



# PowerTrap®

## MODEL GP10

### 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 **INCONEL®** compression coil spring.
5. Easy, inline access to internal parts simplifies cleaning and reduces maintenance costs.
6. High-quality stainless steel internals ensure reliability.
7. Compact design permits installation in a limited space.

\* INCONEL® is a registered trademark of the INCO family of companies



Patented

### Specifications

Model	GP10		
Body Material	Cast Iron	Cast Steel	
Connection	Pumped Medium Inlet & Outlet	Screwed	Screwed / Flanged
	Motive Medium & Pump Exhaust	Screwed	Screwed / Flanged
Size (mm)	Pumped Medium Inlet / Outlet	80 / 50	50 / 50, 80 / 50
	Motive Medium Inlet	25	
	Pump Exhaust Outlet	25	
Maximum Operating Pressure (MPaG) PMO	1.05		
Maximum Operating Temperature (°C) TMO	185		
Motive Medium Pressure Range (MPaG)	0.03 – 1.05		
Maximum Allowable Back Pressure	0.05 MPa less than motive medium pressure used		
Volume of Each Discharge Cycle (ℓ)	approximately 33		
Motive Medium	Steam, compressed air, nitrogen or other non-flammable, non-toxic gasses		
Pumped Medium	Steam condensate, water or other non-flammable, non-toxic fluids with specific gravities 0.85 – 1		

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

Maximum Allowable Pressure (MPaG) PMA: 1.4 (Cast Iron), 1.6 (Cast Steel)

Maximum Allowable Temperature (°C) TMA: 220

1 MPa = 10.197 kg/cm<sup>2</sup>

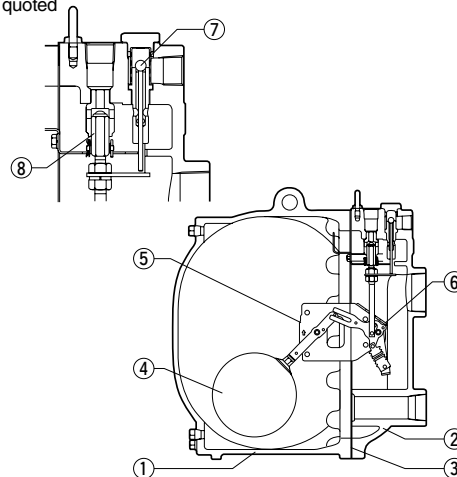


To avoid abnormal operation, accidents or serious injury, DO NOT use this product outside of the specification range. Local regulations may restrict the use of this product to below the conditions quoted

No.	Description	Material	JIS	ASTM/AISI*
①	Body	Cast Iron	FC250	A126 Cl. B
		Cast Steel**	SCPH2	A216 Gr. WCB
②	Cover	Cast Iron	FC250	A126 Cl. B
		Cast Steel**	SCPH2	A216 Gr. WCB
③	Cover Gasket	Graphite Compound	—	—
④	Float	Stainless Steel	SUS316L/303	AISI316L/303
⑤	Lever Unit	Stainless Steel	—	—
⑥	Snap-action Unit	Stainless Steel	—	—
⑦	Motive Medium Intake Valve Unit	Intake Valve	Stainless Steel	SUS303/440C
	Valve Seat	Cast Stainless Steel/ Stainless Steel	SCS13A/ SUS440C	A351 Gr. CF8/ AISI440C
⑧	Exhaust Valve Unit	Exhaust Valve	Stainless Steel	SUS303/440C
		Valve Seat	Stainless Steel	SUS420F
⑨	Check Valve***	CK3MG	Cast Stainless Steel	SCS13A
		CKF3MG	Cast Stainless Steel	SCS13A

