

# TLV®

# PowerTrap®

## MODEL GT10L CAST IRON CAST STEEL

### COMPACT MECHANICAL PUMP WITH STEAM TRAP FOR CONDENSATE REMOVAL AND RECOVERY

#### Features

**Pump/trap with built-in steam trap for a wide range of applications: drainage of low capacity heat exchangers, flash steam recovery systems and reservoirs, often operating under vacuum conditions.**

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.
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.



#### Specifications

Model		GT10L	
Connection	Pumped Medium Inlet & Outlet	Screwed BSP DIN 2999 <sup>1)</sup>	Screwed BSP DIN 2999 <sup>1)</sup> /Flanged <sup>2)</sup> DIN 2501 <sup>1)</sup>
	Motive Medium & Pump Exhaust	Screwed BSP DIN 2999 <sup>1)</sup>	
Size	Pumped Medium: Inlet × Outlet	1 1/2" × 1"	1"/DN 25 × 1"/DN 25
	Motive Medium Inlet		1/2"
	Pump Exhaust Outlet		1/2"
Maximum Operating Pressure (barg)	PMO	10.5	
Maximum Operating Temperature (°C)	TMO	185	
Motive Medium Pressure Range (barg)		0.3 – 10.5	
Maximum Allowable Back Pressure		0.5 bar less than motive medium pressure used	
Volume of Each Discharge Cycle (litre)		approximately 6	
Motive Medium <sup>3)</sup>		Steam, compressed air or nitrogen	
Pumped Medium <sup>4)</sup>		Steam condensate or water	

<sup>1)</sup> Other standards available <sup>2)</sup> PN 10, 16 (Cast Steel also PN 25), for details of flange connection, see picture at bottom right

1 bar = 0.1 MPa

<sup>3)</sup> Do not use with toxic, flammable or otherwise hazardous fluids.

<sup>4)</sup> Do not use for fluids with specific gravities under 0.85 or over 1, or with toxic, flammable or otherwise hazardous fluids.

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

Maximum Allowable Pressure (barg) PMA: 13 (Cast Iron), 21 (Cast Steel)

Maximum Allowable Temperature (°C) TMA: 200 (Cast Iron), 220 (Cast Steel)

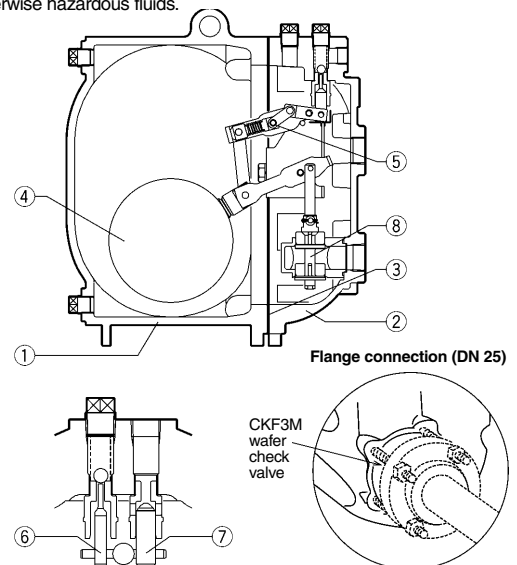


To avoid abnormal operation, accidents or serious injury, DO NOT use this product outside of the specification range. Local regulations may restrict the use of this product to below the conditions quoted.

No.	Description	Material	DIN*	ASTM/AISI*	
①	Body	Cast Iron FC250	0.6025	A126 Cl.B	
		Cast Steel** A216 Gr.WCB	1.0619	—	
②	Cover	Cast Iron FC250	0.6025	A126 Cl.B	
		Cast Steel** A216 Gr.WCB	1.0619	—	
③	Cover Gasket	Graphite Compound	—	—	
④	Float	Stainless Steel SUS316L/304	1.4404/1.4301	AISI316L/304	
⑤	Snap-action Unit	Stainless Steel	—	—	
⑥	Intake Valve	Stainless Steel SUS440C	1.4125	AISI440C	
	Intake Valve Unit	Valve Seat	Stainless Steel SUS440C	1.4021	AISI420F
⑦	Exhaust Valve	Stainless Steel SUS440C	1.4125	AISI440C	
	Exhaust Valve Unit	Valve Seat	Stainless Steel SUS420F	1.4028	AISI420F
⑧	Steam Trap Unit	Stainless Steel	—	—	
⑨	Check Valve***	CK3MG	Cast Stainless Steel A351 Gr.CF8	1.4312	—
		CKF3M	Cast Stainless Steel A351 Gr.CF8	1.4312	—

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

\*\*\* Not shown, model depends on GT10L connection: CK3MG for screwed, CKF3M for flanged

