

# ESCO

## INVERTED BUCKET STEAM TRAPS

The Steam Trap is simply an automatic valve that opens for condensate, air and  $\text{CO}_2$  and closes for steam. For economic reasons, the Trap should perform this function for long periods of time with minimum attention.

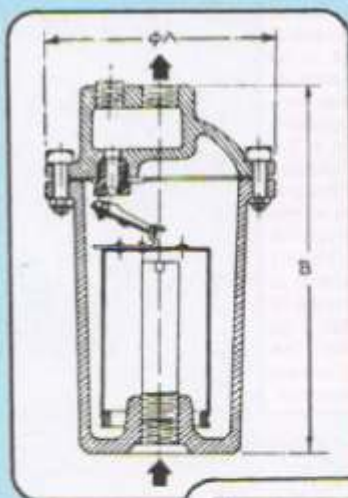
'ESCO' Inverted Bucket Steam Trap perfectly satisfies the above basic requirement. It operates on the difference in density between steam and water. Steam entering the inverted submerged bucket causes the bucket to float which when lifted closes the discharge valve. Condensate entering the Trap changes the bucket to a weight that sinks and opens the trap valve to discharge the condensate. But unlike other mechanical traps, air and carbon dioxide are vented continuously at steam temperature.

The heart of 'ESCO' Inverted Bucket Steam Trap is its leverage system that multiplies the force provided by the bucket to open the valve against pressure. There are no fixed pivots to create friction. It is designed to open the discharge orifice for maximum capacity. Wearing points are reinforced for longer life. Valve and Seat are made of heat treated chrome steel having exceptional hardness.

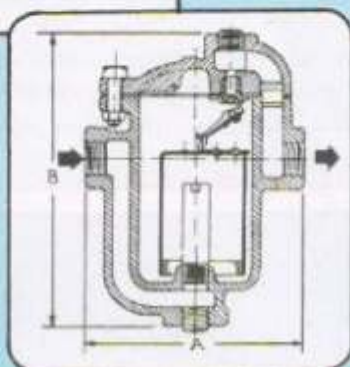
The use of a different leverage ratio for each orifice size makes it possible to open the maximum size orifice at any given pressure. Each size of 'ESCO' Inverted Bucket Steam Trap is available with different sizes of Valve Seat Assemblies at different pressure intervals so that the capacity of any one size is maintained at its optimum level.

The availability of 'ESCO' Traps in different body materials and piping configuration permits flexibility in employing the right Trap to meet with specific needs. 'ESCO' Inverted Bucket Steam Traps are available with different end connections and in body material of C.I., Cast Steel, Forged Steel or Alloy Steel and in different styles - Model IBH having Side Inlet Side Outlet and Model IB2 having Bottom Inlet Top Outlet. IBH and IB2 series Traps, generally available in C. I. construction, are suitable for pressure upto 200 psi. The series IB3, IB6 and IB9 Vertical Traps are suitable for pressure upto 300 psi, 600 psi and 900 psi respectively. Model IBH - 1/2 thru IBH - 1 1/4 traps are also available with integral strainer - series IBHS.

Above All, 'ESCO' Inverted Bucket Steam Traps, in quality and performance, are equivalent to the best known and at the same time attractively economical in price.



Model : IB2



Model : IBH

### IB2 SERIES - BOTTOM INLET TOP OUTLET (C.I.BODY)

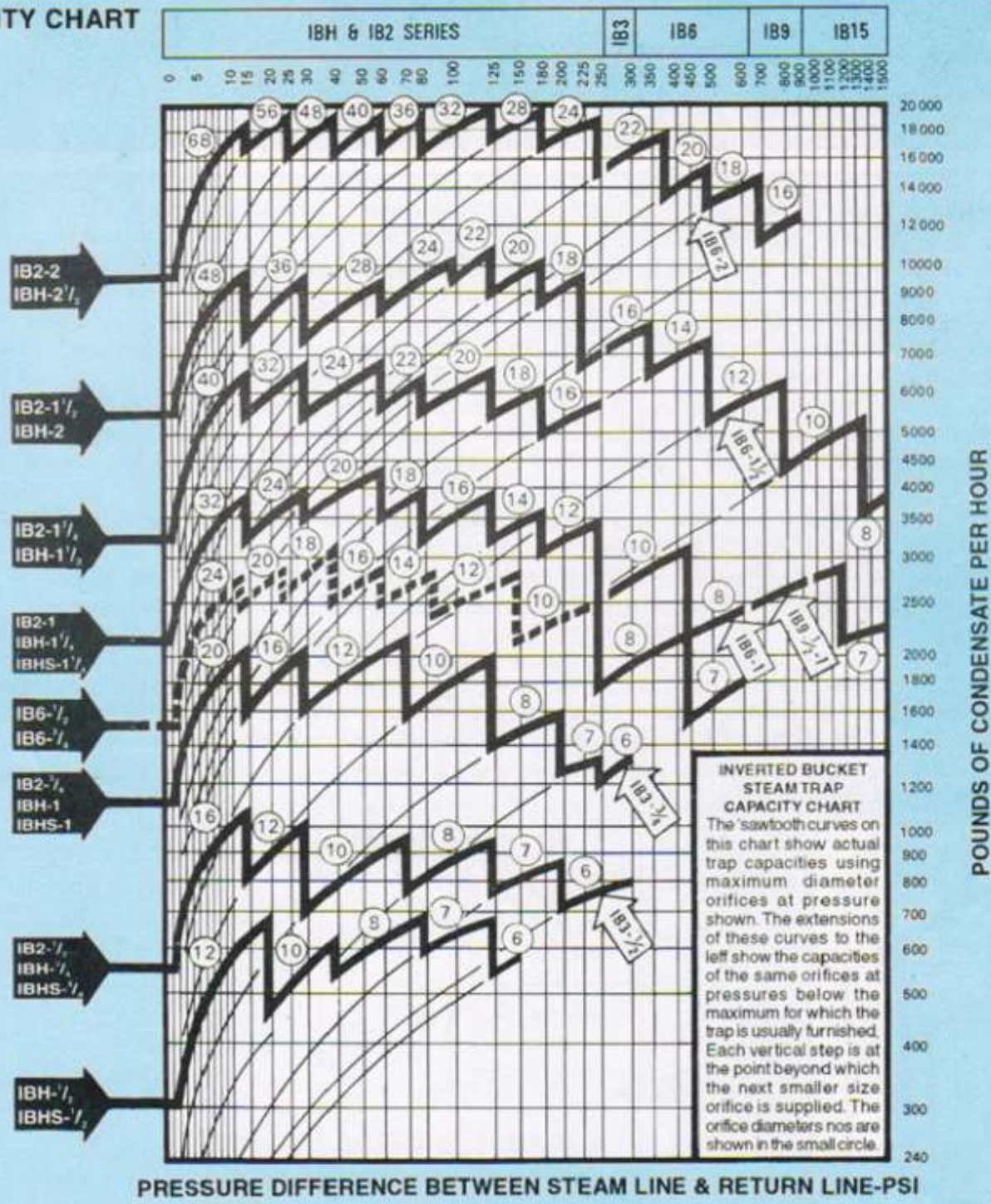
MODEL	SIZE		A	B	Max. design pressure PSI
	INCH.	MM			
IB2 1/2	1/2	15	4.5/8"	6.3/8"	200
IB2 3/4	3/4	20	5.1/4"	7.7/8"	200
IB2 1	1	25	7.3/8"	10.5/8"	200
IB2 1. 1/2	1.1/2	40	9.3/8"	14.1/2"	200
IB2 2	2	50	11.3/8"	17"	200

