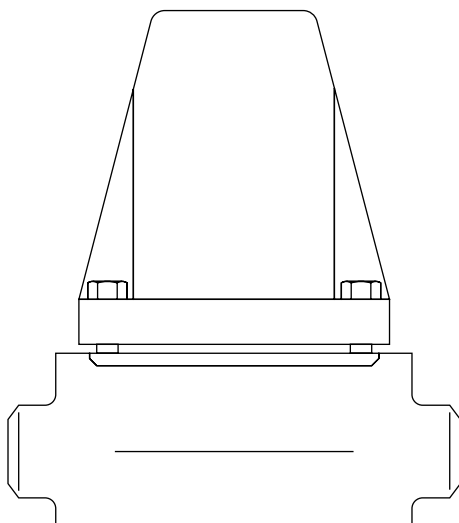


AV45

Air Vent for Steam Systems
Installation and Maintenance Instructions



- 1. General
safety information*
- 2. General
product information*
- 3. Installation*
- 4. Commissioning*
- 5. Operation*
- 6. Maintenance*
- 7. Spare parts*

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 body/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

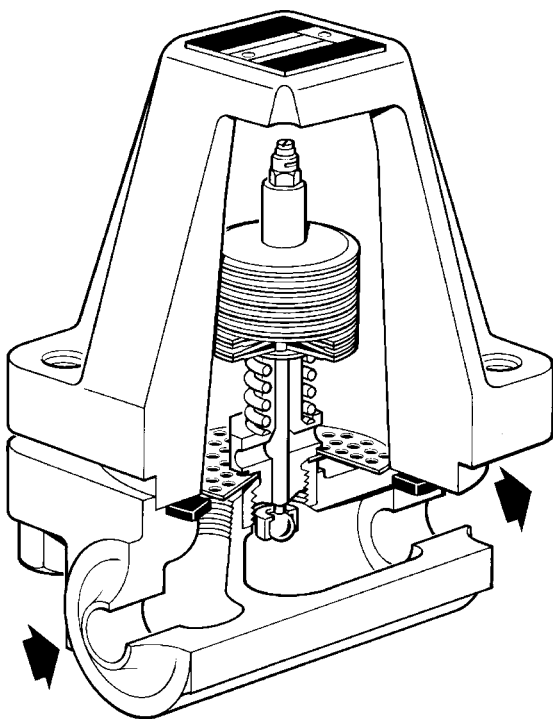
The AV45 is a forged alloy steel, medium pressure, temperature sensitive, maintainable air vent. The operating element comprises a stack of bimetals discs which control the flow of air and other incondensable gases at a preset temperature below steam saturation. It is also available with integral flanges.

Note: For additional information see the Technical Information Sheet, TI-P123-03.

2.2 Sizes and pipe connections

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



The main illustration shows the valve arrangement for the ¾", 1" and 1½" sizes. For ½" sizes the valve arrangement differs as shown below.

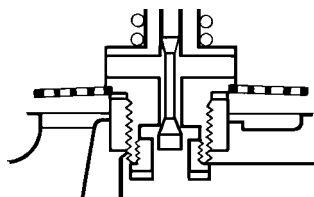


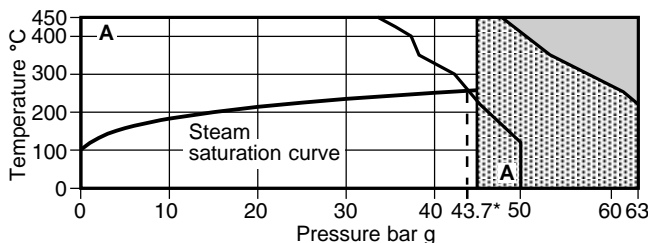
Fig. 1 AV45 (Butt weld version shown)

2.3 Limiting conditions

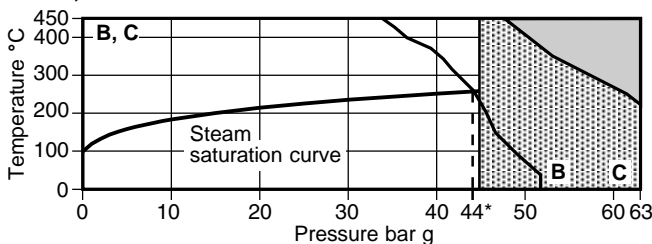
Maximum body design conditions		PN63	
PMA - Maximum allowable pressure		63 bar g	(913.5 psi g)
TMA - Maximum allowable temperature		450°C	(842°F)
PMO - Maximum operating pressure		45 bar g	(652.7 psi g)
TMO - Maximum operating temperature		450°C	(842°F)
Designed for a maximum cold hydraulic test pressure 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.

2.5 K_v values

Size	DN15 - ½"	DN20 - ¾"	DN25 - 1"	DN40 - 1½"
K_v value	0.25	0.6	0.6	0.6
For conversion	$C_V \text{ (UK)} = K_V \times 0.97$		$C_V \text{ (US)} = K_V \times 1.17$	

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 AV45 is designed for installation with the element in a horizontal plane and the cover at the top. Positioned at the highest point of the main, or plant where air collects. For maximum air removal, the discharge should be as free as possible or piped to a safe location. 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.
- 3.5** The air vent should not be insulated.

4. Commissioning

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

5. Operation

The AV45 is a bimetallic air vent. This air vent operates on the basis of two opposing forces acting on the valve - an opening force created by the system pressure, and a closing force resulting from the steam temperature acting on the bimetallic elements. The AV45 quickly and automatically drains air and non-condensable gases on start-up, with no loss of steam.

6. Maintenance

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

Warning

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

6.1 General information



Before undertaking any maintenance on the AV45 it must be isolated from both the supply line and return line and any pressure allowed to safely normalise to atmosphere. The AV45 should then be allowed to cool. When reassembling, ensure that all joint faces are clean.

6.2 How to fit the element set:

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

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

Table 1 Recommended tightening torques

Item no.	 or mm 	N m	(lbf ft)
3	27 A/F	120 - 132	(89 - 97)
11	19 A/F M12	110 - 120	(81 - 89)

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 complete with valve, valve seat and valve seat gaskets	3, 6
Strainer screen (3 off)	4
Set of gaskets (packet of 3 of each)	6, 10

Note: The earlier design of AV45 incorporated 4 off long cover studs and 8 off washers and nuts for assembling the body and cover.

The current design of AV45 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 air vent.

Example: 1 off Element set for a Spirax Sarco 1" AV45 air vent.

