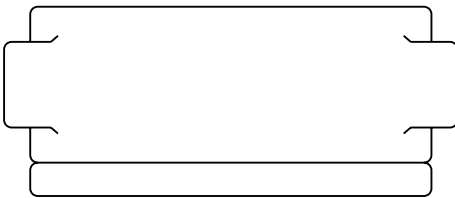


**BPW32 DN15, DN20 and DN25**  
**Balanced Pressure Wafer Steam Trap**  
**Installation and Maintenance Instructions**

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

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# 1. Safety information

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Safe operation of this product can only be guaranteed if it is 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. This product complies with the requirements of the European Pressure Equipment Directive 97/23/EC and falls within category SEP and therefore does not carry the CE mark.

	Product	Group 2 Gases	Group 2 Liquids
BPW32	DN15 to DN25	SEP	SEP

- 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 covers 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.

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## **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.

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### **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 260°C (500°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.

## — 2. General product information —

### 2.1 General description

The BPW32 is a compact wafer pattern stainless steel balanced pressure steam trap for pressures up to 21 bar g (304.5 psi g). It has an internal strainer, is maintainable and is suitable for installation between two pipeline flanges. It offers both weight and space saving over conventional traps.

#### Capsule fill and operation

**Standard capsules** are marked with the letters 'STD' for operation at approximately 13°C (23.4°F) below steam saturation temperature.

**Optionally**, the capsule can be supplied for sub-cooled operation with a 'SUB' fill which operates at approximately 24°C (43.2°F) below steam saturation temperature or for near-to-steam a 'NTS' fill which operates at approximately 6°C (10.8°F) below steam saturation temperature.

#### Standards

This product fully complies with requirements of the European Pressure Equipment Directive 97/23/EC.

#### Certification

This product is available with certification to EN 10204 3.1. **Note:** All certification/inspection requirements must be stated at the time of order placement.

**Note:** For further information see the following Technical Information sheet TI-P126-06.

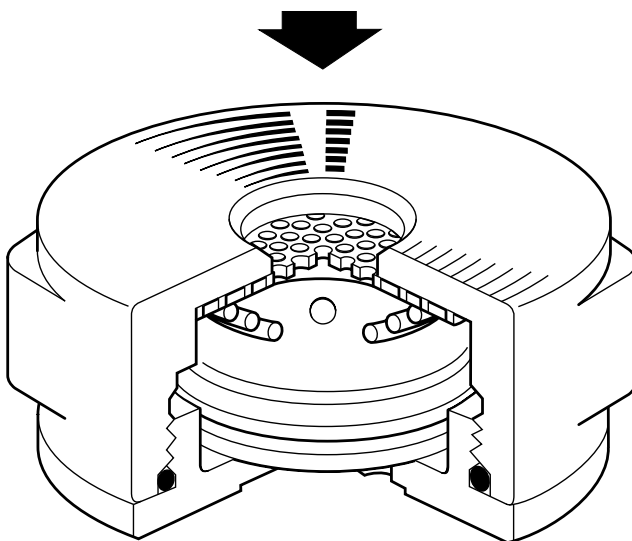
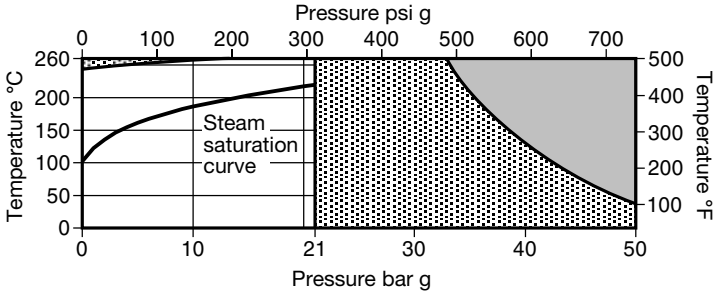


Fig. 1


### 2.2 Sizes and pipe connections

DN15, DN20 and DN25 to fit between standard flanges PN40, ANSI 150, ANSI 300, JIS 10, JIS 16 and JIS 20.

## 2.3 Pressure/temperature limits



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

 The product should not be used in this region or beyond its operating range as damage to the internals may occur.

Body design conditions		PN50/ANSI 300	
PMA	Maximum allowable pressure	50 bar g @ 38°C	(725 psi g @ 100°F)
TMA	Maximum allowable temperature	260°C @ 33 bar g	(500°F @ 478 psi g)
Minimum allowable temperature		0°C	(32°F)
PMO	Maximum operating pressure	21 bar g @ 260°C	(304 psi g @ 500°F)
TMO	Maximum operating temperature	260°C @ 21 bar g	(500°F @ 304 psi g)
Minimum operating temperature		0°C	(32°F)
<b>Note:</b> For lower operating temperatures consult Spirax Sarco.			
Designed for a maximum cold hydraulic test pressure of:		75 bar g	(1088 psi g)

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## 3. Installation

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**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 and the protective film from all name-plates, where appropriate, before installation on steam or other high temperature applications.
- 3.4** The BPW32 is intended for installation in a vertical line with flow from top to bottom, this will ensure that it is self-draining. It can also be installed in other planes if required. Standard flange gaskets to be used - supplied by customer.

