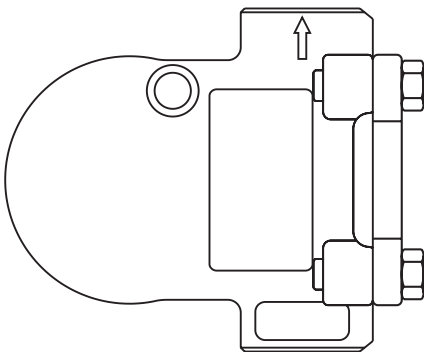

AES14, AES14S and AES14E
Austenitic Stainless Steel Automatic Air Vents for
Liquid Systems - 1/2" and 3/4"
Installation and Maintenance Instructions




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


1. Safety information

Safe operation of these products can only be guaranteed if they are properly installed, commissioned, used and maintained by qualified personnel (see Section 1.11 on this document) 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.

1.1 Intended use

Referring to the Installation and Maintenance Instructions, name-plate and Technical Information Sheet, check that the product is suitable for the intended use/application.

The products listed below comply with the requirements of the Pressure Equipment Directive (PED) and carry the  mark when so required.

It should be noted that products rated as 'SEP' are required by the Directive not to carry the  mark. The products fall within the following Pressure Equipment Directive categories:

Product	Group 1 Gases	Group 2 Gases	Group 1 Liquids	Group 2 Liquids
AES14/AES14E/AES14S	-	SEP	-	SEP

- i) The AES14/AES14S/AES14E has been specifically designed for use on steam, air or water/condensate which are in Group 2 of the above mentioned Pressure Equipment Directive.
- ii) Check material suitability, pressure and temperature and their maximum and minimum values. If the maximum operating limits of the product are lower than those of the system in which it is being fitted, or if malfunction of the product could result in a dangerous overpressure or overtemperature occurrence, ensure a safety device is included in the system to prevent such over-limit situations.
- iii) Determine the correct installation situation and direction of fluid flow.
- iv) Spirax Sarco products are not intended to withstand external stresses that may be induced by any system to which they are fitted. It is the responsibility of the installer to consider these stresses and take adequate precautions to minimise them.
- v) Remove protection covers from all connections before installation.

1.2 Access

Ensure safe access and if necessary a safe working platform (suitably guarded) before attempting to work on the product. Arrange suitable lifting gear if required.

1.3 Lighting

Ensure adequate lighting, particularly where detailed or intricate work is required.

1.4 Hazardous liquids or gases in the pipeline

Consider what is in the pipeline or what may have been in the pipeline at some previous time. Consider: flammable materials, substances hazardous to health, extremes of temperature.

1.5 Hazardous environment around the product

Consider: explosion risk areas, lack of oxygen (e.g. tanks, pits), dangerous gases, extremes of temperature, hot surfaces, fire hazard (e.g. during welding), excessive noise, moving machinery.

1.6 The system

Consider the effect on the complete system of the work proposed. Will any proposed action (e.g. closing isolation valves, electrical isolation) put any other part of the system or any personnel at risk?

Dangers might include isolation of vents or protective devices or the rendering ineffective of controls or alarms. Ensure isolation valves are turned on and off in a gradual way to avoid system shocks.

1.7 Pressure systems

Ensure that any pressure is isolated and safely vented to atmospheric pressure. Consider double isolation (double block and bleed) and the locking or labelling of closed valves. Do not assume that the system has depressurised even when the pressure gauge indicates zero.

1.8 Temperature

Allow time for temperature to normalise after isolation to avoid danger of burns. If parts made from Viton have been subjected to a temperature approaching 315 °C (599 °F) or higher, it may have decomposed and formed hydrofluoric acid. Avoid skin contact and inhalation of any fumes as the acid will cause deep skin burns and damage the respiratory system.

1.9 Tools and consumables

Before starting work ensure that you have suitable tools and/or consumables available. Use only genuine Spirax Sarco replacement parts.

1.10 Protective clothing

Consider whether you and/or others in the vicinity require any protective clothing to protect against the hazards of, for example, chemicals, high /low temperature, radiation, noise, falling objects, and dangers to eyes and face.

1.11 Permits to work

All work must be carried out or be supervised by a suitably competent person. Installation and operating personnel should be trained in the correct use of the product according to the Installation and Maintenance Instructions.

