PowerTrap®

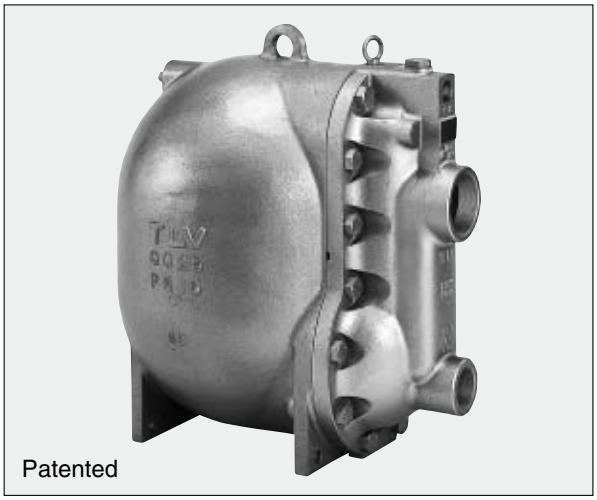
MODEL GP14 CAST IRON CAST STEEL

MECHANICAL PUMP FOR CONDENSATE REMOVAL AND RECOVERY

Features

Pump for a wide range of applications. Ideal for condensate removal from vented receivers and sump drainage.

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. Durable nickel-based alloy compression coil spring.
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.


Patented

Specifications

Model		GP14		
Body Material		Cast Iron	Cast Steel	
Connection	Pumped Medium Inlet & Outlet	Screwed	Screwed	Flanged
	Motive Medium & Pump Exhaust	Screwed	Screwed	Flanged
Size	Pumped Medium Inlet × Outlet	3″× 2″	3″× 2″	DN 50×50 , DN 80×50
	Motive Medium Inlet	1″	1″	DN 25
	Pump Exhaust Outlet	1″	1″	DN 25
Maximum Operating Pressure (barg) PMO		13	14	
Maximum Operating Temperature (°C) TMO		200		
Motive Medium Pressure Range (barg)		10 – 13	10 – 14	
Maximum Allowable Back Pressure		0.5 bar less than motive medium pressure used, but not to exceed 10.5 barg		
Volume of Each Discharge Cycle (ℓ)		approximately 30		
Motive Medium*		Saturated Steam, Compressed Air, Nitrogen		
Pumped Medium**		Steam Condensate, Water		

* 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.

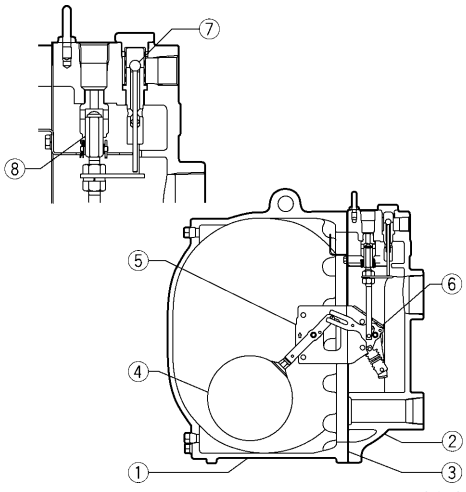
PRESSURE SHELL DESIGN CONDITIONS (**NOT** OPERATING CONDITIONS): Maximum Allowable Pressure (barg) PMA: 13 (Cast Iron), 16 (Cast Steel)
Maximum Allowable Temperature (°C) TMA: 200 (Cast Iron) 220 (Cast Steel)

⚠ 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	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/Stainless Steel US316L	– /1.4404	– /AISI316L
④	Float		Stainless Steel SUS316L/303	1.4404/1.4305	AISI316L/303
⑤	Lever Unit		Stainless Steel	—	—
⑥	Snap-action Unit		Stainless Steel	—	—
⑦	Motive Medium IntakeValve Unit	Intake Valve	Stainless Steel SUS303/440C	1.4305/1.4125	AISI303/440C
		Valve Seat	Cast Stainless Stl. A351 Gr.CF8/ Stainless Steel SUS440C	1.4312/1.4125	– /AISI440C
⑧	Exhaust Valve Unit	Exhaust Valve	Stainless Steel SUS303/440C	1.4305/1.4125	AISI303/440C
		Valve Seat	Stainless Steel SUS420F	1.4028	AISI420F
⑨	Check Valve***	CK3MG	Cast Stainless Steel A351 Gr.CF8	1.4312	—
		CKF3MG	Cast Stainless Steel A351 Gr.CF8	1.4312	—

