



PowerTrap®

MODEL GT10L CAST IRON CAST STEEL STAINLESS 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 (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.

Pressure Equipment Directive (PED)

Classification according to PED 2014/68/EU, fluid group 2

Size	Category	CE marking
DN 25, DN 40	I	With CE marking and Declaration of Conformity



Specifications

Model		GT10L	
Connection	Pumped Medium Inlet & Outlet	Screwed and Flanged*	Screwed
	Motive Medium & Pump Exhaust	Screwed	
Size (mm)	Pumped Medium: Inlet x Outlet	1" / DN 25 x 1" / DN 25	1 1/2" x 1"
	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 to 10.5	
Maximum Allowable Back Pressure		0.5 bar less than motive medium pressure used	
Volume of Each Discharge Cycle (ℓ)		approximately 6	
Motive Medium**		Saturated Steam	
Pumped Medium***		Steam Condensate	
Optional Specifications for Hazardous Locations		ATEX: Ⓜ II2G Ex h IIC T3 Gb	

* For details of flange connection, see picture at bottom right ** Do not use with toxic, flammable or otherwise hazardous fluids.

1 bar = 0.1 MPa

*** 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 (barg) PMA: 13 (Cast Iron), 21 (Cast Steel), 16 (Cast Stainless Steel)

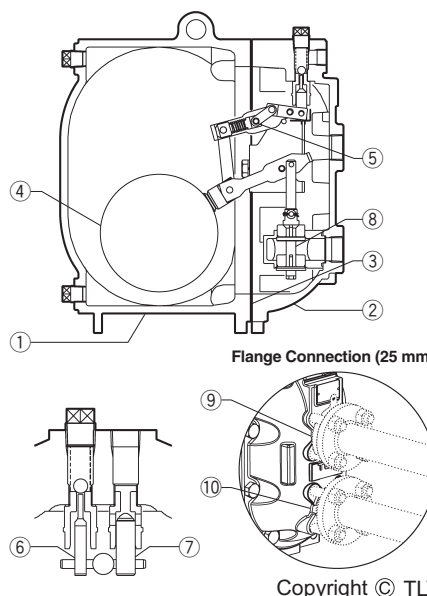
Maximum Allowable Temperature (°C) TMA: 200 (Cast Iron), 220 (Cast Steel, Cast Stainless Steel)



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	—
			Cast Stainless Steel A351 Gr.CF8	1.4312	—
②	Cover		Cast Iron FC250	0.6025	A126 Cl.B
			Cast Steel A216 Gr.WCB	1.0619	—
			Cast Stainless Steel A351 Gr.CF8	1.4312	—
③	Cover Gasket		Graphite Compound	—	—
④	Float		Stainless Steel SUS316L/304	1.4404/1.4301	AISI316L/304
⑤	Snap-action Unit		Stainless Steel	—	—
⑥	Motive Medium Intake Valve Unit	Intake Valve	Stainless Steel SUS440C	1.4125	AISI440C
		Valve Seat	Stainless Steel SUS420F	1.4028	AISI420F
⑦	Exhaust Valve Unit	Exhaust Valve	Stainless Steel SUS440C	1.4125	AISI440C
		Valve Seat	Stainless Steel SUS420F	1.4028	AISI420F
⑧	Steam Trap Unit		Stainless Steel	—	—
⑨	Inlet Check Valve	Screwed	CK3MG**	1.4312	—
		Flanged	CKF5M	1.4301	AISI304
⑩	Outlet Check Valve	Screwed	CK3MG**	1.4312	—
		Flanged	CKF3M	1.4312	—

