



# PowerTrap®

## MODEL GT5C

### COMPACT MECHANICAL PUMP WITH STEAM TRAP FOR ELIMINATING STALL

#### Benefits

**Pump/trap with built-in steam trap, a linear inlet/outlet, low filling head, and simple piping installation for small heat exchangers, tank coils and steam/air heaters often operating under stall conditions.**

1. No cavitation or seal leakage.
2. Non-electric design with durable compression spring for reliable performance.
3. Extremely low 6" filling head.
4. Simplified piping (no exhaust pipe required), compact design and linear inlet/outlet reduce installation space, time and cost.
5. Easy, inline access to internal parts simplifies cleaning and reduces maintenance costs.
6. High-quality stainless steel internals and hardened working surfaces ensure reliability.
7. Float resists shock to 1600 psig.



U.S. Pat. 7,540,170

#### Specifications

| Model                                |                               | GT5C  |                      |
|--------------------------------------|-------------------------------|---|----------------------|
| Body Material                        |                               | Cast Iron                                   | Cast Stainless Steel |
| Connection                           | Pumped Medium Inlet & Outlet  | <b>Screwed</b>                              |                      |
|                                      | Motive Medium & Pump Exhaust  | <b>Screwed</b>                              |                      |
| Size (in)                            | Pumped Medium: Inlet × Outlet | <b>1 × 1</b>                                |                      |
|                                      | Motive Medium Inlet           | 1/2   |                      |
|                                      | Pump Exhaust Outlet           | 3/8   |                      |
| Maximum Operating Pressure (psig)    | PMO                           | 75  |                      |
| Maximum Operating Temperature (°F)   | TMO                           | 365   |                      |
| Maximum Allowable Pressure (psig)    | PMA                           | 150   |                      |
| Maximum Allowable Temperature (°F)   | TMA                           | 428   |                      |
| Motive Medium Pressure Range (psig)  |                               | 5 – 75                                      |                      |
| Maximum Allowable Back Pressure      |                               | 7 psi less than motive medium pressure used |                      |
| Volume of Each Discharge Cycle (gal) |                               | Approximately 3/8                           |                      |
| Motive Medium                        |                               | Saturated steam                             |                      |
| Pumped Medium                        |                               | Steam condensate                            |                      |

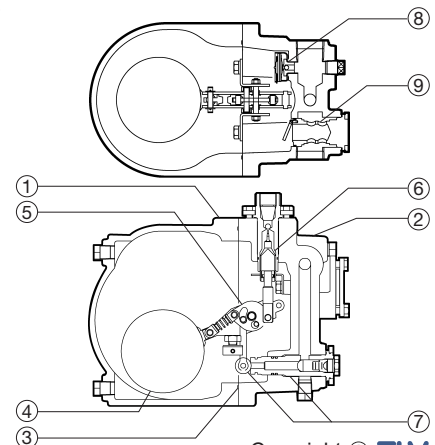


**CAUTION**

To avoid abnormal operation, accidents or serious injury, DO NOT use this product outside of the specification range. Local regulations may restrict the use of this product to below the conditions quoted.

| No. | Description                            | Material               | ASTM/AISI*   | JIS     |
|-----|--|------------------------|--------------|---------|
| ①   | Body                                   | Cast Iron              | A126 Cl.B    | FC250   |
|     |  | Cast Stainless Steel** | A351 Gr.CF8M | —       |
| ②   | Cover                                  | Cast Iron              | A126 Cl.B    | FC250   |
|     |  | Cast Stainless Steel** | A351 Gr.CF8M | —       |
| ③   | Cover Gasket                           | Fluorine Resin         | PTFE         | PTFE    |
| ④   | Float                                  | Stainless Steel        | AISI316L     | SUS316L |
| ⑤   | Snap-action Unit                       | Stainless Steel        | —            | —       |
| ⑥   | Intake-Exhaust Valve Unit              | Valve                  | AISI440C     | SUS440C |
|     |  | Valve Seat             | AISI440C     | SUS440C |
| ⑦   | Trap Unit (with Outlet Check Valve)*** | Stainless Steel        | AISI420F     | SUS420F |
| ⑧   | Air Vent Unit                          | Stainless Steel        | —            | —       |
| ⑨   | Inlet Check Valve                      | Stainless Steel        | AISI304      | SUS304  |

Connections in bold are standard



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\* Equivalent \*\* Cast Stainless Steel model uses stainless steel bolts and plugs

