



# PowerTrap®

## MODEL GP14L

### COMPACT MECHANICAL PUMP FOR CONDENSATE REMOVAL AND RECOVERY

#### Features

**Pump for a wide range of applications. Ideal for low flow condensate removal from vented receivers situated at a low level.**

1. Handles high-temperature condensate without cavitation.
2. No electric power or additional level controls required, hence **INTRINSICALLY SAFE**.
3. Pump will operate with a low filling head (min. 300 mm).
4. Easy, inline access to internal parts simplifies cleaning and reduces maintenance costs.
5. High-quality stainless steel internals and hardened working surfaces ensure reliability.
6. Compact design permits installation in a limited space.
7. Cycle Counter installable as option.



#### Specifications

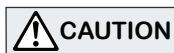
|  |  |          |
|--|--|----------|
| Model                                  | GP14L  |          |
| Connection                             | Pumped Medium Inlet & Outlet                   | Flanged* |
|  | Motive Medium & Pump Exhaust                   | Screwed  |
| Size (mm)                              | Pumped Medium: Inlet x Outlet                  | 40 x 25  |
|  | Motive Medium Inlet                            | 15       |
|  | Pump Exhaust Outlet                            | 15       |
| Maximum Operating Pressure (MPaG) PMO  | 1.4  |          |
| Maximum Operating Temperature (°C) TMO | 220  |          |
| Motive Medium Pressure Range (MPaG)    | 0.03 - 1.4                                     |          |
| Maximum Allowable Back Pressure        | 0.05 MPa less than motive medium pressure used |          |
| Volume of Each Discharge Cycle (ℓ)     | Approx. 8.0                                    |          |
| Motive Medium**                        | Saturated Steam, Compressed Air, Nitrogen      |          |
| Pumped Medium***                       | Steam Condensate, Water                        |          |

\* For details of flange connection, see picture at bottom right. \*\* Do not use with toxic, flammable or otherwise hazardous fluids. 1 MPa = 10.197 kg/cm<sup>2</sup>  
 \*\*\* Do not use for fluids with specific gravities under 0.85 or over 1, or for toxic, flammable or otherwise hazardous fluids.

**PRESSURE SHELL DESIGN CONDITIONS (NOT OPERATING CONDITIONS):**

Maximum Allowable Pressure (MPaG) PMA: 1.6 (Cast Iron), 2.1 (Cast Steel)

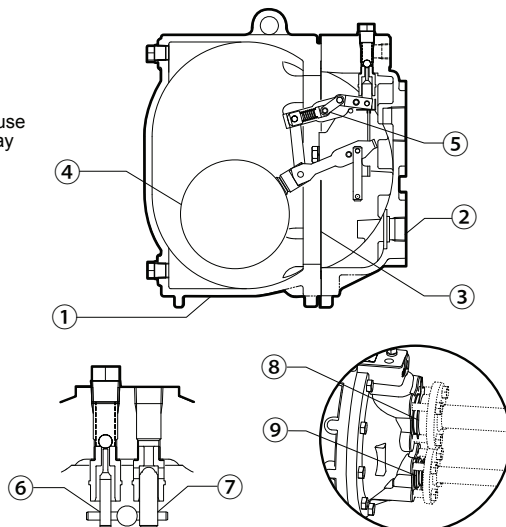
Maximum Allowable Temperature (°C) TMA: 220 (Cast Iron), 260 (Cast Steel)