Where a formal 'permit to work' system is in force it must be complied with. Where there is no such system, it is recommended that a responsible person should know what work is going on and, where necessary, arrange to have an assistant whose primary responsibility is safety.

Post 'warning notices' if necessary.

1.12 Handling

Manual handling of large and/or heavy products may present a risk of injury. Lifting, pushing, pulling, carrying or supporting a load by bodily force can cause injury particularly to the back. You are advised to assess the risks taking into account the task, the individual, the load and the working environment and use the appropriate handling method depending on the circumstances of the work being done.

1.13 Residual hazards

In normal use the external surface of the product may be very hot. If used at the maximum permitted operating conditions the surface temperature of some products may reach temperatures of 100 °C (212 °F).

Many products are not self-draining. Take due care when dismantling or removing the product from an installation (refer to 'Maintenance instructions').

1.14 Freezing

Provision must be made to protect products which are not self-draining against frost damage in environments where they may be exposed to temperatures below freezing point.

1.15 Safety information - Product specific

See the relevant Sections of the attached Installation and Maintenance Instructions for specific details relating to these products.

1.16 Disposal

Unless otherwise stated in the Installation and Maintenance Instructions, this product is recyclable and no ecological hazard is anticipated with its disposal providing due care is taken, except:

Viton:

- Can be landfilled, when in compliance with National and Local regulations.
- Can be incinerated, but a scrubber must be used to remove Hydrogen Fluoride, which is evolved from the product and with compliance to National and Local regulations.
- Is insoluble in aquatic media.

1.17 Returning products

Customers and stockists are reminded that under EC Health, Safety and Environment Law, when returning products to Spirax Sarco they must provide information on any hazards and the precautions to be taken due to contamination residues or mechanical damage which may present a health, safety or environmental risk. This information must be provided in writing including Health and Safety data sheets relating to any substances identified as hazardous or potentially hazardous.

2. General product information


2.1. General description

The AES14, AES14S and AES14E are austenitic stainless steel ball float type air vents for liquid systems. They are available with Viton, stainless steel and EPDM valve cones respectively. The connections are in the vertical plane for flow upwards.

Body and cover castings are produced by a TÜV approved supplier in accordance with AD-Merkblatt WO/TRD100.

Available types	AES14	fitted with a viton valve cone.
	AES14S	fitted with a stainless steel valve cone.
	AES14E	fitted with an EPDM valve cone.

Standards

These products fully comply with the requirements of the Pressure Equipment Directive (PED) and carry the  mark when so required.

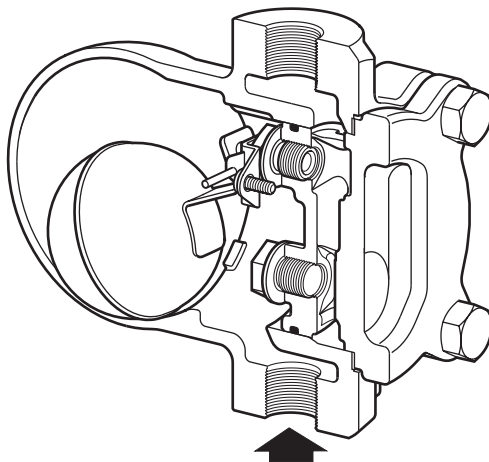
Certification

These products are available with certification to EN 10204 3.1.B.

Note: All certification/inspection requirements must be stated at the time of order placement.

Note: For additional information see Technical Information Sheet TI-P149-14.

Fig. 1 AES14 screwed (vertical up)



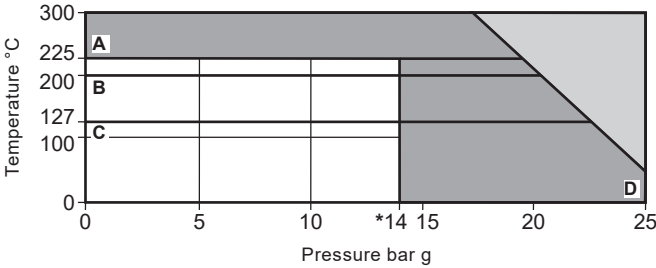
2.2 Sizes and pipe connections

½" and ¾" Screwed BSP (BS 21 and DIN 2999) or NPT (ANSI B 1.20.1).