\*\*\* Trap Unit material differs depending on body material

## Pump Discharge Capacity

Filling Head: 6" from Grade

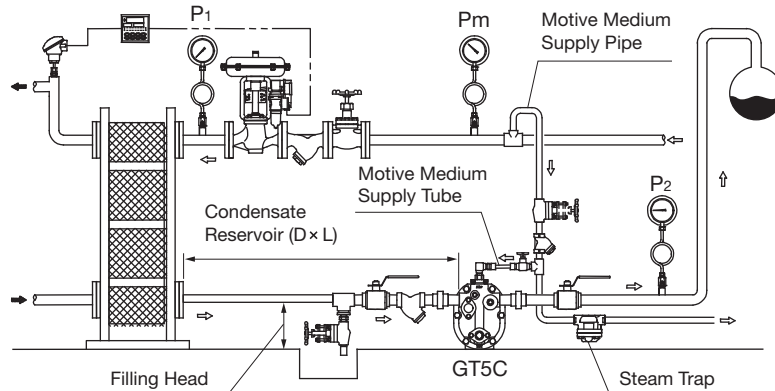
| Motive Medium Inlet Pressure (P <sub>m</sub> ) (psig) | Total Lift or Back Pressure (P <sub>2</sub> ) (psig) | (lb/h) |
|---|--|--------|
| 75  | 5  | 300    |
|   | 15   | 260    |
|   | 25   | 235    |
|   | 35   | 180    |
|   | 50   | 125    |
|   | 65   | 70     |
| 65  | 68   | 65     |
|   | 5  | 290    |
|   | 15   | 250    |
|   | 25   | 210    |
|   | 35   | 170    |
|   | 50   | 110    |
| 50  | 58   | 75     |
|   | 5  | 280    |
|   | 15   | 230    |
|   | 25   | 190    |
|   | 35   | 120    |
|   | 43   | 90     |
| 35  | 5  | 250    |
|   | 15   | 190    |
|   | 25   | 130    |
|   | 28   | 110    |
| 25  | 5  | 220    |
|   | 10   | 200    |
|   | 18   | 140    |
| 15  | 5  | 180    |
|   | 8  | 150    |

### • Correction Factors

An exhaust pipe/tube must be connected in order to make use of the increased pump capacity. If no exhaust pipe/tube is connected, use the standard pumping capacity without applying a correction factor.

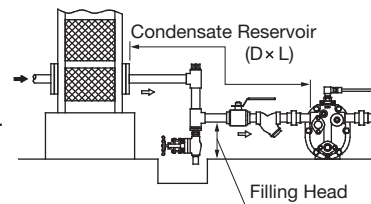
| Filling Head from Grade | Correction Factor |
|-------------------------|-------------------|
| 40"                     | 2.82              |
| 30"                     | 2.60              |
| 20"                     | 2.33              |
| 16"                     | 2.13              |
| 12"                     | 1.94              |
| 8"                      | 1.50              |
| 6"                      | 1.00              |

### • Standard Pump Capacity (6" Filling Head, without Exhaust Pipe/Tube)

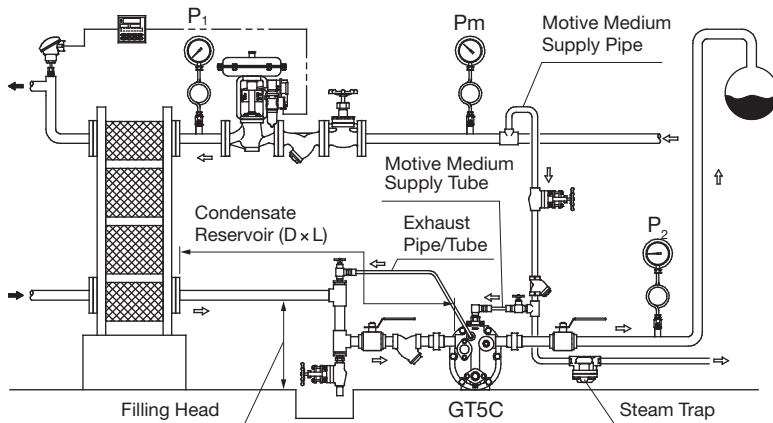


### Vertical Piping Diagram

It is possible to eliminate the exhaust pipe/tube when there is vertical piping on the pumped medium inlet due to elevated position of equipment condensate outlet (as shown to the right). However the pump capacity is the standard pump capacity with 6" filling head.



### • Increased Pump Capacity (For Filling Heads other than 6")

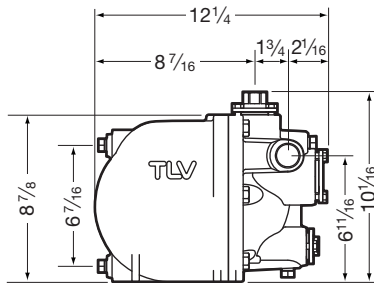


#### NOTE:

- Use the tables above and to the left to determine pump capacity based on the motive medium pressure (P<sub>m</sub>) and the back pressure (P<sub>2</sub>).
- Motive medium pressure (P<sub>m</sub>) minus back pressure (P<sub>2</sub>) must be greater than 7 psi.
- The motive medium supply pipe diameter should be at least 1/2", and the motive medium tube and its fittings/valves should have an inner diameter of at least 5/16".
- A 40 mesh or finer strainer must be installed at the motive medium and pumped medium inlets, and a steam trap installed on the motive medium supply pipe.
- For determining the length (L) and the size (D) of the pumped medium inlet pipe (condensate reservoir), refer to "Reservoir Sizing Table".
- When installing the exhaust pipe/tube, the fitting tube delivered with the product must be installed.