### IBH SERIES - SIDE INLET SIDE OUTLET (C.I.BODY)

MODEL	SIZE		A	B	Max. design pressure PSI
	INCH.	MM			
IBH 1/2	1/2	15	5.1/4"	6.5/8"	150
IBH 3/4	3/4	20	5.1/4"	7.7/8"	200
IBH-1	1	25	6.3/4"	8.3/4"	200



# CAPACITY CHART



PRESSURE DIFFERENCE BETWEEN STEAM LINE & RETURN LINE-PSI

**NOTE :**

- (1) Condensate discharge capacities for flanged end traps and for traps having socket weld connections are the same, size for size, as for the screwed and traps shown on the chart.
- (2) Against request all traps can be supplied with IBR certificate, However, the same will be provided only to the extent permitted by regulations.

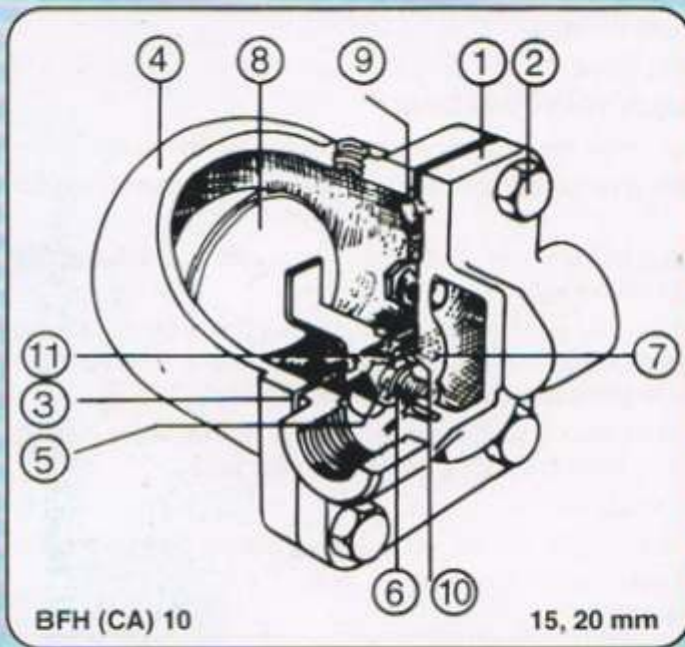


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# ESCO

## COMPRESSED AIR AUTO DRAIN TRAPS Model BFH (CA) 10



### AVAILABLE TYPES:

BFH (CA)-10-4.5 Suitable upto 4.5 bar differential pressure

BFH (CA)-10-10 Suitable upto 10 bar differential pressure

BFH (CA)-10-14 Suitable upto 14 bar differential pressure

### SIZES:

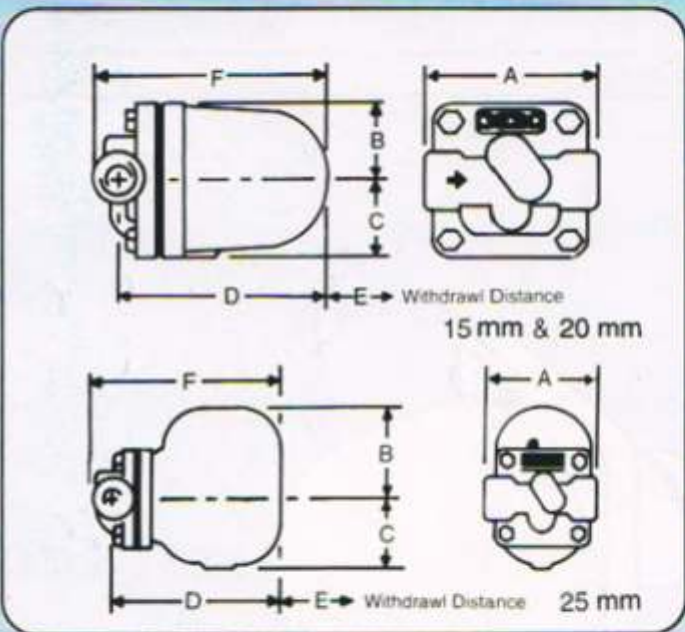
15 NB, 20 NB, 25 NB

### END CONNECTIONS:

Screwed BSPT/NPT

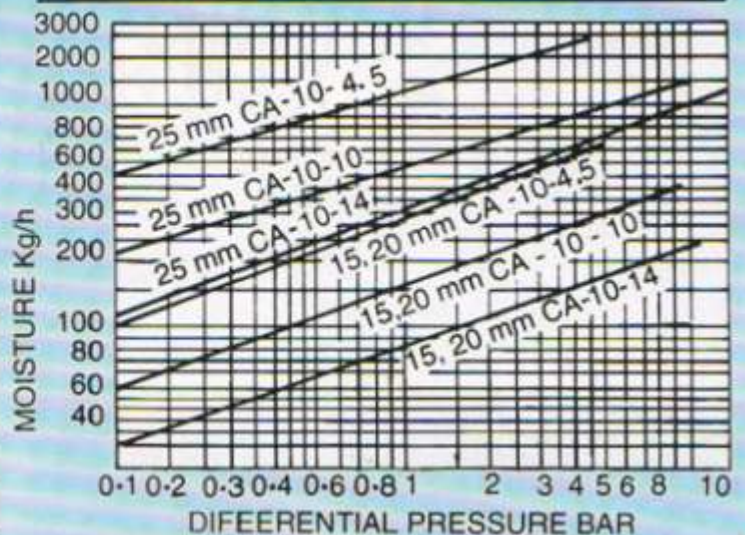
### PART LIST AND MATERIALS

NO	PART	MATERIAL
1.	Body	Cast Iron IS 210 Gr 20
2.	Cover bolts	Carbon steel
3.	Cover Gasket	CAF
4.	Cover	Cast Iron IS 210 Gr 20
5.	Valve Seat	St. Steel AISI 410
6.	Valve Seat Gasket	St. Steel AISI 410
7.	Pivot frame Assly set	St. Steel AISI 304
	Screws	
8.	Ball Float & Lever	St. Steel AISI 304
9.	Plug	Carbon Steel
15.	Support Frame	St. Steel AISI 304
16.	Pivot Frame	St. Steel AISI 304

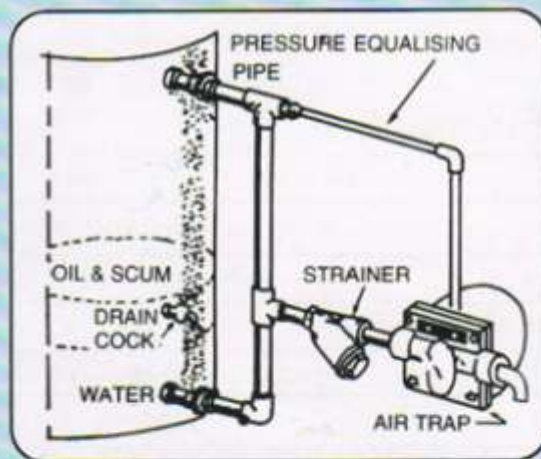
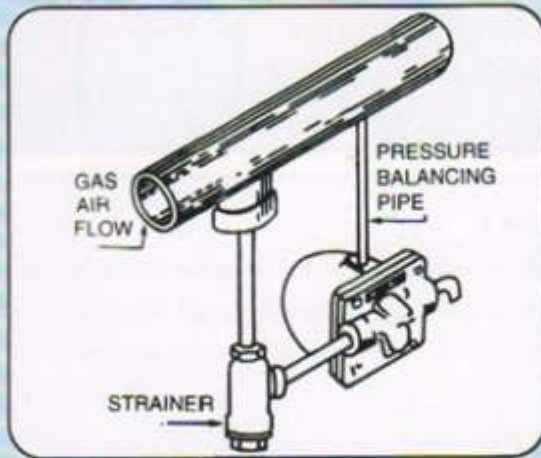


### DIMENSIONS : in millimeters (approx)

Size	A	B	C	D	F	Weight
1/2" 15 mm	128	52	52	145	169	4.6 kg
3/4" 20 mm	128	52	52	145	169	4.6 kg
