



## TDC46M

### Carbon Steel

# Thermodynamic Steam Trap with Maintainable Seat

## Description

The TDC46M is a carbon steel, thermodynamic steam trap that has been specifically designed for low capacity applications up to 46 bar g (667 psi g) (where pipe connections permit). As standard the unit is available with either screwed, socket weld or flanged connections.

## TDC46M benefits:

- Integral strainer.
- Integral air vent.
- Insulation cap.
- Replaceable seat.

## Optional extras

At extra cost a **BDV1** integral blowdown valve can be pre-fitted to the strainer cap, please specify at the time of order placement.

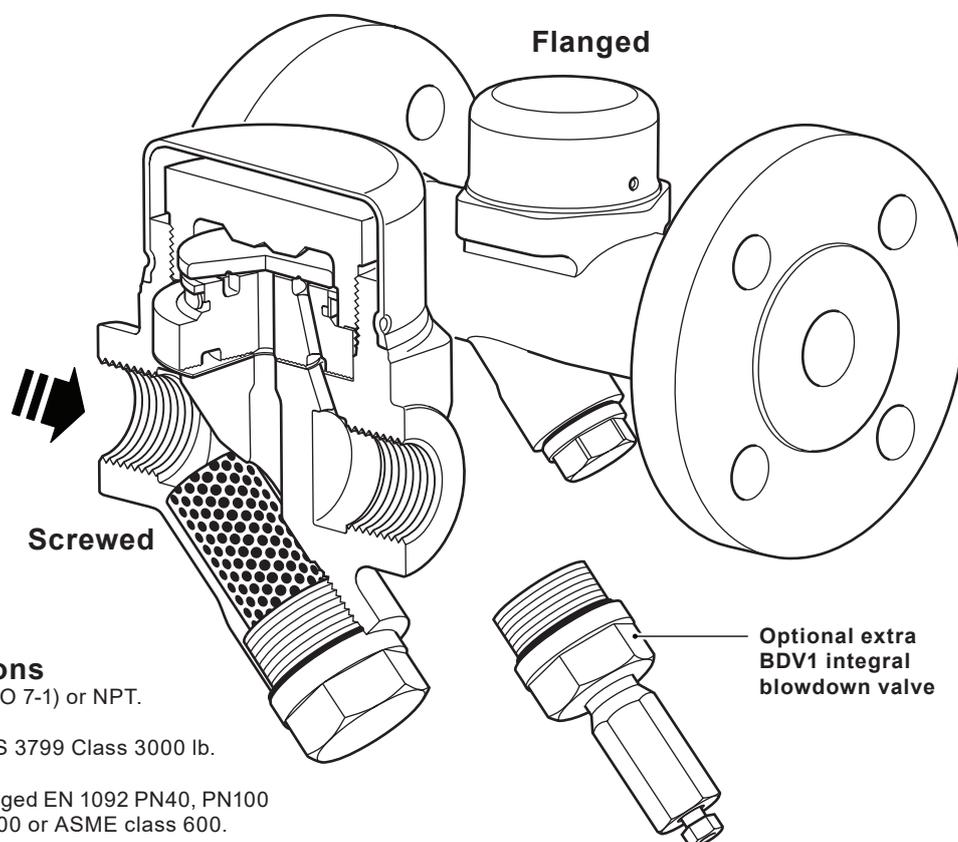
## Standards

This product fully complies with the requirements of the European Pressure Equipment Directive 2014/68/EU.

## Certification

These products are available with certification to EN 10204 3.1.

