PowerTrap®

MODEL GP14M

SECONDARY PRESSURE DRAINER FOR PUMPING APPLICATIONS

Benefits

Pump for a wide range of applications. Ideal for medium flow condensate removal from vented receivers situated at a low level.

1. No cavitation or seal leakage.
2. Non-electric design with durable nickel-based alloy compression spring for reliable performance.
3. Pump will operate with a low filling head (min. 14″).
4. Easy, inline access to internal parts simplifies cleaning and reduces maintenance costs.
5. Intake/exhaust valve heads are both Rockwell 65C with 45C seats for maximum durability.
6. High-quality stainless steel internals ensure reliability.
7. Compact design permits installation in a limited space.
8. Float resists hydraulic shock to 1500 psig.
9. 2-year Limited Warranty for snap-action mechanism.*
10. Optional cycle counter available.

* Contact TLV for details

Specifications

Model			GP14M
Connection	Pumped Medium Inlet & Outlet		**Flanged***
	Motive Medium & Pump Exhaust		Screwed
Size (in)	Pumped Medium: Inlet × Outlet		**1½ × 1½**
	Motive Medium Inlet		½
	Pump Exhaust Outlet		½
Maximum Operating Pressure (psig)		PMO	200
Maximum Operating Temperature (°F)		TMO	428
Maximum Allowable Pressure (psig)		PMA	Cast Iron: 230 Cast Steel: 300
Maximum Allowable Temperature (°F)		TMA	Cast Iron: 428 Cast Steel: 500
Motive Medium Pressure Range (psig)			5 – 200
Maximum Allowable Back Pressure			7 psi less than motive medium pressure used
Volume of Each Discharge Cycle (gal)			Approx. 3.3
Motive Medium**			Saturated Steam, Compressed Air, Nitrogen
Pumped Medium***			Steam Condensate, Water

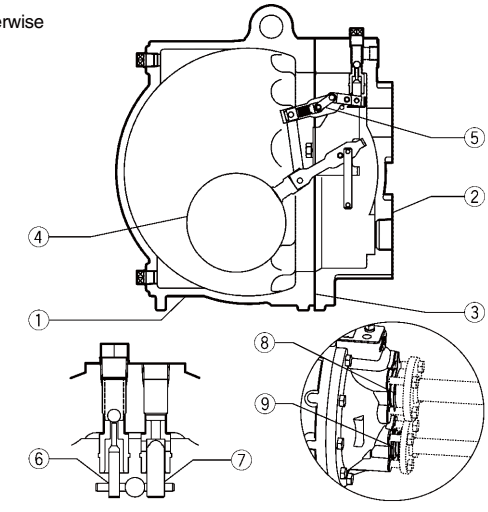
* For details of flange connection, see picture at bottom right
** Do not use with toxic, flammable or otherwise hazardous fluids.
*** Do not use for fluids with specific gravities under 0.85 or over 1, or for toxic, flammable or otherwise hazardous fluids.

Connections and sizes in bold are standard

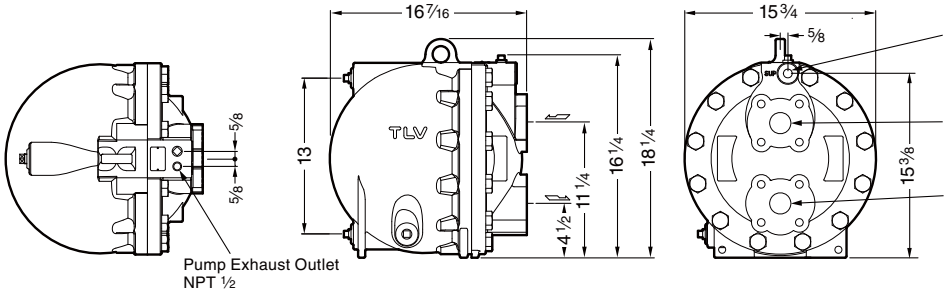
⚠ CAUTION To avoid abnormal operation, accidents or serious injury, DO NOT use this product outside of the specification range. Local regulations may restrict the use of this product to below the conditions quoted.