1" 25 mm	128	115	74	190	212	8.2 kg







To prevent air locking auto drain trap should be provided with balancing line as shown.

### SERVICING

With suitable isolation, repairs can be carried out with the air trap in the line.

Undo cover bolts U and lift off cover. When re-assembling make sure that all joint faces are clean. Always use a new gasket and apply a thin coating of jointing paste.

Tighten coverbolts uniformly.

Open up isolating valve.

### HOW TO FIT MAIN VALVE ASSEMBLY

Isolate and open up as above and remove existing mechanism.

Using a little jointing paste on the thread and gasket, fit the new valve seat to the body.

Attach the support frame E and pivot frame F to the body with assembly set screws D, but do not tighten.

Fit the float arm C to the pivot frame F using the pin G and by moving the complete assembly centre the valve head onto the seat orifice. Hold the assembly firmly in place and tighten up set screws D.

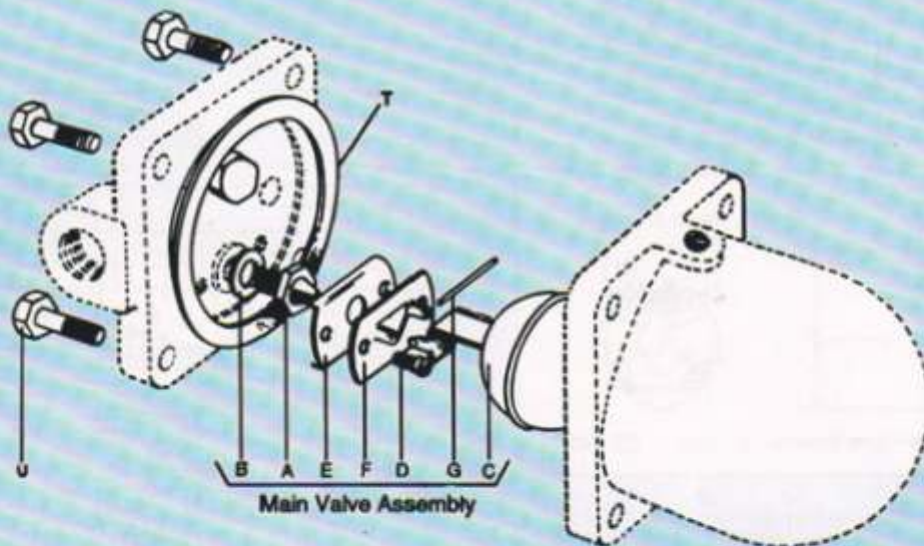
Check operation by raising and lowering the float several times making sure that the valve head is centring properly on the seat.

Refit cover etc. as above.

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

### AVAILABLE SPARES

Main Valve Assembly with Float	A, B, C, D, E, F, G
Set of Gaskets	B, T
Set of Cover Bolts (Set of 4)	U



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# ESCO

## BALANCED PRESSURE THERMOSTATIC STEAM TRAP: SERIES TST-300 & TST 13X AIR VENT : SERIES TAV-300

### ELEMENT FILLING

As standard, TST-300 series Trap is supplied with Filling which operates approximately 20° C below steam temperature, i.e. sub-cooling. However, TAV-300 Trap is supplied with filling which will operate at approximately 10° C below steam temperature.