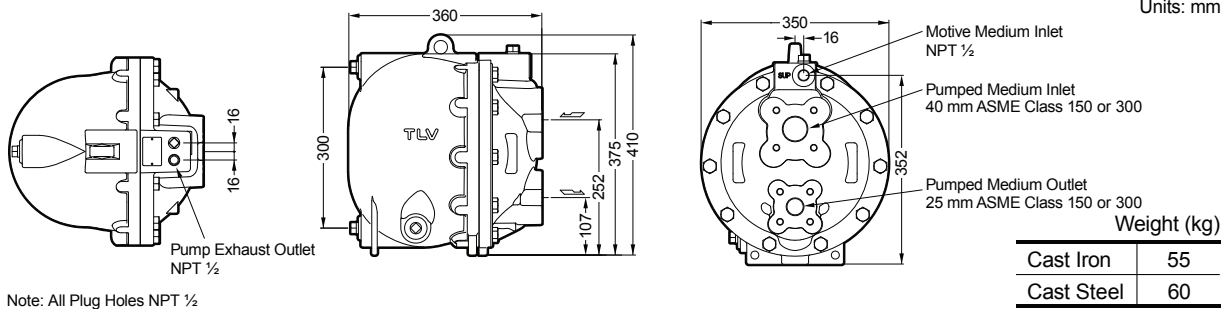
To avoid abnormal operation, accidents or serious injury, **DO NOT** use this product outside of the specification range. Local regulations may restrict the use of this product to below the conditions quoted.

| No. | Description                    | Material             | JIS     | ASTM/AISI*  |
|-----|--------------------------------|----------------------|---------|-------------|
| ①   | Body                           | Cast Iron            | FC250   | A126 Cl.B   |
|     |                                | Cast Steel**         | —       | A216 Gr.WCB |
| ②   | Cover                          | Cast Iron            | FC250   | A126 Cl.B   |
|     |                                | Cast Steel**         | —       | A216 Gr.WCB |
| ③   | Cover Gasket                   | Graphite Compound    | —       | —           |
| ④   | Float                          | Stainless Steel      | SUS316L | AISI316L    |
| ⑤   | Snap-action Unit               | Stainless Steel      | —       | —           |
| ⑥   | Motive Medium Inlet Valve Unit | Stainless Steel      | SUS440C | AISI440C    |
|     | Valve Seat                     | Stainless Steel      | SUS420F | AISI420F    |
| ⑦   | Exhaust Valve Unit             | Stainless Steel      | SUS440C | AISI440C    |
|     | Valve Seat                     | Stainless Steel      | SUS420F | AISI420F    |
| ⑧   | Inlet Check Valve CKF5M        | Stainless Steel      | SUS304  | AISI304     |
| ⑨   | Outlet Check Valve CKF3M       | Cast Stainless Steel | —       | A351 Gr.CF8 |

\* Equivalent \*\* Option: Cast Stainless Steel



## Dimensions

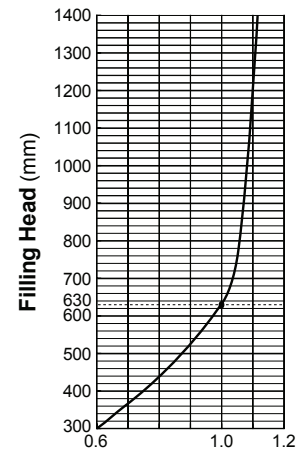
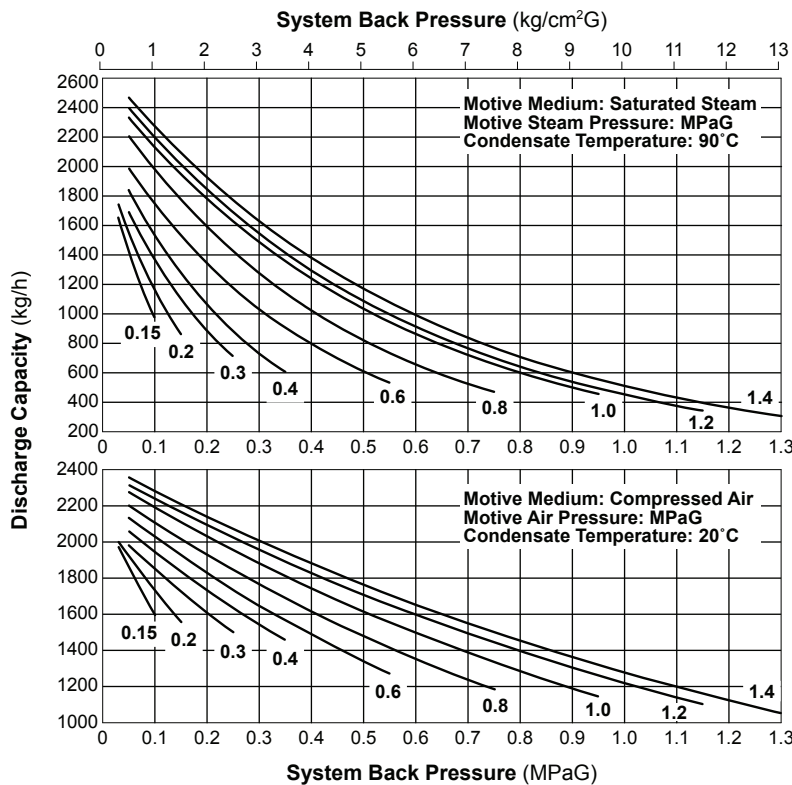


