



PowerTrap®

MODEL GP10L CAST IRON CAST STEEL

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 low levels.

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	GP10L	
Connection	Pumped Medium Inlet & Outlet Motive Medium & Pump Exhaust	Screwed BSP DIN 2999* Screwed BSP DIN 2999*/ Flanged** DIN 2501*
Size	Pumped Medium: Inlet x Outlet	1 1/2" x 1" / 1" / DN 25 x 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		Steam, compressed air, nitrogen or other non-flammable, non-toxic gas
Pumped Medium		Steam condensate, water or other non-flammable, non-toxic fluid with a specific gravity of 0.85 – 1

* Other standards available ** PN 10, 16 (Cast Steel also PN 25), for details of flange connection, see picture at bottom right 1 bar = 0.1 MPa

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)

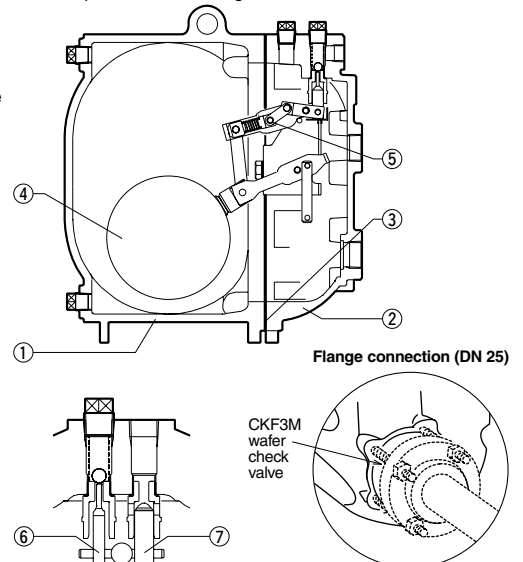


To avoid abnormal operation, accidents or serious injury, DO NOT use this product outside of the specification range. Local regulations may restrict the use of this product to below the conditions quoted.

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	1.4404	AISI316L	
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	Check Valve***	CK3MG	Cast Steel A351 Gr.CF8	1.4312	—
		CKF3M	Cast Steel A351 Gr.CF8	1.4312	—

* Equivalent materials ** Option: Cast Stainless Steel

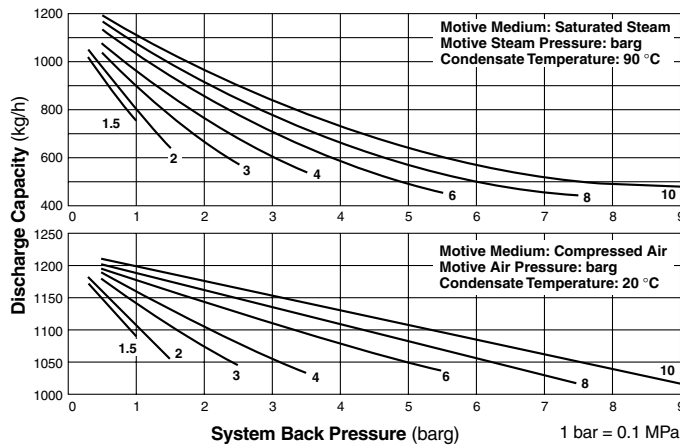
*** Not shown, model depends on GP10L connection: CK3MG for screwed, CKF3M for flanged



