FORBES MARSHALL

Installation and Maintenance Manual
Compact Module Two Orifice Float Trap

CMTOFT

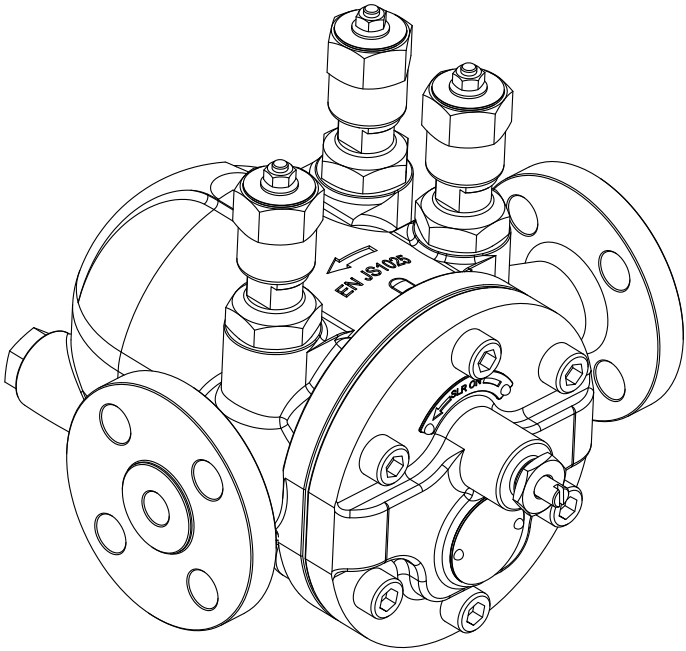


Table of Contents

PLEASE NOTE - Throughout this manual this cautionary symbol is used to describe a potential damage or injury that might occur if the safety considerations are overlooked. This symbol denotes CAUTION, WARNING or DANGER.

1. Preface:

This manual is intended for anyone using, commissioning, servicing, or disposing the below mentioned products safely and efficiently.

Compact Module Two Orifice Float Trap [CMTOFT] Size: DN 15 (½") and DN 20 (¾").

PLEASE NOTE:

Throughout this manual the following cautionary symbol is used to describe a potential damage or injury that might occur if the safety considerations are overlooked.

2. Important Safety Notes:

Read this section carefully before installing/operating/maintaining the product. The precautions listed in this manual are provided for personnel and equipment safety. Furthermore, Forbes Marshall accepts no responsibility for accidents or damage occurring as a result of failure to observe these precautions. Note that the product is designed to perform for non-contaminated fluids only. A contamination in the form of chemical, foreign particle etc. can lead to problem with product performance and life of the product.

If these products in compliance with the operating instructions are, properly installed, commissioned, maintained and installed by qualified personnel (refer Section 2.7) the safety operations of these products can be guaranteed. General instructions for proper use of tools and safety of equipment's, pipeline and plant construction must also be complied with.

2.1 Intended use:

Check if the product is suitable for intended use/ application by referring to the installation and maintenance instructions, name plates and technical information sheets.

i) The product is suitable for use as defined in the technical information sheet. In case the need arises to use the product on any other fluid please contact Forbes Marshall for assistance.

ii) Check for the suitability in conformance to the limiting conditions specified in technical information sheet of the product.

iii) The correct installation and direction of fluid flow has to be determined.

iv) Forbes Marshall products are not intended to resist external stresses, hence necessary precautions to be taken to minimize the same.

2.2 Accessibility and Lighting:

Safe accessibility and working conditions are to be ensured prior to working on the product.

2.3 Hazardous environment and media:

The product has to be protected from hazardous environment and check to ensure that no hazardous liquids or gases pass through the product.

2.4 Depressurizing of systems and normalizing of temperature:

Ensure isolation and safety venting of any pressure to the atmospheric pressure. Even if the pressure gauge indicates zero, do not make an assumption that the system has been depressurized. To avoid danger of burns allow temperature to normalize after isolation.

2.5 Tools and consumables:

Ensure you have appropriate tools and / or consumables available before starting the work. Use of original Forbes Marshall replacement parts is recommended.

2.6 Protective clothing:

Consider for the requirement of any protective clothing for you/ or others in the vicinity for protection against hazards of temperature (high or low), chemicals, radiation, dangers to eyes and face, noise and falling objects

2.7 Permits to work:

All work to be carried out under supervision of a competent person. Training should be imparted to operating personnel on correct usage of product as per Installation and Maintenance instruction. “Permit to work” to be complied with (wherever applicable), in case of absence of this system a responsible person should have complete information and knowledge on what work is going on and where required, arrange to have an assistant with his primary goal and responsibility being safety. “Warning Notices” should be posted wherever necessary

2.8 Handling:

There is a risk of injury if heavy products are handled manually. Analyze the risk and use appropriate handling method by taking into consideration the task, individual, the working environment and the load.

