

Forbes Marshall Bimetallic Steam Traps

FMBM58, FMBM78, FMBM510, FMBM710, FMBM715-F22, FMBM715-F91, FMBM721-F22 and FMBM721-F91.

Description

The Forbes Marshall FMBM58, FMBM78, FMBM510, FMBM710, FMBM715-F22, FMBM715-F91, FMBM721-F22 and FMBM721-F91 bimetallic steam traps are re designed for draining high pressure, high temperature steam lines. These steam traps are specially designed for HP steam, have a reinforced stainless steel insert within the body and traps can be repaired inline. They operate with no loss of steam, and quickly drain air, non-condensable gases and large quantities of cold water on start-up. Normally open in the event of failure, they have a check valve, a built-in strainer screen and an external adjustment for adjusting the discharge temperature of the condensate.

Size and End Connections

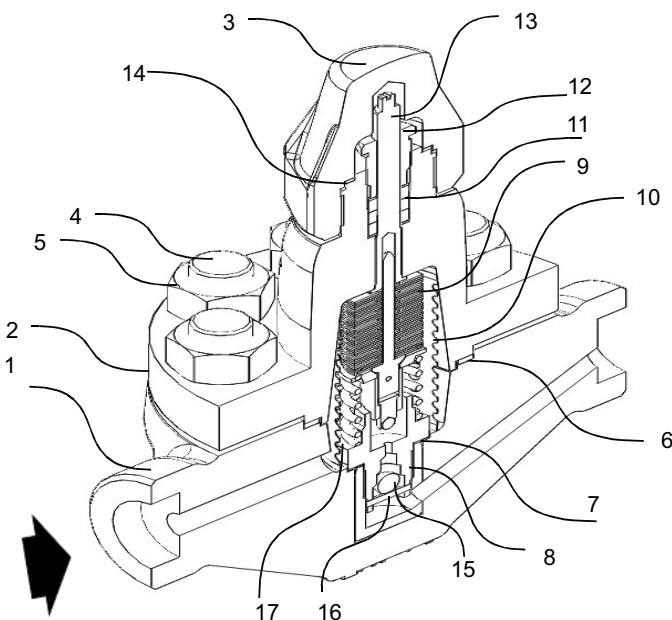
Size: DN15 (1/2"), DN20(3/4") and DN25(1")

End Connection : Socket weld to ASME (ANSI) B 16.11

Butt weld to (ANSI) B 16.25



FMBM715-F22, FMBM721-F22 FMBM715-F91 & FMBM721-F91	} Butt weld End are as per SCH.XXS Pipe
FMBM58, FMBM78 FMBM510 & FMBM710	



Material

No.	Part	Material			
1	Body	FMBM78, FMBM58 FMBM710 & FMBM510	Forged Carbon steel ASTM A105N / Alloy steel ASTM A182Gr. F22 Class 3		
		FMBM715-F22/F91 FMBM721-F22/F91	Alloy steel ASTM A182Gr. F22 Class 3 / F91		
		FMBM78, FMBM58 FMBM710 & FMBM510	Forged Carbon steel ASTM A105N / Alloy steel ASTM A182Gr. F22 Class 3		
		FMBM715-F22/F91 FMBM721-F22/F91	Alloy steel ASTM A182Gr. F22 Class 3 / F91		
3	Cover Cap Nut	FMBM78, FMBM58 FMBM710 & FMBM510	Alloy steel ASTM A182Gr. F91		
		FMBM715-F22/F91 FMBM721-F22/F91	Alloy steel ASTM A182Gr. F91		
		FMBM78, FMBM58 FMBM710 & FMBM510	ASTM A193 Gr. B16		
		FMBM715-F22/F91 & FMBM721-F22/F91			
5	Cover Nut	FMBM78, FMBM58 FMBM710, FMBM510	ASTM A194 Gr. 4		
		FMBM715-F22/F91 & FMBM721-F22/F91			
		6		Cover gasket	Spiral wound stainless steel and graphite (asbestos-free)
		7		Valve seat gasket	Stainless steel
8	Valve seat	Stainless steel			
9	Element assembly	Stainless steel			
10	Strainer screen	Stainless steel			
11	Gland packing	Graphite (asbestos-free)			
12	Gland nut	Stainless steel			
13	Adjustment Screw	Stainless steel			
14	Cover Cap Nut Gasket	Stainless steel/Graphite			
15	NRV Ball	Stainless steel			
16	Dowell Pin	Stainless steel			
17	Spring	Nickel Alloy			