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



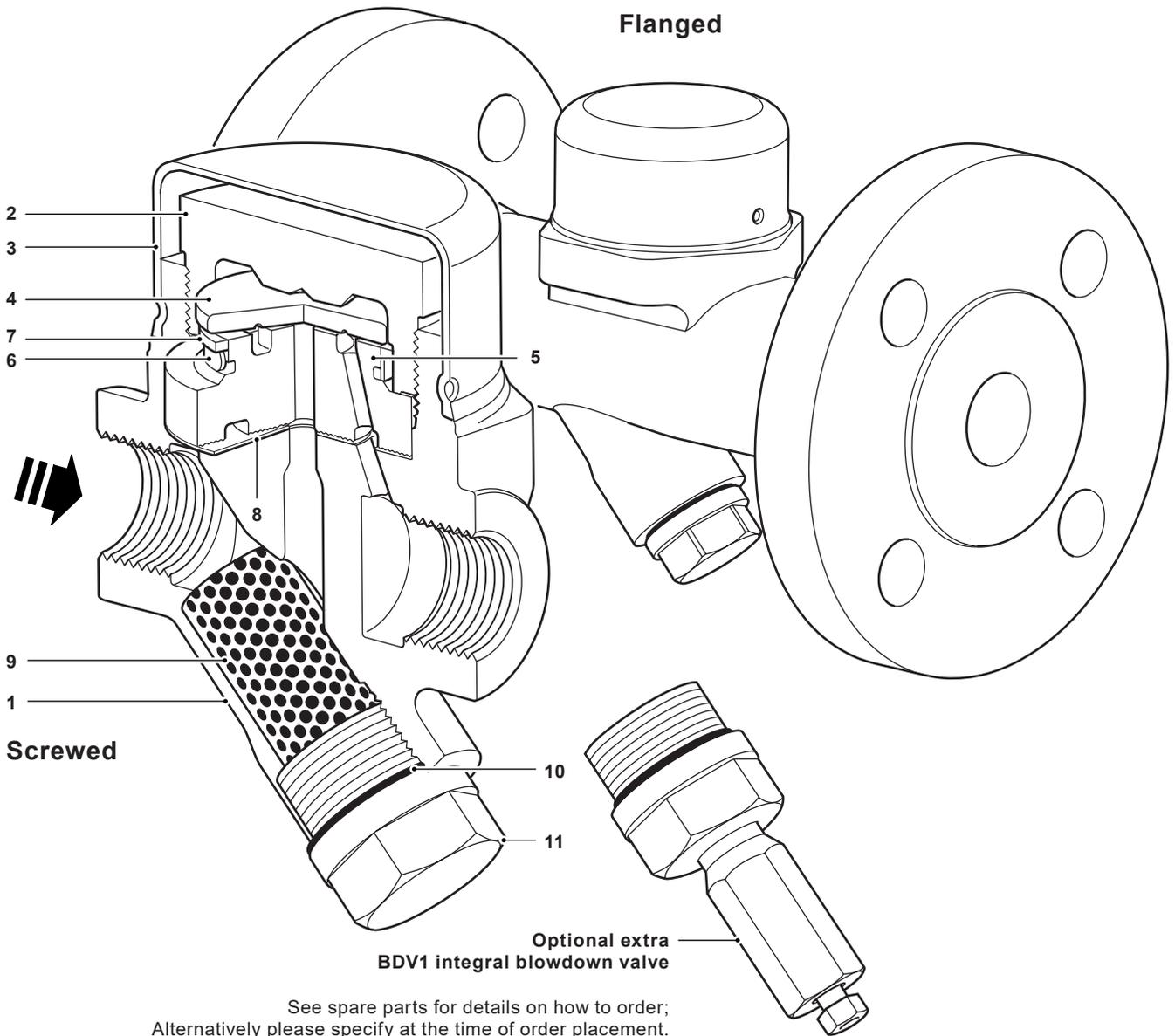
## Sizes and pipe connections

½", ¾" and 1" screwed BSP T Rp (ISO 7-1) or NPT.

½", ¾" and 1" socket weld ends to BS 3799 Class 3000 lb.

