piping system whose normal pressure and temperature do not exceed these ratings. The maximum allowable pressure in valves as specified in the standards is for non- shock conditions. Water hammer and impact should also be avoided.

If system testing will subject the valve to pressures in excess of the working pressure rating, this should be within the "shell test pressure for the body" to a maximum of 1.5 times the PN rating and conducted with the valve fully opened.

It may be hazardous to use these valves outside of their specified pressure and temperature limitations and also when not used for the correct application.

### **VALVE LOCATION and END-OF-LINE SERVICE**

To ensure ease of operation, adjustment, maintenance and repair, valve siting should be decided during the system design phase. To prevent imposing strain on the valve joints, pipe work and valves must be adequately supported. These valves are not suitable for end of line service.

### **INSTALLATION**

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

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

Any electrical component e.g. actuators, limit switches must be explosion proof and comply with the Directive and Standards as listed in BS EN 1127-1 clause 6.4.5.

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.**

Boss™ ball valves are manufactured to exacting standards and, therefore, should not be subjected to misuse. The following should be avoided:

- Careless handling of the valve- (Valves should not be lifted using the lever).
- Dirt and debris entering the valve through the end ports.
- Excessive force during assembly and lever operation.

Use suitable hangers close to both ends of the valve in order to remove stresses transmitted by the pipe.

Boss™ Fig 968S ball valves have Type A compression ends manufactured to EN 1254. These compression ends are suitable for mechanically joining copper or stainless steel tube by means of compressing a cone on to a tube without the application of heat.

The range is designed for use with copper tube to BS EN 1057:1996(formerly BS2871: Part 1), BS2871:Part 2, or stainless steel tube to BS4127: 1994.

To make a joint:

1. Ensure that the fitting is 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.

EITHER

2a. Insert the pipe into the fitting without removing the cone, ensuring that the cone is in the correct position and that the pipe makes firm contact with the stop in the body of the valve.

OR

2b. Unscrew the capnut and cone from the fitting. Slide the capnut and cone onto the pipe and insert the pipe into the fitting as far as the stop.

3. In both cases, tighten the capnut onto the valve until the pipe cannot be rotated by hand. A drop of light machine oil on the threads will facilitate tightening- particularly on the larger size valves.

4. Tighten the capnut with a good, well-fitting spanner, using the table below as a guideline taking into consideration any variations in installation conditions.

Nominal Pipe Size	Guide to Tightening
15mm	¾ to 1 Turn
22mm	¾ to 1 Turn
28mm	¾ to 1 Turn
35mm	1 to 1.1/4 Turns
42mm	1 to 1.1/4 Turns
54mm	1 to 1.1/4 Turns

NB.

- Jointing compounds or sealants are not necessary with Boss™ compression ended valves; the use of these materials could impair the efficiency of the joint and may contravene water regulations.
- Over tightening will not produce a better joint, and may lead to problems in service.
- The valves are available in brass or gunmetal bodies. Cap nuts are made from brass.
- The valve should be operated from fully open to fully closed to test that it has been correctly installed.
- Make sure that a ball valve is fully open during installation.

Make sure that a ball valve is fully open during installation. The valve should be operated from fully open to fully closed to test that it has been correctly installed.

## **OPERATION**

### **Fig 968S Red Lever handle ball valves**

To open – turn the lever 90° so that it is in line with the pipe run in which it is installed.

To close – turn the lever 90° so that it is across the line with the pipe run in which it is installed.

Full opening and closing is completed when a full 90° is achieved and the lever is firmly set against a stop on the valve body.

**Caution:** Service applications with extremes of temperature may cause the ball to become tight in the valve. The valve may become stiff to operate in these circumstances.

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.

Boss™ Yellow Lever and Tee handle ball valves are not suitable for regulating and throttling service.

## **MAINTENANCE**

A regular maintenance program is the most efficient method of ensuring longer term operational efficiency of the selected valve. Such a program would need to include a risk assessment and a planned procedure of how the maintenance will be carried out. The possibility of operational limits being exceeded and the potential hazards ensuing must be considered as part of this assessment.

This should be implemented to include visual checks on the valve's condition and any development of unforeseen conditions, which could lead to failure.

**We do not recommend any servicing or maintenance is carried out on these valves.**

Should a valve need replacing 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. The correct fitting tools and equipment should be used for valve replacement work.

Separate means of draining the pipe work must be provided when carrying out any the replacement of Fig 967S Red Lever handle ball valves.

Where there may be any system debris this should be collected and /or filtered by installation of the appropriate protective device.

Valves within the scope of the ATEX Directive with a protection level defined as Group II category 2 will operate in Zone 1 (gases/vapours) or Zone 21( dusts) designated in BS1127-1 Explosion prevention and protection.

Tools are either "single spark" e.g. screwdriver, spanner, impact screwdriver or "shower of sparks" e.g. sawing or grinding. Only steel "single spark" tools are permitted in Zones 1 and 21.

Tools causing showers of sparks are only permissible if:

- no hazardous explosive atmosphere is present.
- dust deposits have been removed and no dust cloud is present.

The use of tools on equipment in Zones 1 and 21 should be subject to a "permit to work" system.

A full risk assessment and methodology statement must be compiled prior to any maintenance. This must include the removal of dust deposits by good housekeeping.

## **PRODUCT LIFE SPAN**

When a valve is properly selected for its service conditions it should give years of trouble-free service provided it is installed correctly and receives adequate preventative maintenance. By not considering the compatibility of the system design and the pressure and temperature requirements the life expectancy of the valves can be adversely affected and valve failure may occur. The nature of the fluid being carried through the valve could also affect the valve performance as this could lead to premature valve failure. There may also be interactions between metals in the pipe system and the valve which need to be considered. Appropriate flushing and cleaning of the pipe work installation should take place when commissioning the system as this would help extend the valve life.

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