

Air Vents for Liquid Systems

Types AE30, AE30A, 13W, 13WS, 13WH, 13WHS

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) 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.

- i) The products have been specifically designed for use on steam, air or water/condensate. The products' use on other fluids may be possible but, if this is contemplated, Spirax Sarco should be contacted to confirm the suitability of the product for the application being considered.
- 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 and protective film from all name-plates, where appropriate, before installation on steam or other high temperature applications.

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.

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 in excess of 300°C (572°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 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.

1.16 Returning products

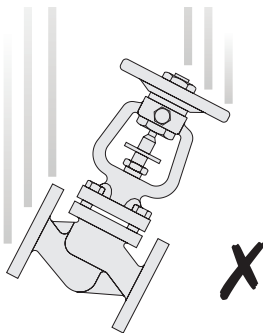
Customers and stockists are reminded that under EC Health, Safety and Environment Law, when returning products to Spirax Sarco they must provide information on any hazards and the precautions to be taken due to contamination residues or mechanical damage which may present a health, safety or environmental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

1.17 Working safely with cast iron products on steam

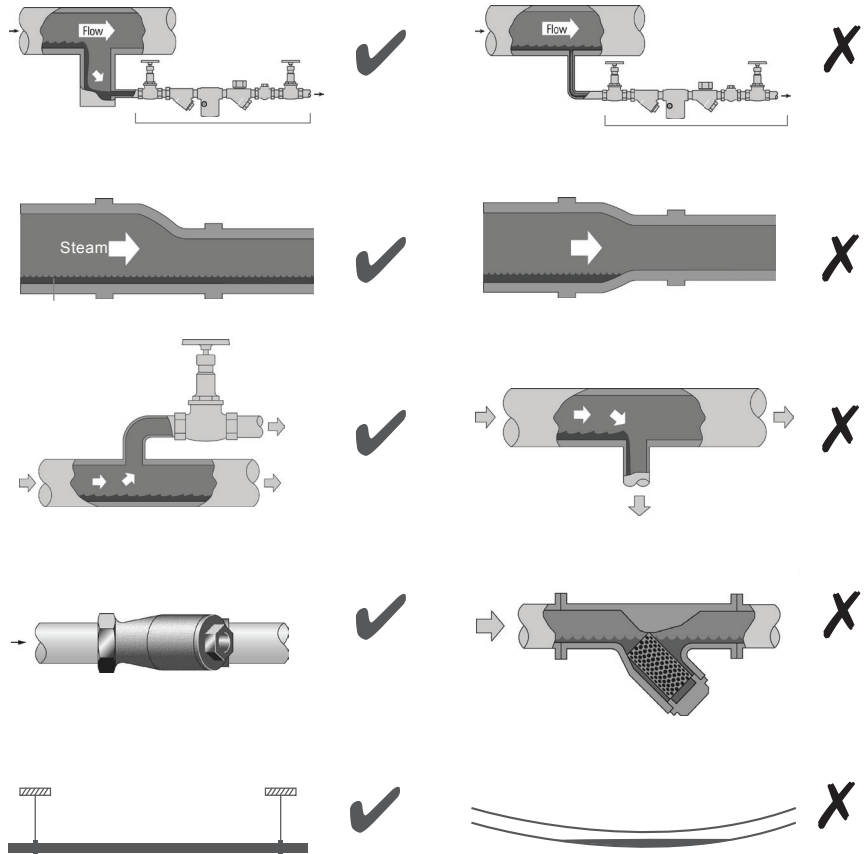
Cast iron products are commonly found on steam and condensate systems. If installed correctly using good steam engineering practices, it is perfectly safe. However, because of its mechanical properties, it is less forgiving compared to other materials such as SG iron or carbon steel. The following are the good engineering practices required to prevent waterhammer and ensure safe working conditions on a steam system.

Safe Handling

Cast Iron is a brittle material. If the product is dropped during installation and there is any risk of damage the product should not be used unless it is fully inspected and pressure tested by the manufacturer.



