



PowerTrap®

MODEL GP10F

STEEL SECONDARY PRESSURE DRAINERS FOR PUMPING APPLICATIONS

Benefits

Technologically advanced system for pumping high temperature condensate or process liquids from vented receivers and sumps.

1. No cavitation or seal leakage.
2. Non-electric, compression spring design.
3. Externally removable motive medium intake valve, protected by an internal screen provides excellent serviceability.
4. Durable nickel-based alloy compression coil spring.
5. Inlet and exhaust valve heads are both Rockwell 65C with 45C seats for maximum durability.
6. All internal parts are suspended from the trap cover and can be removed upward in one piece, for simple maintenance and repair.
7. Two year snap-action mechanism and lifetime spring warranty.*
8. Float resists shock to 1500 psig.
9. Low profile design operates with low filling head and permits installation in a limited space.
10. Optional internal thermostatic steam trap available for drainage of motive medium inlet pipeline.
11. Mechanism retrofits some other makers' pumps.*
12. Cycle Counter installable as option.

* Contact TLV for details



Specifications

Model		GP10F
Connection	Pumped Medium Inlet & Outlet	Screwed*
	Motive Medium & Pump Exhaust	Screwed*
Size (in)	Pumped Medium: Inlet × Outlet	3 × 2
	Motive Medium Inlet	¾
	Pump Exhaust Outlet	1
Maximum Operating Pressure (psig)	PMO	150
Maximum Operating Temperature (°F)	TMO	428
Maximum Allowable Pressure (psig)	PMA	150
Maximum Allowable Temperature (°F)	TMA	650
Motive Medium Pressure Range (psi)		5 – 150
Maximum Allowable Back Pressure		7 psi less than motive medium pressure used
Volume of Each Discharge Cycle (gal)		Approximately 8
Motive Medium**		Saturated Steam, Compressed Air or Nitrogen
Pumped Medium***		Steam Condensate, Water

* Other connections available, but discharge capacity may be reduced.

** Do not use with toxic, flammable, or otherwise hazardous fluids.

*** Do not use for fluids with specific gravities under 0.85 or over, or for toxic, flammable, or otherwise hazardous fluids.

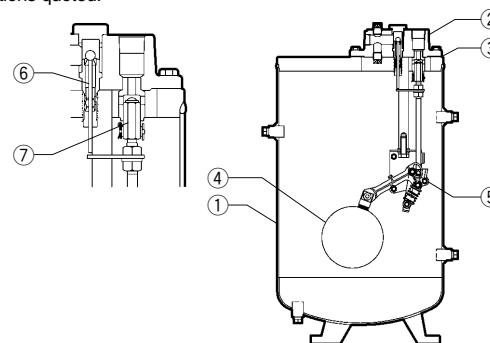
Connections and sizes in bold are standard



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	Carbon Steel**	SA414 Gr.G	—
②	Cover	Cast Steel**	A216 Gr.WCB	—
③	Cover Gasket	Graphite	—	—
④	Float	Stainless Steel	AISI316L/ AISI304	SUS316L/ SUS304
⑤	Snap-action Unit	Stainless Steel	—	—
⑥	Motive Medium Intake Valve Unit	Intake Valve	AISI440C/ AISI303	SUS440C/ SUS303
		Valve Seat	AISI440C/ AISI303	SUS440C/ SUS303
⑦	Exhaust Valve Unit	Exhaust Valve	AISI440C/ AISI303	SUS440C/ SUS303
		Valve Seat	AISI420F	SUS420F
⑧	TLV CK3MG Check Valve***	Cast Stainless Steel	A351 Gr.CF8	—

* Equivalent ** Option: Stainless steel *** Not shown



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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.