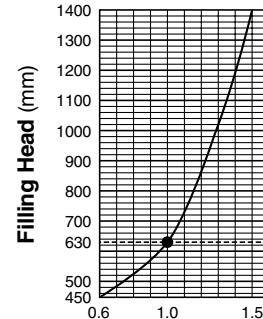
Discharge Capacity

A

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

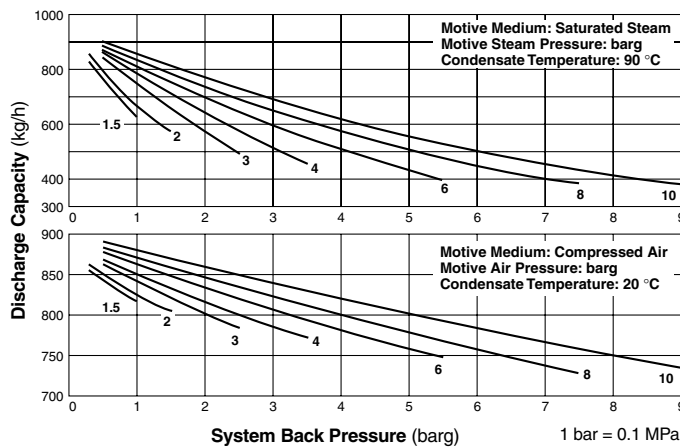


• CORRECTION FACTOR
For discharge capacity graph **A** installed with filling head other than 630 mm (minimum filling head: 450 mm)

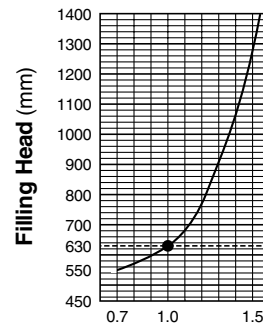


B

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

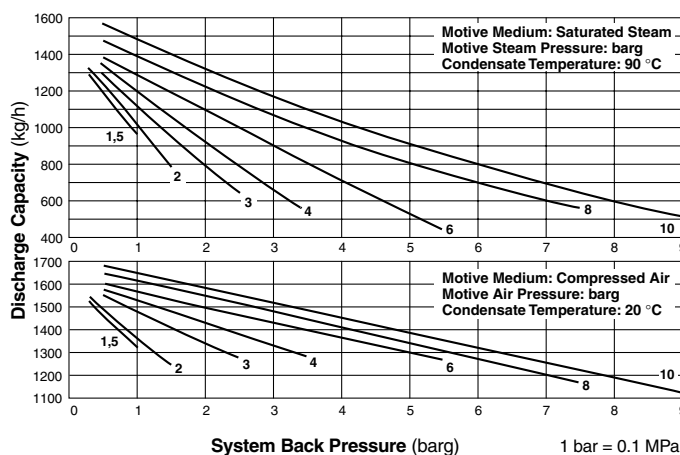


• CORRECTION FACTOR
For discharge capacity graph **B** with filling head other than 630 mm (minimum filling head: 550 mm)

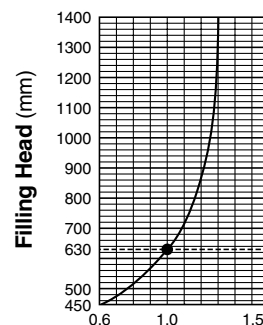


C

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



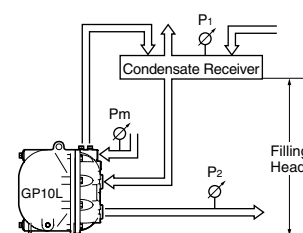
• CORRECTION FACTOR
For discharge capacity graph **C** with filling head other than 630 mm (minimum filling head: 450 mm)



NOTE:

- A check valve must be installed at both the pumped medium inlet and outlet. To achieve the above capacities with the standard GP10L 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.