Steam Mains - Do's and Dont's:



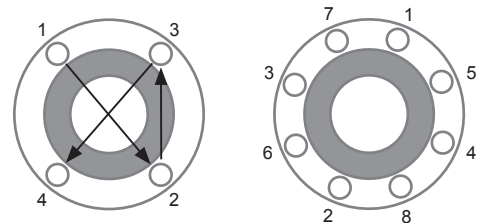
Prevention of tensile stressing

Pipe misalignment:

Installing products or re-assembling after maintenance:



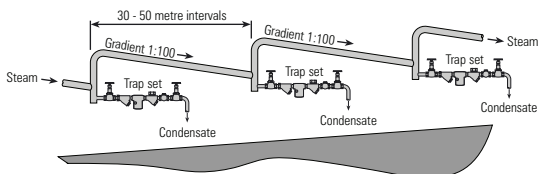
Do not over tighten.
Use correct torque figures.



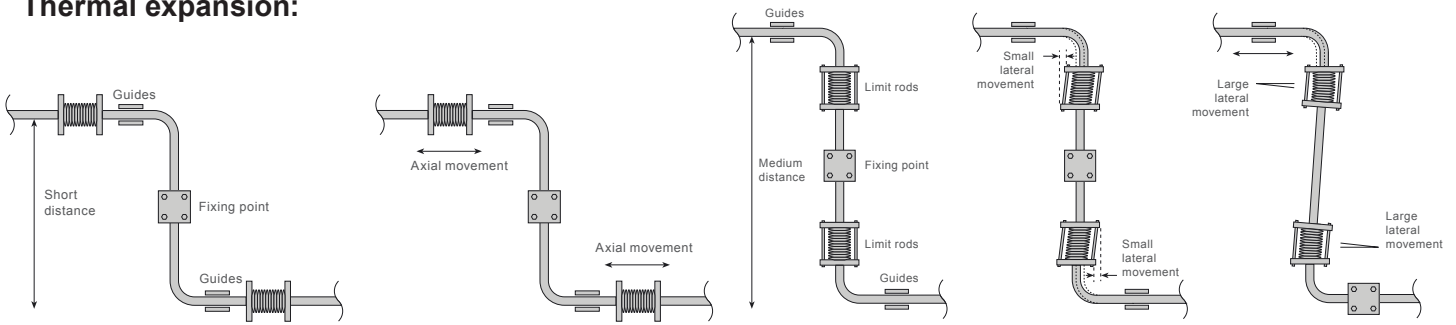
Flange bolts should be gradually tightened across diameters to ensure even load and alignment.

Prevention of water hammer

Steam trapping on steam mains:



Thermal expansion:



Description

Float type air vents afford maximum efficiency for immediate removal of air or gases from a liquid system. They will vent air and gases as quickly as they reach the vent body, then close before liquid can escape.

Limiting Conditions

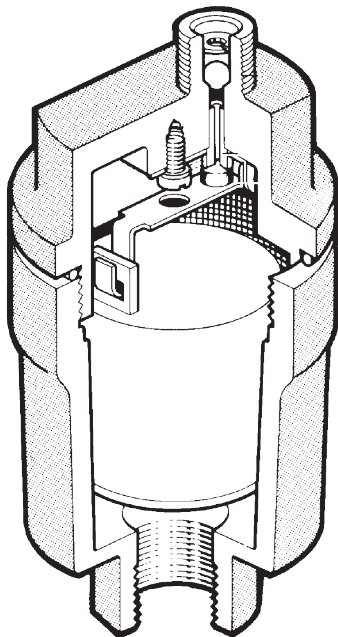
	<u>PMO</u>	<u>TMO</u>
Type AE30, AE30A	116 psi	230°F
Type 13W (13SW)	150 psi	450°F (200°C)
Type 13WH (13WHS)	300 psi	450°F (200°C)

PMO— Max. Operating Pressure

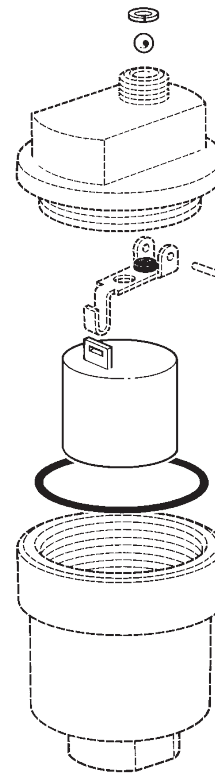
TMO—Max. Operating Temperature

Operation

The float is attached to the discharge valve by a lever assembly. When air or gases enter the body, any liquid inside the body is displaced, lowering the liquid level. The weight of the float pulls the valve head off the seat, forcing the unit to discharge the air or gas to atmosphere. Once air or gas is discharged, the liquid level instantaneously rises within the body, forcing the discharge orifice to close tightly. This operation is instantaneous and continuous with a discharge that is fully modulating. It is important to remember when applying this type of equipment to a system that it must be installed in the piping so that the air and gases will flow into it.