* Equivalent materials ** Option: Cast Stainless Steel
*** Not shown, model depends on GP14 connection; CK3MG for screwed, CKF3MG for flanged



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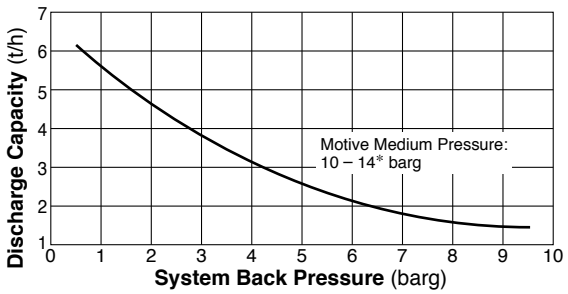
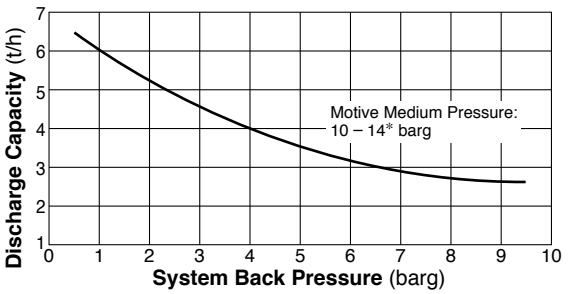
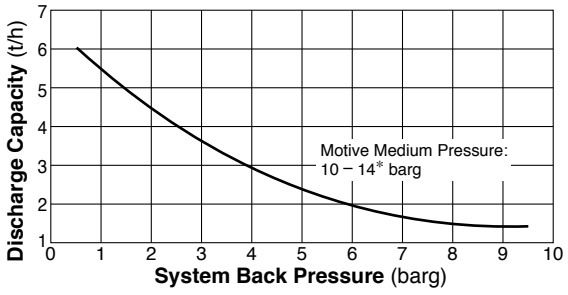
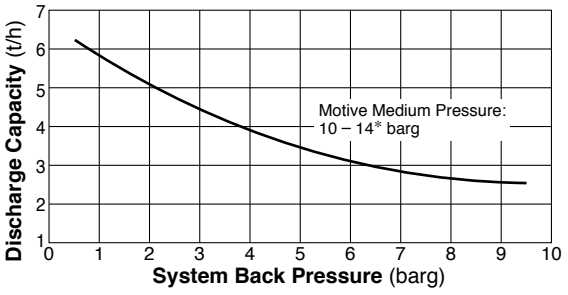
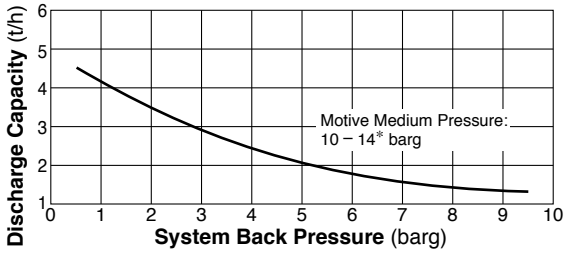
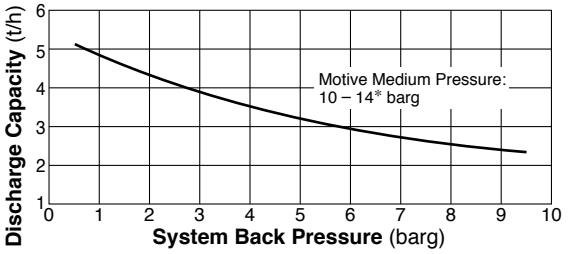
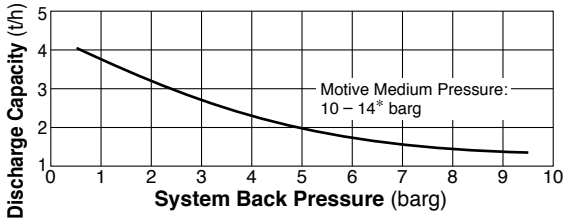
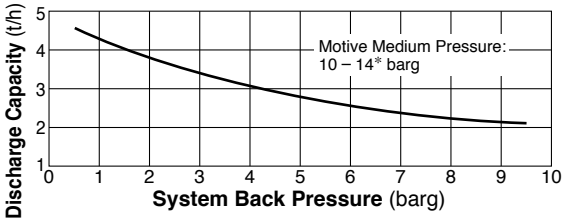
Discharge Capacity