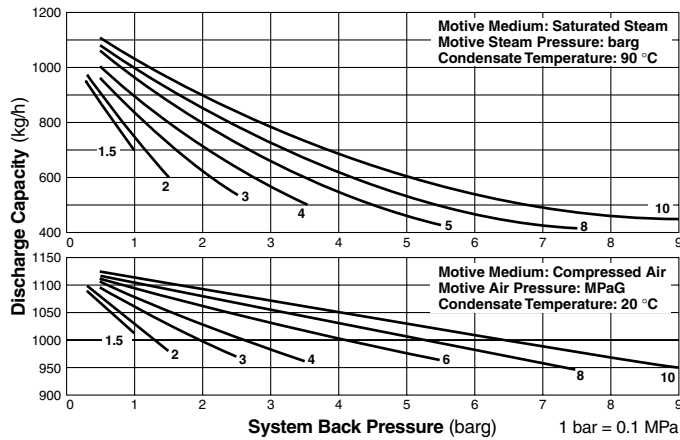


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## Discharge Capacity

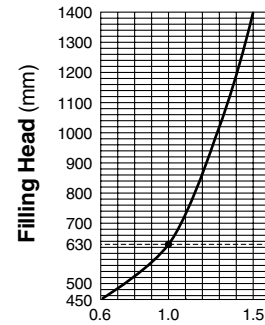
**A**

Connection:	Screwed
Inlet size:	1"
Outlet size:	1"
Check Valve:	CK3MG
Inlet:	1"
Outlet:	1"
Filling Head:	630 mm



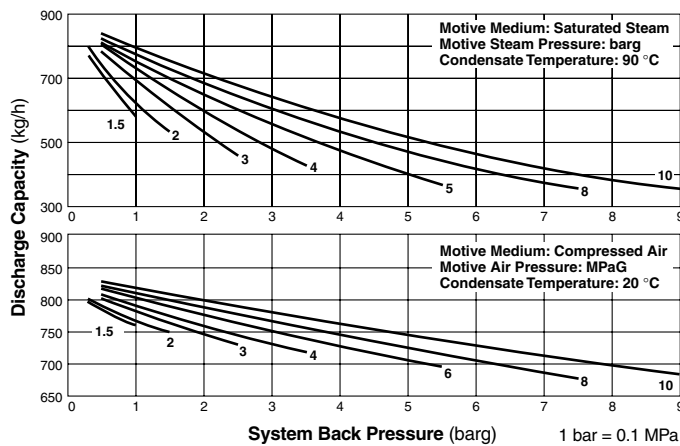
● CORRECTION FACTOR

For discharge capacity graph **A** with filling head other than 630 mm (minimum filling head: 450 mm)



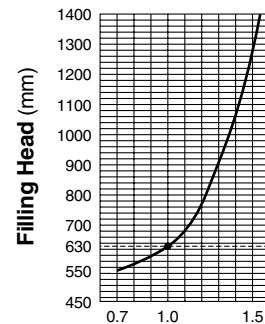
**B**

Connection:	Flanged
Inlet size:	DN 25
Outlet size:	DN 25
Check Valve:	CKF3M
Inlet:	DN 25
Outlet:	DN 25
Filling Head:	630 mm



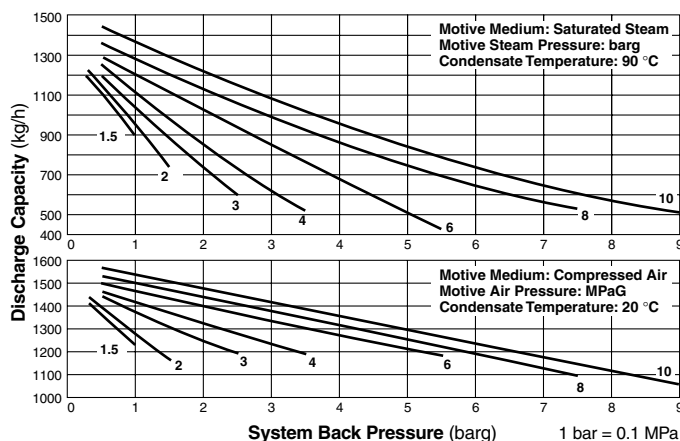
● CORRECTION FACTOR

For discharge capacity graph **B** with filling head other than 630 mm (minimum filling head: 550 mm)



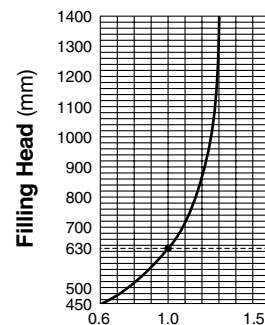
**C**

Connection:	Screwed
Inlet size:	1 1/2"
Outlet size:	1"
Check Valve:	CK3MG
Inlet:	1 1/2"
Outlet:	1"
Filling Head:	630 mm



● CORRECTION FACTOR

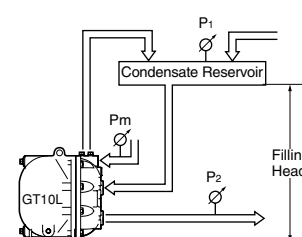
For discharge capacity graph **C** with filling head other than 630 mm (minimum filling head: 450 mm)



**NOTE:**

- A check valve must be installed at both the pumped medium inlet and outlet. To achieve the above capacities with the standard GT10L configuration, TLV CK3MG or CKF3M check valves must be used.
- Motive medium pressure minus back pressure must be greater than 0.5 bar.
- 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.