Type AE30A
shown



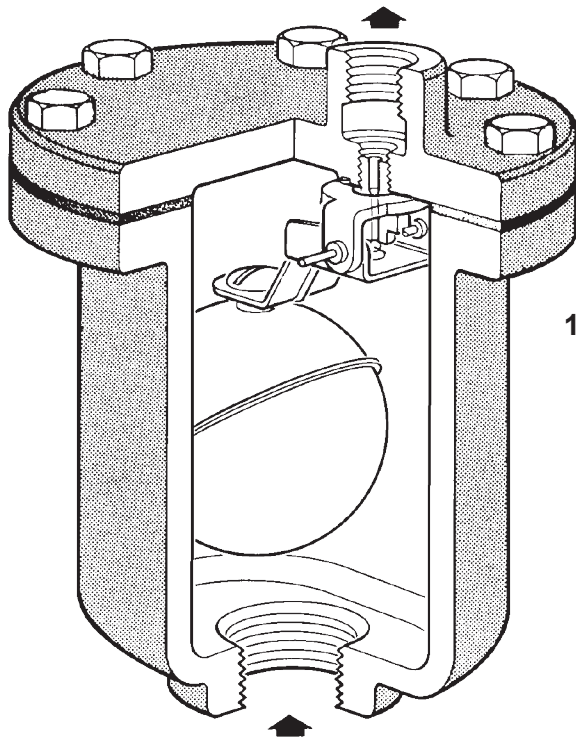
Installation

An air vent is required at all high points of a liquid system on terminal equipment and wherever air can collect. All types of AE30, AE30A, 13W, 13WS, 13WH, and 13WHS air vents must be installed vertically above the piping with the inlet at the bottom so that the float mechanism is rising and falling in the vertical plane. The inlet piping should be the same size as the piping connection on the body. As with all air vents, dribbling may occur if the valve becomes fouled with dirt. For this reason, it is recommended that a pipe be fitted to the outlet discharge to drain or to a safe place where damage cannot occur.

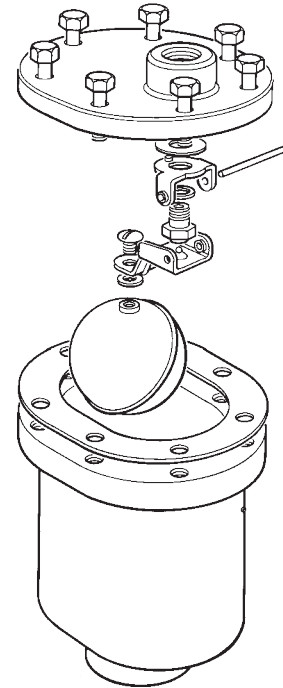
Maintenance

Maintenance can be performed with the air vent in-line so long as suitable isolation valving is provided in the system. On the AE30 and AE30A, unthreading the cover removes the mechanism assembly from the body. By removing the cover bolts on the 13W, 13WH, 13WS, and 13WHS, the cover, including the mechanism assembly, can be removed.

When reassembling all types, make sure that all flange gasket surfaces are clean. Always use a new gasket. Tighten bolts uniformly before opening isolation valve. Refer to the appropriate exploded view for the various parts which can be ordered for repair when necessary. When replacing valve mechanism parts, check by raising and lowering float several times, making sure the valve is centering properly on the seat.



13W, 13WH (shown),
13WS, 13WHS



For any additional information you may require, contact: Spirax Sarco Applications Engineering Department
Toll Free 1-800-575-0394

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/sarco

SPIRAX SARCO, INC. • 1150 NORTHPOINT BLVD. • BLYTHEWOOD, SC 29016
PHONE 803-714-2000 • FAX 803-714-2222
SPIRAXSARCO.COM/GLOBAL/US