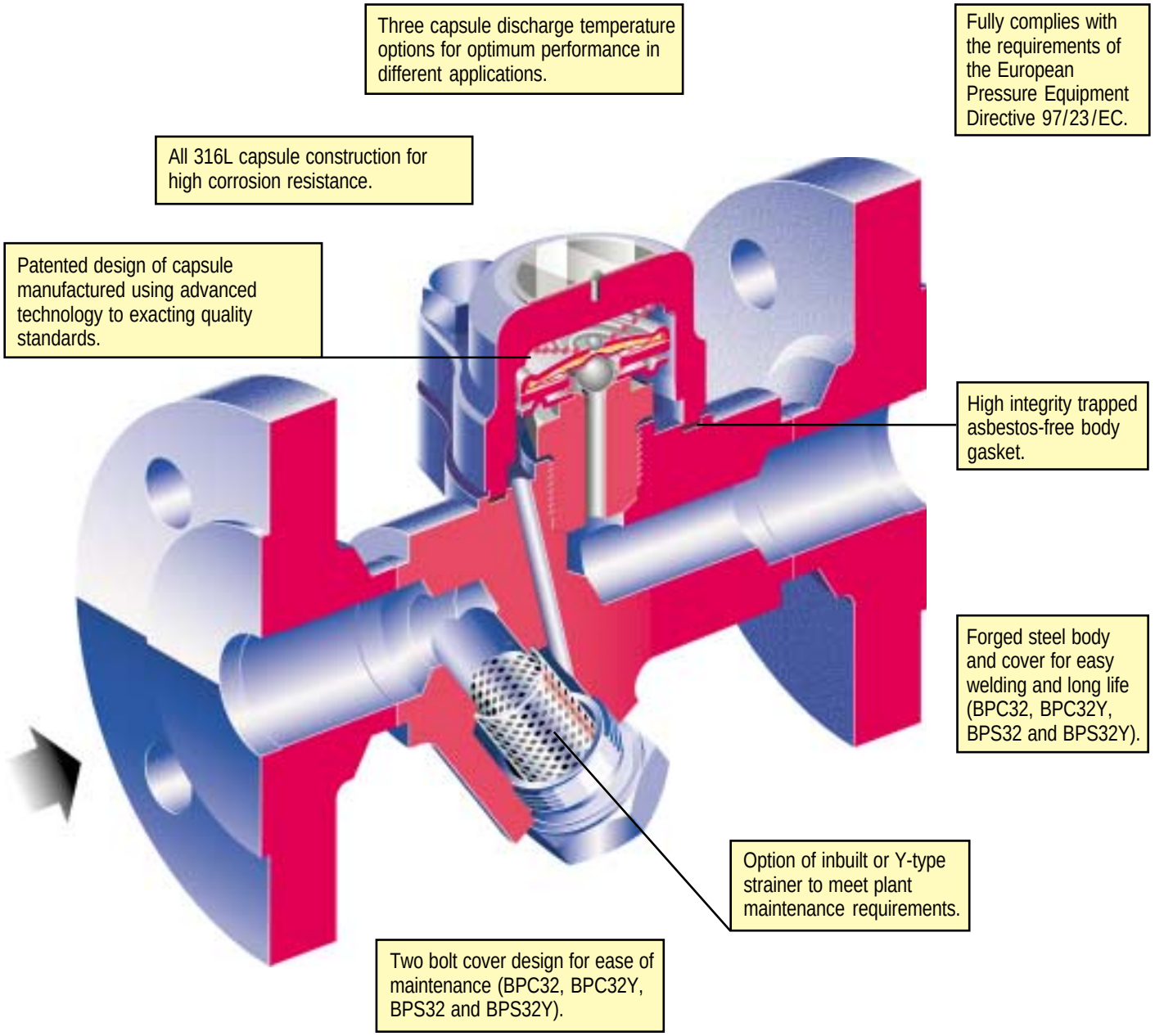
Balanced pressure thermostatic steam traps

for pressures up to 32 bar

spirax sarco

Balanced pressure thermostatic steam traps

Spirax Sarco has been manufacturing balanced pressure thermostatic steam traps for over 70 years. Continuous investment in product development has resulted in a design evolution which leads the world.



BPC32Y shown
(Features of other models may vary)

Why use balanced pressure thermostatic steam traps

The balanced pressure principle is now the most widely accepted for applications where thermostatic steam traps can utilise sensible heat in the condensate and reduce flash steam losses.

