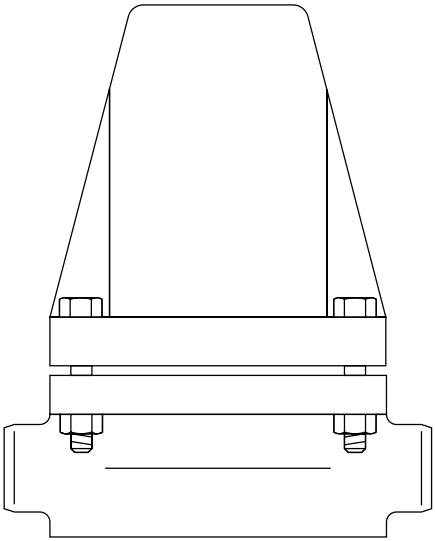
spirax sarco

# SM45
# Bimetallic Steam Trap
## Installation and Maintenance Instructions



# 1. General safety information

**Safe operation of the unit can only be guaranteed if it is properly installed, commissioned and maintained by a qualified person (see Section 11 of the attached Supplementary Safety Information) in compliance with the operating instructions. General installation and safety instructions for pipeline and plant construction, as well as the proper use of tools and safety equipment must also be complied with.**

## Warning

**The cover gasket contains a thin stainless steel support ring which may cause physical injury if it is not handled and disposed of carefully.**

## Isolation

**Consider whether closing isolating valves will put any other part of the system or personnel at risk. Dangers might include; isolation of vents and protective devices or alarms. Ensure isolation valves are turned off in a gradual way to avoid system shocks.**

## Pressure

**Before attempting any maintenance consider what is or may have been in the pipeline. Ensure that any pressure is isolated and safely vented to atmospheric pressure before attempting to maintain the product, this is easily achieved by fitting Spirax Sarco depressurisation valves type DV (see separate literature for details). Do not assume that the system is depressurised even when a pressure gauge indicates zero.**

## Temperature

**Allow time for temperature to normalise after isolation to avoid the danger of burns and consider whether protective clothing (including safety glasses) is required.**

## Disposal

**The product is recyclable. No ecological hazard is anticipated with the disposal of this product providing due care is taken.**

# 2. General product information

## 2.1 General description

The SM45 is a medium pressure, temperature sensitive, maintainable steam trap. The operating element comprises a stack of bimetal discs which control the flow of condensate at a preset temperature below steam saturation.

**Note:** For additional information see the Technical Information Sheet TI-P025-01.

## 2.2 Sizes and pipe connections

½", ¾", 1" and 1½" screwed BSP or NPT.

½", ¾", 1" and 1½" butt weld to suit schedule 80 pipe and socket weld to BS 3799 Class 3000. DN15, 20, 25 and 40 standard flange to DIN 2546 PN64, ANSI 300, ANSI 600 and JIS / KS 30K.