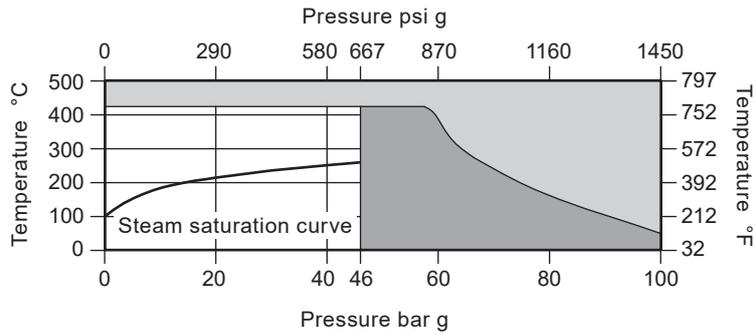
DN15, DN20 and DN25 integrally flanged EN 1092 PN40, PN100 and ASME class 150, ASME class 300 or ASME class 600.

## Materials



No.	Part	Material	
1	Body	Carbon steel	1.0619+N/ASTM A216 WCB
2	Top cap	Stainless steel	1.4301/ASTM 479 304
3	Insulating cover	Stainless steel	EN 10088-1 1.4301
4	Disc	Hardened steel	1.2379
5	Seat	Hardened steel	1.2379
6	Bimetal ring	Bimetal	
7	Support	Stainless steel	AISI 304
8	Seat gasket	Graphite foil	
9	Strainer screen	Stainless steel	ASTM A478 316L
10	Strainer cap gasket	Stainless steel	AISI 304
11	Strainer cap	Stainless steel	1.4308/ASTM A351 CF8

## Pressure/temperature limits (ISO 6552) - Screwed and Socket weld



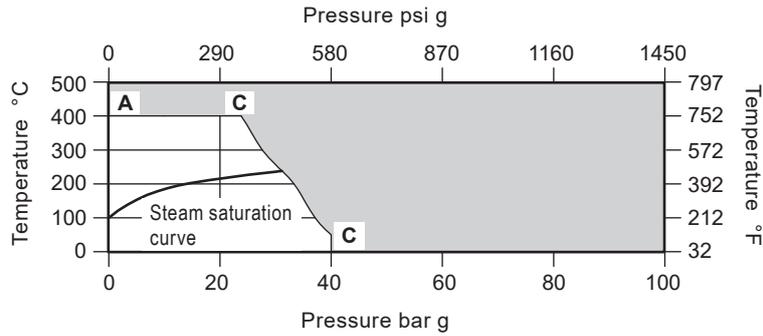
 The product **must not** be used in this region or beyond the parameter of the PMA or TMA of the relative end connection.

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

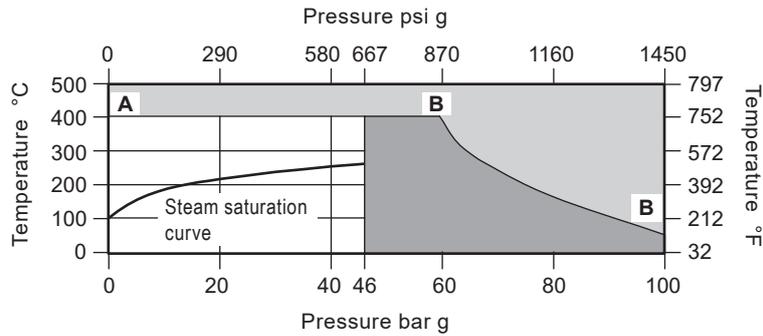
Body design condition	PN100 and ASME Class 600	
PMA Maximum allowable pressure	100 bar g @ 50 °C	1450 psi g @ 122 °F
TMA Maximum allowable temperature	425 °C @ 57.5 bar g	797 °F @ 834 psi g
Minimum allowable temperature	-29 °C	-20.2 °F
PMO Maximum operating pressure	46 bar g @ 425 °C	667 psi g @ 797 °F
TMO Maximum operating temperature	425 °C @ 46 bar g	797 °F @ 667 psi g
Minimum operating temperature	0 °C	32 °F
Minimum operating pressure	1.5 bar g	22 psi g
Maximum operating backpressure	80% of upstream pressure	
Product is safe for use under full vacuum conditions		
Designed for a maximum cold hydraulic test pressure of:	150 bar g	2176 psi g