### TYPICAL APPLICATION

Steam Tracer Lines, Steam Jacketed Lines, Steam Coils, etc.

### NOTE 1 :

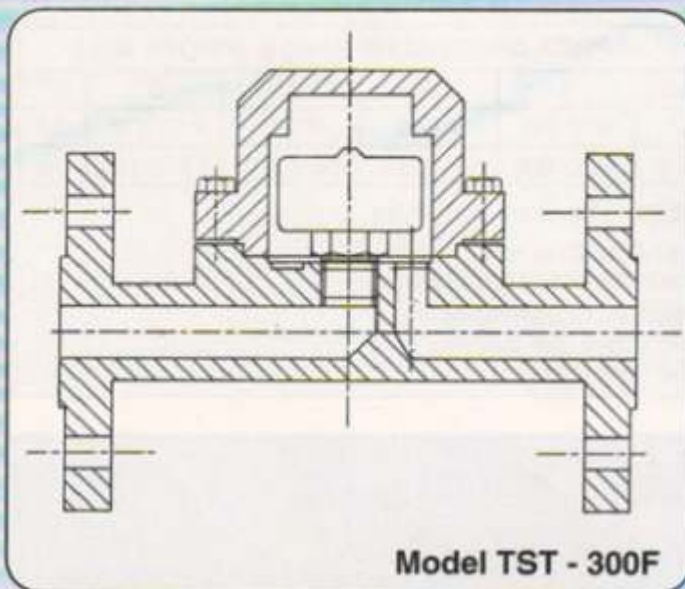
Choice of different materials for Body and Cover is available, e.g. Forged ASTM A 105, Cast Steel (ASTM A 216, Gr WCB), AISI 304, AISI 316 etc.

APPROX DIMENSIONS (mm) & WEIGHT (kg.)					
SIZE	A	B	C	D	WT.
15 NB	55	68	87	73.5	1.6
20 NB	55	69	90	73.5	1.6

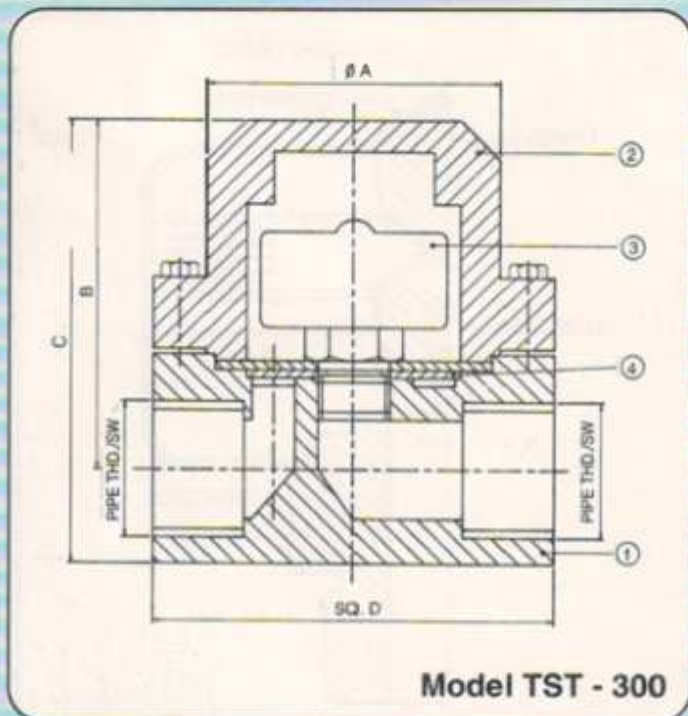
### CONDENSATE DISCHARGE CAPACITY TABLE

Differential Pressure Kg/Cm2 (PSI)	Size	
	1/2" (15NB), 3/4" (20NB)	kg/Hr. (Lbs/Hr.)
1.4 (20)	250	(550)
3.5 (50)	400	(880)
7 (100)	525	(1150)
8.8 (125)	560	(1235)
10.5 (150)	595	(1310)
14 (200)	654	(1440)
17.6 (250)	709	(1560)
21.1 (300)	750	(1650)

### BALANCED PRESSURE THERMOSTATIC STEAM TRAP WITH INTEGRAL FLANGES



Model TST - 300F



Model TST - 300

**SIZES :** 15NB (1/2") / 20NB (3/4")

### END CONDITIONS :

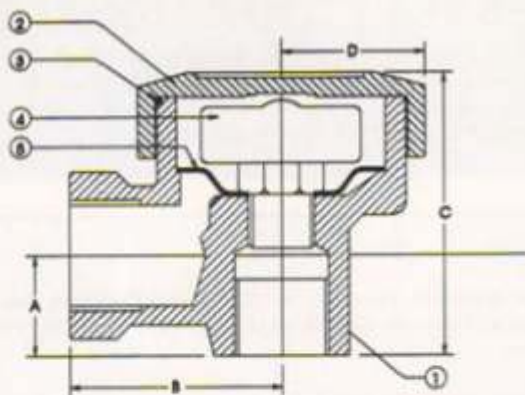
SCREWED BSPT / NPT / BSP  
SOCKET WELDABLE TO ANSI B 16.11  
FLANGED TO ANSI / BS / DIN stds.