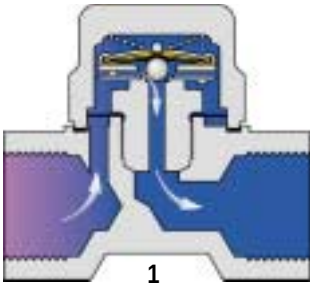
Unlike other types of thermostatic steam traps, they are not affected by backpressure, ensuring plant efficiency under all system operating conditions.

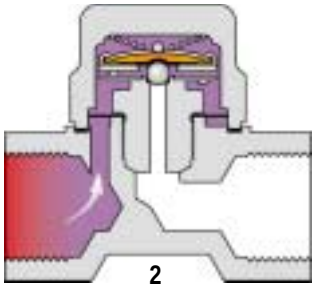
The modular design of the internal components provides a quick and easy solution to trap maintenance. With more than six million of the current stainless steel capsules installed and in use around the world, the versatility of the balanced pressure steam trap is well proven in a wide range of applications.

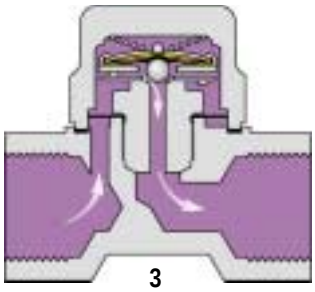
Product range and options

Material			Brass								Carbon steel				Stainless steel					
Model			BPT								BPC				BPS				MST	
			13A	13AX	13S	13SX	13UA	13UAX	13US	13USX	32	32CV	32Y	32YCV	32	32CV	32Y	32YCV	21	21H
Body design rating			PN16	PN16	PN16	PN16	PN16	PN16	PN16	PN16	PN40	PN40	PN40	PN40	PN40	PN40	PN40	PN40	PN25	PN25
Sizes		DN8 - ¼"																	•	
		DN15 - ½"	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
		DN20 - ¾"	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
		DN25 - 1"									•	•	•	•	•	•	•	•		•
Connections		Screwed	•	•	•	•					•	•	•	•	•	•	•	•	•	•
		Scrd union inlet					•	•	•	•										
		Socket weld									•	•	•	•	•	•	•	•		
		Butt weld									•	•	•	•	•	•	•	•		
		Flanged									•	•	•	•	•	•	•	•		
Strainer		Flat type		•		•		•		•	•	•			•	•			•	•
		Cylindrical type											•	•			•	•		
Capsule fill*		STD									•	•	•	•	•	•	•	•		
		E	•	•	•	•	•	•	•	•									•	•
Internal check valve												•		•		•		•		
Discharge capacity			High	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High	Low	High
Optional	Capsule fill*	SUB									•	•	•	•	•	•	•	•		
		NTS									•	•	•	•	•	•	•	•		
		F	•	•	•	•	•	•	•	•									•	•
		G	•	•	•	•	•	•	•	•									•	•
	Blowdown valve												•	•			•	•		
	Chrome plated finish		•	•	•	•	•	•	•	•										

*Note, Capsule fill and operation - When placing an order always state capsule fill:
Standard capsule - Is marked with '**STD**' or '**E**' for operation at approximately 12°C below steam saturation temperature.
Optionally - The capsule can be supplied for sub-cooled '**SUB**' or '**F**' operation at approximately 24°C below steam saturation temperature. For critical applications the '**NTS**' or '**G**' fill capsule should be selected which operates at approximately 4°C below steam saturation temperature.


1


2


3

How the balanced pressure thermostatic steam trap works

At the heart of the balanced pressure thermostatic steam trap is a stainless steel capsule - filled with deionised water and alcohol. For further details see the note under Product range and options.