**Pressure/temperature limits (ISO 6552) - Flanged EN 1092**

**PN40**



**PN100**

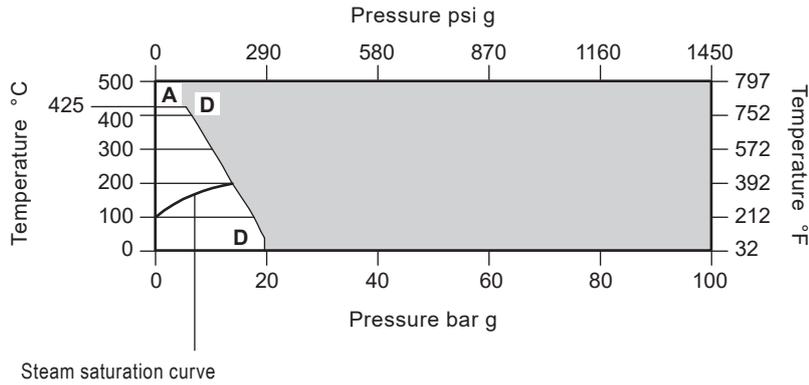


- The product **must not** be used in this region or beyond the parameter of the PMA or TMA of the relative end connection.
- The product should not be used in this region or beyond its operating range as damage to the internals may occur.

	Body design condition	PN100	
	PMA Maximum allowable pressure	100 bar g @ 50 °C	1450 psi g @ 122 °F
	TMA Maximum allowable temperature	400 °C @ 59.5 bar g	752 °F @ 863 psi g
	Minimum allowable temperature	-10 °C	14 °F
	PMO Maximum operating pressure	46 bar g @ 400 °C	667 psi g @ 752 °F
<b>A - B - B</b>	<b>PN100</b> TMO Maximum operating temperature	400 °C @ 46 bar g	752 °F @ 667 psi g
	Minimum operating temperature	0 °C	32 °F
	Minimum operating pressure	1.5 bar g	22 psi g
	Maximum operating backpressure	80% of upstream pressure	
	Product is safe for use under full vacuum conditions		
	Designed for a maximum cold hydraulic test pressure of:	150 bar g	2176 psi g
	Body design condition	PN40	
	PMA Maximum allowable pressure	40 bar g @ 50 °C	580 psi g @ 122 °F
	TMA Maximum allowable temperature	400 °C @ 23.8 bar g	752 °F @ 345 psi g
	Minimum allowable temperature	-10 °C	14 °F
	PMO Maximum operating pressure for saturated steam service	31.1 bar g @ 238 °C	451 psi g @ 460 °F
<b>A - C - C</b>	<b>PN40</b> TMO Maximum operating temperature	400 °C @ 23.8 bar g	752 °F @ 345 psi g
	Minimum operating temperature	0 °C	32 °F
	Minimum operating pressure	1.5 bar g	22 psi g
	Maximum operating backpressure	80% of upstream pressure	
	Product is safe for use under full vacuum conditions		
	Designed for a maximum cold hydraulic test pressure of:	60 bar g	870 psi g

# Pressure/temperature limits (ISO 6552) - Flanged ASME

## ASME Class 150

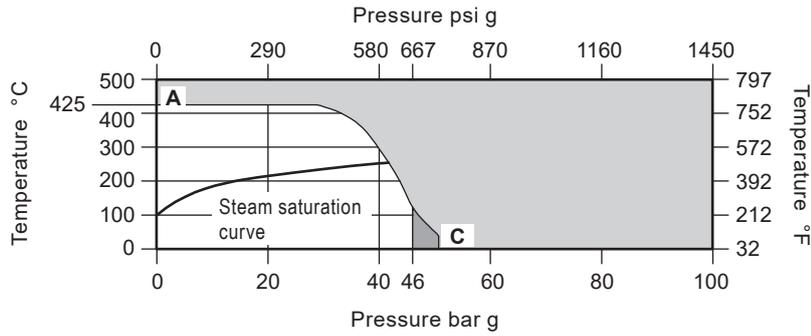


The product **must not** be used in this region or beyond the parameter of the PMA or TMA of the relative end connection.