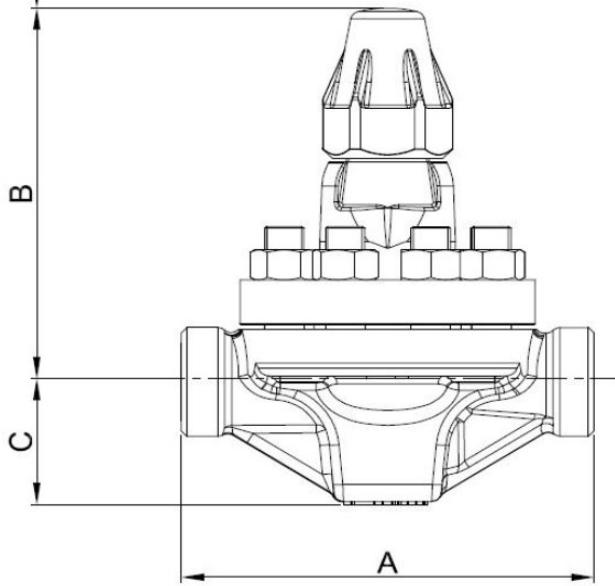
Limiting Conditions :

Body Design Conditions :	FMBM78, FMBM58, FMBM710 and FMBM510: FMBM715-F22, FMBM715-F91, FMBM721-F22 & FMBM721-F91:		Class 1500 to ASME (ANSI) B 16.34 Class 2500 to ASME (ANSI) B16.34
PMA Maximum Allowable Pressure:	FMBM58 and FMBM510 FMBM78 and FMBM710 FMBM715-F22 and FMBM721-F22 FMBM715-F91 and FMBM721-F91	255 bar g @ 38°C 258.6 bar g @ 38°C 430.9 bar g @ 38°C 430.9 bar g @ 38°C	For Forged Steel A105N Material For Alloy steel F22 Material For Alloy steel F22 Material For Alloy steel F91 Material
TMA Maximum Allowable Temperature:	FMBM58 and FMBM510 FMBM78 and FMBM710 FMBM715-F22 and FMBM721-F22 FMBM715-F91 and FMBM721-F91	425°C @ 143 bar g 570°C @ 57 bar g 570°C @97 bar g 570°C @201 bar g	For Forged Steel A105N Material For Alloy steel F22 Material For Alloy steel F22 Material For Alloy steel F91 Material
Maximum Operating Conditions:	FMBM58 FMBM510 FMBM78 FMBM710 FMBM715-F91 FMBM721-F91 FMBM715-F22 FMBM721-F22	80 bar g @ 425°C 100 bar g @ 425°C 80 bar g @ 530°C 100 bar g @ 530°C 150 bar g @ 525°C 210 bar g @ 525°C 150 bar g @ 530°C 210 bar g @ 510°C	For Forged Steel A105N Material For Forged steel A105N Material For Alloy steel F22 Material For Alloy steel F22 Material For Alloy steel F91 Material For Alloy steel F91 Material For Alloy steel F22 Material For Alloy steel F22 Material
Minimum inlet pressure for satisfactory operation is:	FMBM58 & FMBM78 FMBM510, FMBM710, FMBM715-F22/F91 & FMBM721-F22/F91	20 bar g 25 bar g	
Maximum cold hydraulic test pressure:	FMBM58, FMBM78, FMBM510 & FMBM710 FMBM715-F22, FMBM715-F91, FMBM721-F22 & FMBM721-F91	For IBR= 200 bar g For ASME= 388 bar g For IBR = 420 bar g For ASME = 646 bar g	
Minimum operating temperature: 0°C			
ΔPMX The back pressure for correct operation must not exceed 90% of the upstream pressure			

