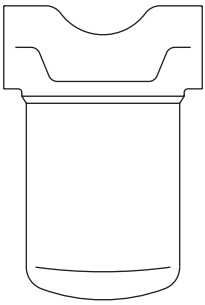
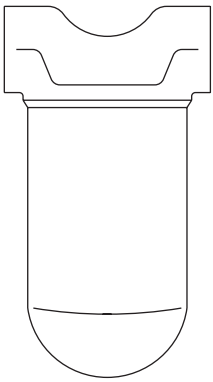
SIB30, SIB30H and SIB45
Sealed Inverted Bucket Steam Traps
Installation and Maintenance Instructions



SIB30



SIB45

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) 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 European Pressure Equipment Directive 2014/68/EU and carry the CE mark when so required.

i) **The product has been specifically designed for use on steam, air or water/condensate which are in Group 2 of the above mentioned Pressure Equipment Directive. 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 the 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 of 538 °C (1 000 °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.

Please visit the Spirax Sarco product compliance web pages:
https://www.spiraxsarco.com/product-compliance
for up to date information on any substances of concern that may be contained within this product. Where no additional information is provided on the Spirax Sarco product compliance web page, this product may be safely recycled and/or disposed providing due care is taken. Always check your local recycling and disposal regulations.

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.

2. General product information

2.1 General description

The SIB30, SIB30H and SIB45 are all stainless steel sealed inverted bucket steam traps. They are supplied with a specified pressure change assembly depending on the required operating pressure differential.

The traps are available with a range of seat sizes to suit pressure differentials between 0.5 to 30 bar (7.25 to 435 psi) for the SIB30/SIB30H and 0.5 to 45 bar (7.25 to 652.5 psi) for the SIB45. Traps for 45 bar are also provided with an inbuilt check valve as standard.

Note: For additional information see the following Technical Information Sheets:

SIB30 and SIB30H	TI-P110-01
SIB45	TI-P110-02

2.2 Sizes and pipe connections

SIB30, SIB30H

½" and ¾" screwed BSP T Rp (ISO 7-1) or NPT and socket weld ends (BS 3799)
DN15 and DN20 standard flange ANSI 150 and ANSI 300, BS 4504 PN40.
Flanges are also available for JIS Tables 20, 16 and 10.

SIB45/5

½" and ¾" butt weld ends to ANSI B 16.5 (to suit ANSI B 36.10 Schedule 80 pipe).
½" and ¾" socket weld ends BS 3799 Class 3000.
DN20 and DN25 standard flanges DIN2547 PN100 and ANSI 600.

SIB45/6, SIB45/8, SIB45/10

¾" and 1" screwed BSP T Rp (ISO 7-1) or NPT.
DN20 and DN25 standard flanges ANSI 150 and ANSI 300.

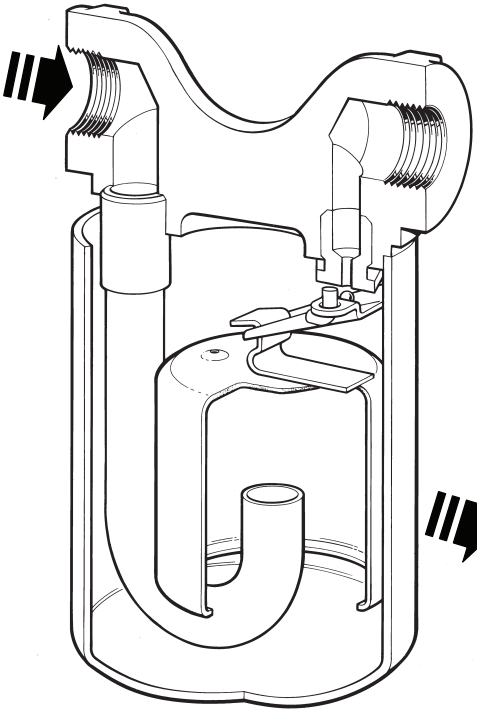


Fig.1 SIB30

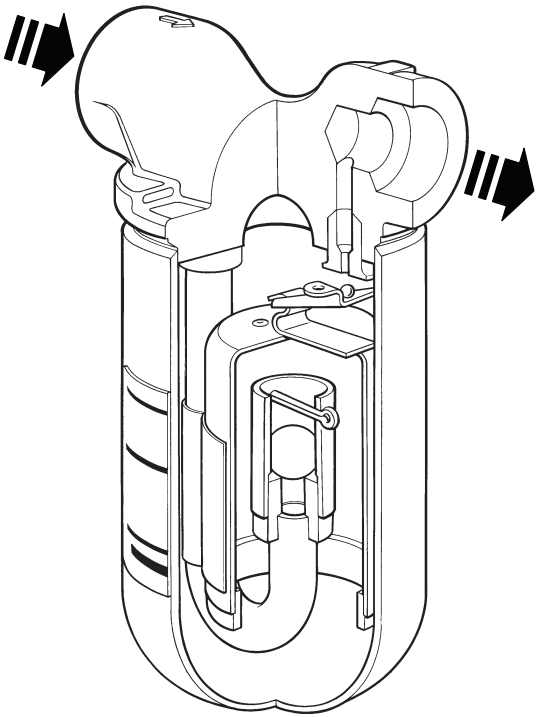
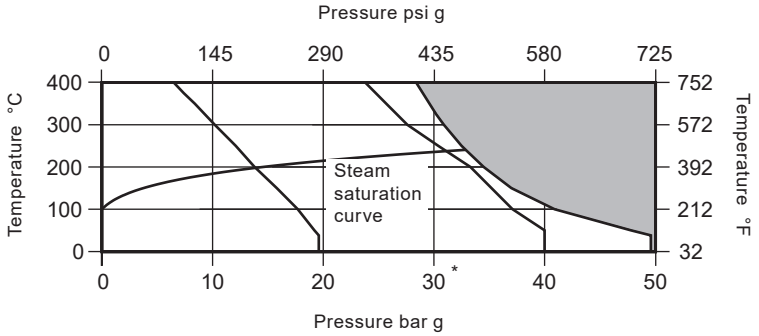


Fig.2 SIB45/5

2.3 Limiting conditions (ISO 6552)

SIB30 and SIB30H



*PMO Maximum operating pressure recommended.