Body design condition		ASME Class 150	
PMA	Maximum allowable pressure	19.6 bar g @ 38 °C	284 psi g @ 100 °F
TMA	Maximum allowable temperature	425 °C @ 5.5 bar g	797 °F @ 80 psi g
	Minimum allowable temperature	-29 °C	-20.2 °F
PMO	Maximum operating pressure for saturated steam service	14 bar g	203 psi g
<b>A - D - D</b>	TMO Maximum operating temperature	425 °C @ 5.5 bar g	797 °F @ 80 psi g
	Minimum operating temperature	0 °C	32 °F
	Minimum operating pressure	1.5 barg	22 psi g
	Maximum operating backpressure	80% of upstream pressure	
Product is safe for use under full vacuum conditions			
	Designed for a maximum cold hydraulic test pressure of:	29.4 bar g	22 psi g

## Pressure/temperature limits (ISO 6552) - Flanged ASME

### ASME Class 300



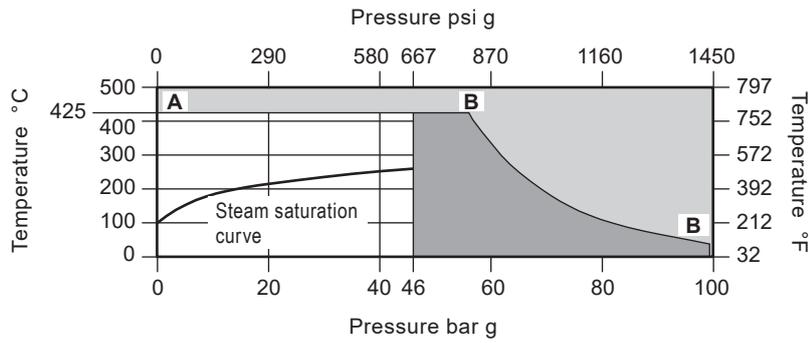
**A** The product **must not** be used in this region or beyond the parameter of the PMA or TMA of the relative end connection.

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

Body design condition		ASME Class 300	
PMA	Maximum allowable pressure	51.1 bar g @ 38 °C	741 psi g @ 100 °F
TMA	Maximum allowable temperature	425 °C @ 28.8 g	797 °F @ 418 psi g
	Minimum allowable temperature	-29 °C	-20.2 °F
PMO	Maximum operating pressure for saturated steam service	43 bar g	624 psi g
<b>A - C</b>	TMO Maximum operating temperature	425 °C @ 28.8 bar g	797 °F @ 418 psi g
	Minimum operating temperature	0 °C	32 °F
	Minimum operating pressure	1.5 bar g	22 psi g
	Maximum operating backpressure	80% of upstream pressure	
Product is safe for use under full vacuum conditions			
	Designed for a maximum cold hydraulic test pressure of:	76.6 bar g	1111 psi g