Check Valve Size & Model	Motive Medium: Saturated Steam Condensate Temperature: 90 °C Filling Head: 860 mm see correction factors for other filling heads)	Motive Medium: Air Condensate Temperature: 20 °C Filling Head: 860 mm (see correction factors for other filling heads)
A 3″ Inlet / 2″ Outlet CK3MG		
B DN 80 Inlet / DN 50 Outlet CKF3MG		
C 2″ Inlet / 2″ Outlet CK3MG		
D DN 50 Inlet / DN 50 Outlet CKF3MG		

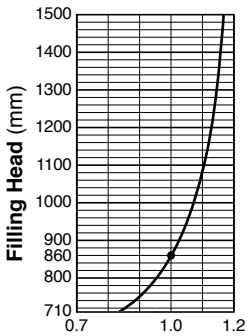
* Motive medium pressure must not exceed 13 barg for cast iron GP14

1 bar = 0.1 MPa

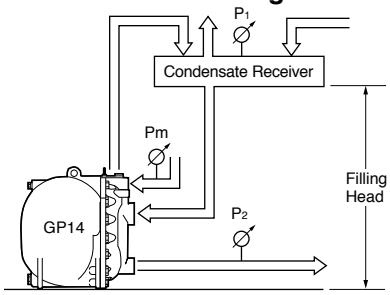
● Correction Factors

For filling heads other than 860 mm

(minimum filling head: 710 mm)



● Illustration of 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 × 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 GP14 configuration, TLV CK3MG or CKF3MG 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.

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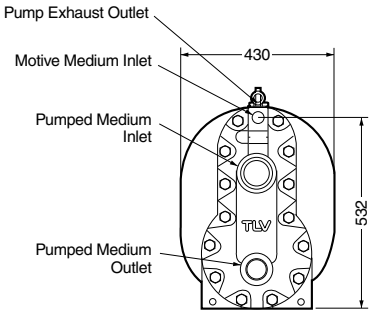
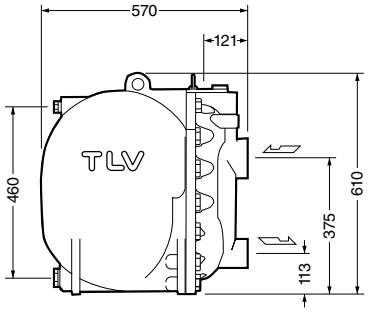
Dimensions



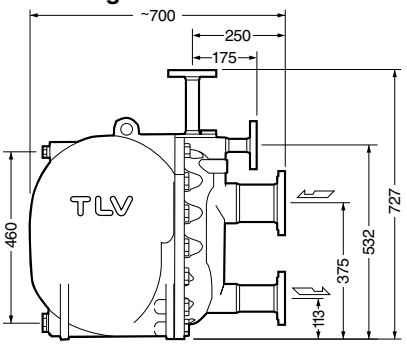
Units: mm

● **Screwed***



Weight (kg): 124 (Cast Iron), 136 (Cast Steel)
* BSP DIN 2999, other standards available

● **Flanged****



Weight (kg): 146 (Cast Steel)
** DIN 2501 PN 25/40, ASME Class 300 RF, other standards available

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)

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

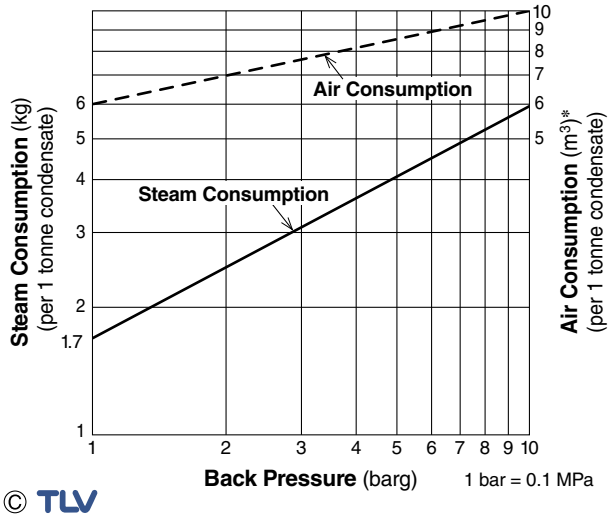
③ If flash steam is condensed before it enters the receiver/reservoir, compare tables ① & ② and choose the larger of the two resultant sizes.

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	1.2 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			
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 medium pressure (Pm) divided by back pressure (P_2) equals 2 or greater (when $Pm \div P_2 \geqq 2$)

Steam or Air Consumption (Motive Medium)



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

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Memo:

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

ISO 9001/ISO 14001

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