



# PowerTrap<sup>®</sup>

**MODEL GP10F** CAST STEEL  
CARBON STEEL

## MECHANICAL PUMP WITH RETROFITTABLE MECHANISM 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. All internal parts are suspended from the trap cover and can be removed upward in one piece.
6. High quality stainless steel internals and hardened working surfaces ensure reliability.
7. Cycle Counter installable as option.
8. Highly durable pump body.



### Pressure Equipment Directive (PED)

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

Size	Category	CE marking
DN 80 × DN 50	II	with CE marking and Declaration of Conformity

### Specifications

Model		GP10F
Connection	Pumped Medium Inlet & Outlet	Flanged EN1092-1 PN 40*
	Motive Medium & Pump Exhaust	Screwed BSP DIN 2999*
Size	Pumped Medium: Inlet × Outlet	DN 80 × DN 50
	Motive Medium Inlet	3/4"
	Pump Exhaust Outlet	1"
Maximum Operating Pressure (barg)	PMO	10.5
Maximum Operating Temperature (°C)	TMO	260
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 (ℓ)		approximately 30
Motive Medium**		Saturated Steam, Compressed Air, Nitrogen
Pumped Medium***		Steam Condensate, Water

\* Other standards available \*\* 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: 10.5  
Maximum Allowable Temperature (°C) TMA: 260

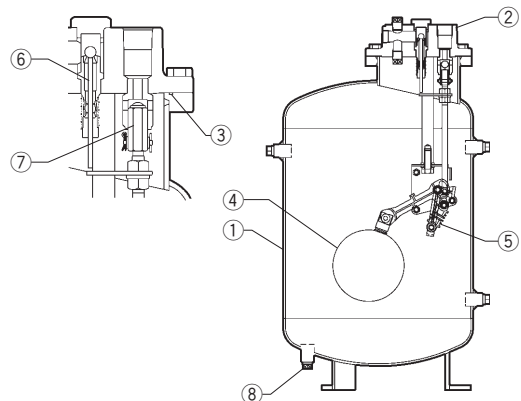


To avoid abnormal operation, accidents or serious injury, DO NOT use this product outside of the specification range. Local regulations may restrict the use of this product to below the conditions quoted.

No.	Description	Material	DIN <sup>1)</sup>	ASTM/AISI <sup>1)</sup>
①	Body	Carbon Steel P235GH HII <sup>2)</sup>	1.0345	—
②	Cover	Cast Steel A216 Gr.WCB <sup>2)</sup>	%*%*	—
③	Cover Gasket	Graphite/Stainless Steel SUS316	- / 1.4401	- / AISI316
④	Float	Stainless Steel SUS316L/SUS304	1.4404/ 1.4301	AISI316L/ AISI304
⑤	Snap-action Unit	Stainless Steel	—	—
⑥	Motive Medium Intake Valve Unit	Intake Valve	1.4125/ 1.4305	AISI440C/ AISI303
		Valve Seat	1.4125	AISI440C
⑦	Exhaust Valve Unit	Exhaust Valve	1.4125/ 1.4305	AISI440C AISI303/
		Valve Seat	1.4028	AISI420F
⑧	Drain Plug	Carbon Steel S25C	1.1158	AISI1025
⑨	Flange Assembly <sup>3) 4)</sup>	Carbon Steel C22.8	1.0460	A105
⑩	Check Valve <sup>4)</sup>	CKF3MG Cast Stainless Steel A351 Gr.CF8	1.4312	—

<sup>1)</sup> Equivalent materials <sup>2)</sup> Option: Stainless Steel

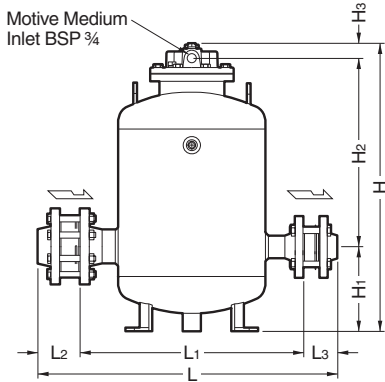
<sup>3)</sup> Consisting of bolts, nuts, butt-weld flange, gaskets <sup>4)</sup> Shown on reverse



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**Dimensions**

● **GP10F**

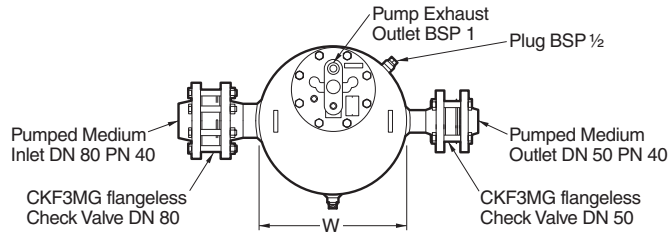


**GP10F Flanged\***

(mm)