* Equivalent materials ** Not shown

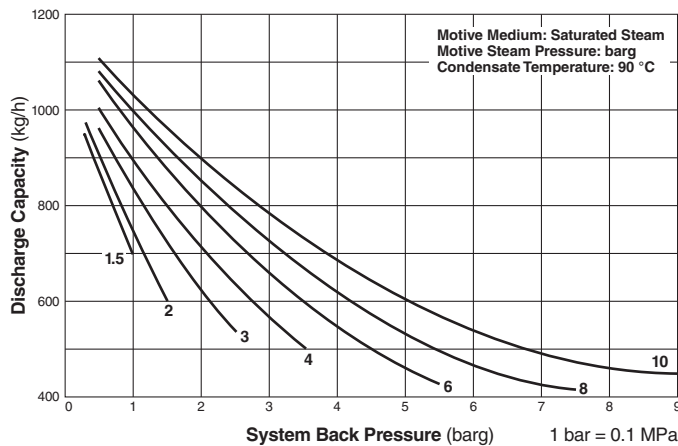


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Discharge Capacity

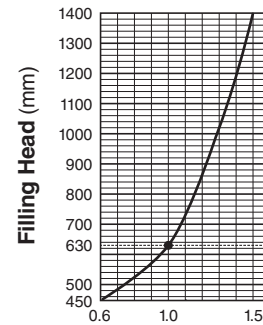
A

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



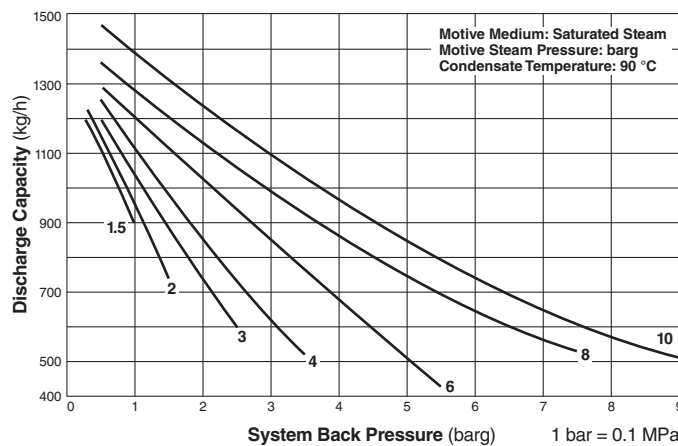
• CORRECTION FACTOR

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



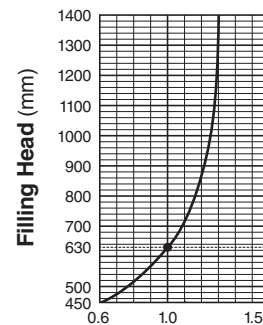
B

Connection:	Screwed
Inlet size:	1½"
Outlet size:	1"
Check Valve:	CK3MG
Inlet:	1½"
Outlet:	1"
Filling Head:	630 mm



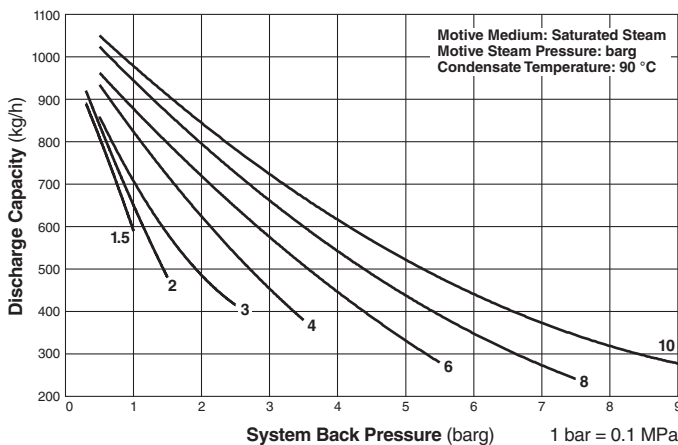
• CORRECTION FACTOR

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



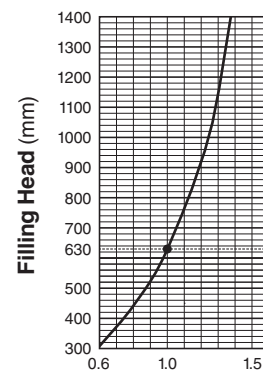
C

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



• CORRECTION FACTOR

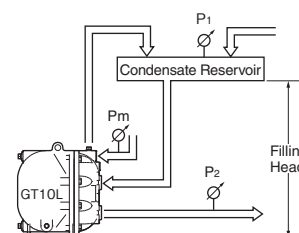
For discharge capacity graph **C** with filling head other than 630 mm (minimum filling head: 300 mm)



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, either TLV check valves CK3MG (inlet & outlet), or CKF5M (inlet) and CKF3M (outlet) must be used, depending on connection type.
- 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