No.	Description		Material	ASTM/AISI*	JIS
①	Body		Cast Iron	A126 Cl.B	FC250
			Cast Steel**	A216 Gr.WCB	—
②	Cover		Cast Iron	A126 Cl.B	FC250
			Cast Steel**	A216 Gr.WCB	—
③	Cover Gasket		Graphite Compound	—	—
④	Float		Stainless Steel	AISI316L	SUS316L
⑤	Snap-action Unit		Stainless Steel	—	—
⑥	Motive Medium Intake Valve Unit	Intake Valve	Stainless Steel	AISI440C	SUS440C
		Valve Seat	Stainless Steel	AISI420F	SUS420F
⑦	Exhaust Valve Unit	Exhaust Valve	Stainless Steel	AISI440C	SUS440C
		Valve Seat	Stainless Steel	AISI420F	SUS420F
⑧	Inlet Check Valve CKF5M		Stainless Steel	AISI304	SUS304
⑨	Outlet Check Valve CKF3M		Cast Stainless Steel	A351 Gr.CF8	—

* Equivalent ** Option: Cast Stainless Steel



Dimensions



Units: inch

Weight (lb)	
Cast Iron	188
Cast Steel	207

Note: All Plug Holes NPT ½

Discharge Capacity

Filling Head 25″ from Grade

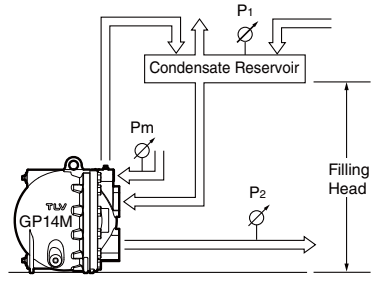
Inlet Pipe Size		1½″	
Inlet Check Valve		1½″ CKF5M	
Outlet Check Valve		1½″ CKF3M	
Motive Medium		Air	Steam
Motive Medium Inlet Pressure (Pm) (psig)	Total Lift or Back Press. (P_2) psig	lb/h	lb/h
200	25	5240	7200
	40	4890	5840
	60	4510	4850
	80	4120	3570
	100	3700	2850
	150	3060	1540
175	25	5110	6300
	40	4670	5050
	60	4360	4010
	80	3940	3080
	100	3570	2200
	150	2840	1280
150	15	5290	6610
	25	5020	5480
	40	4580	4270
	60	4180	3370
	80	3700	2490
	100	3190	1760
125	15	5260	5820
	25	4940	5100
	40	4540	3850
	60	4030	2990
	80	3540	2130
	100	3110	1470
100	15	5170	5330
	25	4810	4400
	40	4320	3200
	60	3820	2200
	80	3260	1450
75	15	4960	4510
	25	4580	3520
	40	4020	2310
	60	3390	1490
50	10	4970	4990
	15	4820	3850
	25	4350	2840
	40	3610	1600
25	5	5000	4660
	10	4630	3850
	15	4240	2860
10	2	4850	4620

● Correction Factor

For GP14M installed with filling head other than 25″ (minimum filling head: 14″)

Filling Head from Grade	Inlet Pipe & Check Valve Size
	1½″ CKF5M
55″	1.11
43″	1.08
37″	1.07
31″	1.05
25″	1.00
22″	0.95
18″	0.81
14″	0.60

● Illustration of Filling Head and Pressures



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

Make sure that:
Discharge Capacity × 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 GP14M configuration, TLV check valves CKF5M for inlet and CKF3M for outlet must be used.
- Motive steam pressure minus back pressure must be greater than 7 psi.
- In closed system applications, the motive medium must be compatible with the liquid being pumped. If a non-condensible 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.

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**.

If NO flash steam is present, use dimensions given in table ②. If flash steam is present, compare tables ① & ② and choose the larger resultant size. For all open systems, use table ① to select a suitable vent pipe diameter.