### LIMITING CONDITIONS :

PMO : 21 kg / Cm2 ( 300 PSI )  
TMO : 260° C ( 500° F )  
Cold Hydraulic Test Pressure : 42 Kg/Cm2 ( 600 PSI )

TST-300 PART LIST & MATERIALS		
SR. NO.	NAME OF PART	MATERIAL
1	BODY	SEE NOTE 1
2	COVER	SEE NOTE 1
3	THERMOSTATIC ELEMENT	AISI 304
4	STRAINER SCREEN	AISI 304

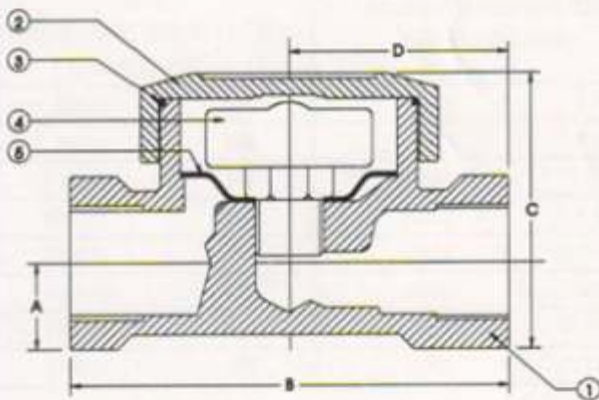




**Model TST - 13AX**

**APPROX DIMENSIONS (mm) & WEIGHT (kg.)**

SIZE	A	B	C	D	WT.
1/2"	13/16" (20)	1 1/2" (38)	2 1/4" (57)	1 1/16" (27)	0.5
3/4"	1 1/16" (27)	1 9/16" (40)	2 5/8" (66)	1 1/16" (27)	0.6



**Model TST - 13SX**

**APPROX DIMENSIONS (mm) & WEIGHT (kg.)**

SIZE	A	B	C	D	WT.
1/2"	9/16" (14)	3" (76)	2" (51)	1 1/2" (38)	0.5
3/4"	13/16" (20)	3 3/16" (80)	2 1/4" (57)	1 9/16" (40)	0.6

**SIZES :** 15NB (1/2") / 20NB (3/4")

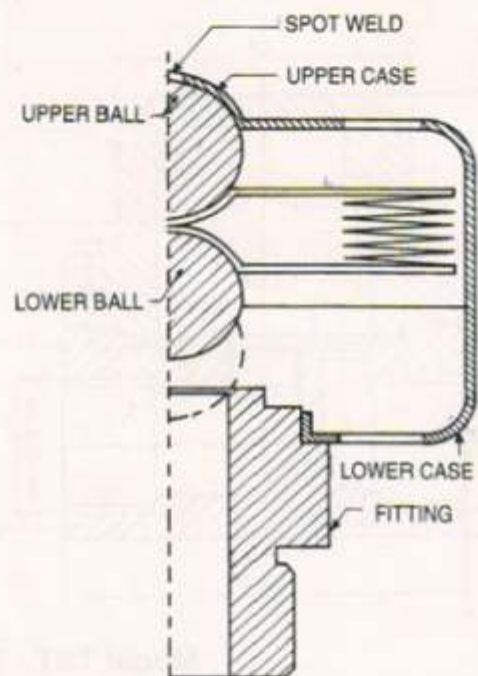
**END CONDITIONS :**  
SCREWED BSPT / NPT / BSP

**LIMITING CONDITIONS :**  
PMO - 16KG./CM<sup>2</sup> (225 PSI)  
TMO - 260° C (500° F)

**TST - 13X PART LIST & MATERIALS**

SR. NO.	NAME OF PART	MATERIAL
1	BODY	BRASS
2	CAP	BRASS
3	'O' RING	SYNTHETIC RUBBER
4	THERMOSTATIC ELEMENT	AISI 304
5	STRAINER SCREEN	AISI 304

The welded Stainless Steel Bellow (Element) is self-adjusting over its entire operating pressure range. This Element will discharge the condensate at approximately 20° C or 10° C below steam saturation temperature depending upon the type of Filling filled in Element. The Element is also resistant to water hammer.



**ENLARGED AND SECTIONED VIEW OF ELEMENT**

**ELEMENT PART LIST & MATERIALS**

NAME OF PART	MATERIAL
UPPER CASE	AISI 304
LOWER CASE	AISI 304
UPPER BALL	AISI 440 b
LOWER BALL	AISI 440 c
FITTING	AISI 416

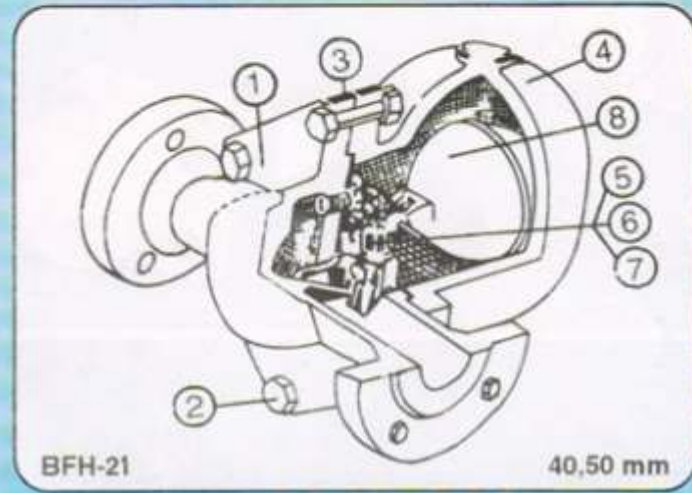
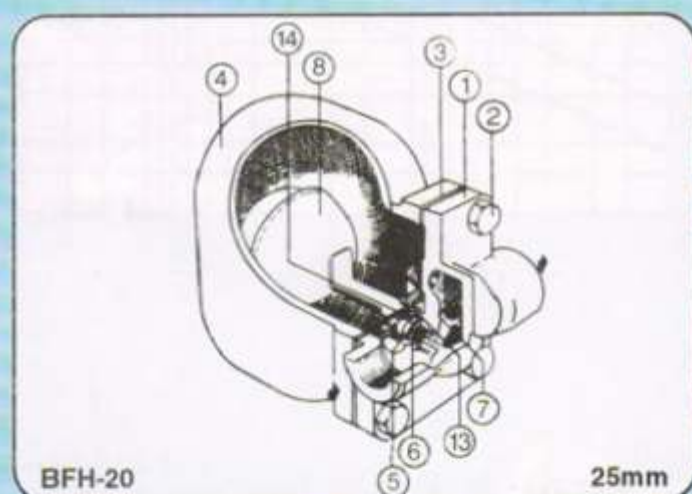
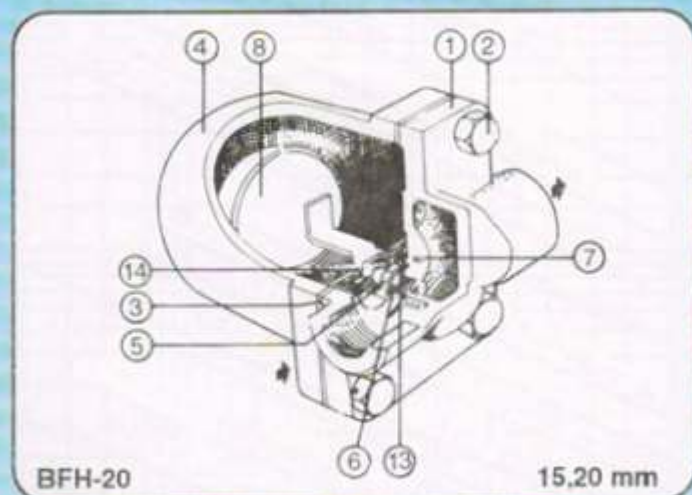