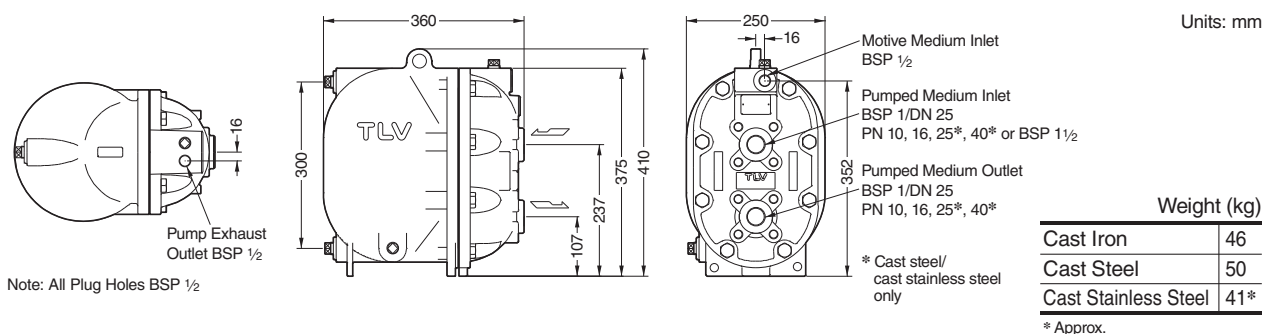


The discharge capacity is determined by the motive medium, motive medium pressure (P_m) and back pressure (P_2).

Make sure that:

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

Dimensions



Size of Reservoir

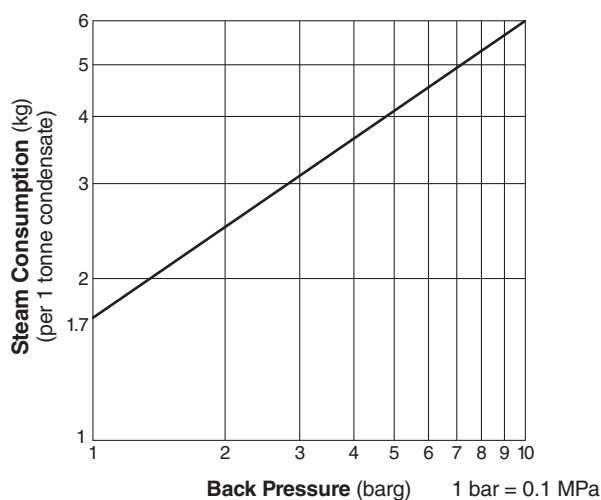
The reservoir must have a capacity sufficient to store the condensate produced during the PowerTrap operation and discharge.

Size of Reservoir; flash steam is not involved

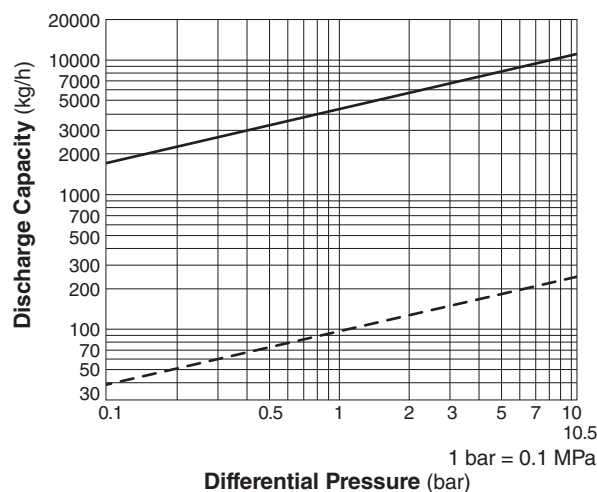
Amount of Condensate (kg/h)	Reservoir diameter (mm) and length (m)						
	40	50	80	100	150	200	250
300 or less	1.2m	0.7					
400	1.5	1.0					
500	2.0	1.2	0.5				
600		1.5	0.6				
800		2.0	0.8	0.5			
1000			1.0	0.7			
1500			1.5	1.0			
2000			2.0	1.3	0.6		
3000				2.0	0.9	0.5	
4000					1.2	0.7	
5000					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

Reservoir length can be reduced by 50% when the motive pressure (P_m) divided by the back pressure (P₂) equals 2 or greater (when P_m ÷ P₂ ≥ 2).

Steam Consumption (Motive Medium)



GT10L Steam Trap Discharge Capacity



— : Capacity of GT10L as a steam trap (P₁ > P₂).
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.

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



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

Memo:

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