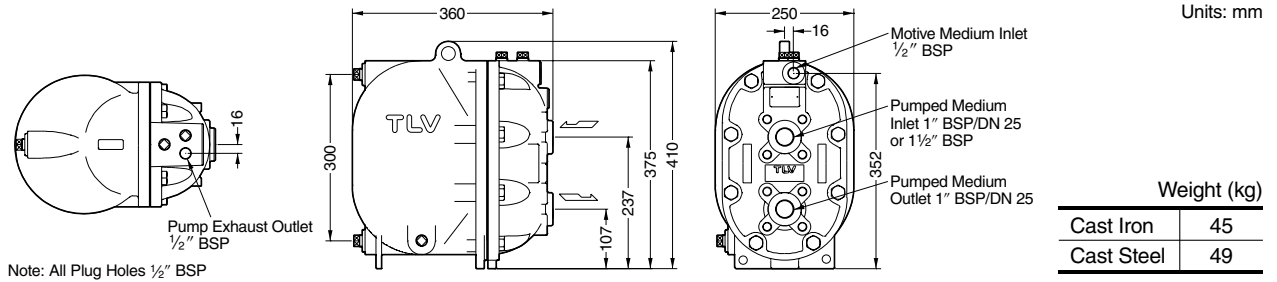
• FILLING HEAD AND PRESSURES



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

Make sure that:
Flow Rate \times Correction Factor
> Required Flow Rate

Dimensions



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 Receiver** (flash steam is involved)
(Length: 1 m)
- ② **Size of Reservoir** (flash steam is not involved)

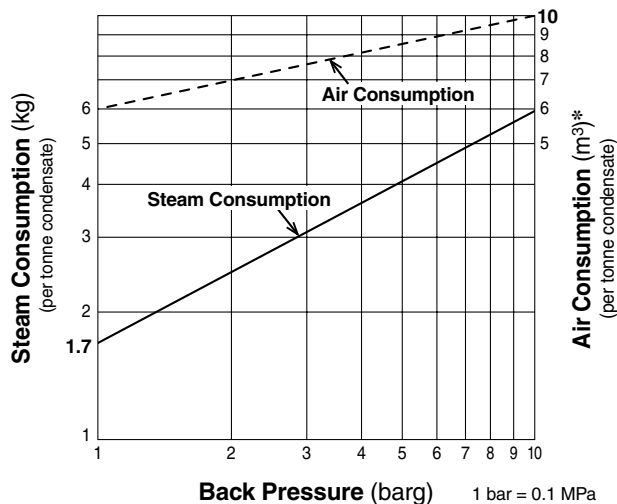
Flash steam up to (kg/h)	Receiver diameter mm	Vent pipe diameter mm
25	80	25
50	100	50
75	125	50
100	150	80
150	200	80
200	200	100
300	250	125
400	300	125
500	350	150
700	400	200
800	450	200
1 000	500	200
1 100	500	250
1 400	550	250
1 500	600	250

Amount of condensate (kg/h)	Reservoir diameter (mm) and length (m)						
	40	50	80	100	150	200	250
300	1.2 m	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			
1 000			1.0	0.7			
1 500			1.5	1.0			
2 000			2.0	1.3	0.6		
3 000				2.0	0.9	0.5	
4 000					1.2	0.7	
5 000					1.4	0.8	0.5
6 000					1.7	1.0	0.6
7 000					2.0	1.2	0.7
8 000						1.3	0.8
9 000						1.5	0.9
10 000						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 $P_m \div P_2 \geq 2$).

Steam or Air Consumption (Motive Medium)