## Pressure/temperature limits (ISO 6552) - Flanged ASME

### ASME Class 600

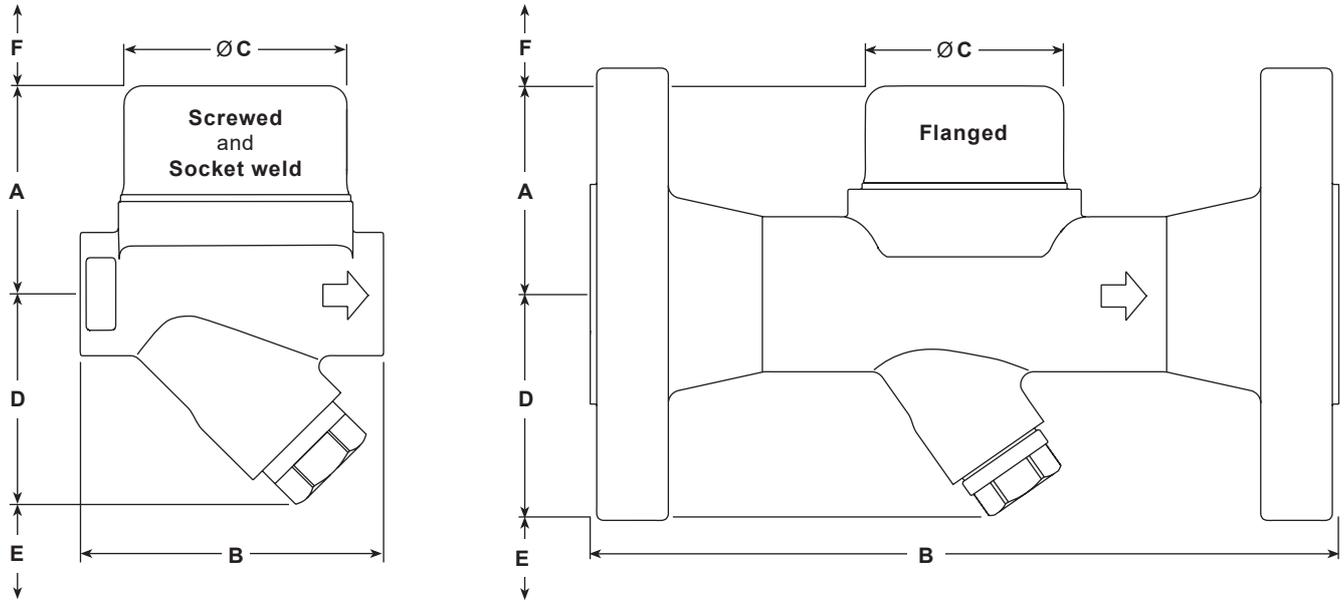


 The product **must not** be used in this region or beyond the parameter of the PMA or TMA of the relative end connection.

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

Body design condition		ASME Class 600		
PMA	Maximum allowable pressure	99.3 bar g @ 38 °C	1440 psi g @ 100 °F	
TMA	Maximum allowable temperature	425 °C @ 56 bar g	797 °F @ 812 psi g	
	Minimum allowable temperature	-29 °C	-20.2 °F	
PMO	Maximum operating pressure	46 bar g	667 psi g	
<b>A - B - B</b>	TMO	Maximum operating temperature	425 °C @ 46 bar g	797 °F @ 667 psi g
	Minimum operating temperature	0 °C	32 °F	
	Minimum operating pressure	1.5 bar g	22 psi g	
	Maximum operating backpressure	80% of upstream pressure		
Product is safe for use under full vacuum conditions				
	Designed for a maximum cold hydraulic test pressure of:	149 bar g	2161 psi g	