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)

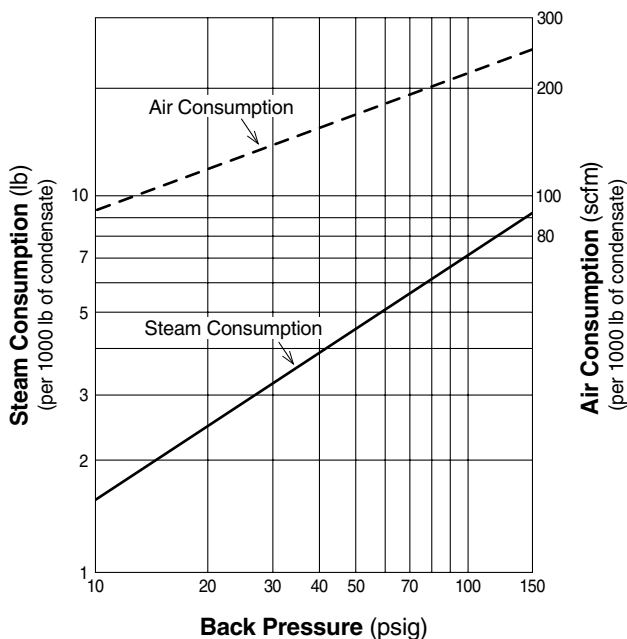
Flash Steam up to (lb/h)	Receiver Diameter (in)	Vent Pipe Diameter (in)
50	3	1
75	4	1½
100	4	2
200	6	2½
300	8	3
400	8	4
600	10	4
800	12	6
1,000	14	6
1,400	16	8
1,600	18	8
2,000	20	8

2. Reservoir Dimensions

Amount of condensate lb/h	Reservoir diameter (in) and length (ft)						
	1½	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 medium pressure (Pm) divided by back pressure (P2) equals 2 or greater (when $P_m \div P_2 \geq 2$).

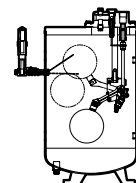
Steam or Air Consumption (Motive Medium)



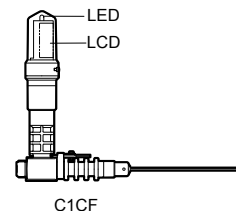
* Equivalent consumption of air at 68 °F under atmospheric pressure

Cycle Counter (option)

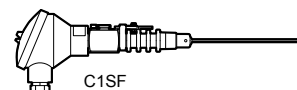
Two types of counter can be installed on the GP10F to monitor the number of pumping cycles and help to determine the timing of maintenance, or estimate the volume of pumped condensate.



- C1CF - (Counter Unit Type) : Self-contained standalone unit. Includes an LCD counter display and an operation indicator LED.



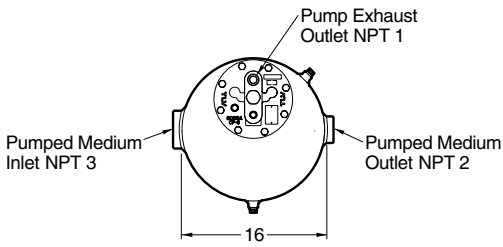
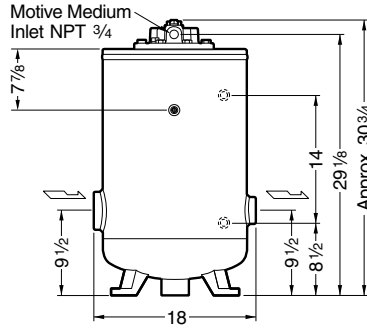
- C1SF - (Terminal Box Type) : Designed for use with remote monitoring equipment and systems.