½" and ¾" Socket weld ends to ANSI B 16.11, BS 3799 Class 3000 and DIN 3239.


Note: For alternative connections please consult Spirax Sarco.

2.3 Pressure/temperature limits



*PMO
Maximum operating pressure
14 bar g (203 psi g).

 The product **must not** be used in this region.

 The Viton and EPDM soft seat versions should not be used in this region or beyond their maximum operating temperature as damage to the internals may occur.

- A - D** AES14S - Maximum operating temperature 225 °C
- B - D** AES14 - Maximum operating temperature 200 °C
- C - D** AES14E - Maximum operating temperature 127 °C

Body design conditions		PN25	
PMA	Maximum allowable pressure	25 bar g	(363 psi g)
TMA	Maximum allowable temperature	25 bar g	(572 °F)
PMO	Maximum operating pressure for saturated steam service	14 bar g	(203 psi g)
		AES14	200 °C (392 °F)
TMO	Maximum operating temperature	AES14S	225 °C (437 °F)
		AES14E	127 °C (260 °F)
	Minimum operating temperature	-20 °C	(-4 °F)
	Designed for a maximum cold hydraulic test pressure of:	37.5 bar g	(544 psi g)

2.4 Materials

Part	Material	
Body and cover	Austenitic stainless steel (316)	EN 10213-4 (1.4408) ASTM A351 CF8M
Cover bolts	Stainless steel	BS EN 3506 A2-70
Cover gasket	Reinforced exfoliated graphite	
'O' ring	Grey Viton complies with FDA CFR Title 21, Para 177, Section 2600	
Internals	Stainless steel	

AES14, AES14S and AES14E Austenitic Stainless Steel Automatic Air Vents for Liquid Systems - ½" and ¾"

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. All Spirax Sarco air vents should be installed vertically with the inlet at the bottom.
- 3.3** Remove plastic protective covers from connections.
- 3.4** If the trap is to discharge to atmosphere ensure that it's to a safe place, the discharging fluid may be at a temperature of 100 °C (212 °F).
Note: Dribbling may occur if the valve becomes fouled with dirt.
- 3.5** The automatic air vent must be fitted into a vertical plane above the point being vented with the direction of flow as indicated so that the float arm rises and falls vertically. Ensure that the edge marked 'TOP' is facing uppermost. Because of the way automatic air vents operate they all dribble liquid when discharging air. This is perfectly normal. Because of this we recommend piping the discharge to a drain via an air break.
- 3.6** Ensure adequate space is left to remove the body from the cover for maintenance. Minimum withdrawal distance distance for the AES14 series is 135 mm (5.3").

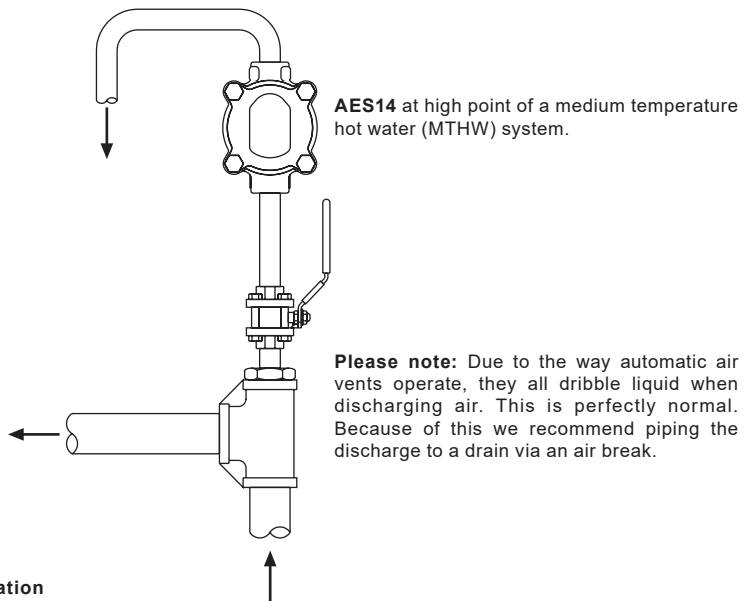


Fig. 2 Typical installation

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 AES14 is a ball float type air vent for liquid systems. Any air which is trapped within the system will migrate to the high points of the system and collect, where the AES14 should be installed.