**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).

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## 4. Commissioning

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

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## 5. Operation

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The operating element is a capsule containing a small quantity of a special liquid with a boiling point below that of water. In the cold conditions that exist at start-up, the capsule is relaxed. The valve is off its seat and is wide open, allowing unrestricted removal of air. This is a feature of all balanced pressure traps and explains why they are well suited to air venting.

As condensate passes through the balanced pressure steam trap, heat is transferred to the liquid in the capsule. The fill liquid boils before steam reaches the trap. The vapour pressure within the capsule causes it to expand and the trap shuts. Heat loss from the trap then cools the water surrounding the capsule, the fill condenses and the capsule contracts, opening the valve and releasing condensate until steam temperature approaches again at which the cycle is repeated.

# 6. Maintenance

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

## 6.1 General information



Before undertaking any maintenance on the trap it must be isolated from 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. Always ensure the correct tools, safety procedures and protective equipment are used at all times. When the maintenance is complete open the isolation valves slowly and check for leaks.

## 6.2 Replacing the internals set:

- Unscrew the cap (2) from the body (1) and lift out the spacer plate (5), capsule (3), spring (4) and screen (6). **Lugs are provided on the side of the body for easy location during disassembly.**
- Insert the new internal set (see Section 7) together with the spacer plate (5) which is reusable.
- Refit the cap (2) using a two pin spanner. The thread should be coated with a small amount of anti-seize lubricant.
- If the end cap (2) is replaced then a new internals set should be fitted as detailed above.

**Note:** A suitable tool is manufactured by GEDORE 'Caliper face spanner', 635-456, Gedore No. 44/7 pin diameter to be 4 mm. This is available to order through Spirax Sarco.

**Table 1 Recommended tightening torques**

Item	Connections	Size	 or  mm	N m	(lbf ft)
1 and 2	ANSI 150	All sizes		M45	10 - 15 (7.2 - 10.7)
	PN40	DN15		M45	10 - 15 (7.2 - 10.7)
	ANSI 300				
	JIS 10	DN20		M51	15 - 20 (10.7 - 14.3)
	JIS 16 JIS 20	DN25		M59	20 - 25 (14.3 - 17.8)



# 7. Spare parts

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

## Available spares

Internal set	3, 4, 5, 6, 7
End cap	2

## How to order spares

Always order spares by using the description given in the column headed 'Available spares' and state the size, model no. and capsule option required.

**Example:** 1 - Internal set for a DN20 BPW32 balanced pressure wafer steam trap with 'STD' fill capsule.

**Note:** The capsule can be identified from the letter stamped on the name-plate on the cap (e.g. STD, SUB or a NTS).

A standard capsule (STD) will be supplied, unless specified otherwise on the order.

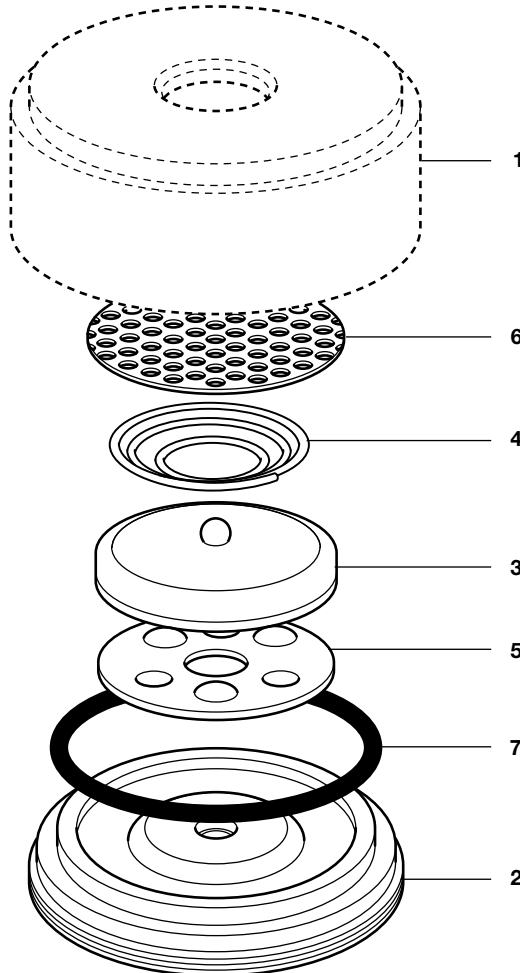


Fig. 2