① Receiver Dimensions (Length: 3.5 ft)

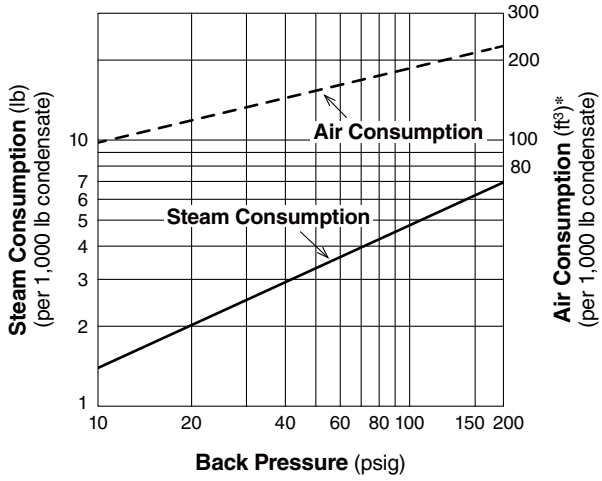
Flash steam up to lb/h	Receiver diameter in	Vent pipe diameter in
50	3	1
75	4	1 ½
100	4	2
200	6	2 ½
300	8	3
400	8	4
600	10	4
800	12	6
1,000	14	6
1,400	16	8
1,600	18	8
2,000	20	8

② Reservoir Dimensions

Amount of Condensate (lb/h)	Reservoir Diameter (in) and Length (ft)						
	1 ½	2	3	4	6	8	10
500 or less	3.0 ft	2.0					
700	4.0	2.5	1.0				
1,000	5.5	3.5	1.5				
1,200		4.5	2.0	1.0			
1,500			2.5	1.5			
2,000			3.5	2.0			
3,000			4.5	3.0			
4,000			6.5	4.0	1.5		
5,000				5.0	2.5		
6,000				5.5	2.5	1.5	
7,000				6.5	3.0	1.5	
8,000					3.5	2.0	
9,000					4.0	2.5	1.5
10,000					4.5	2.5	1.5
12,000					5.0	3.0	2.0
14,000					6.0	3.5	2.5
16,000					6.5	4.0	2.5
18,000						4.5	3.0
20,000						5.0	3.5

Reservoir length can be reduced by 50% when the motive 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)



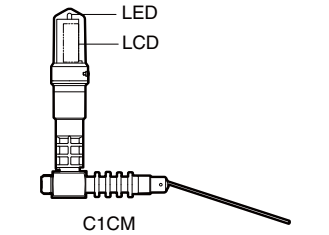
* Equivalent consumption of air at 68 °F under atmospheric pressure

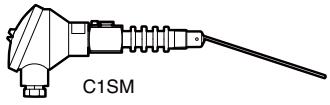
Cycle Counter (option)

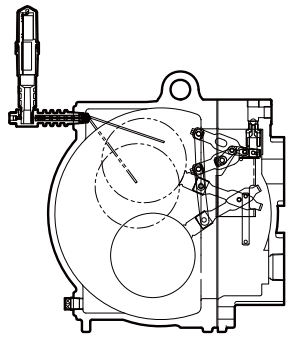
Two types of counter can be installed on the GP14M to monitor the number of pumping cycles and help to determine the timing of maintenance, or estimate the volume of pumped condensate.

- C1CM – (Counter Unit Type):
  Self-contained standalone unit. Includes an LCD counter display and an operation indicator LED.
- C1SM – (Terminal Box Type):
  Designed for use with remote monitoring equipment and systems.

Intrinsically safe models are also available.
See the Cycle Counter SDS for further details







CAUTION DO NOT DISASSEMBLE OR REMOVE THIS PRODUCT WHILE IT IS UNDER PRESSURE.
Allow internal pressure of this product to equal atmospheric pressure and its surface to cool to room temperature before disassembling or removing. Failure to do so could cause burns or other injury. READ INSTRUCTION MANUAL CAREFULLY.

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Member of FCI Fluid Controls Institute, Inc. Technical Resources for Instrumentation and Fluid Control

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

ISO 9001/ISO 14001