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

Dimensions

Units: in



Weight: 154 lb

Discharge Capacity

Filling Head: 42" from Grade

Inlet Pipe Size		A	1"	B	1 1/2"	C	2"	D	3"
Inlet Check Valve		1" CK3MG		1 1/2" CK3MG		2" CK3MG		3" CK3MG	
Outlet Check Valve		1" CK3MG		1 1/2" CK3MG		2" CK3MG		2" CK3MG	
Motive Medium		Air	Steam	Air	Steam	Air	Steam	Air	Steam
Operating Inlet Press. (Pm) (psig)	Total Lift or Back Press. (P2) (psig)	(lb/h)	(lb/h)	(lb/h)	(lb/h)	(lb/h)	(lb/h)	(lb/h)	(lb/h)
150	15	3820	3730	7550	7370	13290	12920	17110	17020
	25	3640	3640	7280	7010	12190	1180	15290	15020
	40	3550	3370	6830	6370	10650	10370	12650	12470
	60	3460	3190	6190	5640	9100	8550	10190	10010
	80	3190	2910	5550	5100	8010	7100	8550	8100
	100	3000	2730	4910	4370	7190	5820	7550	6640
125	15	3640	3550	7460	7010	12830	12380	16200	15930
	25	3550	3460	7100	6550	11560	11010	14380	14010
	40	3460	3190	6550	5820	10010	9190	12010	11380
	60	3280	3000	5920	5190	8650	7280	9740	9460
	80	3090	2820	5280	4730	7550	5820	8190	7640
	100	2910	2550	4640	3910	6730	5010	7100	6280
100	15	3550	3370	7190	6640	12380	12010	15470	15200
	25	3460	3190	6830	6190	11190	10370	13740	12920
	40	3280	3000	6370	5460	9560	8370	11380	10280
	60	3190	2820	5730	4730	8100	6640	9190	7830
	80	3000	2640	5100	3820	7100	5550	7740	6370
	100	2820	2460	4470	3410	6100	4730	6370	5100
75	15	3460	3190	7100	6280	11920	11380	14200	13650
	25	3370	3000	6640	5730	10650	10010	12290	11190
	40	3190	2730	6010	5010	9100	7920	10470	8920
	60	3000	2370	5280	4190	7740	6100	8370	6550
	80	2820	2190	4640	3640	6730	5010	7100	5550
	100	2640	2010	4010	3000	5730	4190	5820	4470
50	10	3460	3090	7190	6190	11380	10470	13920	13470
	15	3370	3000	6920	5820	10740	8920	12920	12010
	25	3280	2730	6370	5190	9460	7010	11280	9100
	40	3000	2280	5730	4190	7550	5460	9280	5730
	60	2820	2100	5090	3550	6550	4470	7830	4730
	80	2640	1920	4430	3000	5550	3820	6370	4010
25	5	3460	3090	7100	5820	11280	10280	13830	12290
	10	3280	2820	6730	5280	10470	7920	12740	10010
	15	3190	2640	6460	4820	9650	6190	11740	8460
	20	3100	2460	6190	4370	8840	5460	10740	7550
	25	3000	2280	5920	3910	8030	4730	9740	6730
	30	2910	2100	5640	3460	7220	4010	8740	5820

NOTE:

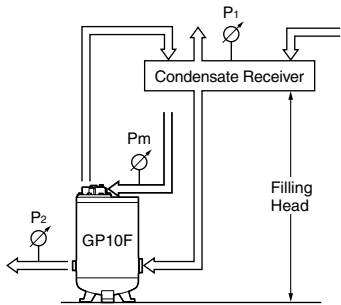
- A check valve must be installed at both the pumped medium inlet and outlet. To achieve the above capacities with the standard GP10F configuration, TLV CK3MG check valves must be used.
- Motive medium pressure minus back pressure must be greater than 7 psi.
- In closed system applications, the motive medium must be compatible with the liquid being pumped. If a non-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 Factors

For GP10F installed with filling head other than 42" (minimum filling head 33")

Filling Head from Grade	Inlet Pipe/Check Valve Size			
	1"	1 1/2"	2"	3"
33"	0.76	0.83	0.83	0.85
36"	0.85	0.89	0.88	0.90
42"	1.00	1.00	1.00	1.00
48"	1.10	1.07	1.04	1.03
54"	1.18	1.14	1.09	1.08
60"	1.22	1.17	1.12	1.09
66"	1.29	1.20	1.15	1.11