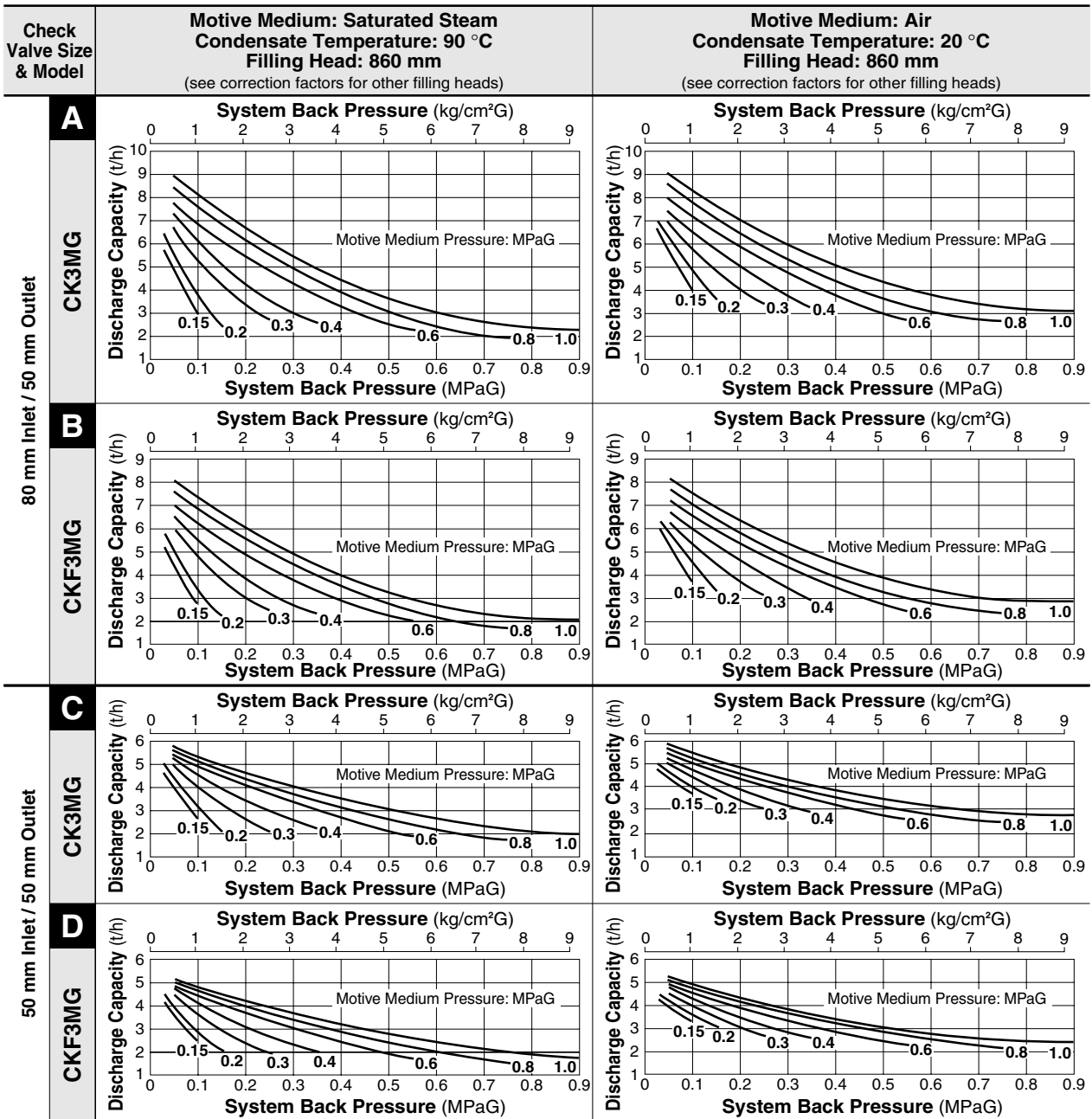
\* Equivalent \*\* Option: Cast Stainless Steel

\*\*\* Not shown, model depends on GP10 connection: CK3MG for screwed, CKF3MG for flanged



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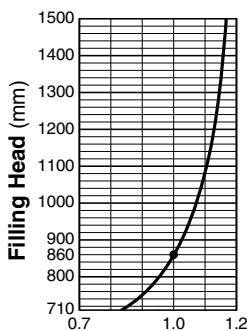
Discharge Capacity



• Correction Factors (for filling heads other than 860 mm)

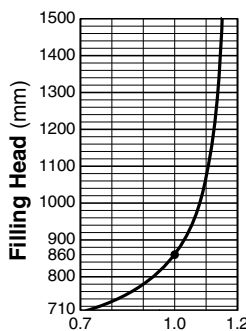
For Discharge Capacity Graphs **A & B**

(minimum filling head: 710 mm)



For Discharge Capacity Graphs **C & D**

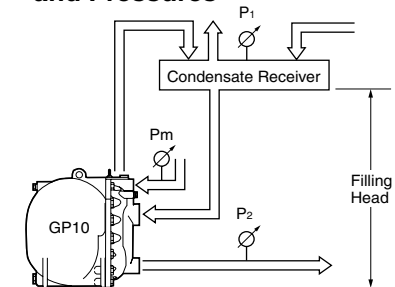
(minimum filling head: 710 mm)