2.9 Freezing:

Provision should be made to protect systems which are not self-draining, against frost damage (in environment where they may be exposed to temperatures below freezing point) to be made.

2.10 Product Disposal:

It is necessary to dispose this product only in accordance with local regulations at the authorized, qualified collecting point specified for equipment’s and its parts—Please refer the part details mentioned in the material table of this manual.
Please follow all waste disposal guidelines (Management & Handling) as published by local governing authorities in India & abroad

2.11 Returning products:

Customers and Stockist are reminded that, when returning products to Forbes Marshall 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.

3. Brief Product Information:

3.1 Description:

The Forbes Marshall Compact Module Two Orifice Float Trap, CMTOFT , has SG iron cover and base with stainless steel internals and integral automatic air venting facility .

The CMTOFT is provided with two orifices operated by single float. For normal running condensate load single orifice opens and with increase in condensate load opens the second orifice. This modulating mechanism makes this trap to cope up efficiently the condensate load at startup, normal running and peak load conditions. CMTOFT is provided with other inbuilt features - upstream and downstream isolation valves, bypass valve, non-return valve, automatic air venting, steam lock release and strainer. Trap monitoring sensor port is provided to monitor the trap with Forbes Marshall steam trap monitoring system.

CMTOFT is supplied with horizontal flanged connections and can be maintained without disturbing the pipework.

3.2 Sizes and Pipe Connections:

DN15 and DN20 Flanged ASA300.

3.3 Certification:

This product is available with manufacturers typical test report.

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

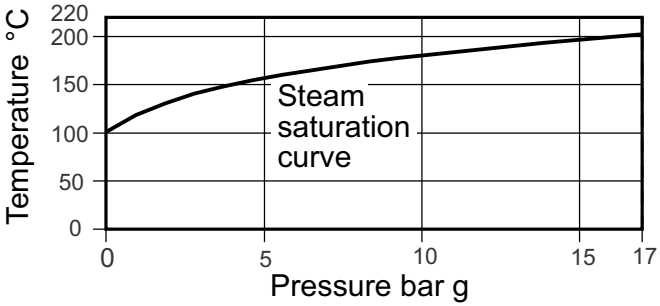
3.4 Available Options:

Optional steam lock release (SLR) feature is provided in addition to the standard air vent. For further information please consult Forbes Marshall.

3.5 Limiting Conditions:

PMA - Maximum allowable pressure			17 bar g @ 220°C
TMA - Maximum allowable temperature			220°C
Minimum allowable temperature			-10°C
PMO - Maximum operating pressure			15 bar g
TMO - Maximum operating temperature			220°C
Minimum operating temperature			0°C
△PMX	Maximum differential pressure	CMTOFT	4.5 bar g
		CMTOFT	10 bar g
		CMTOFT	15 bar g
Maximum cold hydraulic test pressure 26 bar g			

3.6 Operating Range :



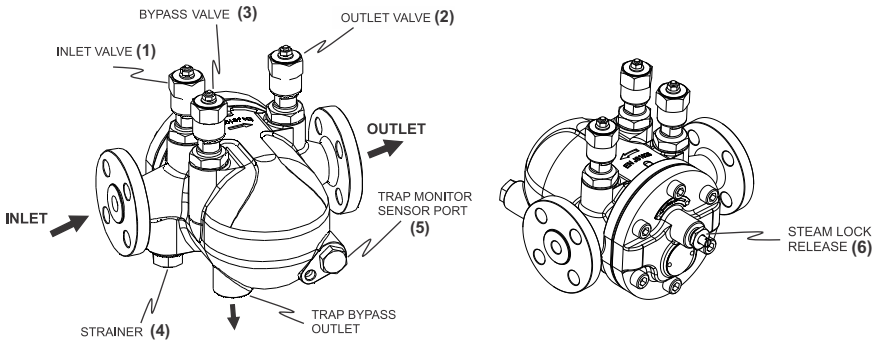


Figure 1: Compact Module Two Orifice Float Trap [CMTOFT]