● Illustration of Filling Head and Pressures

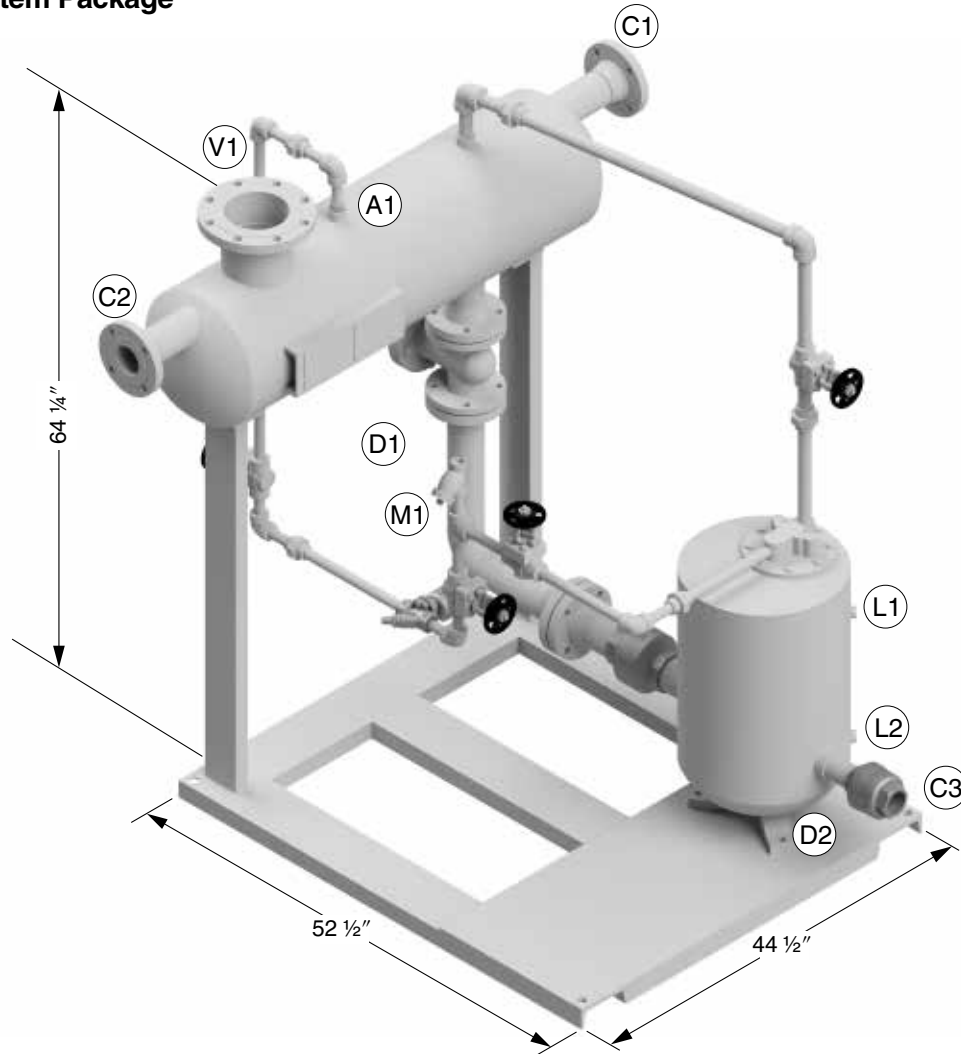


- The discharge capacity is determined by the motive medium, motive medium pressure (Pm) and back pressure (P2).