Dimensions / Weights (approximatly) in mm and kg

Sr. No.	Model	Connection	A	B	C	D	Weight	
1	FMBM78	Socket Weld End	160	184	64.5	150	10.5	10.5
	FMBM58	Butt Weld End	160	184	64.5	150	10.5	10.5
2	FMBM710	Socket Weld End	160	184	64.5	150	10.5	10.5
	FMBM510	Butt Weld End	160	184	64.5	150	10.5	10.5
3	FMBM715-F91	Socket Weld End	210	201	65.5	150	14	14
	FMBM715-F91	Butt Weld End	210	201	65.5	150	14	14
	FMBM721-F91	Socket Weld End	210	201	65.5	150	14	14
	FMBM721-F22	Butt Weld End	210	201	65.5	150	14	14

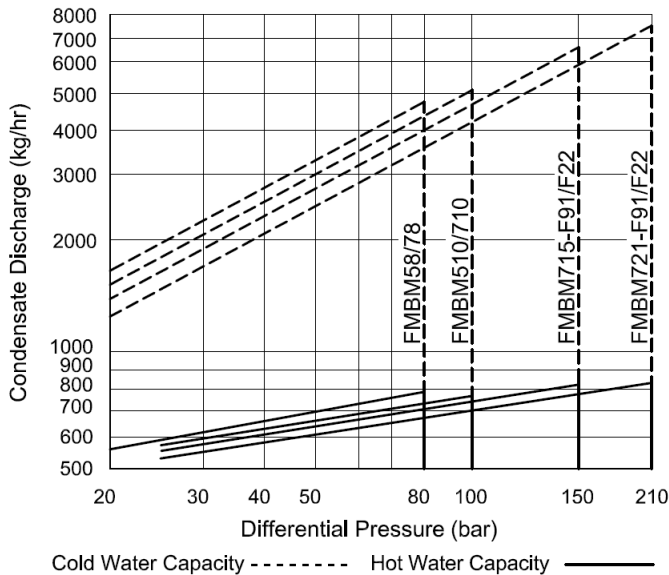
WITHDRAWAL DISTANCE FOR BIMETALLIC ELEMENT



Available Spare parts (Refer Fig.1) :

The spare parts available are detailed below. No other parts are supplied as spares.

Capacities :



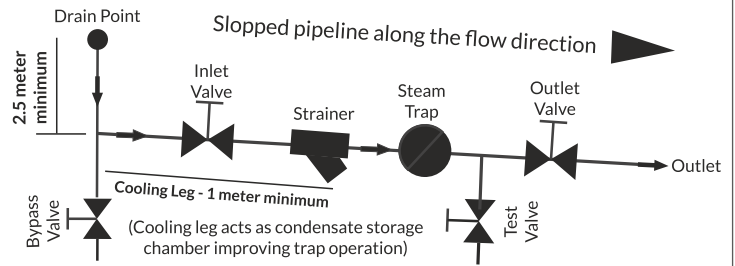
Available spares (Refer Fig.1) :

Bimetal assembly kit	8, 9, 15, 16
Strainer screen	10
Gasket set	6, 7 and 14

How to Order :

Order Spares as per the Code no. specified in the user manual.

Bimetallic Steam Trap Installation Guidelines:

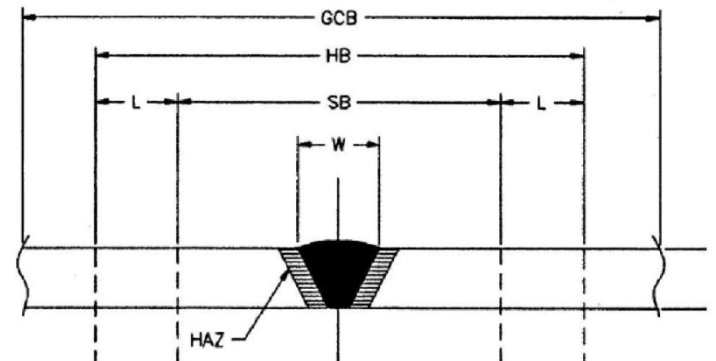


- Install the trap 2.5 meters from equipment drain point.
- DO NOT insulate the trap and the cooling leg of minimum 1.0 meter. As it affects trap performance.