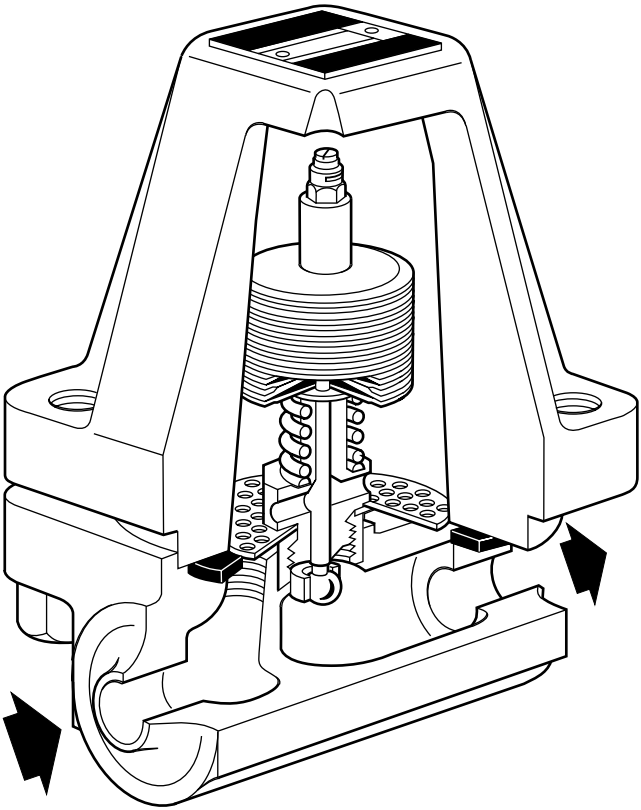


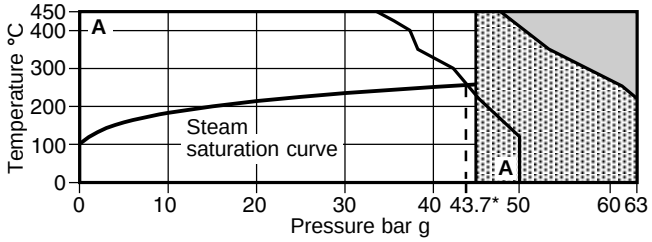
**Fig. 1 SM45 with butt weld connections**

## 2.3 Limiting conditions (to ISO 6552)

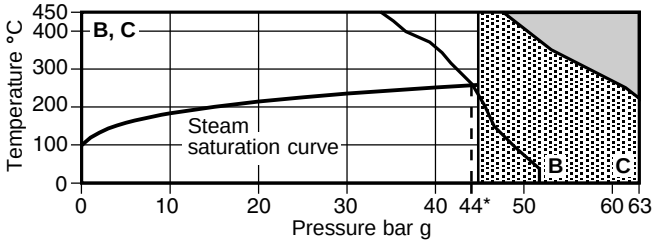
| | | | |
|---|---|---|---|
| Maximum body design conditions | | | PN63 |
| PMA - Maximum allowable pressure | | 63 bar g | (913.5 psi g) |
| TMA - Maximum allowable temperature | | 450°C | (842°F) |
| PMO - Maximum operating pressure | | 45 bar g | (652.5 psi g) |
| TMO - Maximum operating pressure | | 450°C | (842°F) |
| Designed for a maximum cold hydraulic test pressure of: | Flanged PN64, screwed, SW and BW | 109 bar g | (1 581 psi g) |
| | Flanged ANSI 300 | 80 bar g | (1 160 psi g) |
| | Flanged ANSI 600 | 109 bar g | (1 581 psi g) |
| | Flanged JIS / KS 30K | 79 bar g | (1 145.8 psi g) |

## 2.4 Operating range

**Screwed, socket weld, butt weld and flanged JIS / KS 30K**




**Flanged ANSI 300, ANSI 600 and PN64**




The product must not be used in this region.

The product should not be used in this region as damage to internals may occur.

*****PMO Maximum operating pressure recommended for saturated steam.
**A - A** Screwed, socket weld, butt weld and flanged JIS / KS 30K.
**B - B** Flanged ANSI 300.
**C - C** Flanged ANSI 600 and PN64.

# 3. Installation

**Note: Before actioning any installation observe the 'Safety information' in Section 1.**

Referring to the Installation and Maintenance Instructions, name-plate and Technical Information Sheet, check that the product is suitable for the intended installation:

**3.1** Check materials, pressure and temperature and their maximum values. If the maximum operating limit of the product is lower than that of the system in which it is being fitted, ensure that a safety device is included in the system to prevent overpressurisation.

**3.2** Determine the correct installation situation and the direction of fluid flow.

**3.3** Remove protective covers from all connections.

**3.4** The trap is designed for installation with the element in a horizontal plane with the cover at the top.

**3.5** When welding the trap into the line there is no need to remove the element providing that welding is done by the electric arc method.

**3.6** Bimetallic steam traps are recommended for applications where sub-cooling of condensate prior to discharge is acceptable. Therefore, if prompt removal of condensate is required, a suitable unlagged cooling leg of pipework must be installed immediately upstream of the trap. The cooling leg should be at least 1 - 2 m (3 - 6 ft) long.

**Note:** If the trap is to discharge to atmosphere ensure it is to a safe place, the discharging fluid may be at a temperature of 100°C (212°F).

# 4. Commissioning

After installation or maintenance ensure that the system is fully functioning. Carry out tests on any alarms or protective devices.

# 5. Operation

The SM45 is a bimetallic steam trap. The trap operates on the basis of two opposing forces acting on the valve, an operating force created by the system pressure, an opening force created by the system pressure, and a closing force resulting from the condensate temperature acting on the bimetallic elements. The SM45 operates with no loss of steam and automatically and quickly drains air, non-condensable gases and large amounts of cold water on start-up.