NOTE:

- A check valve must be installed at both the pumped medium inlet and outlet. To achieve the above capacities with the standard GP10 configuration, TLV CK3MG or CKF3MG check valves must be used.
- Motive medium 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

• Illustration of Filling Head and Pressures

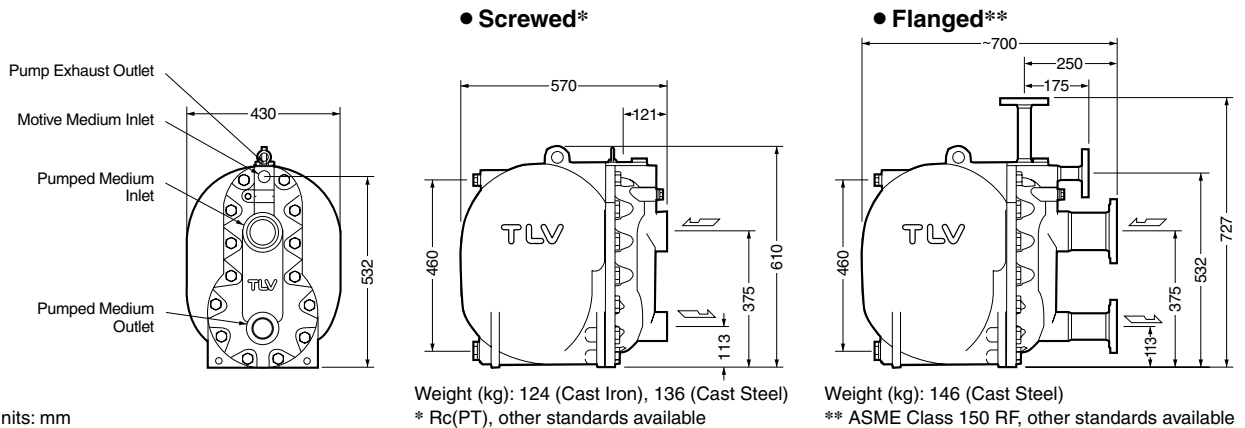


The flow rate is determined by the motive medium, motive medium pressure (Pm) and back pressure (P2).

Make sure that:

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

Dimensions



Units: mm

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 (in)	Vent Pipe Diameter mm (in)
25	80 (3)	25 (1)
50	100 (4)	50 (2)
75	125 (5)	50 (2)
100	150 (6)	80 (3)
150	200 (8)	80 (3)
200	200 (8)	100 (4)
300	250 (10)	125 (5)
400	300 (12)	125 (5)
500	350 (14)	150 (6)
700	400 (16)	200 (8)
800	450 (18)	200 (8)
1 000	500 (20)	200 (8)
1 100	500 (20)	250 (10)
1 400	550 (22)	250 (10)
1 500	600 (24)	250 (10)

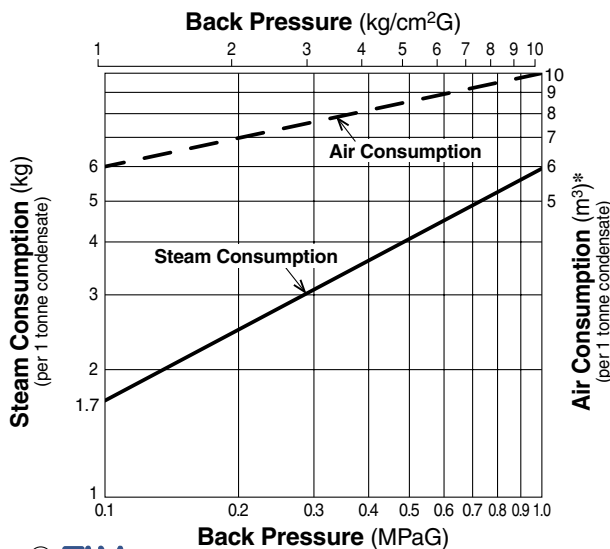
② Size of Reservoir (flash steam is not involved)

Amount of Condensate (kg/h)	Reservoir Diameter (mm) and Length (m)						
	40	50	80	100	150	200	250
300	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