- DO NOT use thermal blanket to wrap the entire steam trap during PWHT. welded unit should not furnace PWHT'd. (Heat generated by these methods destroy bimetal).
- Only localised Post Weld Heat Treatment of the weld is allowed.

Welding & Post Weld Heat Treatment Instructions :

(Reference : ASME SEC IX)



W - Widest width of weld

HAZ - Heat Affected zone

SB - Soak band

HB - Heated band

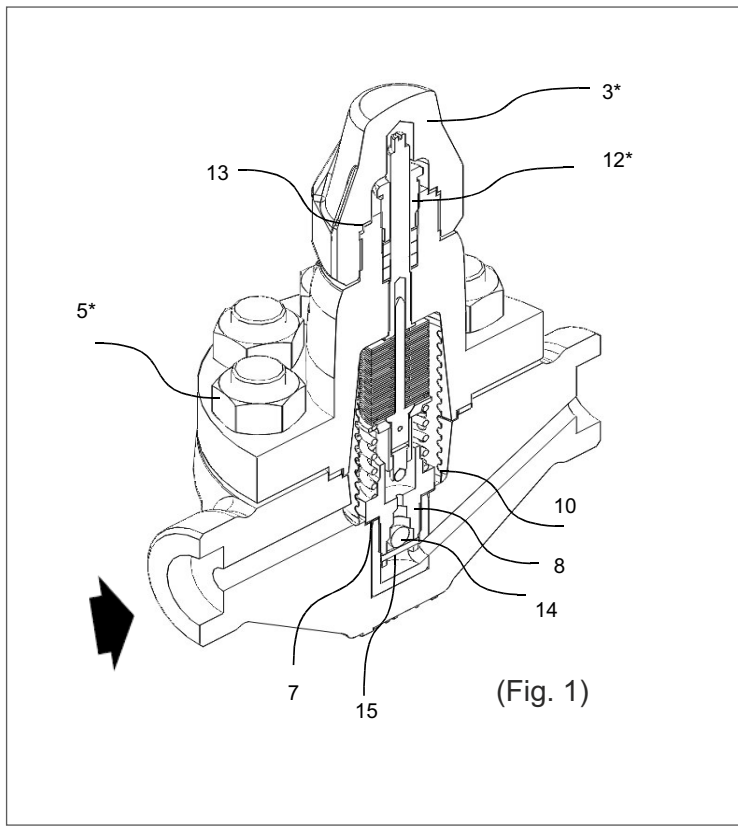
GCB - Gradient control band (Insulation Band)

Pipe Schedule	Pipe Material & Size	Soak Band (mm)	Heated Band (mm)	Gradient Control Band (Insulation Band)	Soaking Temp (°C)	Heating Rate	Cooling Rate	Soak rate
XXS	15-P91	W + T	SB + 4√r T	HB + 4√r T	730-775	100°C/Hr		1 Hr/Inch t
	20-P91				730-775			
	25-P91				730-775			
XXS	15-P22				675(min)			
	20-P22				675(min)			
	25-P22				675(min)			
160	15-P91				730-775			
	20-P91				730-775			
	25-P91				730-775			
160	15-P22				675(min)			
	20-P22				675(min)			
	25-P22				675(min)			
80	15-P22	675(min)						
	20-P22	675(min)						
	25-P22	675(min)						

M) - The steam trap is factory set at 20C below seam saturation temperature.

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.

2) For more details of welding & Post Weld Heat Treatment refer - ASME SEC IX .



Recommended Tightning Torque :

Item part			N m
8	Valve Seat	36 A/F	120
12	Gland nut	21 A/F	25
5	Cover nut	FMBM58/78	24 A/F 120
		FMBM510/710	24 A/F 160
		FMBM715-F22/F91 & FMBM721-F22/F91	30A/F 200
3	Cover Cap Nut	FMBM58/78 & FMBM510/710	41A/F 80
		FMBM715-F22/F91 & FMBM721-F22/F91	55A/F 140



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