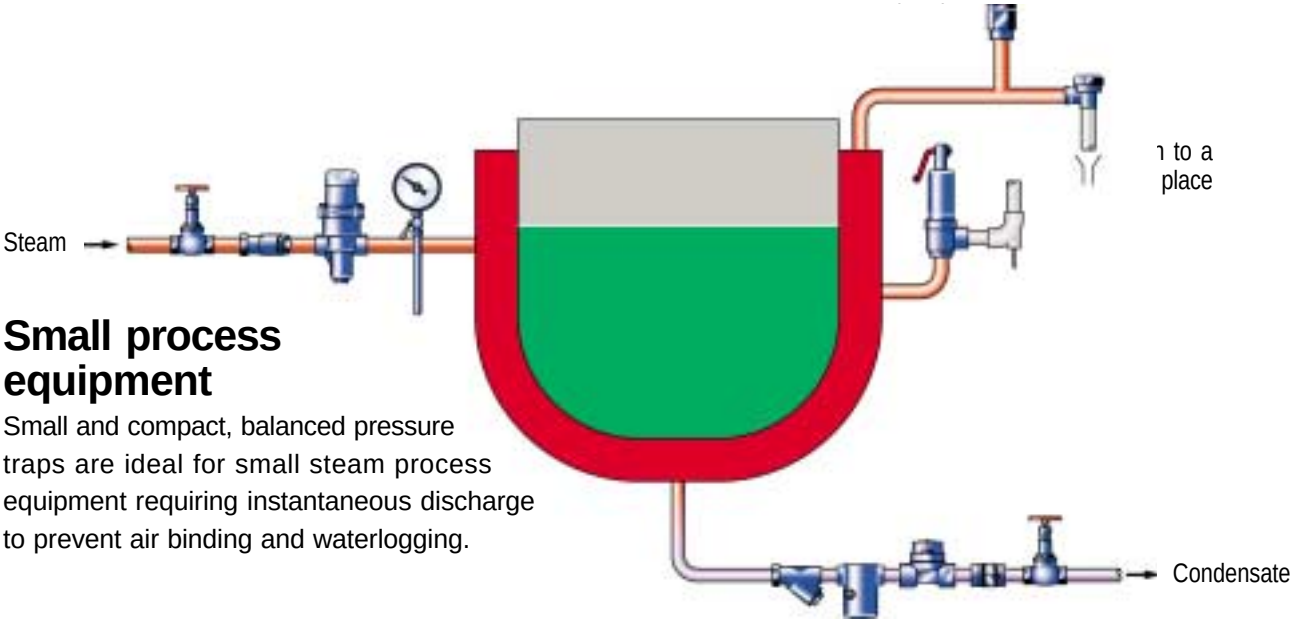
On start-up, cold air and condensate enter the trap. As the capsule is also cold, the valve is open and the air and condensate are discharged (**1**). The capsule warms up as the condensate approaches steam temperature. Its liquid filling boils, and the resultant vapour pressure acting on the diaphragms pushes the valve head towards the seat (**2**), fully closing at the selected discharge temperature before any steam is lost.

As the condensate within the trap cools, the vapour filling condenses and the internal capsule pressure falls. The valve reopens, discharges condensate and the cycle repeats (**3**).

User benefits

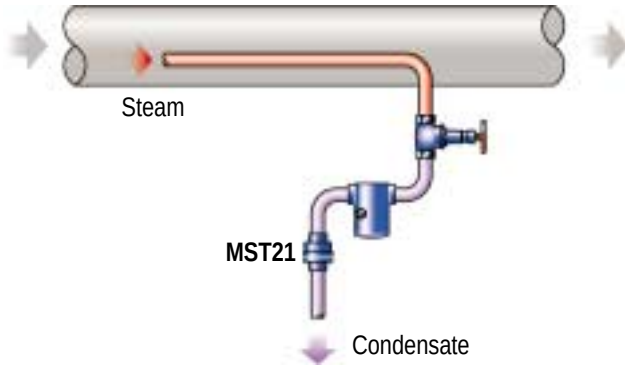
- Ease of maintenance with a two bolt cover design.
- All stainless steel internals extend working life and reduce plant maintenance.
- Compact design reduces installation space requirements compared to other types of steam traps.
- High resistance to superheat and waterhammer ensures long working life and reduces maintenance.
- Discharge temperature set by capsule selection - no requirement to adjust on-site.
- Automatically discharges air and incondensable gases to aid rapid warm-up of plant.
- Fully complies with the requirements of the European Pressure Equipment Directive 97/23/EC.
- Unaffected by backpressure which can lead to plant waterlogging which happens with some other types of thermostatic steam traps.