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# ESCO BALL FLOAT STEAM TRAPS (SCREWED ENDS) Model BFH - 20

## BALL FLOAT STEAM TRAPS (FLANGED ENDS) Model BFH - 21



**SIZES :** 15/20/25/40/50 NB

**TYPES:**

- BFH - 20/21 - 4.5 Suitable upto a max differential pressure of 4.5 bar
- BFH - 20/21 - 10 Suitable up to a max differential pressure of 10 bar
- BFH - 20/21 - 14 Suitable up to a max differential pressure of 14 bar
- BFH - 20/21 - 21 Suitable up to a max differential pressure of 21 bar
- BFH - 20/21 - 32 Suitable up to a max differential pressure of 32 bar
- Max Body Design condition : 32 bar at 425°C
- Steam Lock Release - Available.

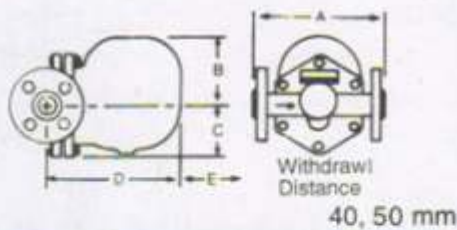
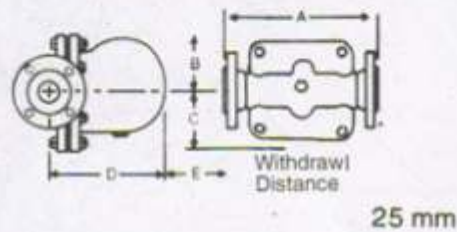
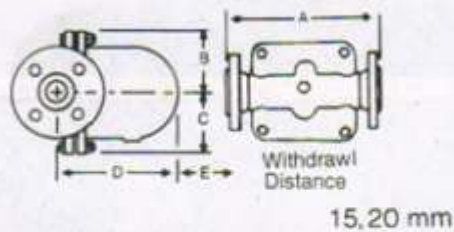
**END CONNECTIONS:**

- BFH - 20 : Screwed BSPT/NPT, Socket weldable to ANSI B. 16-11
- BFH - 21 : Flanged to ANSI B. 16.5 Class 150/300/600/  
BS 10 Tables H, J, K, R Din ND 10, 16, 25, 40

**PART LIST AND MATERIALS**

No	PART	MATERIAL
1.	Body	Cast Steel A 216 Gr WCB
2.	Cover Bolts & Nuts	Carbon Steel High tensile
3.	Cover Gasket	CAF
4.	Cover	Cast Steel A216 GrWCB
5.	Valve Seat 15, 20 & 25 NB	Stainless Steel AISI 410
	Main Valve Assly with Erosion Deflector 40 & 50 NB	Stainless Steel AISI 410
6.	Valve Seat Gasket	Stainless Steel AISI 304
7.	Pivot Frame Assembly & set screws 15, 20, 25 NB	Stainless Steel AISI 304
	M.V. Assembly Studs & Nuts 40, 50 NB	Carbon Steel
8.	Ball Float & Lever	Stainless Steel AISI 304
9.	Steam Lock Release Unit	Stainless Steel AISI 304
10.	SLR unit Gasket	Stainless Steel AISI 304
11.	SLR seat	Stainless Steel AISI 410
12.	SLR Seat Gasket	Stainless Steel AISI 304
13.	Support Frame	Stainless Steel AISI 304
14.	Pivot Frame	Stainless Steel AISI 304





#### DIMENSIONAL DETAILS (Approx)

Size	A	B	C	D	E	F
15/20 NB	212	54	54	145	120	23
25 NB	212	110	75	190	160	24
40 NB	330	132	110	240	200	29
50 NB	330	145	125	250	200	32

#### INSTALLATION

The Trap should be fitted with the Float Arm in horizontal plane so that it raises and falls vertically with direction of flow as shown on the body of the Trap.