Make sure that:
Discharge Capacity × correction factor
> required flow rate

System Package Configuration

Single System Package¹⁾



Available Standard System Package Configurations

Single GP10F: 29 Gallon Tank

Weight: approx. 940 lb

Max. Allowable Flash Steam: 1800 lb/h

Tag	Qty.	Size (in)	Process
A1	1	½	Auxiliary Connection
C1	1	3	Condensate Inlet/Overflow Connection
C2	1	3	Condensate Inlet/Overflow Connection
C3	1	2	Pumped Condensate Outlet Connection
D1	1	½	Tank Drain Connection
D2	1	½	PowerTrap Drain Connection
L1	1	½	PowerTrap Level Gauge Connection
L2	1	½	PowerTrap Level Gauge Connection
M1	1	1	Motive Steam Inlet Connection
V1	1	6	System Vent Connection

Discharge Capacity: see discharge capacity graph column **D**

Twin GP10F: 50 Gallon Tank

Weight: approx. 1500 lb

Max. Allowable Flash Steam: 3200 lb/h

Tag	Qty.	Size (in)	Process
A1	1	½	Auxiliary Connection
C1	1	4	Condensate Inlet/Overflow Connection
C2	1	4	Condensate Inlet/Overflow Connection
C3	2	2	Pumped Condensate Outlet Connection
D1	1	½	Tank Drain Connection
D2	2	½	PowerTrap Drain Connection
L1	2	½	PowerTrap Level Gauge Connection
L2	2	½	PowerTrap Level Gauge Connection
M1	1	1	Motive Steam Inlet Connection
V1	1	8	System Vent Connection

Discharge Capacity: double the discharge capacity found in column **D**

NOTES:

1) Single Industrial System Package shown. See System Package Specifications table for details and alternative configuration. See next page for Standard Tank/Piping specifications. Other non-standard specifications available to meet site requirements.





System Package Specifications

Tank



ASME U-stamped pressure vessel built in accordance with the latest edition of ASME Section VIII Div. 1
 Rated to 200 psig @ 395 °F
 Connections 2" and greater:
 Connections 1 1/2" and smaller:
 Corrosion Allowance:

ASME 150RFWN flanged fittings
 300# socket weld fittings
 1/32"

Standard Design Option:	Industrial	Power & Refining
PowerTrap		
Body Material	Fabricated Carbon Steel	Fabricated Carbon Steel
PowerTrap Connections incl. Inlet, Outlet, Motive & Exhaust Connections	NPT	150RFWN flanged (connections are NPT & seal welded)
PowerTrap Connections incl. Drain & Sight Glass Connections	NPT	NPT
Check Valves		
PowerTrap Check Valves	NPT (CK3MG)	Flangeless 150RF (CKF3MG)
Isolation Valves		
Inlet/Outlet Valves	150RF Cast Steel Flanged Gate Valve with #8 Trim	150RF Cast Steel Flanged Gate Valve with #8 Trim
Motive/Balance Line Valves	800# NPT Cast Steel Gate Valve with #8 Trim	800# Socket Weld Cast Steel Gate Valve with #8 Trim
Piping		
PowerTrap Inlet/Outlet Piping	Schedule 40 A106 SMLS	Schedule 80 A106 SMLS
Motive/Balance Line Piping	Schedule 40 A106 SMLS	Schedule 80 A106 SMLS
Motive/Balance Line Fittings	3000# Forged Steel Threaded	3000# Forged Steel Socket Weld
Piping Code	ASME B31.3 "Category D" fluid service With no testing documentation	ASME B31.3 specification code With full testing and documentation as indicated in the ASME B31.3 code
Y-strainer Installation Location		
Location	On Motive Line	
Gaskets		
Type	Stainless Steel Flexible Graphite Spiral Wound	
Paint		
Pre-paint	Near White Metal Blast	White Metal Blast
Pre-Top Coat	None	
Top Coat	Sherwin Williams Heat-Flex Hi-Temp Pure Aluminium Finish, Surface Temp. 500 °F	

Memo:

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ISO 9001
ISO 14001



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