Typical applications



Small process equipment

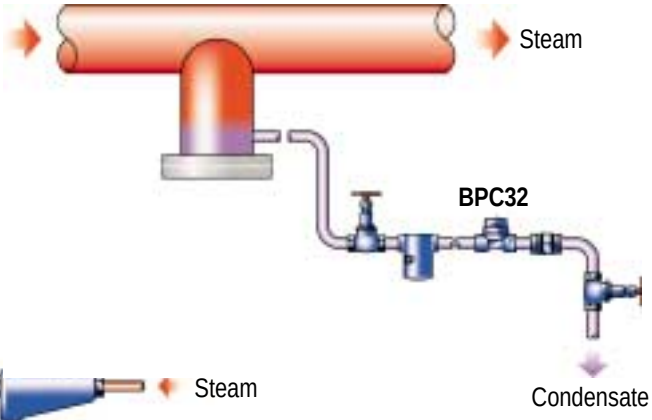
Small and compact, balanced pressure traps are ideal for small steam process equipment requiring instantaneous discharge to prevent air binding and waterlogging.

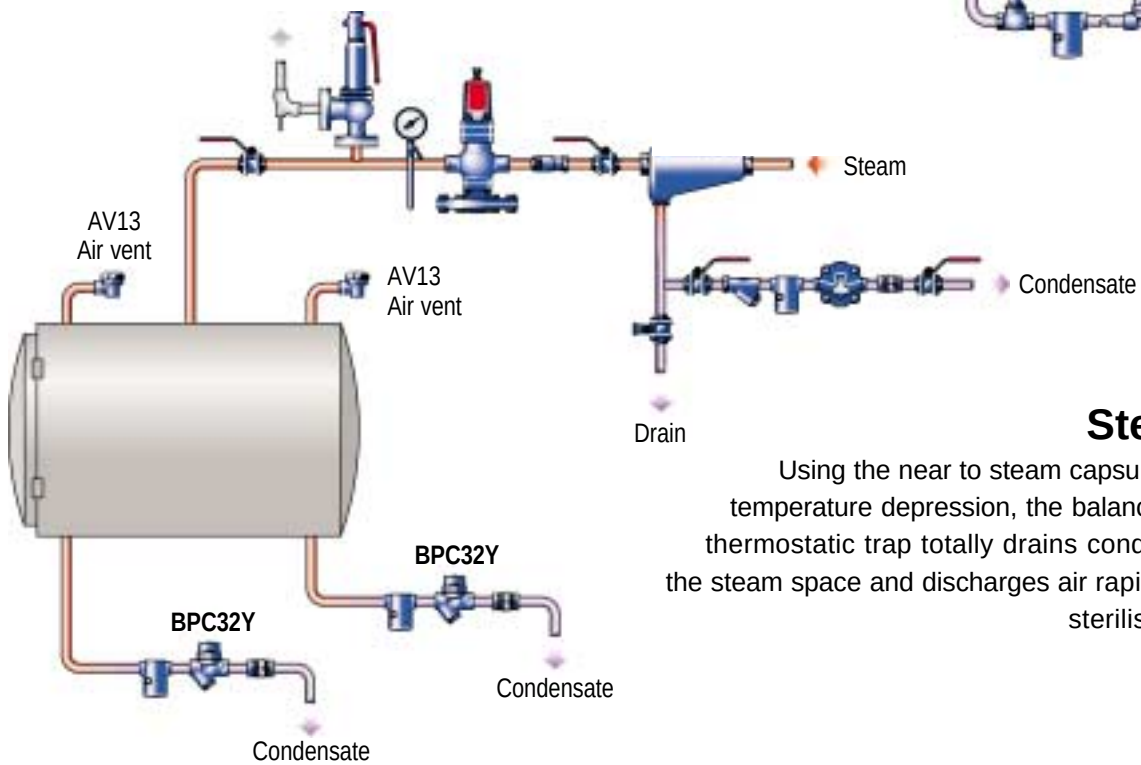


Steam mains drainage

Robust and durable the balanced pressure trap is an ideal second choice to the thermodynamic trap for low pressure steam mains drainage.

Using the sub-cooled capsule option, the balanced pressure thermostatic trap is highly efficient, making use of some of the sensible heat within the hot condensate.





Sterilizers

Using the near to steam capsule with a 5°C temperature depression, the balanced pressure thermostatic trap totally drains condensate from the steam space and discharges air rapidly reducing sterilisation times.