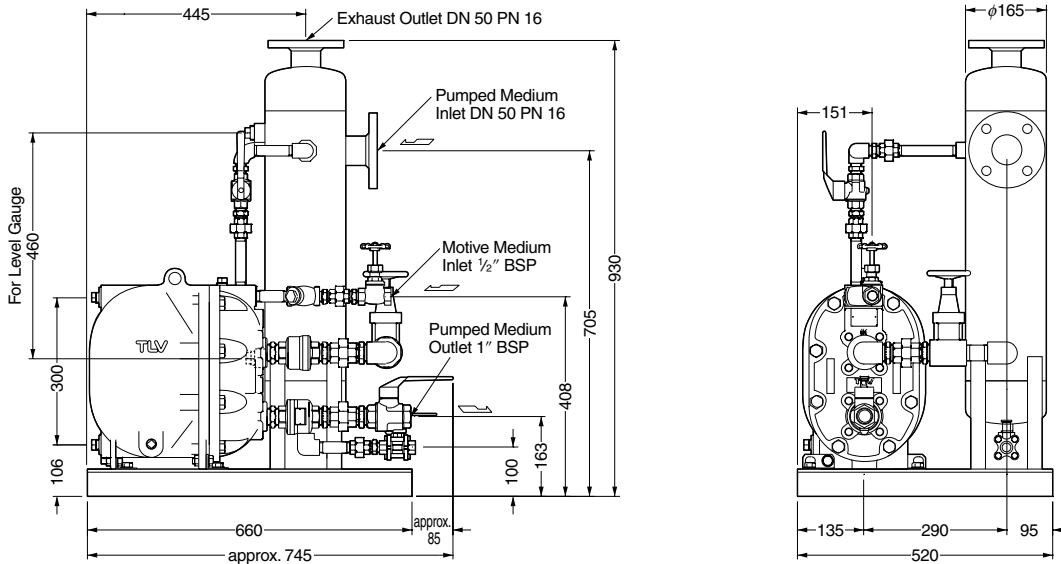


* Equivalent consumption of standard air (air at 20 °C under atmospheric pressure)

System Package (Open Systems)*

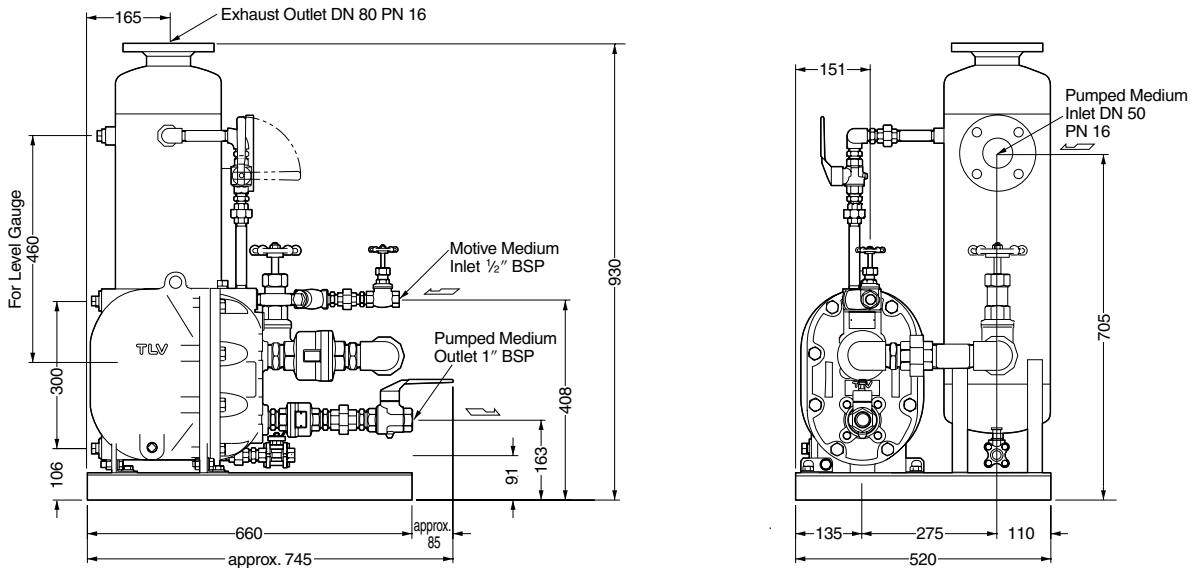
Single System Package Type S1L

Discharge Capacity: see discharge capacity graph **A** (no correction factor required, max. capacity 1 t/h)
 Maximum Allowable Flash Steam: 100 kg/h Tank Size: 12 ℓ Weight: 120 kg



Single System Package Type S1M

Discharge Capacity: see discharge capacity graph **C** (no correction factor required, max. capacity 1.5 t/h)
 Maximum Allowable Flash Steam: 200 kg/h Tank Size: 22 ℓ Weight: 130 kg



Standards:

Flanged connections: DIN 2501
 Screwed connections: DIN 2999
 Other standards available

* System packages with other capacities, configurations, etc. also available

Units: mm

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

ISO 9001/ISO 14001