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

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

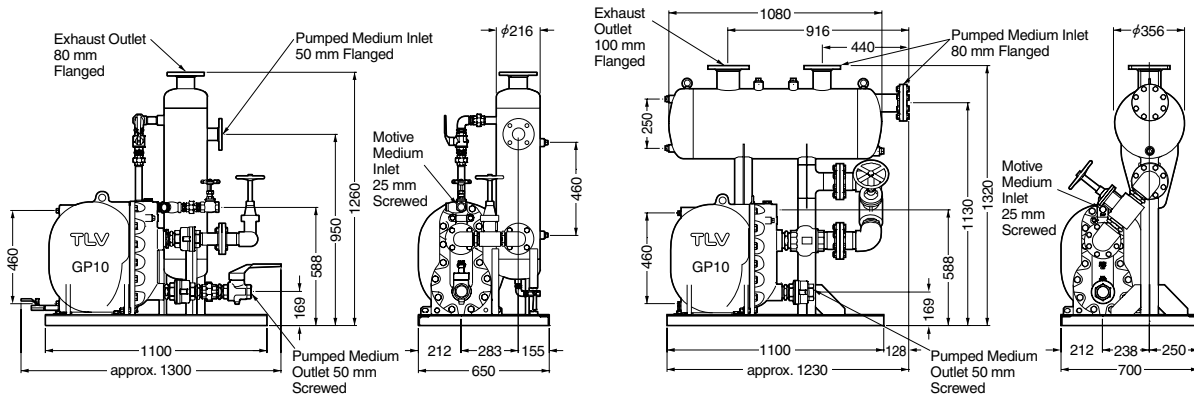
Steam or Air Consumption (Motive Medium)



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

**System Packages (Open Systems)**

**Single System Package**



**Type S1**

Discharge Capacity: see discharge capacity graph **C**  
 (no correction factor required, maximum capacity 2 t/h)  
 Maximum Allowable Flash Steam: 200 kg/h  
 Tank Size: 30 ℓ  
 Weight: 300 kg

**Type M1**

Discharge Capacity: see discharge capacity graph **A**  
 (no correction factor required)  
 Maximum Allowable Flash Steam: 500 kg/h  
 Tank Size: 100 ℓ  
 Weight: 340 kg

**Twin System Package**

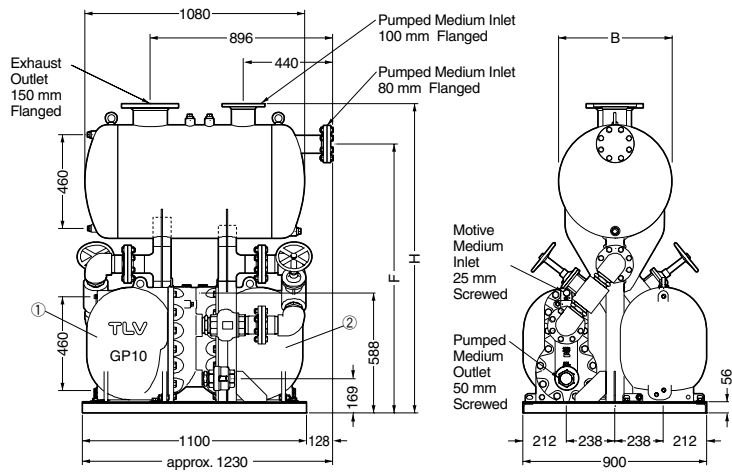
With small condensate loads, **PowerTrap** ① operates alone.  
 As condensate loads increase, **PowerTrap** ① and ② operate together.

**Type L2**

Discharge Capacity: double the discharge capacity found in graph **A** (no correction factor required)  
 Maximum Allowable Flash Steam: 1000 kg/h  
 Tank Size: 230 ℓ  
 Weight: 570 kg

**Type E2**

Discharge Capacity: double the discharge capacity found in graph **A** (no correction factor required)  
 Maximum Allowable Flash Steam: 1500 kg/h  
 Tank Size: 330 ℓ  
 Weight: 580 kg



**Standards:**

Screwed Connections: Rc(PT)  
 Flanged Connections: JIS 10K FF  
 Other standards available,  
 but weights and dimensions may differ

Units: mm

**Dimensions**

Type	H	F	φ B
L2	1520	1320	560
E2	1620	1420	660

Manufacturer

ISO 9001/ISO 14001

**TLV**® CO., LTD.  
 Kakogawa, Japan

is approved by LRQA Ltd. to ISO 9001/14001