# 6. Maintenance

**Note: Before actioning any maintenance program observe the 'Safety information' in Section 1.**

### Warning

**The cover gasket contains a thin stainless steel support ring which may cause physical injury if not handled and disposed of carefully.**

## 6.1 General information

Before undertaking any maintenance on the trap it must be isolated from both the supply line and return line and any pressure allowed to safely normalise to atmosphere. The trap should then be allowed to cool. When reassembling, ensure that all joint faces are clean.

## 6.2 How to fit the element set:

- Remove the cover from the body by unscrewing the cover nuts (**11**).
- Unscrew the element set (**3**) and replace with a new one, coating the valve seat thread with a non-run silicon sealant such as Loctite Superflex Silicone Sealant White.
- Lightly coat the valve seat gasket (**6**) with a suitable jointing compound.
- Replace the cover and cover gasket (**10**) making sure that the strainer screen (**4**) is correctly located.
- Ensure that the cover nuts are evenly tightend to the recommended torque (see Table 1).

### Warning

**Do not dismantle the element by removing the lock-nut (2) or the setting of the trap will be lost.**

# 7. Spare parts

The spare parts available are shown in heavy outline. Parts drawn in broken line are not supplied as spares.

### Available spares

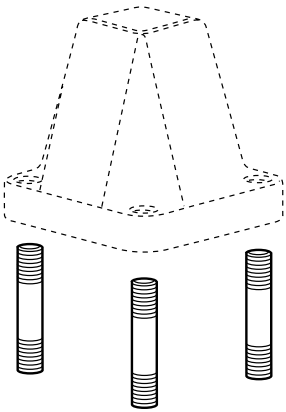
| | |
|---|---|
| Element set<br>Complete with valve, valve seat and valve seat gasket | **3, 6, 7** |
| Strainer screen (3 off) | **4** |
| Set of gaskets (packet of 3 of each) | **6, 10** |

### Important note

The earlier design of SM45 incorporated 4 off long cover studs and 8 off washers and nuts for assembling the body and cover.
The current design of SM45 incorporates a threaded cover and 4 off shorter studs and 4 off washers and nuts.

### How to order spares

Always order spares by using the description given in the column headed 'Available spares' and state the size and type of trap.
**Example:** 1 - Element set for a DN25 Spirax Sarco SM45 bimetallic steam trap.



**Warning**

**Do not dismantle the element by removing the lock-nut (2) or the setting of the trap will be lost.**

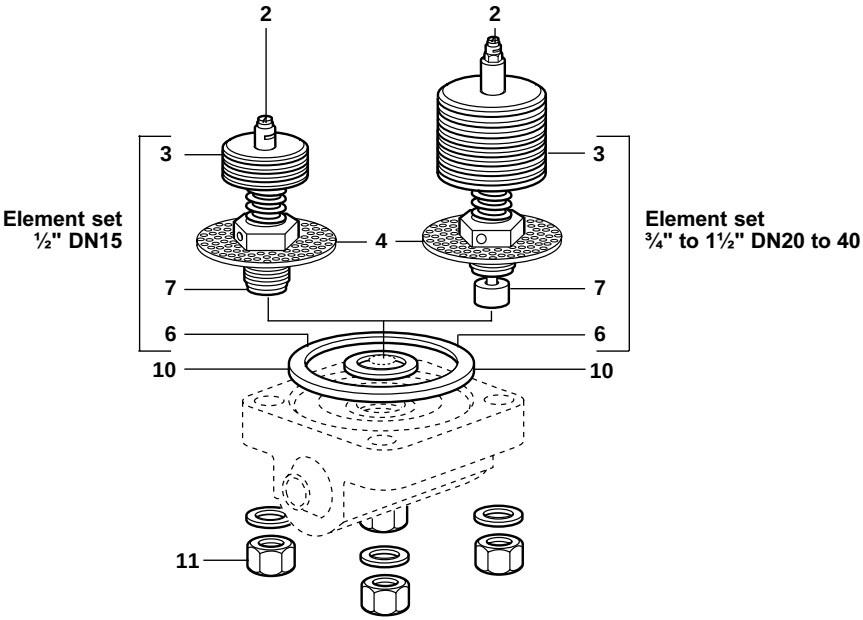



**Fig. 2 SM45 with butt weld connections**

## Table 1 Recommended tightening torques

| Item No. | Part | or mm | N m | (lbf ft) |
|---|---|---|---|---|
| **3** | **Element** | 27 A/F | 120 - 132 | (89 - 97) |
| **11** | **Cover nuts** | 19 A/F M12 | 110 - 120 | (81 - 89) |