## Discharge Capacity

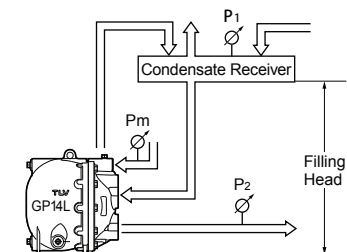
|                 |         |
|-----------------|---------|
| Connection:     | Flanged |
| Inlet size:     | 40 mm   |
| Outlet size:    | 25 mm   |
| Check Valve:    |         |
| Inlet (CKF5M):  | 40 mm   |
| Outlet (CKF3M): | 25 mm   |
| Filling Head:   | 630 mm  |

● **Correction Factor**

For GP14L installed with filling head other than 630 mm (minimum filling head: 300 mm)



● **Illustration of Filling Head and Pressures**



• The discharge capacity is determined by the motive medium, motive medium pressure (Pm) and back pressure (P2).

Make sure that:  
 Discharge Capacity × Correction Factor  
 > Required Flow Rate

**NOTE:**

- A check valve must be installed at both the pumped medium inlet and outlet. To achieve the above capacities with the standard GP14L configuration, TLV check valves CKF5M for inlet and CKF3M for outlet must be used.
- Motive steam pressure minus back pressure must be greater than 0.05 MPa.
- In closed system applications, the motive medium must be compatible with the liquid being pumped. If a non-condensable gas such as air or nitrogen is used as the motive medium, consult TLV for assistance.
- A strainer must be installed at the motive medium and pumped medium inlets.

## Size of Receiver/Reservoir

The receiver/reservoir must have a capacity sufficient to store the condensate produced during the **PowerTrap** operation and discharge. A receiver will generally be larger than a reservoir because it must handle the condensate both as a liquid and as flash steam, and separate one from the other so that only condensate is sent to the **PowerTrap**.

### ① Size of Reservoir; flash steam is involved (Length: 1 m)

| Flash steam up to kg/h | Receiver diameter mm | Vent pipe diameter mm |
|------------------------|----------------------|-----------------------|
| 25                     | 80                   | 25                    |
| 50                     | 100                  | 50                    |
| 75                     | 125                  | 50                    |
| 100                    | 150                  | 80                    |
| 150                    | 200                  | 80                    |
| 200                    | 200                  | 100                   |
| 300                    | 250                  | 125                   |
| 400                    | 300                  | 125                   |
| 500                    | 350                  | 150                   |
| 700                    | 400                  | 200                   |
| 800                    | 450                  | 200                   |
| 1000                   | 500                  | 200                   |
| 1100                   | 500                  | 250                   |
| 1400                   | 550                  | 250                   |
| 1500                   | 600                  | 250                   |