BPT13A
BPT13AX
BPT13S
BPT13SX

BPT13A shown

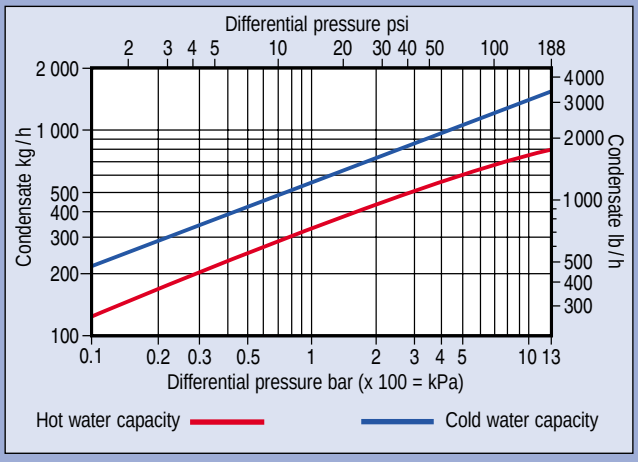
Sizes and pipe connections

½" and ¾" screwed BSP or NPT.
BPT13A - Angled connections.
BPT13AX - Angled connections with strainer screen.
BPT13S - Straight connections.
BPT13SX - Straight connections with strainer screen.

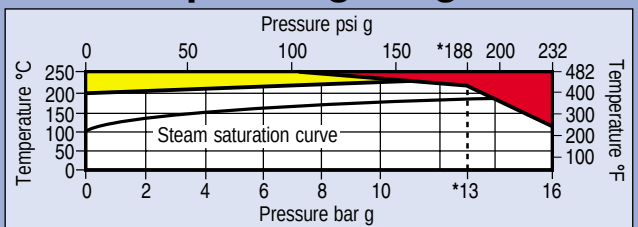
Materials

Body	Brass	BS EN 12165 CW 617N
Cap	Brass	BS EN 12165 CW 617N
'O' Ring	Synthetic rubber high fluorine fluorocarbon	
Internals	Stainless steel	

Capacities



Operating range



The product must not be used in the **red** area.
The product should not be used in the **yellow** area or beyond its operating range as damage to the internals may occur.
***PMO** - Maximum operating pressure for saturated steam service.

Limiting conditions (ISO 6552)

Body design conditions PN16
PMA - Maximum allowable pressure 16 bar g
TMA - Maximum allowable temperature 250°C
Designed for a maximum cold hydraulic test pressure of:
24 bar g

BPT13UA
BPT13UAX
BPT13US
BPT13USX

BPT13UA shown (chrome plated)

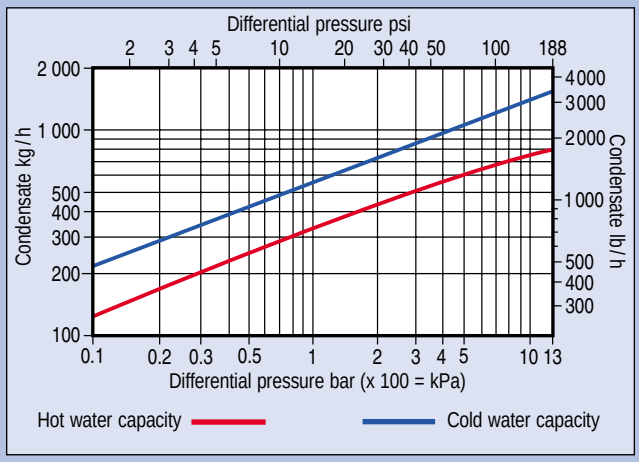
Sizes and pipe connections

½" and ¾" screwed BSP or NPT.
BPT13UA - Angled connections, union inlet.
BPT13UAX - Angled connections, union inlet with strainer screen.
BPT13US - Straight connections, union inlet.
BPT13USX - Straight connections, union inlet with strainer screen.

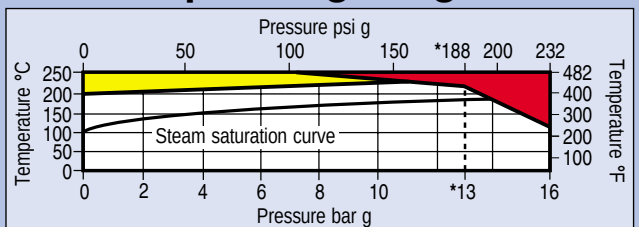
Materials

Body	Brass	BS EN 12165 CW 617N
Cap	Brass	BS EN 12165 CW 617N
'O' Ring	Synthetic rubber high fluorine fluorocarbon	
Internals	Stainless steel	

Capacities



Operating range



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***PMO** - Maximum operating pressure for saturated steam service.