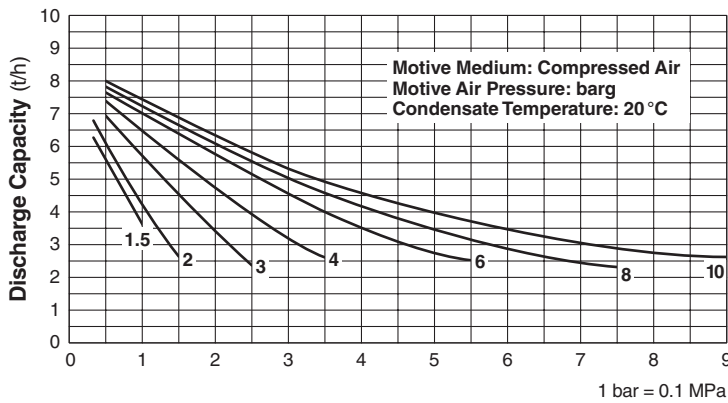
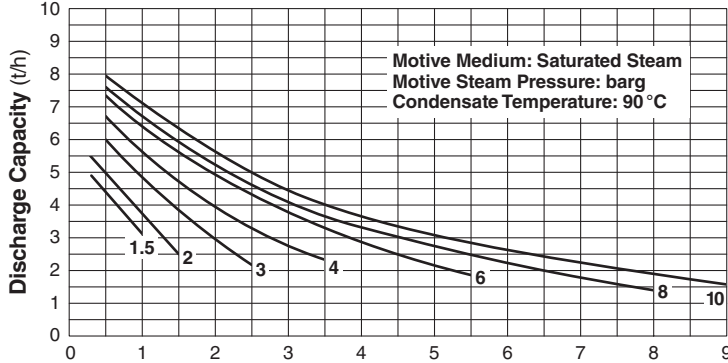
L	H	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	L <sub>1</sub>	L <sub>2</sub>	L <sub>3</sub>	φW	Weight (kg)
810	782	230	512	40	600	115	95	400	126

\* EN1092-1 PN 40, threaded connections: DIN 2999 female, other standards available



**Discharge Capacity**

CKF3MG DN 80 check valve at inlet, DN 50 at outlet, filling head 1070 mm

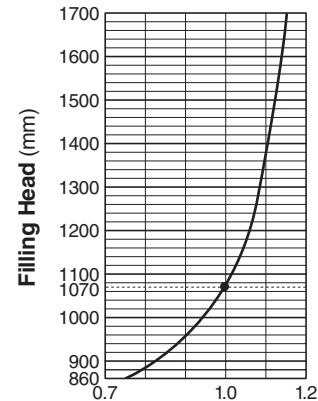


**NOTE:**

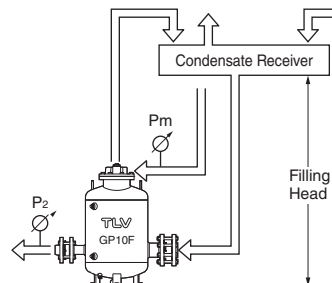
- To achieve the above capacities with the standard GP10F configuration, TLV CKF3MG check valves (supplied with the GP10F) must be used at the pumped medium inlet and outlet.
- Motive medium pressure minus back pressure must be greater than 0.5 bar.
- In closed system applications, the motive medium 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.

● **Correction Factor**

For GP10F with check valve CKF3MG, installed with filling head other than 1070 mm (minimum filling head: 860 mm)



● **Illustration of Filling Head and Pressures**



- The Discharge Capacity is determined by the motive medium, motive medium pressure (P<sub>m</sub>) and back pressure (P<sub>2</sub>).

Make sure that:  
 Discharge Capacity × Correction Factor > Required Flow Rate

## Receiver/Reservoir Sizing Tables

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

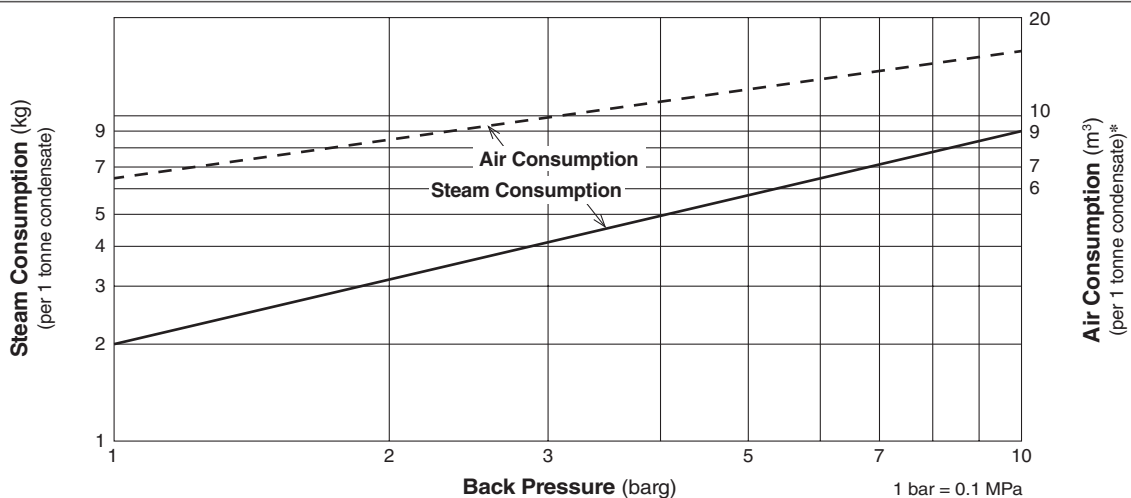
### 2. Size of Reservoir (flash steam is not involved)