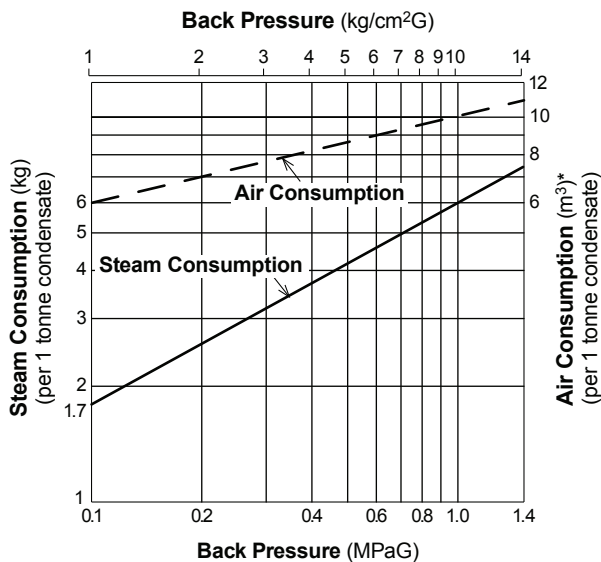
### ② Size of Reservoir; flash steam is not involved

| Amount of Condensate (kg/h) | Reservoir Diameter (mm) and Length (m) |     |     |     |     |     |     |
|-----------------------------|--|-----|-----|-----|-----|-----|-----|
|                             | 40                                     | 50  | 80  | 100 | 150 | 200 | 250 |
| 300 or less                 | 1.2m                                   | 0.7 |     |     |     |     |     |
| 400                         | 1.5                                    | 1.0 |     |     |     |     |     |
| 500                         | 2.0                                    | 1.2 | 0.5 |     |     |     |     |
| 600                         |  | 1.5 | 0.6 |     |     |     |     |
| 800                         |  | 2.0 | 0.8 | 0.5 |     |     |     |
| 1000                        |  |     | 1.0 | 0.7 |     |     |     |
| 1500                        |  |     | 1.5 | 1.0 |     |     |     |
| 2000                        |  |     | 2.0 | 1.3 | 0.6 |     |     |
| 3000                        |  |     |     | 2.0 | 0.9 | 0.5 |     |
| 4000                        |  |     |     |     | 1.2 | 0.7 |     |
| 5000                        |  |     |     |     | 1.4 | 0.8 | 0.5 |
| 6000                        |  |     |     |     | 1.7 | 1.0 | 0.6 |
| 7000                        |  |     |     |     | 2.0 | 1.2 | 0.7 |
| 8000                        |  |     |     |     |     | 1.3 | 0.8 |
| 9000                        |  |     |     |     |     | 1.5 | 0.9 |
| 10000                       |  |     |     |     |     | 1.7 | 1.0 |

### ③ If flash steam is condensed before it enters the receiver/reservoir, compare tables ① and ② and choose the larger of the two sizes.

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

## Steam or Air Consumption (Motive Medium)



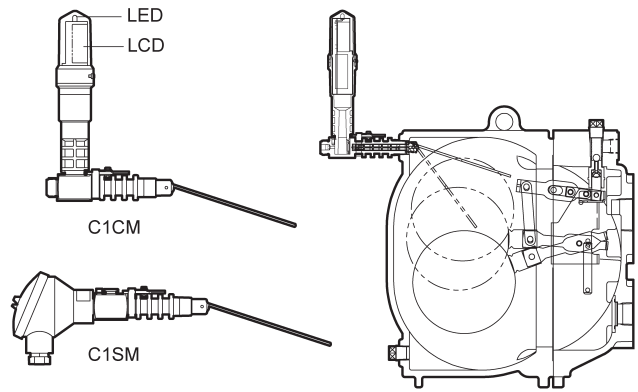
\* Equivalent consumption of air at 20 °C under atmospheric pressure

## Cycle Counter (Option)

Two types of counter can be installed on the GP14L to monitor the number of pumping cycles and help to determine the timing of maintenance, or estimate the volume of pumped condensate.

- C1CM – (Counter Unit Type):  
Self-contained standalone unit. Includes an LCD counter display and an operation indicator LED.
- C1SM – (Terminal Box Type):  
Designed for use with remote monitoring equipment and systems.

Intrinsically safe models are also available.  
See the Cycle Counter SDS for further details.



Manufacturer

**TLV**® CO., LTD.

Kakogawa, Japan

is approved by LQA Ltd. to ISO 9001/14001

ISO 9001/ISO 14001