Limiting conditions (ISO 6552)

Body design conditions PN16
PMA - Maximum allowable pressure 16 bar g
TMA - Maximum allowable temperature 250°C
Designed for a maximum cold hydraulic test pressure of:
24 bar g

BPC32
BPC32CV
BPC32Y
BPC32YCV

BPC32Y shown

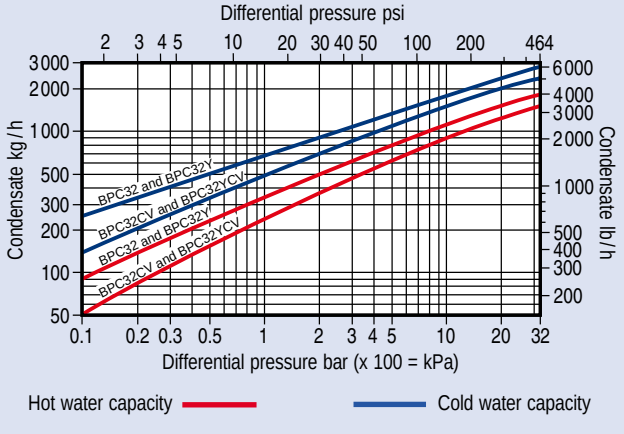
Sizes and pipe connections

½", ¾" and 1" screwed BSP or NPT,
socket weld ends to BS 3799 Class 3000,
butt weld ends to EN 12627.
DN15, DN20 and DN25 standard flange to EN 1092-1 PN40,
ANSI B 16.5 Class 150 and 300, JIS/KS 10K and JIS/KS 20K.

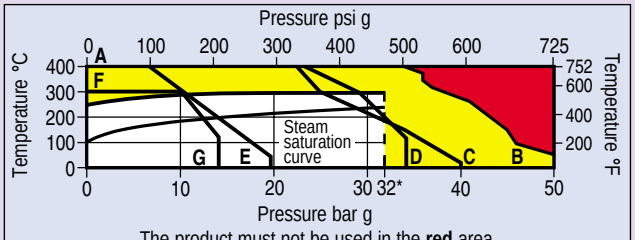
Materials

Body	Carbon steel	DIN 17243 C22-8 (W/S 1.0460) ASTM A105N
Cover	Carbon steel	DIN 17243 C22-8 (W/S 1.0460) ASTM A105N
Cover gasket	Stainless steel reinforced exfoliated graphite	
Internals	Stainless steel	
Cover bolts	Stainless steel (M10 x 30)	A2-70
Strainer cap (BPC32Y only)	Carbon steel	DIN 17243 C22-8 (W/S 1.0460) ASTM A105N

Capacities



Operating range



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*PMO - Maximum operating pressure for saturated steam service.
A - B Screwed, socket weld, butt weld and flanged ANSI 300
A - C Flanged EN 1092-1 PN40 **A - D** Flanged JIS/KS 20K
A - E Flanged ANSI 150 **F - G** Flanged JIS/KS 10K

Limiting conditions (ISO 6552)

Body design conditions PN40
PMA - Maximum allowable pressure 50 bar g
TMA - Maximum allowable temperature 400°C
Designed for a maximum cold hydraulic test pressure of:
75 bar g

BPS32
BPS32CV
BPS32Y
BPS32YCV

BPS32 shown

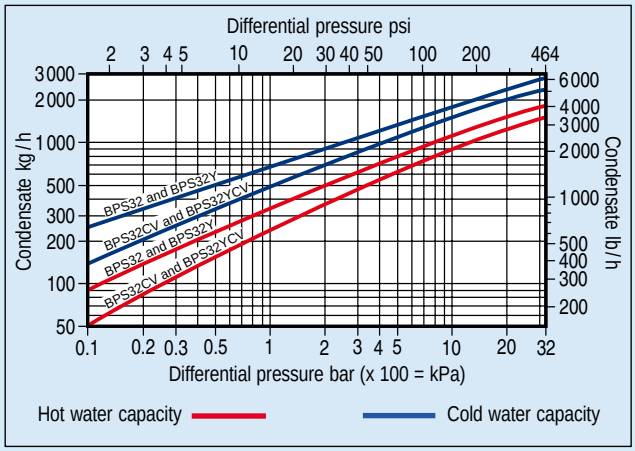
Sizes and pipe connections

½", ¾" and 1" screwed BSP or NPT,
socket weld ends to BS 3799 Class 3000,
butt weld ends to EN 12627.
DN15, DN20 and DN25 standard flange to EN 1092-1 PN40,
ANSI B 16.5 Class 150 and 300, JIS/KS 10K and JIS/KS 20K.