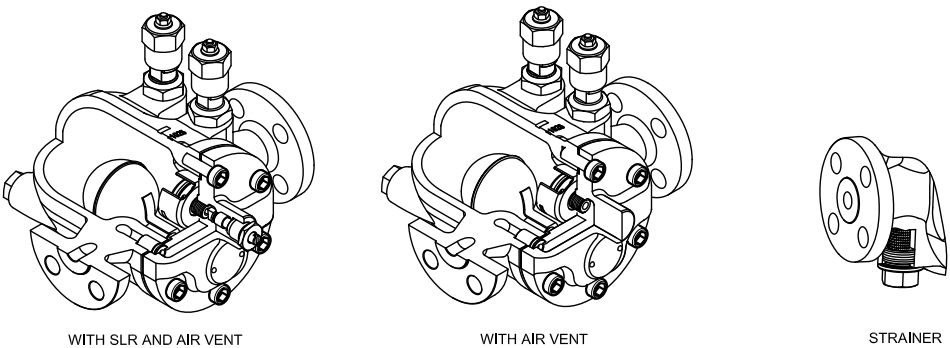


Figure 2: Available options in Compact Module Two Orifice Float Trap [CMTOFT]

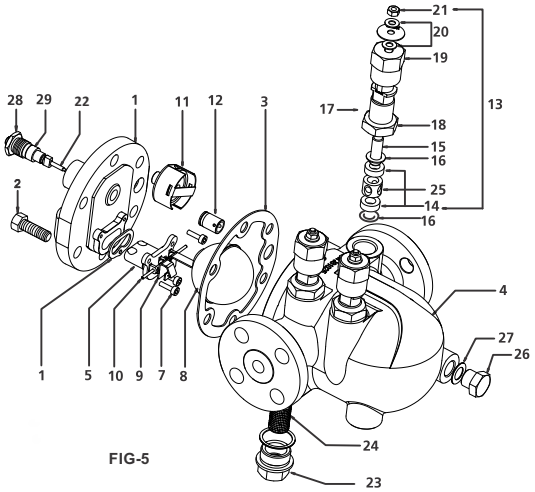


FIG-5

Figure 3: Exploded View of Compact Module Two Orifice Float Trap [CMTOFT]

Material:

No.	Part	Material	Standard
1	Base	SG iron	ENJS 1024
2	Cover bolts	Carbon steel chromium plated	A193 BS
3	Cover gasket	Reinforced exfoliated graphite	-
4	Cover	SG iron	ENJS 1025
5	Seat	Stainless steel CA40	A743
6	Seat gasket	Reinforced exfoliated graphite	-
7	Seat screws	Stainless steel SS304	A276
8	Float and lever assembly	Stainless steel SS304	A240
9	Secondary lever assembly	Stainless steel SS304	A240
10	Pivot pin	Stainless steel SS304	A276
11	Air vent assembly	Stainless steel SS304	-
12	NRV assembly	Stainless steel type 431	ASTM A276
13	Valve assembly	Stainless steel	ASTM A105
14	Valve sealing ring	Graphite	-
15	Valve Stem-piston	Stainless steel type 316	A276
16	Valve plain washer	Stainless steel SS304	ASTM A240
17	Bonnet	Stainless steel SS420	ASTM A276
18	Lock Nut M22x1.5	Stainless steel SS304	ASTM A276
19	Hex Knob	MS IS2062	-
20	M6 washer	Stainless steel SS304	ASTM A240
21	M6 LH hex nut	Stainless steel SS304	ASTM A240
22	M6 LH hex	Stainless steel SS304	ASTM A240
23	Strainer cap	Stainless steel type ANC2	BS 3146 P ART2
24	Strainer Screen	Stainless steel SS304	ASTM A240
25	3/8" BSP plug	Stainless steel	ASTM A105
26	Plug gasket	Stainless steel Ss304	-
27	SLR gland nut	Stainless steel type 304	ASTM A276
28	SLR glands	Graphite	-
29	SLR stem	Stainless steel type 316	ASTM A240
30	Spacer	Stainless steel	-