**Dimensions (approximate) in mm (inches)**

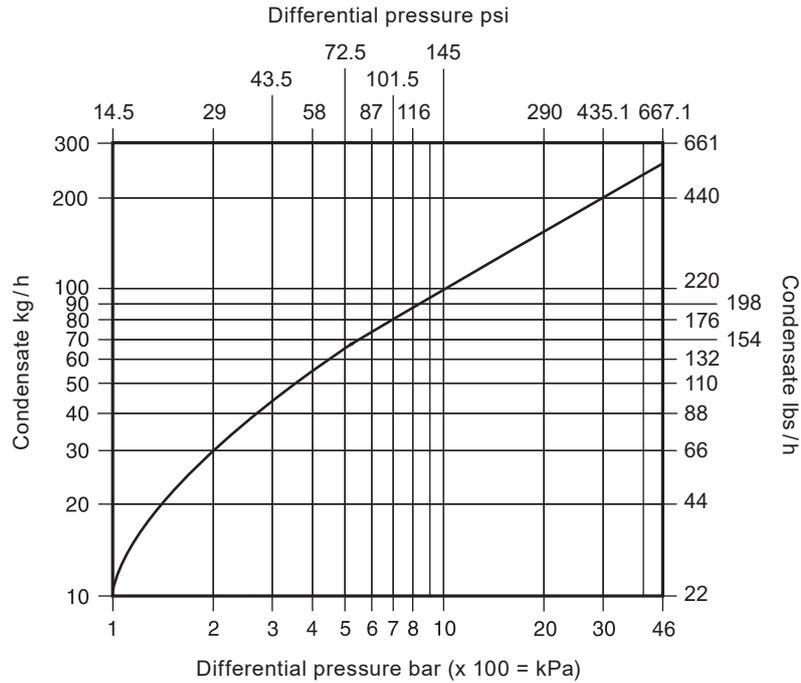


Size	A	Screwed		Socket weld	B		C	D	E	F
		Socket weld	Flanged		PN40 ASME 150, 300, 600	PN100				
1/2" DN15	58 (2.28)	78 (3.07)	92 (3.62)		150 (5.91)	210 (8.27)	61 (2.40)	59 (2.32)	40 (1.57)	30 (1.18)
3/4" DN20	61 (2.40)	95 (3.74)			160 (6.29)	230 (9.06)		63 (2.48)		
1" DN25	65 (2.56)					67 (2.64)				

**Weights (approximate) in kg (lbs)**

Size	Screwed	Socket weld	Flanged				
			ASME 150	ASME 300	ASME 600	PN40	PN100
1/2" DN15	1.38 (3.04)	1.49 (3.28)	2.46 (5.42)	2.96 (6.53)	3.06 (6.75)	3.06 (6.75)	4.36 (9.61)
3/4" DN20	1.64 (3.62)	1.64 (3.62)	3.16 (6.97)	4.06 (8.95)	4.26 (9.39)	3.96 (8.73)	6.26 (13.8)
1" DN25	1.90 (4.19)	1.90 (4.19)	4.16 (9.17)	5.16 (11.4)	5.46 (12.0)	4.86 (10.7)	8.16 (18.0)

## Capacities



### Safety information, installation and maintenance

For full details see the Installation and Maintenance Instructions (IM-P187-05) supplied with the product.

#### Installation note:

The TDC46M is designed for installation with the disc in a horizontal plane with the insulating cover at the top.

It is recommended that a non-return valve is fitted when discharging condensate into return lines where backpressure is experienced. It is also recommended that a diffuser is fitted when discharging to atmosphere.

For ease and maintenance, consideration should be given to fitting isolation valves upstream and downstream of the steam trap.

### How to order

**Example:** 1 off Spirax Sarco DN15 TDC46M thermodynamic steam trap having flanged EN 1092 PN40 connections.

## Spare parts

Please note that the spares shown are the same for the screwed, socket weld and flanged versions.

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

### Available spares

Insulating cover	3
Top cap, seat and disc assembly	2, 4, 5, 6, 7, 8
Strainer screen and gasket	9, 10
Set of gaskets (packet of 3 sets)	8, 10
BDV1 blowdown valve retrofit kit	