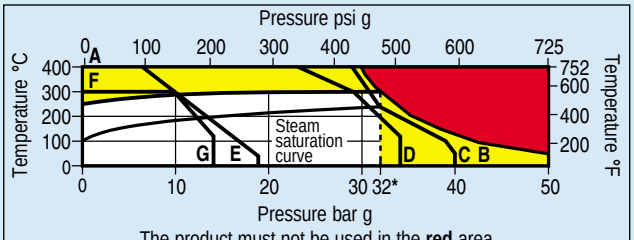
Materials

Body	Austenitic stainless steel	DIN 17440 (W/S 1.4571) 316 Ti
Cover	Austenitic stainless steel	DIN 17440 (W/S 1.4571) 316 Ti
Cover gasket	Stainless steel reinforced exfoliated graphite	
Internals	Stainless steel	
Cover bolts	Stainless steel (M10 x 30)	A2-70
Strainer cap (BPS32Y only)	Austenitic stainless steel	DIN 17440 (W/S 1.4571) 316 Ti

Capacities



Operating range



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*PMO - Maximum operating pressure for saturated steam service.
A - B Screwed, socket weld, butt weld and flanged ANSI 300
A - C Flanged EN 1092-1 PN40 **A - D** Flanged JIS/KS 20K
A - E Flanged ANSI 150 **F - G** Flanged JIS/KS 10K

Limiting conditions (ISO 6552)

Body design conditions PN40
PMA - Maximum allowable pressure 50 bar g
TMA - Maximum allowable temperature 400°C
Designed for a maximum cold hydraulic test pressure of:
75 bar g

MST21
MST21H

Sizes and pipe connections

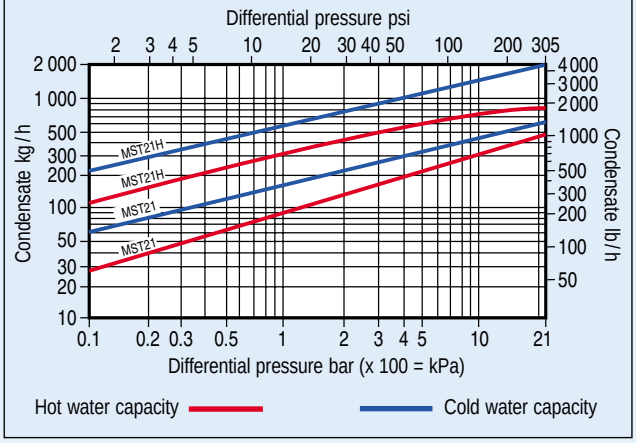
MS21
¼" and ½" screwed BSP, DIN/ISO 228-1 and NPT.

MS21H
½", ¾" and 1" screwed BSP, DIN/ISO 228-1 and NPT.

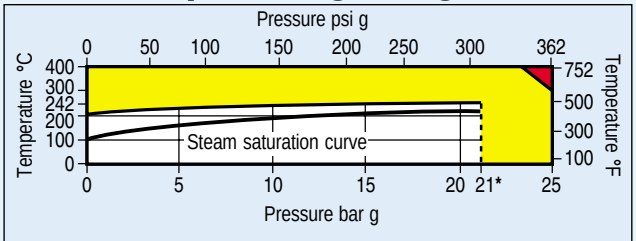
Materials

Body	Stainless steel	ASTM A743 CF16F/ DIN 17440
Cap	Stainless steel	42OA UGIMA AISI 420
Gasket	Stainless steel	BS 1449 304515
Internals	Stainless steel	

Capacities



Operating range



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

***PMO** - Maximum operating pressure for saturated steam service.

Limiting conditions (ISO 6552)

Body design conditions PN25
PMA - Maximum allowable pressure 25 bar g
TMA - Maximum allowable temperature 400°C
Designed for a maximum cold hydraulic test pressure of:
38 bar g

Additional product options

The BPC32 and BPS32 are also available with Spiratec sensors fitted to detect steam leakage and/or system waterlogging. For further details of the Spiratec steam trap monitoring system consult Spirax Sarco.

