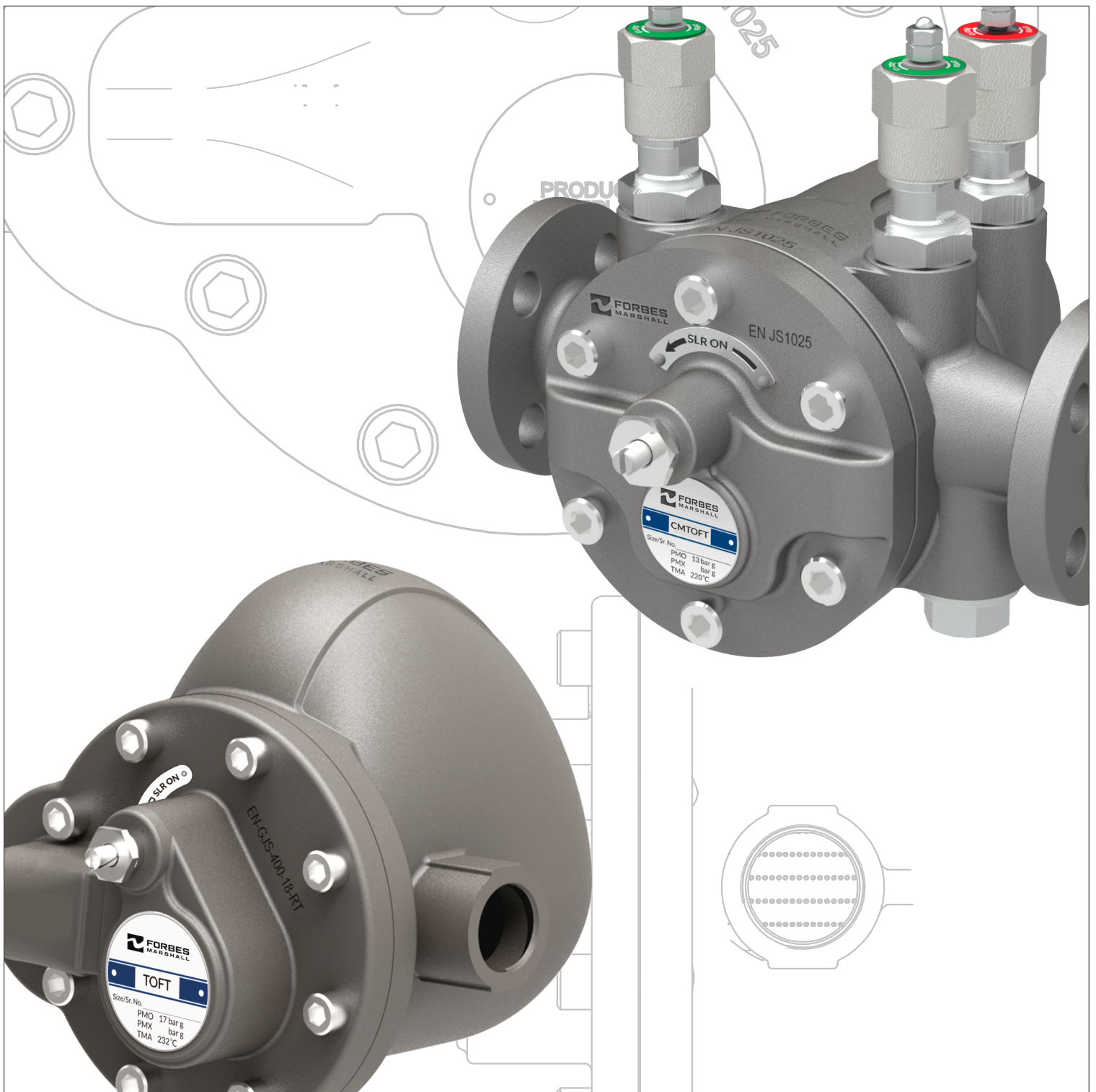


Start-up Condensate Evacuation Made Easy

Two Orifice Float Trap



Two Orifice Float Trap (Patented)

In most processes startup loads are typically much higher than the running load.