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

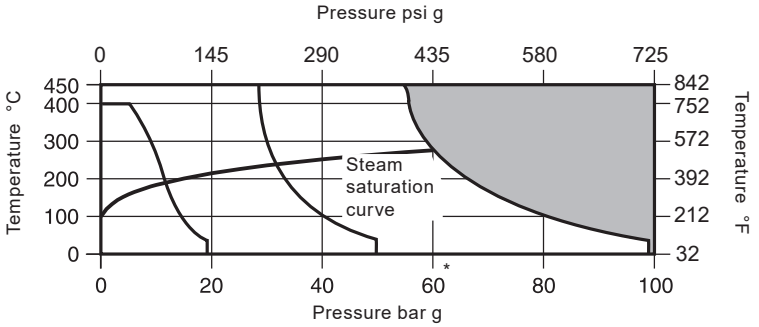
A - A Flanged ANSI 300, screwed and socket weld

B - B Flanged BS 4504 PN40

C - C Flanged ANSI 150

Body design conditions		PN50	(ANSI 300)
PMA	Maximum allowable pressure	49 bar g	(711 psi g)
TMA	Maximum allowable temperature	400 °C	(752 °F)
PMO	Maximum operating pressure	30 bar g	(435 psi g)
TMO	Maximum operating temperature	400 °C	(752 °F)
Designed for a maximum cold hydraulic test pressure of:		75 bar g	(1 087.5 psi g)

SIB45



*PMO Maximum operating pressure recommended.

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

A - A Screwed, butt weld, socket weld, flanged DIN 2547 PN100 and ANSI 600.

B - B Flanged ANSI 300.

C - C Flanged ANSI 150

Body design conditions		PN100	(ANSI 600)
PMA	Maximum allowable pressure	100 bar g	(1 450 psi g)
TMA	Maximum allowable temperature	450 °C	(842 °F)
PMO	Maximum operating pressure	60 bar g	(870 psi g)
TMO	Maximum operating temperature	450 °C	(842 °F)
Product is safe for use under full vacuum conditions			
Designed for a maximum cold hydraulic test pressure of:		150 bar g	(2 175 psi g)

∆ PMX - Maximum differential pressure

∆ PMX bar	SIB30	SIB30H	SIB45
45.0	-	-	SIB45 /5
30.0	SIB30 /4	SIB30H /5	-
20.0	SIB30/5	SIB30H/6	SIB45 /6
12.0	SIB30/6	SIB30H /7	-
8.5	SIB30/7	SIB30H/8	SIB45 /8
5.0	-	SIB30H/10	-
4.0	SIB30/8	-	-
4.5			SIB45 /10
2.5	SIB30/10	-	-
2.0	-	SIB30H/12	-
1.5	SIB30/12	-	-

Note: The pressure limit of the flange type should be greater than the pressure limit of the internal mechanism selected.

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 must be installed with the body upright so that the bucket is rising and falling vertically. When superheat conditions exist the trap body may need to be primed with water prior to steam being turned on to avoid steam blowing through the trap.

3.5 Inverted bucket steam traps do not permit rapid release of air. On process applications, in particular, this can lead to slow warm-up times and waterlogging of the steam space. A separate external air vent is therefore required in parallel to vent air efficiently. Any bypass should be positioned above the trap. If it is below, and is leaking or left open, the waterseal could be blown away leading to steam wastage. Where inverted bucket traps are fitted in exposed conditions the possibility of freezing damage can be reduced by thermal insulation.

3.6 Traps must be installed in a horizontal pipeline . The inlet of the trap should be below the drain point of the plant being drained, so that a waterseal can be maintained around the open end of the bucket. A small drop leg should precede the trap - typically 150 mm (6").

3.7 Where the trap discharges into a closed condensate return system or where there is a lift at the trap, a check valve should be fitted downstream of the trap.

3.8 If the trap has to be installed at a higher point than the drainage point, then a small bore riser into a 'U' seal should be used. A check valve should be fitted before the trap to prevent the loss of the internal waterseal.

3.9 If the trap is installed on a superheated steam system application, then a non return valve should be fitted on the trap inlet, to prevent the trap from losing its waterseal.
Priming of the trap with water may be required before commissioning.

3.10 When welding the trap into the pipeline, this should be carried out by electric arc process. If installed in exposed positions, considerations should be given to insulating the trap.

Note 1: 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).

Note 2: On all blast discharge steam traps check valves and sight glasses must be installed at least 1 metre (3 ft) downstream of the trap.

4. Commissioning

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

5. Operation

Under most conditions the trap will discharge condensate with a blast type action. Under low load and /or low pressure applications the discharge may tend to 'dribble'. Condensate is discharged at steam temperature so due care must be given to the site of the discharge.

6. Maintenance

The SIB30 and SIB45 are factory set sealed steam traps.

They are non-adjustable and require no maintenance.

7. Spare parts

The SIB30 /SIB30H and SIB45 are sealed, non-maintainable, steam traps. Therefore no spares are available.

How to order a new product

Example: 1 - Spirax Sarco SIB30/ 6 ½" screwed BSP sealed inverted bucket steam trap.
Note: The cover (and flanges when specified) are welded to the body using the TIG process.
Welds are approved in accordance with ASME Section IX and BS EN 288.