UBP32

Sealed balanced pressure steam trap complete with swivel pipeline connector to allow either horizontal or vertical installation. Unique two bolt fixing provides easy trap replacement without the need to dismantle pipework.

For further information see Sales Brochure SB-F01-36.

SBP30

Sealed balanced pressure steam trap manufactured in stainless steel. Ideal for applications where maintenance schedules require non-maintainable steam traps.

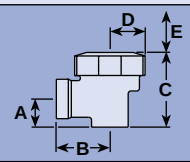
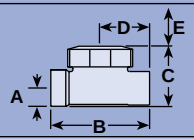
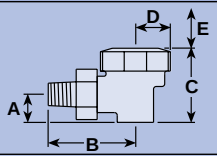
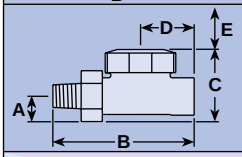
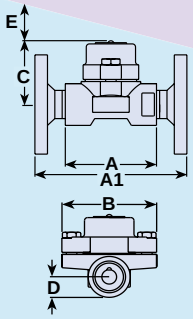
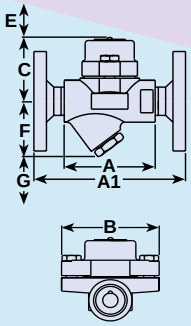
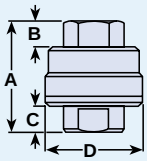
For further information see Sales Brochure SB-F01-21.

TSS21

Sealed balanced pressure steam trap manufactured in stainless steel. Designed as both a conventional steam tracing trap and, when fitted in reverse mode, as a fixed discharge temperature steam trap.

For further information see Sales Brochure SB-F01-21.

Dimensions/weight (approximate) in mm and kg

Product		Size	Dimensions A	A1	B	C	D	E	F	G	Weight Screwed SW/BW	flanged
	BPT13A BPT13AX	DN15 ½"	20	-	38	53	25	55	-	-	0.40	-
		DN20 ¾"	27	-	40	62	25	55	-	-	0.45	-
	BPT13S BPT13SX	DN15 ½"	14	-	76	47	38	55	-	-	0.45	-
		DN20 ¾"	20	-	80	53	40	55	-	-	0.50	-
	BT13UA BPT13UAX	DN15 ½"	20	-	67	53	25	55	-	-	0.50	-
		DN20 ¾"	27	-	75	62	25	55	-	-	0.55	-
	BPT13US BPT13USX	DN15 ½"	19	-	105	52	38	55	-	-	0.55	-
		DN20 ¾"	22	-	115	57	40	55	-	-	0.60	-
	BPC32 BPC32CV BPS32 BPS32CV	DN15 ½"	95	150	94	64	17	37	-	-	1.40	2.9
		DN20 ¾"	95	150	94	64	19	37	-	-	1.40	3.5
		DN25 1"	95	160	94	64	23	37	-	-	1.50	4.1
	BPC32Y BPC32YCV BPS32Y BPS32YCV	DN15 ½"	95	150	94	64	-	37	53	28	1.60	3.1
		DN20 ¾"	95	150	94	64	-	37	54	28	1.60	3.7
		DN25 1"	95	160	94	64	-	37	56	28	1.80	4.4
	MST21	DN8 ¼"	50.5	-	8.5	10	45	-	-	-	0.34	-
		DN15 ½"	61	-	12.5	14	45	-	-	-	0.48	-
	MST21H	DN15 ½"	61	-	12.5	14	45	-	-	-	0.48	-
		DN20 ¾"	68	-	14.0	14	45	-	-	-	0.48	-
		DN25 1"	75	-	14.0	14	45	-	-	-	0.48	-

How to order

Example: 1 off Spirax Sarco DN15 BPC32 carbon steel bodied maintainable balanced pressure thermostatic steam trap having flanged EN 1092-1 PN40 connections and fitted with an 'STD' fill capsule for operation at approximately 12°C below steam saturation temperature.

Some of the products may not be available in certain markets.

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