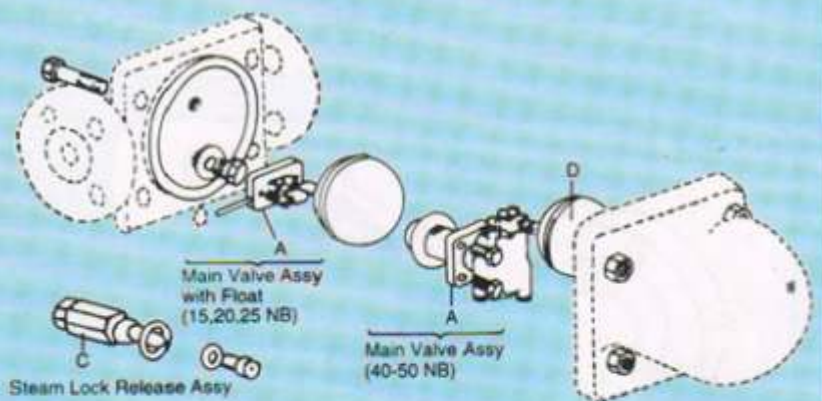
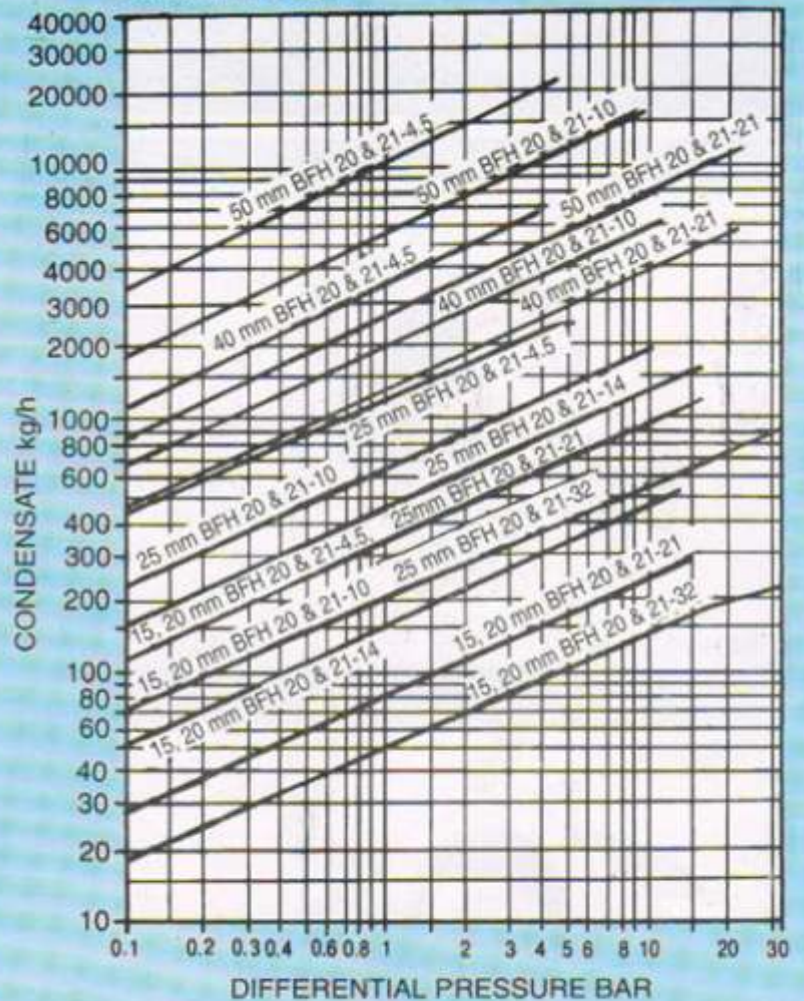
#### OPTIONAL EXTRA

The steam trap body can be drilled & tapped to 3/8" BSPT/NPT to provide a cock to act as a manual air vent.

#### AVAILABLE SPARES

1. Main Valve Assly with float (15,20,25NB)	A
2. Main Valve Assly with float (40,50NB)	A+D
3. Steam Lock Release unit	C
4. Set of Gaskets	E

#### CAPACITY CHART



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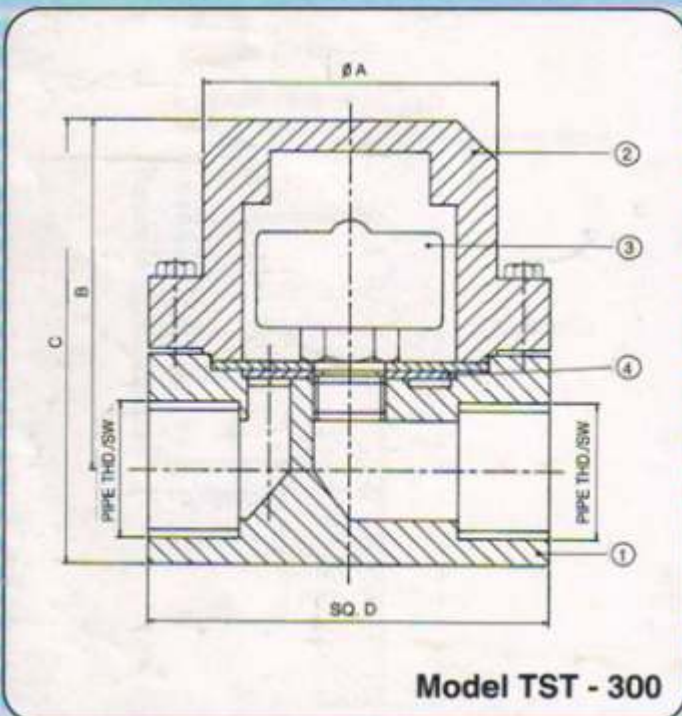
## BALANCED PRESSURE THERMOSTATIC STEAM TRAP: SERIES TST-300 & TST 13X AIR VENT : SERIES TAV-300

### ELEMENT FILLING

As standard, TST-300 series Trap is supplied with Filling which operates approximately 20° C below steam temperature, i.e. sub-cooling. However, TAV-300 Trap is supplied with filling which will operate at approximately 10° C below steam temperature.

### TYPICAL APPLICATION

Steam Tracer Lines, Steam Jacketed Lines, Steam Coils, etc.



**Model TST - 300**

### NOTE 1 :

Choice of different materials for Body and Cover is available, e.g. Forged ASTM A 105, Cast Steel (ASTM A 216, Gr WCB), AISI 304, AISI 316 etc.

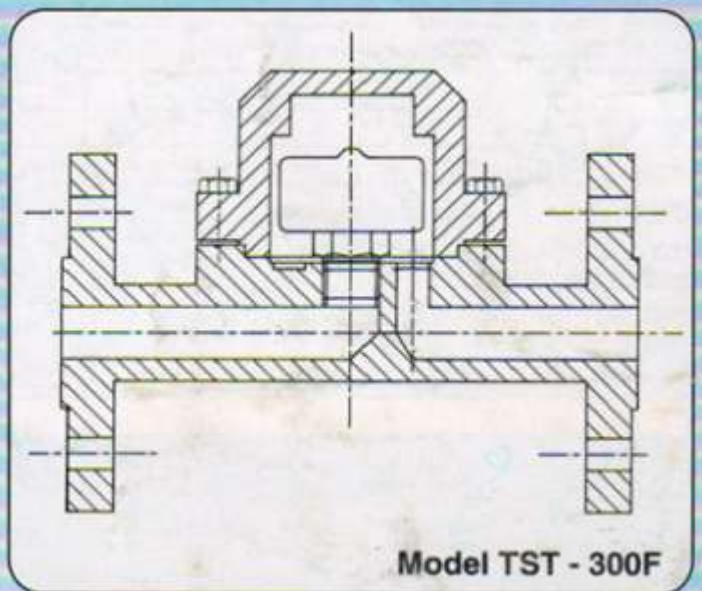
### APPROX DIMENSIONS (mm) & WEIGHT (kg.)