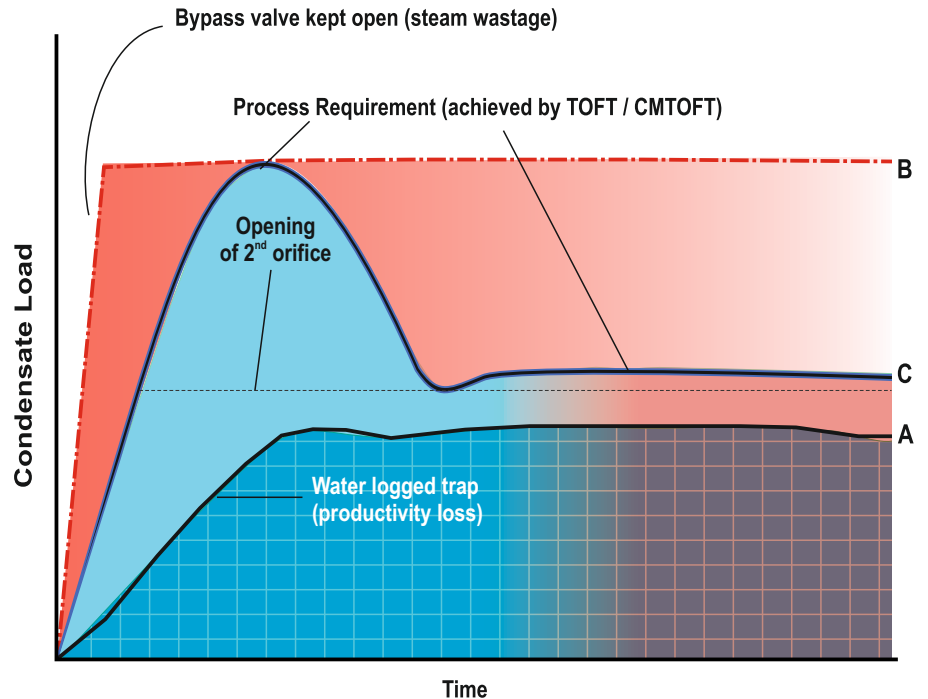
Conventional steam traps are unable to handle startup load effectively, resulting in condensate accumulation in the process equipment. As a result, process heating is hampered and desired process temperature is not achieved. To address this issue, operators have to resort to opening the steam trap bypass valve, resulting in a steam loss of 3-4%, drop in condensate recovery factor, increased fuel and water consumption, and higher CO₂ emissions.

To ensure that the process KPIs of productivity, product quality, energy efficiency, safety and reliability are met, besides supplying steam at the right pressure and temperature, it is essential that condensate is efficiently evacuated from the equipment.

For over 75 years Forbes Marshall has been providing innovative solutions to help businesses improve their process and energy efficiency and be more environmentally responsible. We work with industries globally to improve process and energy efficiency.

The Forbes Marshall Two Orifice Float trap (patented) is designed to handle high discharge capacity at startup and peak condensate loads.

Varying Condensate Load Pattern



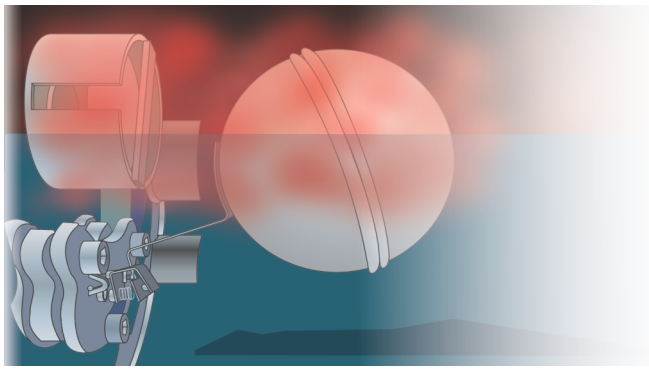
A common issue that many process plants face across process equipment is the inability to attain process temperatures or desired temperature gradients. This can lead to product quality and productivity issues.

Conventional steam traps are not able to evacuate heavy startup condensate loads efficiently leading to condensate accumulation in the equipment steam space.

As can be seen in the illustration above,

- A:** If the process trap is not selected and sized properly, the heat exchanger gets waterlogged during start up, leading to lower heat transfer to the process
- B:** When bypass valve is opened to overcome this problem, it removes the condensate but at the same time also leads to steam loss
- C:** With the unique two-orifice design of the Forbes Marshall Two Orifice Float Trap, both the orifices open to discharge the higher condensate load during start up and when the condensate load is reduced during running condition, only one orifice remains open to cater to the load. This feature ensures that process temperatures are achieved within the required time frame, eliminating the need to open the bypass valve. As a result production goals can be met without compromising on energy efficiency.

Principle of Operation



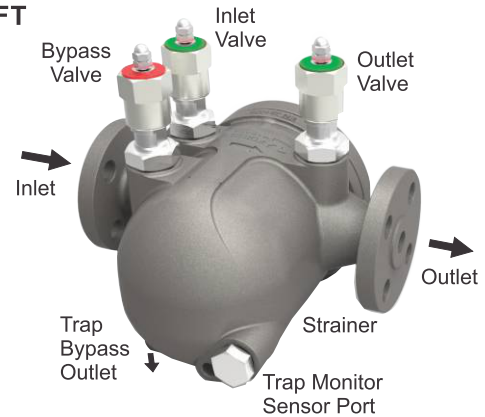
When the condensate load is higher, additional lift of the float causes the second orifice to open, thereby enabling the TOFT / CMTTOFT to handle both start up and running conditions effectively.