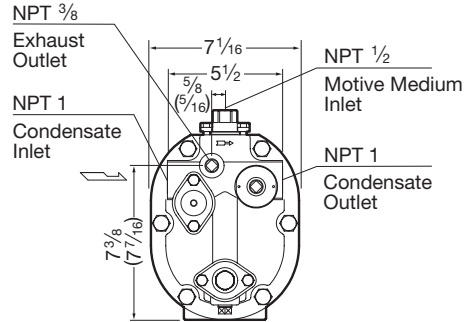
**Dimensions**

Units: in



Note: All plug holes are NPT 3/8

● **Screwed\***



Weight (lb): 44 (40)

\* NPT, other standards available ( ) is for Stainless Steel

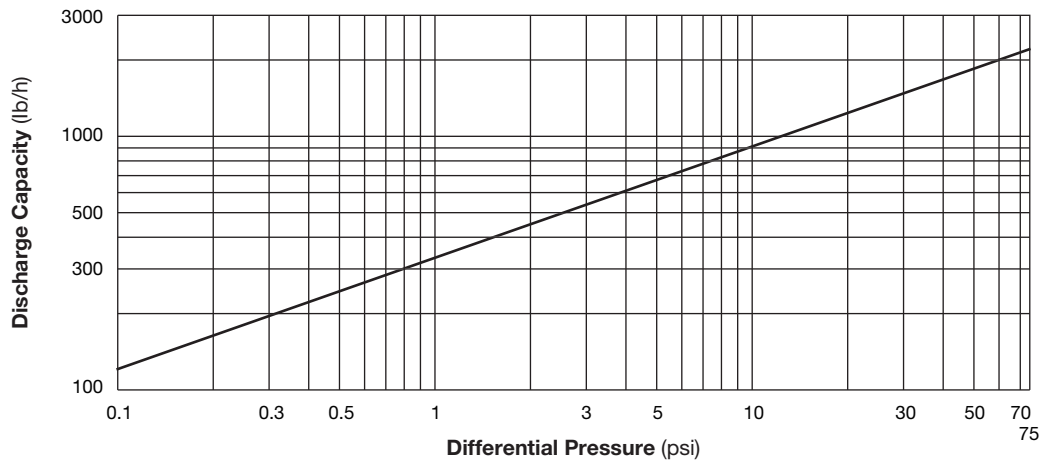
**Reservoir Sizing Table**

The reservoir must have capacity sufficient to store the condensate produced during the **PowerTrap** operation and discharge.

| Amount of Condensate (lb/h) | Reservoir Diameter (in) and Length (ft) |        |        |     |     |
|-----------------------------|---|--------|--------|-----|-----|
|                             | 1"                                      | 1 1/4" | 1 1/2" | 2"  | 3"  |
| 100 or less                 | 2.0 (ft)                                |        |        |     |     |
| 150                         | 3.0                                     | 1.5    |        |     |     |
| 200                         | 3.9                                     | 2.0    | 1.3    |     |     |
| 300                         | 5.6                                     | 3.0    | 2.0    | 1.3 |     |
| 500                         |   | 4.9    | 3.0    | 2.0 |     |
| 700                         |   | 6.9    | 4.0    | 2.5 | 1.0 |
| 1000                        |   |        | 5.5    | 3.5 | 1.5 |

Reservoir length can be reduced by 50% when the motive medium pressure (Pm) divided by back pressure (P2) equals 2 or greater (when  $P_m \div P_2 \geq 2$ ).

**Steam Trap Discharge Capacity**



1. Capacity of GT5C as a steam trap (Inlet Pressure > Outlet Pressure). Instantaneous condensate loads above the rated trap capacity will cause the pump to cycle and therefore reduce the discharge capacity.
2. Capacities are based on continuous discharge of condensate 11 °F below saturated steam temperature.
3. Differential pressure is the difference between inlet and outlet pressure of the trap.
4. Recommended safety factor: at least 1.5



DO NOT use this product under conditions that exceed maximum differential pressure, as condensate backup will occur!

Memo:

**DO NOT DISASSEMBLE OR REMOVE THIS PRODUCT WHILE IT IS UNDER PRESSURE.**

Allow internal pressure of this product to equal atmospheric pressure and its surface to cool to room temperature before disassembling or removing. Failure to do so could cause burns or other injury. READ INSTRUCTION MANUAL CAREFULLY.

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Manufacturer  
**TLV CO., LTD.**  
Kakogawa, Japan  
is approved by LRQA Ltd. to ISO 9001/14001