SIZE	A	B	C	D	WT.
15 NB	55	68	87	73.5	1.6
20 NB	55	69	90	73.5	1.6

### CONDENSATE DISCHARGE CAPACITY TABLE

Differential Pressure Kg/Cm2 (PSI)	Size	
	1/2" (15NB)	3/4" (20NB)
	kg/Hr. (Lbs/Hr.)	
1.4 (20)	250	(550)
3.5 (50)	400	(880)
7 (100)	525	(1150)
8.8 (125)	560	(1235)
10.5 (150)	595	(1310)
14 (200)	654	(1440)
17.6 (250)	709	(1560)
21.1 (300)	750	(1650)

### BALANCED PRESSURE THERMOSTATIC STEAM TRAP WITH INTEGRAL FLANGES



**Model TST - 300F**

**SIZES :** 15NB (1/2") / 20NB (3/4")

### END CONDITIONS :

SCREWED BSPT / NPT / BSP  
SOCKET WELDABLE TO ANSI B 16.11  
FLANGED TO ANSI / BS / DIN stds.

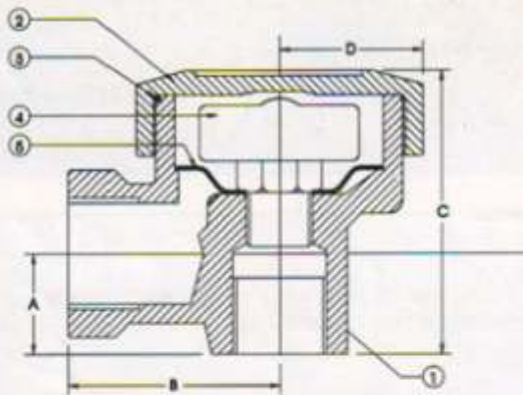
### LIMITING CONDITIONS :

PMO : 21 kg / Cm2 ( 300 PSI )  
TMO : 260° C ( 500° F )  
Cold Hydraulic Test Pressure : 42 Kg/Cm2 ( 600 PSI )

### TST-300 PART LIST & MATERIALS

SR. NO.	NAME OF PART	MATERIAL
1	BODY	SEE NOTE 1
2	COVER	SEE NOTE 1
3	THERMOSTATIC ELEMENT	AISI 304
4	STRAINER SCREEN	AISI 304

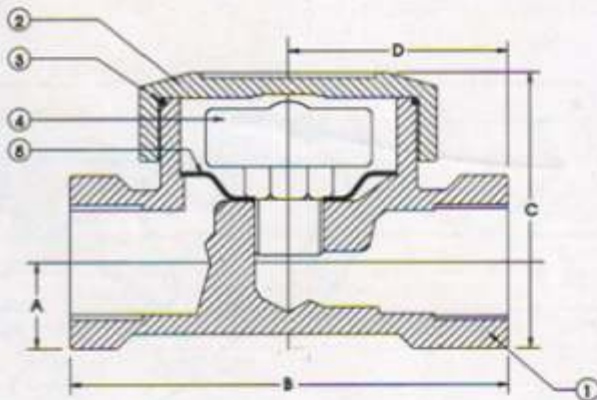




**Model TST - 13AX**

**APPROX DIMENSIONS (mm) & WEIGHT (kg.)**

SIZE	A	B	C	D	WT.
1/2"	13/16" (20)	1 1/2" (38)	2 1/4" (57)	1 1/16" (27)	0.5
3/4"	1 1/16" (27)	1 9/16" (40)	2 5/8" (66)	1 1/16" (27)	0.6



**Model TST - 13SX**

**APPROX DIMENSIONS (mm) & WEIGHT (kg.)**

SIZE	A	B	C	D	WT.
1/2"	9/16" (14)	3" (76)	2" (51)	1 1/2" (38)	0.5
3/4"	13/16" (20)	3 3/16" (80)	2 1/4" (57)	1 9/16" (40)	0.6

**SIZES :** 15NB (1/2") / 20NB (3/4")

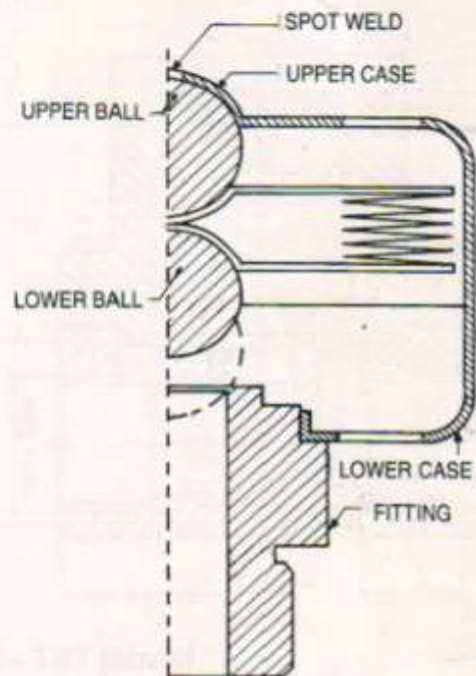
**END CONDITIONS :**  
SCREWED BSPT / NPT / BSP

**LIMITING CONDITIONS :**  
PMO - 16KG./CM<sup>2</sup> (225 PSI)  
T<sub>MAX</sub> - 280° C (500° F)

**TST - 13X PART LIST & MATERIALS**

SR. NO.	NAME OF PART	MATERIAL
1	BODY	BRASS
2	CAP	BRASS
3	"O" RING	SYNTHETIC RUBBER
4	THERMOSTATIC ELEMENT	AISI 304
5	STRAINER SCREEN	AISI 304

The welded Stainless Steel Bellow (Element) is self-adjusting over its entire operating pressure range. This Element will discharge the condensate at approximately 20° C or 10° C below steam saturation temperature depending upon the type of Filling filled in Element. The Element is also resistant to water hammer.



**ENLARGED AND SECTIONED VIEW OF ELEMENT**

**ELEMENT PART LIST & MATERIALS**

NAME OF PART	MATERIAL
UPPER CASE	AISI 304
LOWER CASE	AISI 304
UPPER BALL	AISI 440 b
LOWER BALL	AISI 440 c
FITTING	AISI 416



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