### How to order spares

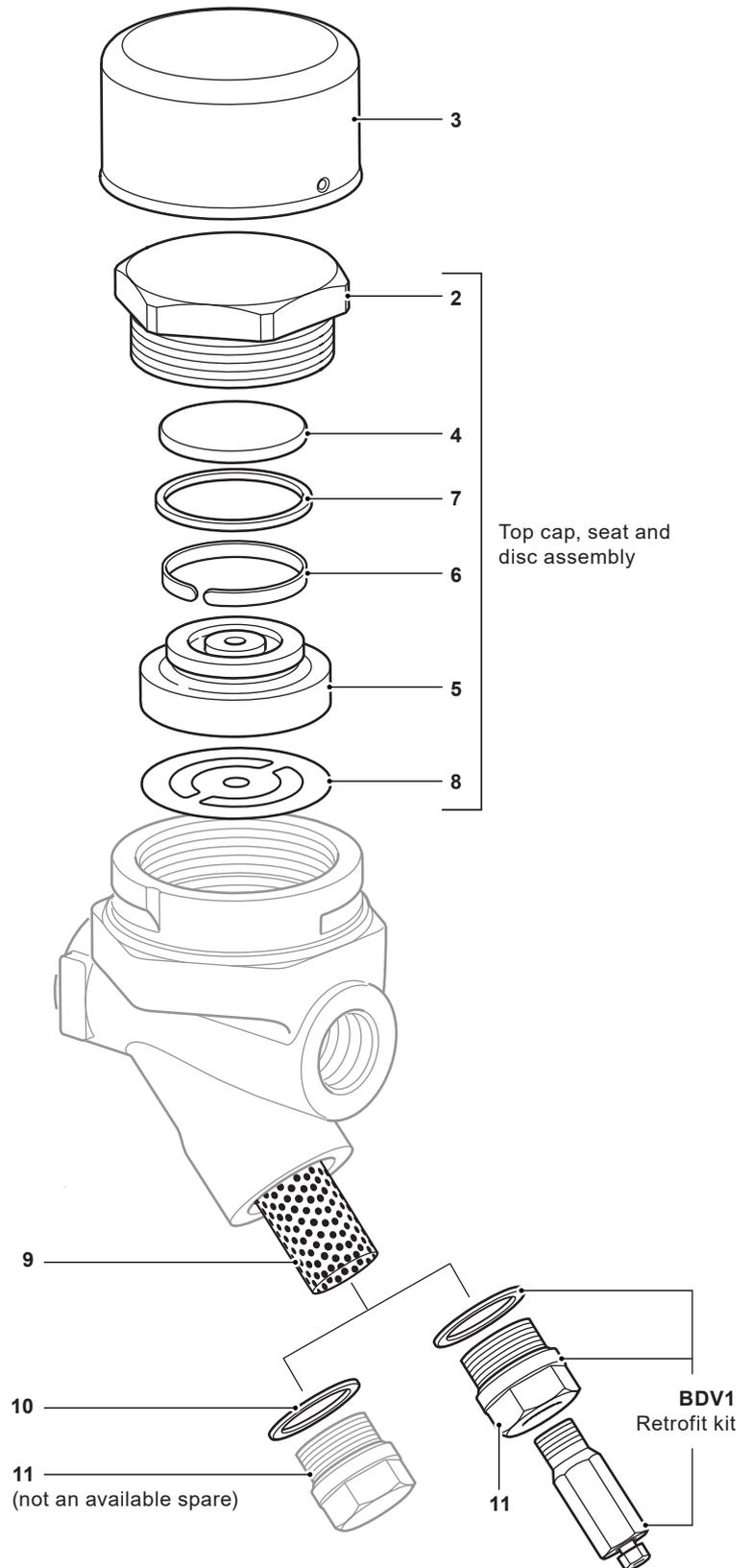
Always order spares by using the description given in the column headed 'Available spares' and state the size and type of trap.

**Example:** 1 off Top cap, seat and disc assembly for a Spirax Sarco DN15 TDC46M thermodynamic steam trap.

### Cautionary note regarding disassembly and assembly of the unit:

Removal of the following parts:

- top cap (2),
- strainer cap (11) and the
- optional BDV2 retrofit kit should be carried out in a workshop, not whilst the trap is installed inline. For socket weld installations the unit can be maintained inline however care should be taken to avoid damage to pipework.



### Recommended tightening torques (for suitably lubricated threads)

Item	Part	 mm	N m	(lbf ft)
2	Top cap	50 A/F	300	221
11	Strainer cap	24 A/F	105 - 110	81