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

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 pressure ( $P_m$ ) divided by the back pressure ( $P_2$ ) equals 2 or greater (when  $P_m \div P_2 \geq 2$ ).

## Steam or Air Consumption (Motive Medium)



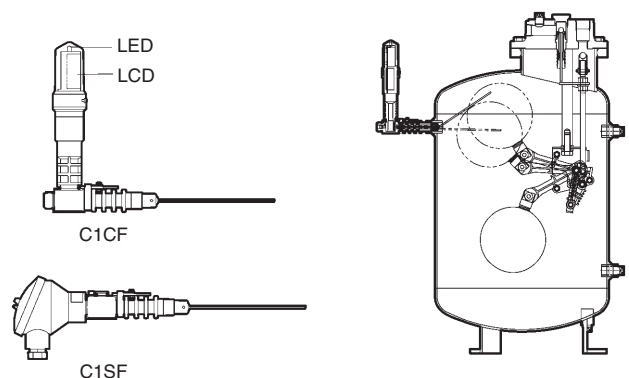
\* Equivalent consumption of air at 20 °C under atmospheric pressure

## Cycle Counter (option)

Two types of counter can be installed on the GP10F to monitor the number of pumping cycles and help to determine the timing of maintenance, or estimate the volume of pumped condensate.

- C1CF – (Counter Unit Type): Self-contained standalone unit. Includes an LCD counter display and an operation indicator LED.
- C1SF – (Terminal Box Type): Designed for use with remote monitoring equipment and systems.

See the Cycle Counter SDS for further details.

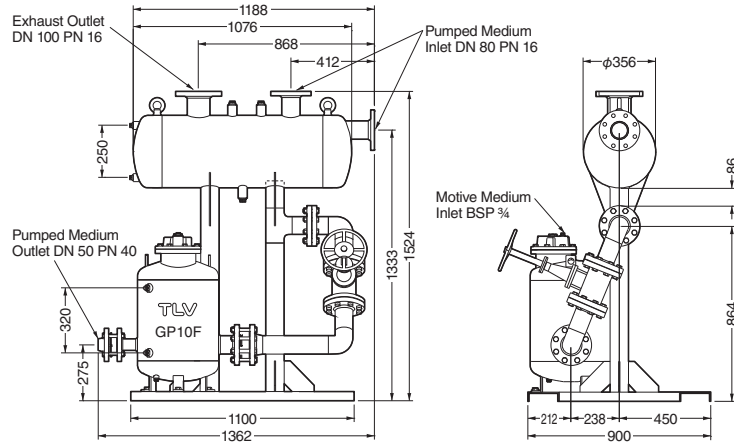


## System Packages (Open Systems)

### Single System Package

#### Type M1

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

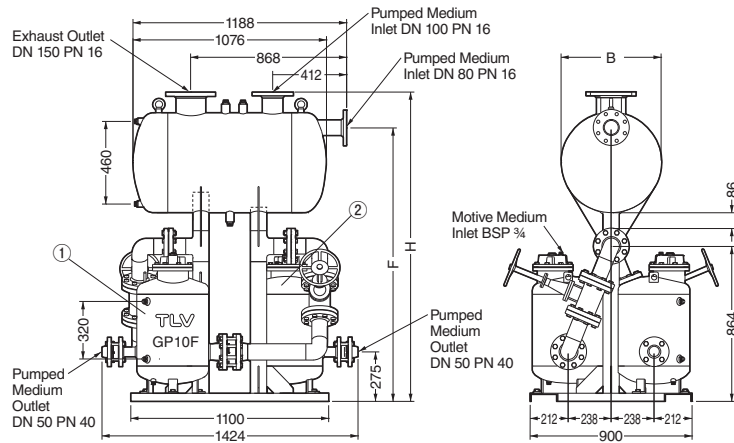


### Twin System Package

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

#### Type L2

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



#### Type E2

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

#### Standards:

Flanged connections: EN1092-1  
 Screwed connections: DIN 2999  
 Other standards available  
 Actual specifications may differ from the ones shown. Please consult TLV for details.

Units: mm

#### Dimensions

Type	H	F	Φ B
L2	1724	1524	560
E2	1823	1623	660

Manufacturer

**TLV** CO., LTD.

Kakogawa, Japan

is approved by LRQA Ltd. to ISO 9001/14001

ISO 9001  
 ISO 14001