3.7. Product Dimension and Drawing:

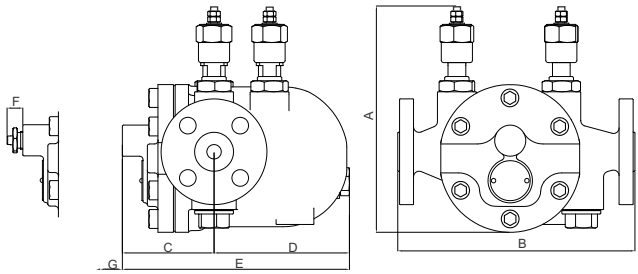
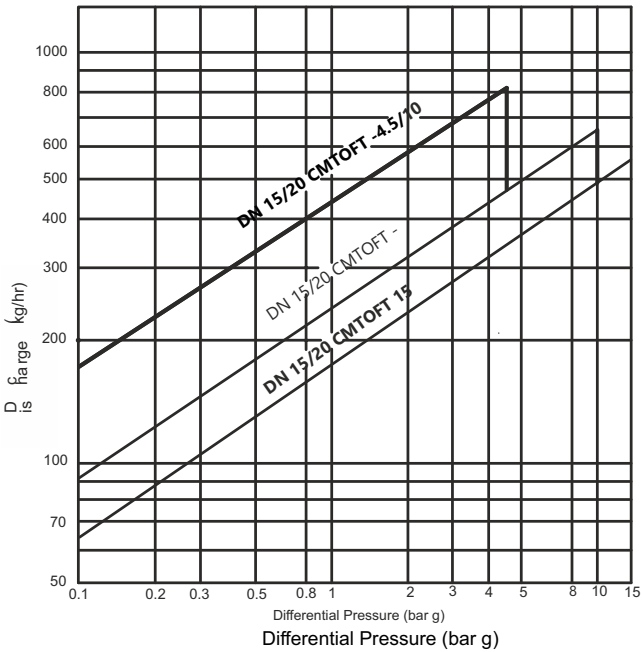


Figure 4: Dimensional drawing of Compact Module Two Orifice Float Trap [CMTOFT]

Dimensions and weights (approximate) in mm and kg:

Size	A	B	C	D	E	F	G	Weight
DN15	205	218.5	83	122	210	18	150	10
DN20	205	221.5	83	122	210	18	150	10.7

3.8. Capacity Chart:



Differential Pressure (bar g)

Capacities shown are based on condensate at saturation temperature. When discharging sub-cooled condensate the air vent provides extra capacities. Under start-up conditions when the condensate is cold the internal thermostatic air vent will be open and provides additional capacity to the main valve. On 4.5 bar g units this will provide a minimum of 25% increased capacity above the hot condensate figures shown. On 10 and 15 bar g units this will be minimum increase of 40% on the published capacity.

4. Product Working Principle:

Compact Module Two Orifice Float Trap [CMTOFT] works on buoyancy principle. The float and lever assembly opens and closes two orifices based on condensate load.

4.1. Operation of Compact Module Two Orifice Float Trap [CMTOFT]: (Refer fig. 2 & 3)

1. Compact Module Two Orifice Float Trap [CMTOFT] is a continuous discharge trap provided with two orifices operated with single float, removing condensate the instant it forms. CMTOFT is suitable for its high start-up load handling capability, clean tight shut-off and resistance to water hammer and vibration.
2. On start-up, the float is resting in its lowest position and the main valve seat (5) is closed. The air is removed through the thermostatic air vent preventing the system from air binding.
3. Hot condensate will close the air vent seat valve tightly and as soon as condensate enters the cover (1) of the trap, the float rises and the lever mechanism (8 and 9) attached to it opens both orifice of the main valve seat (5) keeping the system drained of condensate at all the times. When steam arrives, the float drops and closes the main valve seat (5).

5. Installation Guidelines:

Note: Before implementing any installations observe the 'Important Safety notes" in section 2. Referring to the Installation and Maintenance Instructions, name-plate and Technical Information Sheet, check that the product is suitable for the intended installation.

1. Determine the correct installation location/position and the direction of fluid flow
2. Remove protective covers from all connections where appropriate, before installation.
3. 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).
4. The trap must be fitted with the float arm in a horizontal plane so that float arm rises and falls vertically therefore the arrow on the name-plate point downwards as shown in figure 5.

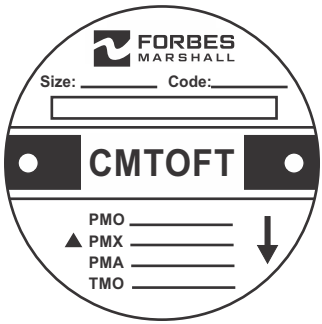


Figure 5: Compact Module Two Orifice Float Trap [CMTOFT]

5. The arrow on the casting should be in the direction of the flow.

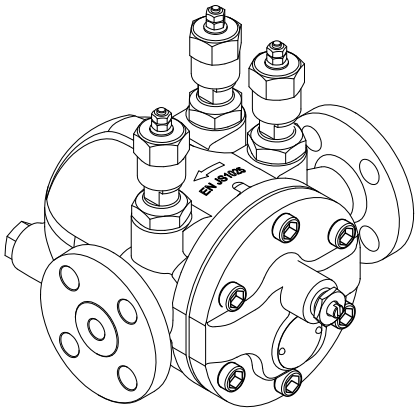


Figure 6: Cover casting with the arrow

6. Check for normal discharge pattern and leaks if any.
7. Typical installation of Compact Module Two Orifice Float Trap [CMTOFT] for trapping on steam utilizing equipment.

