## NON-ELECTRIC CONDENSATE PUMPS

**PMPT** 

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## Pressure Motive Pump & Trap Combination (Internal Trap)







#### TYPICAL APPLICATIONS

The Model **PMPT** low-profile pressure motive pump has an internal Steam Trap for applications requiring compact design due to spatial constraints. It is an excellent choice for drainage of various modulating process equipment.

**PMPT** 

**Ductile Iron** 

1", 11/2"

**125 PSIG** 

366°F

**Stainless Steel** 

**Stainless Steel** 

150 PSIG @ 450°F

The PMPT allows condensate discharge under all operating conditions of modulating equipment, including vacuum.

#### **FEATURES**

- Compact, low-profile design allows for drainage of equipment positioned close to the floor
- The PMPT provides provides condensate drainage for modulating equipment, preventing inefficient and dangerous system stall
- Equipped with our proven, <u>Patented "Snap-Assure"</u> mechanism which extends the useful life of the pump
- Internal mechanism can be removed from the top of the pump while pump remains piped in line
- Mechanism incorporates heat-treated stainless steel wear items
- Dual compression springs made from Inconel-X-750 for high-temperature, corrosive service

#### MATERIALS **Ductile Iron SA-395** Body Stainless Steel CF8 Cover Cover Gasket Garlock Cover Bolts Steel Inlet Valve Hardened Stainless Steel 40 Rc Vent Valve Hardened Stainless Steel 40 Rc **Ball Float** 300 Stainless Steel **Check Valves** Stainless Steel 316SS CF3 Springs Inconel-X-750 Other Internal Components Stainless Steel

#### **OPTIONS**

- Horizontal pipe reservoir (recommended)
- Motive and vent piping
- Motive piping components such as steam trap, strainer and regulator
- Packaged systems available with reservoir, base and skid
- ASME Code Stamp available upon request

#### Patent Pending



Model

Body

Cover

Sizes

**Check Valves** 

PMO Max. Operating Pressure

PMA Max. Allowable Pressure

TMO Max. Operating Temperature

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#### **Capacity Operating in Pump Mode**

<b>CAPACITIES</b> – Condensate (Ibs/hr) Using steam as a motive pressure			
Motive Pressure	Total Back Pressure	<b>Check Vc</b> 1″ x 1″	Ilve Size 1 <sup>1</sup> /2" x 1 <sup>1</sup> /2"
(PSIG)	(PSIG)	6" Head	6" Head
5	2	150	258
10	5	302	523
10	2	409	704
25	15	791	1380
25	10	1020	1780
25	5	1224	2110
50	40	839	1470
50	25	1012	1770
50	10	1318	2280
75	60	810	1420
75	40	1122	1970
75	15	1241	2150
100	80	490	859
100	60	969	1700
100	40	1209	2100
100	15	1318	2260
125	115	146	256
125	100	371	649
125	80	634	1110
125	60	961	1680
125	40	1054	1830
125	15	1046	1780

#### **Capacity Operating in Trap Mode**

**PMPT** 

TRAP CAPACITIES			
Differential Pressure (PSI)	Capacity - Condensate (Ibs/hr)		
5	3470		
10	4126		
20	4907		
30	5430		
40	5835		
50	6170		
65	6588		
75	6828		
100	7337		
125	7758		



# NON-ELECTRIC CONDENSATE PUMPS Sizing & Selection

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Pressure Motive Pumps

## Problem: Stalled Heat Exchanger

#### **DESCRIPTION:**

## STALL CONDITION WITH MODULATED STEAM FLOW

When a modulating valve is used to control product temperature in heat transfer equipment, the valve will open and close as necessary to meet the variable demand of the system to maintain the product at constant temperature. Therefore, when maximum heating is required, the supply valve will be fully open to satisfy the high steam demand requirement. At this point, pressure is also being supplied at its highest level, which may be sufficient to overcome total system back pressure.

As the product temperature is satisfied, demand decreases and the valve correspondingly begins to close, reducing pressure differential. If demand is satisfied, the valve modulates to its fully closed position. Inlet supply pressure will eventually fall below system back pressure, resulting in system stall. This leads to poor heat transfer and water hammer as condensate backs up in the heat transfer equipment.



Heat Exchanger System without PMP

## Solution: Use PMP & Steam Trap Combination

#### **DESCRIPTION:**

#### USE A PRESSURE MOTIVE PUMP AND STEAM TRAP COMBINATION

#### (Available in INTERNAL and EXTERNAL Steam Trap designs)

When the supply valve is fully open and inlet pressure exceeds back pressure, condensate forming in the heat transfer equipment will be pushed through the pump and steam trap into the condensate return line. As the supply valve begins to close and the back pressure exceeds inlet pressure, any condensate forming inside the heat transfer equipment will drain by gravity into the pump tank. The condensate will accumulate in the pump tank until the float mechanism reaches its trip point. The "tripping" of the mechanism opens the motive valve to allow high pressure steam into the tank to drive the condensate from the tank to the condensate return line.

**Note:** A larger steam trap than normally required to drain the heat transfer equipment must be used to handle the high instantaneous discharge rate of the pump. See additional information in this catalog for sizing guidelines.



Heat Exchanger System with PMP & Internal Trap (PMPT) (Closed Loop System)