● FILLING HEAD AND PRESSURES

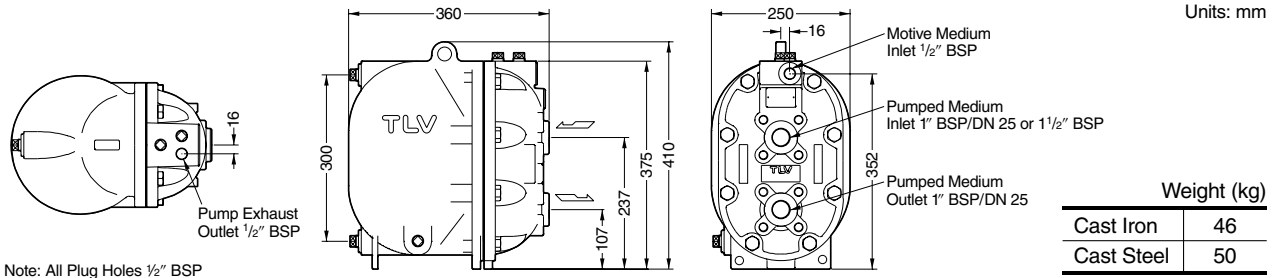


The flow rate is determined by the motive medium, motive medium pressure ( $P_m$ ) and back pressure ( $P_2$ ).

Make sure that:

$$\text{Flow Rate} \times \text{Correction Factor} > \text{Required Flow Rate}$$

**Dimensions**



**Size of Reservoir**

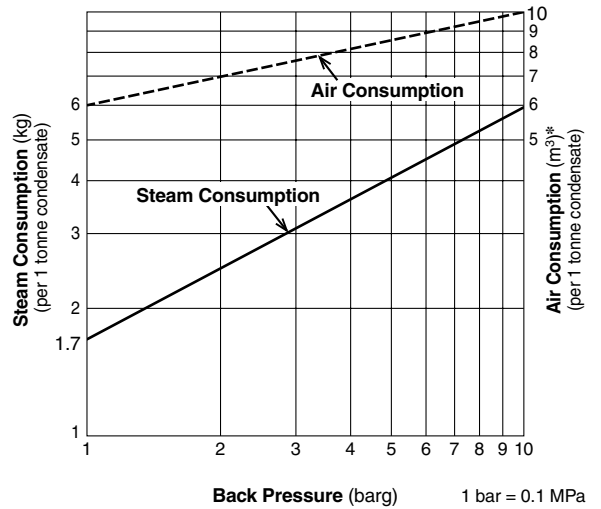
The reservoir must have a capacity sufficient to store the condensate produced during the PowerTrap operation and discharge.

**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	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

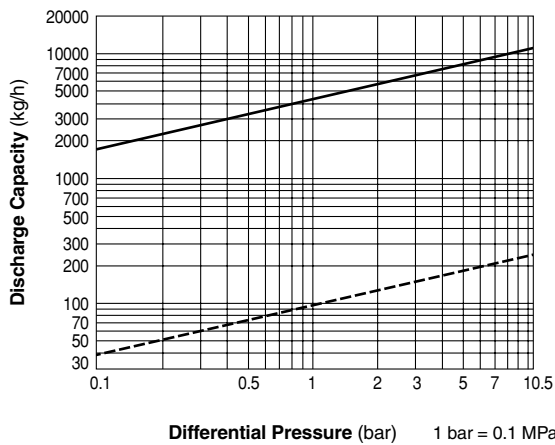
Reservoir length can be reduced by 50% when the motive pressure (Pm) divided by the back pressure (P2) equals 2 or greater (when  $P_m \div P_2 \geq 2$ ).

**Steam or Air Consumption**



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

**GT10L Steam Trap Capacity**



— : Capacity of GT10L as a steam trap ( $P_1 > P_2$ ). Instantaneous condensate loads above the rated trap capacity will cause the pump to cycle and therefore reduce the discharge capacity.  
 - - - : Minimum amount of condensate required to prevent steam leakage.

1. Capacities are based on continuous discharge of condensate 6 °C below steam temperature.
2. Differential pressure is the difference between inlet and outlet pressure of the trap.



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

Memo:

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

ISO 9001/ISO 14001