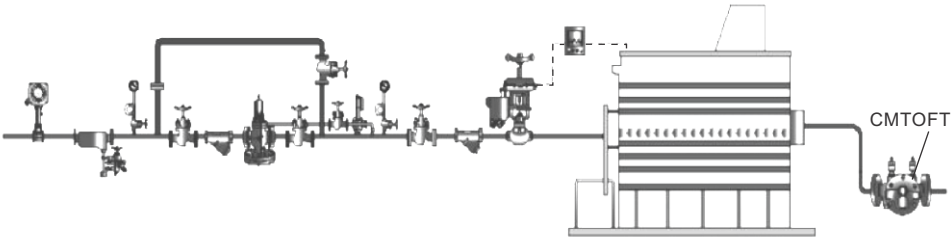


Figure 7: Installation of Compact Module Two Orifice [CMTOFT]

6. Start-up and Commissioning:

6.1. Flushing of lines: [Refer figure 1]

As part of pre-installation all fluid handling equipment particularly piping should be thoroughly cleaned of scale and the internal debris which accumulates during construction. This is accomplished by blowing or flushing with air, steam, water and other suitable medium.

Follow this step to carry out flushing of lines.

1. Close the integral inlet valve (1) and outlet valve (2) respectivelyopen the integral bypass valve (3).
2. Drain the condensate for 10-15 minutes or until clear condensate starts coming out, whichever is earlier.

   Note: Integral bypass valve (3) should be used to remove muck or dirt and not for welding fluxes and metal burrs. For a detailed procedure on flushing of lines please visit Forbes Marshall website.

6.2. Commissioning: [Refer figure 1]

After installation or maintenance ensure that the system is fully functioning by confirming fluid is passing through it.

1. After flushing of lines is complete, ensure the integral bypass valve (3) is closed and integral inlet valve (2) should be opened respectively
2. Check for leaks and attend if any.

6.3. Setting of steam lock release (SLR): [Refer figure 8]

Figure 8: SLR setting

1. Loosen the gland nut **(1)** by one thread. SLR unit should be screwed in clockwise direction to close and anticlockwise direction to open.
2. Rotate the gland nut **(1)** in anti-clockwise direction. This moves the stem towards thermopod. Once the stem touches the thermopod ball, rotate it further by 1/4th of a turn.

Note: The SLR unit should only be used to prevent 'steam locking' and therefore is designed to pass a small amount of steam, it is not recommended that the SLR be left in the fully open condition as this may lead to premature trap failure and more frequent maintenance schedules.

7. Maintenance Guidelines:

Note: Before undertaking any maintenance of the product it must be isolated from both supply line and return line and ensure pressure is normalized to atmosphere. The product should then be allowed to cool. When re-assembling ensure that all joint faces are clean. Once completed open the upstream isolation valve slowly and check for leaks.

7.1. Routine and Preventive Maintenance:

Please refer to the maintenance schedule mentioned in the table below to undertake routine maintenance of the trap.

Sr. No.	PARAMETERS TO BE CHECKED	FREQUENCY FOR CHECKING VARIOUS PARAMETERS						
	Steam traps	Immediately	Daily	Weekly	Monthly	Quarterly	Half yearly	Annually
1	Check CMTOFT			Y				
2	Repair / Replace steam traps - when testing shows leaks	Y						
3	Clean strainers of CMTOFT				Y			
4	Clean internals of CMTOFT					Y		
5	Visual inspection for leakages		Y					
6	Arresting any other leaks	Y						

7.2. Tool Kit:

To carry out maintenance of the Compact module two orifice float trap refer the tools mentioned in the table below.

Size	Component		Tool used & Size
DN15/20	Gland nut		Open spanner 21 mm (A/F)
	Air Vent Assembly		Open spanner 17mm (A/F)
	Main valve seat		12 inch Screw driver
	Drain plug		Open spanner 24 mm (A/F)
	Upstream and downstream isolation valve, bypass valve	Hexagonal knob	Open spanner 29 mm (A/F)
		Bonnet	19 mm open spanner
		M22 Bonnet lock nut	30 mm open spanner
		Sealing Stack	Insertor Tool (Available as Spares)
		Sealing Stack	Extractor Tool (Available as Spares)
	Strainer cap		26mm box spanner
	Flange assembly		19mm open spanner
	M4 allen bolt for float seat		3mm allen key
	Lock nut		30mm open spanner
	Body and cover assembly (M10 bolt)		8mm in key