The air will enter the body and pass through the open valve to atmosphere as the air and any other gases are released, the system liquid enters the body, lifting the ball float, drawing the valve head to the seat via the action of the lever mechanism, thus closing the valve.

6. Maintenance

Note:

Before actioning any maintenance programme 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 the supply line and any pressure allowed to safely normalise to atmosphere. The air vent should then be allowed to cool. When reassembling, ensure that all joint faces are clean.

Note: The following Sections need to be read in conjunction with Figure 3.

6.2. How to fit the main valve assembly - maintenance kit

- Undo the cover bolts (2). Place two screwdrivers between the body and cover on either side and lever off the body, keeping bolt holes aligned.
- Remove the pivot pin (14) and float assembly (8).
- Remove the two main valve assembly screws (7) and pivot frame (12).
- Remove the main valve seat (5) and replace with a new seat supplied with new gasket and tighten to the recommended torque (see Table 1, page 8).
- Refit the pivot frame (12) by tightening the assembly set screws (7) to the recommended torque (see Table 1, page 11). Replace float assembly (8) and pivot pin (14).
- Fit a new 'O' ring (15) onto the body ensuring that the 'O' ring contact surfaces are all clean and in good condition. Care must be taken to ensure that the 'O' ring is not damaged during assembly. A suitable lubricant may be used to ease assembly.
- Refit the cover using a new gasket (3) and tighten the cover bolts (2). Ensure that the word 'TOP' is uppermost on the body edge. This is relevant to all configurations.

Note: If only the valve cone is being replaced, remove the worn part and push the new cone into the hole in the float lever carefully, insuring the lever does not become distorted.

7. Spare parts

The spare parts available are shown in solid outline. Parts drawn in a grey line are not supplied as spares.

Available spares

	AES14	3, 5, 6, 7 (2 off), 8, 9, 12, 14, 15
Maintenance kit	AES14S	3, 5, 6, 7 (2 off), 8, 9, 12, 14, 15
	AES14E	3, 5, 6, 7 (2 off), 8, 9, 12, 14, 15
	Seal kit	(packet of 3)
		3, 15, 9 †

† **Note:** One of each EPDM and Viton valve cones are supplied to fit as required.

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 - Maintenance kit for a Spirax Sarco ½" AES14 austenitic stainless steel automatic air vent.

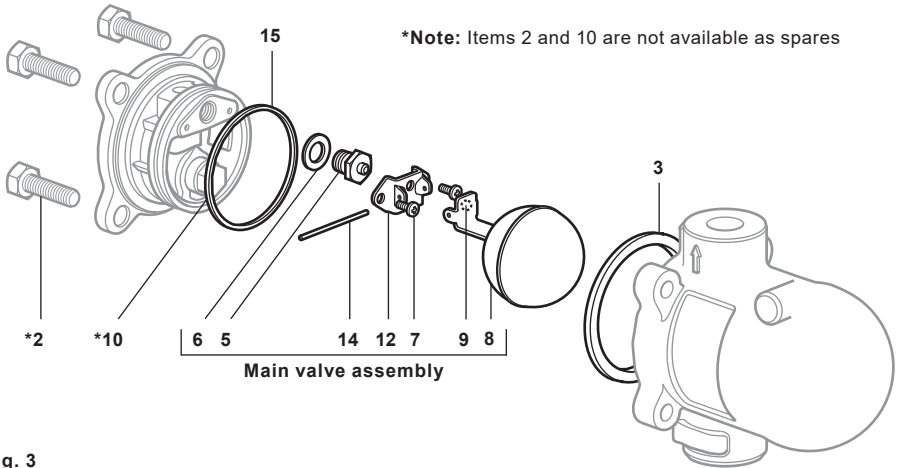




Fig. 3

Table 1 Recommended tightening torques

Item	Part		or mm		N m	(lbf ft)
2	Cover bolts	-		M10 x 30	20 - 25	(15 - 18)
5	Main valve seat	17 A/F		-	50 - 55	(37 - 40)
7	Main valve assembly screws	Pozidrive		M4 x 6	2.5 - 3.0	(1.8 - 2.2)
10	Blanking plug	11 A/F		-	50 - 55	(37 - 40)

AES14, AES14S and AES14E Austenitic Stainless Steel Automatic Air Vents for Liquid Systems - ½" and ¾"