Variants

Two Orifice Float Trap TOFT



Compact Module - Two Orifice Float Trap CMTTOFT



Features and Benefits

Two Orifice Mechanism (patented)



Improved batch times, productivity and product quality



No bypass opening at start-up
Steam saving of 3 - 4 %

Compact construction with inbuilt piston valve*, non return valve* and strainer



Zero in-line loss and no loss from gland

Provision to install steam trap monitoring system



Real-time indication of steam trap health

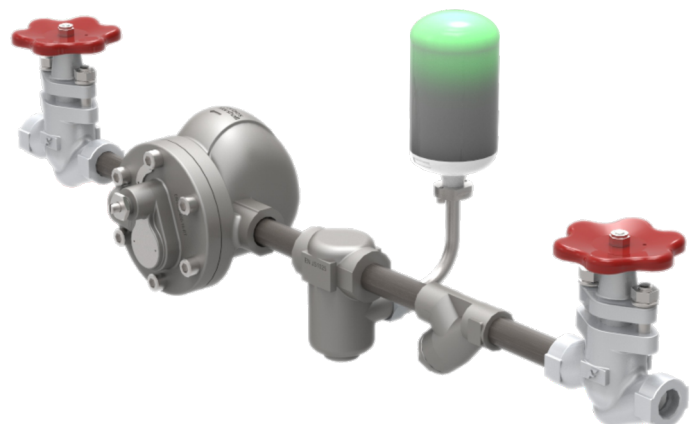
Improved uptime

*Available with CMTTOFT model only

Enhanced Trap Uptime with Forbes Marshall Trap Monitoring System (FMTMS)

Process trap uptime is an important KPI across all process industries that needs to be improved, and performance sustained.






The Forbes Marshall Trap Monitoring System (FMTMS) is an innovative solution to automatically detect and indicate the health of steam traps on a real time basis. It detects failed open steam traps that leak live steam, as well as failed closed traps that result in waterlogging. It also correctly determines when the process is not in operation. The diagnosed status is indicated through a multi colour LED. These diagnostics help plant personnel take timely corrective action to ensure that trap uptime is maintained at >95%.



Our Services

Our energy conservation services include comprehensive plant audits that ensure optimised reductions by enhancing steam generation, steam distribution, steam utilisation and condensate recovery.

At the equipment level our digital services focus on sustaining uptime at >95% levels. Equipment specific data is analysed to remotely monitor health and diagnose issues, enabling proactive maintenance and reducing downtime.

<p>Forbes Marshall Surveys</p>  <p>Plant surveys to map opportunities</p>	<p>Forbes Marshall Energy Audits</p>  <p>Take your plant to benchmark performance</p>	<p>Forbes Marshall Design Consultancy</p>  <p>Design for benchmark performance</p>	<p>Forbes Marshall Care</p>  <p>Sustained performance of your steam assets</p>	<p>Forbes Marshall Digital</p>  <p>Beyond Connectivity</p>
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Customer Speak

The Forbes Marshall Two Orifice Float Trap has enabled us to achieve a faster start-up and reduce the ramp up time in our dome presses. We have now decided to standardise these traps for all types of presses.

India's eminent tyre manufacturer

The Two Orifice Float Traps installed on our jet dyeing machine for the last two years are functioning satisfactorily. The traps have helped us to achieve the desired temperature gradient during the heating cycle in the machine.

Leading textile dyeing mill in Western India

After replacing the existing traps with Forbes Marshall Two Orifice Float Trap on our Cooker and De-solventising Toaster (DT), we were able to achieve ~6-8% reduction in Specific Steam Consumption (SSC).

Renowned solvent extraction plant in North India

The batch time of 3 Nos 2KL ghee (clarified butter) kettles is reduced by 20 minutes after replacing the existing Thermodynamic Steam Traps with Forbes Marshall Compact Module Thermodynamic Trap. This has also helped us reduce the steam consumption by 4~5%.

Leading dairy plant in North India

The efficient functioning of Two Orifice Float Traps has aided us to reduce the start up time on cookers by 10 minutes.

Global snack food company

Forbes Marshall has audited and delivered a complete solution to our plywood unit, which eliminates bypass opening and water logging during start-up.

We have installed a Compact Two Orifice Float trap on the chambers, presses and dryers, which has helped reduce the steam load by 1.5 TPH (3300 lb/h).

Leading manufacturer of plywood in Central India

We installed the Forbes Marshall Compact Two Orifice Float trap on our tumble dryer and flatwork ironer. This has resulted in a significant reduction in steam consumption of upto 8 lt / hr and an improved trap uptime.

A luxury hotel in South East Asia

As part of its condensate and flash recovery solution, Forbes Marshall installed compact module two orifice float traps to replace our group trapping with thermodynamic steam traps. This has resulted in 25% savings in fuel consumption and a significant reduction in water consumption.

A corrugation and packaging plant in South Asia



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