7.3. Recommended tightening torque:

Item No.	Part	 or mm 		Torque Range
2	Cover Bolt		M10 X 25L	47 – 50 Nm
7	Seat Screws		M4 X 12L	6 – 7 Nm
21 & 22	LH Hex Nut and LH Hex		M6	2 - 3Nm
11	Air Vent Assembly	17 A/F	M12	50 - 55 Nm
26	3/8” BSP	24 A/F		50 – 55Nm
18	Lock Nut	30 A/F		100 -110 Nm
23	Strainer Cap	25 A/F		120 – 125Nm

Table 1 Recommended Tightening Torques

7.4. Maintaining main valve assembly: [Refer Figure 3]

Note: The cover gasket contains a thin stainless steel support ring which may cause physical injury if not handled and disposed of carefully.

1. Undo the cover bolts (2) and lift off the base (1).
2. Remove the complete float assembly (5, 7, 9 and 10) by undoing the three seat screws (7).
3. Remove the main valve seat (5) and replace with a new one supplied with new seat gasket (6).
4. Fit a complete new float assembly by tightening the assembly set screws (7). Apply Anti-seize compound on screw (7) during assembly
5. Refit the base (1) using a new cover gasket (3).
6. Apply Anti-seize compound on cover bolts (2).

7.5. Maintaining air vent assembly: [Refer Figure 3 and 9]

1. Remove the spring clip, element and spacer plate (11).Unscrew the seat.
2. Fit a new seat and frame. Apply Anabond or similar high temperature sealant on seat thread during assembly.
3. Assemble the spacer plate, fit element and clips.
4. Align the complete air vent (11) horizontally so that the frame clears the cover.
5. Refit the base (1) using a new gasket (3).
6. Apply Anti-seize compound on cover bolts (2).

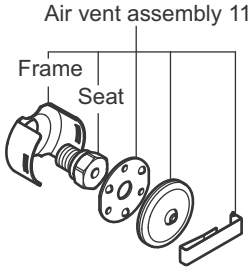


Figure 9: Air vent assembly

7.6. Maintaining and fitting isolation valves:

Note: The graphite sealing stacks (14) contain thin stainless steel support rings which may cause physical injury if not handled and disposed of carefully.

7.6.1. Dismantling the isolation valve: [Refer figure 3]

1. Using the Hex Knob (19), fully open the valve.
2. Make loose bonnet lock nut (18).
3. Carefully turn the bonnet (17) in the clockwise direction to come out from cover(4)
4. Take out bonnet & valve stem piston (15) assembly slowly and release piston/bonnet assembly from the cover.
5. Examine valve stem-piston (15) for signs of scouring, corrosion etc. which could affect perfect tightness of the valve.
6. Check other parts for wear/damage and replace if necessary

7.6.2. Repacking the isolation valve: [Refer figure 3 and 10]

1. With the valve dismantled, insert the valve internals with extractor tool through the sealing stack (14) and spacer (31).
2. Firmly tap to ensure that the tool bottoms out in the bore and with the quarter turn of the handle carefully remove the two sealing stack 14) and the spacer (31).
3. Thoroughly clean the sealing stack housing and all the internals.
4. Fit new lower sealing stack (14), spacer (31) and new upper sealing stack (14), using insertor tool. Use mallet to apply light strokes on insertor tool ensuring they fit perfectly.

   Note: The lower and upper stacks are the same.
5. Apply a thin layer of Anti-seize compound or graphite based grease to bonnet threads only (not to internals and piston).

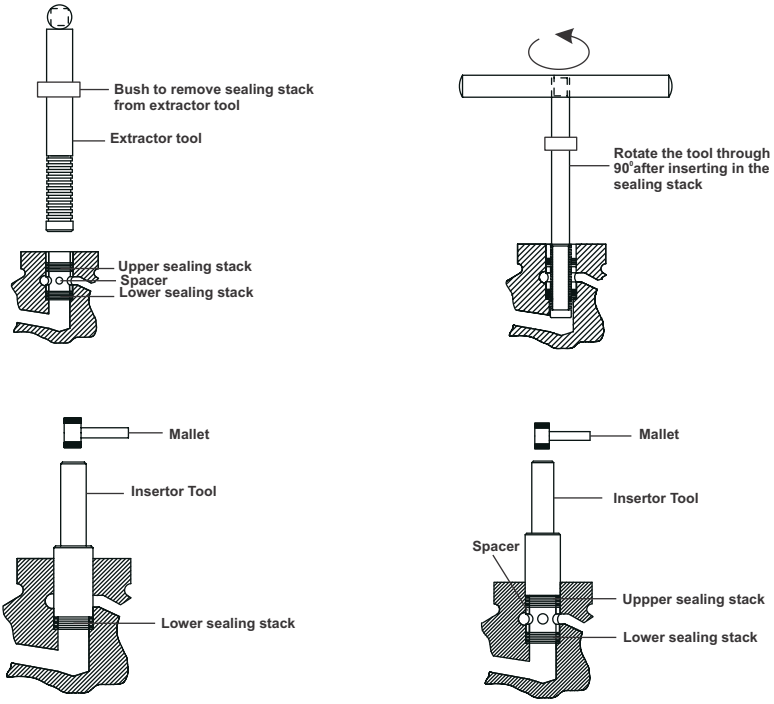


Figure 10: View showing Extractor tool and Insertor tool

7.6.3. Reassembling the isolation Valve: [Refer Figure 3]

1. Take the piston/bonnet sub-assembly and insert stem-piston (15) into the upper sealing stack and push it down until it is possible to engage bonnet (17) threads with cover (4) threads and screw into the cover (4)
2. Shut the valve fully ensuring that the bonnet (17) is driven down straight & gradually tighten the lock nuts (18) to the recommended torques (see Table 1).

7.7. Lubrication procedure of the isolation valves:

Clean the valve unit before lubrication. Lubricate the valve frequently with Molykote M30 oil or equivalent. Lubricate stem-piston, bonnet threading of (inlet, outlet and bypass) valves. Open and close the valves 2 – 3 times after lubrication.

7.8. Steam trap testing:

Following methods can be used to determine the operating condition of a trap and determine if its working properly.

1. Testing traps through visual inspection.
2. Testing traps using temperature gun / equipment..
3. Testing traps using sound / ultrasound.
4. Testing traps through online monitoring.

8. Troubleshooting:

If the expected performance is unachievable after installation of the Compact Module Two Orifice Float Trap, check the following points for appropriate corrective measures.

Failure Mode	Possible Cause	Remedy
No Condensate Discharge at all	Inlet Pipe or Strainer Screen is clogged with rust or scale	Flush inlet pipe and clean strainer screen. If screen rusted replace with new strainer screen.
	No condensate is discharged; the surface temperature of the trap is low.	Ensure Upstream and downstream isolation valve is fully open.
		Check the installation, fluid flow direction arrow on the cover casting and the name plate on the base casting arrow point downward.
		Check if the ball float is punctured, if punctured replace with new float assembly.
	Valve seat (Air vent assembly) is blocked.	Clean the valve seat and thermopod ball surface (valve head) then re-assemble the trap.
	Differential pressure is insufficient to discharge condensate	Check if the actual differential pressure (ΔP) is higher than the design ΔP, the steam float trap would have failed in closed position, as the float buoyancy will not be adequate to open the valve seat.
	No condensate is discharged, and the surface temperature of the trap is warm.	The trap is getting steam locked. Adjust the steam lock release (SLR) setting by first closing it fully then open it by 1/4th turn if present. Otherwise use bypass valve to release steam which increase steam loss. If there is no SLR then replace with TV + SLR combination CMTOFT.
		Check the installation and for the blockage in the non – return valve (NRV).

Failure Mode	Possible Cause	Remedy
Steam Leakage	Live steam continuously leaking through the outlet.	Check valve and seat assembly for dirt deposition, then clean and lap the valve seating area. *Seat stamping to be done by lightly stamp an S.S. ball of similar size on the valve seating.
		Check valve and seat assembly for worn out, replace with new valve and seat assembly.
	Valve seat and thermopod ball (valve head) of air vent assembly does not shut-off tightly.	Clean the valve seat and thermopod ball (valve head) surface after that **seat stamping to be done by lightly stamp thermopod ball (valve head) on the valve seat of the air vent assembly.
	Valve seat (Air vent assembly) is wire drawing	Replace with new Air vent assembly.
	Steam leaking from the trap body.	Tighten the cover nuts and bolts to the proper torque (50 Nm).
		Check cover and seat gasket for any possible damage and leakage, replace with new cover and seat gasket.
		Check scouring, corrosion have occur on stem piston of upstream & downstream isolation valves and Bypass valve. If damaged replace with new stem piston and lubricate stem piston with Molykote M30 oil.
		Check sealing stack of upstream & downstream isolation valves and bypass valve are damage or worn, replace with new sealing stack and Hex nut should be tight with recommended torque. (refer table 1)
		Check for leakage from the trap monitoring sensor port.
		Check if the by-pass valve is fully closed.

Failure Mode	Possible Cause	Remedy
Not discharging enough condensate	Reduced condensate carrying capacity of the trap due back pressure variation in the return line.	Check for the leaking steam float trap which increase the back pressure on the other working steam traps connected to the same return line.
		Check for other traps, by-pass valve leaking or kept open if connected in closed loop, which increase back pressure on the working traps, connected to the same return line.
	Differential pressure is insufficient to discharge condensate.	Check parameters and trap sizing. If the actual differential pressure (ΔP) is lower than the design ΔP, the steam float trap would discharge lower condensate.
	Condensate floods due to partial blockage/deposition in the flow path.	Check the inlet strainer is partially blocked.
		Check main valve seat orifice for blockage. If blocked, clean and lap the valve seat.
		Check thermostatic valve seat orifice for blockage. If blocked, clean and lap the valve seat.

***Seat stamping for main valve seat procedure:**

Placevalve seat on the fixture with a silimar size S.S. ball of orifice on the valve seat and tap slightly on the center with a mallet. Due to stamping a seating surface is formed on the valve seat orifice.

****Seat stamping for air vent assembly procedure:**

Place valve seat on the fixture with thermopod on the valve seat (thermopod ball side resting on the valve seat orifice) and tap slightly on the center with a mallet. Due to stamping a seating surface is formed on the valve seat orifice.

Note: Never attempt to modify the product. When replacing old parts with new part, use the spare parts listed in Section 9.

9. Available Spares: [Refer figure 3]

Always order spares part by using the description & spare code given below & stating size.

MODEL	SPARE TYPE	SPARE CONSIST OF	SPARE SPECIFICATION	SPARE CODE
CMTOFT	MAIN VALVE ASSEMBY KIT	MAIN VALVE SEAT,GASKET AND FLOAT ASSEMBLY (PACK OF 1)	15/20NB	SPARE-1520CMTOFT-4.5MVKIT
		MAIN VALVE SEAT,GASKET AND FLOAT ASSEMBLY (PACK OF 1)	15/20NB	SPARE-1520CMTOFT-10MVKIT
		MAIN VALVE SEAT,GASKET AND FLOAT ASSEMBLY (PACK OF 1)	15/20NB	SPARE-1520CMTOFT-15MVKIT
	ISOLATION VALVES INTERNALS KIT	VALVE STEM,LOCK NUT,WASHER,SPACER,SEALING STACK(PACK OF 3 NOS. EACH)	15/20NB	SPARE-1520CMTOFT-INTKIT
	VALVE SEALING STACK	SEALING STACK(PACK OF 15 NOS.)	15/20NB	SPARE-1520CMTOFT-SRKIT
	STRAINER SCREEN KIT	STRAINER SCREEN (PACK OF 5 NOS.)	15/20NB	SPARE-1520CMTOFT-SCRKIT
	GASKET KIT	COVER GASKET & SEAT GASKET (PACK OF 5 NOS. EACH)	15/20NB	SPARE-1520CMTOFT-GKIT
	FLOAT KIT	BALL FLOAT & COVER/BASE GASKET (PACK OF 1 EACH)	15/20NB	SPARE-1520CMTOFT-4.5FKIT
			15/20NB	SPARE-1520CMTOFT-10FKIT
			15/20NB	SPARE-1520CMTOFT-15FKIT
	NRV O-RING KIT	NRV O-RINGS PACK OF 10 NO'S	15/20NB	SPARE-1520CMTOFT-OKIT

How to Order:

Example: DN15 Compact Module Two Orifice Float Trap, Flanged ASA300 CMTOFT-4.5 bar g differential pressure with steam lock release.

How to Order Spares:

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

Example : 1 no. Main valve assembly for DN15 Compact Module Two Orifice Float Trap CMTOFT-4.5 .

10. Warranty Period:

As per ordering information and agreements in the contract.

FORBES MARSHALL

www.forbesmarshall.com

Forbes Marshall Arca
Codel International
Krohne Marshall
Forbes Vyncke
Forbes Marshall Steam Systems

A: **Forbes Marshall Pvt. Ltd.**
Opp. 106th Milestone, CTS 2220,
Mumbai-Pune Road, Kasarwadi,
Pune MH 411034 INDIA

P: +91(0)20-68138555

F: +91(0)20-68138402

E: ccmidc@forbesmarshall.com

Forbes Marshall International Pte. Ltd.
16A, Tuas Avenue 1,
#05-21, JTC Space @Tuas
Singapore - 639533

P: +65 6219 3890

CIN No: U28996PN1985PTC037806