PowerTrap®

MODEL GT10L

COMBINATION PUMPING AND TRAPPING SECONDARY PRESSURE DRAINER

Benefits

Pump/trap with built-in steam trap for a wide range of applications: drainage of low capacity heat exchangers, flash steam recovery systems and reservoirs, often operating under vacuum conditions.

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. 12″).
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. Two year warranty for snap-action mechanism.*

* Contact TLV for details

Specifications

Model			GT10L	
Connection	Pumped Medium Inlet & Outlet		**Screwed and Flanged***	**Screwed**
	Motive Medium & Pump Exhaust		Screwed	
Size (in)	Pumped Medium: Inlet × Outlet		**1 × 1**	**1½ × 1**
	Motive Medium Inlet		½	
	Pump Exhaust Outlet		½	
Maximum Operating Pressure (psig)		PMO	150	
Maximum Operating Temperature (°F)		TMO	365	
Maximum Allowable Pressure (psig)		PMA	Cast Iron: 230 Cast Steel: 300	
Maximum Allowable Temperature (°F)		TMA	428	
Motive Medium Pressure Range (psig)			5 – 150	
Maximum Allowable Back Pressure			7 psi less than motive medium pressure used	
Volume of Each Discharge Cycle (gal)			approximately 1.6	
Motive Medium**			Saturated Steam	
Pumped Medium***			Steam Condensate	

* For details of flange connection, see picture at bottom right

Connections and sizes in bold are standard

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

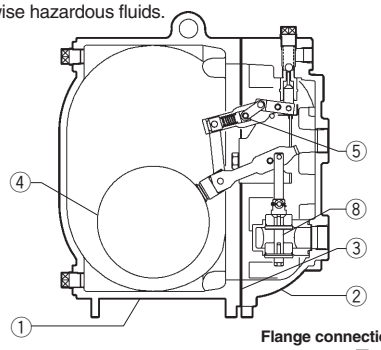
*** Do not use for fluids with specific gravities under 0.85 or over 1, or for toxic, flammable or otherwise hazardous fluids.

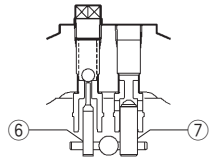
⚠ CAUTION

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.

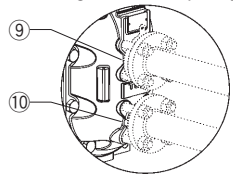
No.	Description			Material	ASTM/AISI*	JIS
①	Body			Cast Iron	A126 Cl.B	FC250
				Cast Steel**	A216 Gr.WCB	—
②	Cover			Cast Iron	A126 Cl.B	FC250
				Cast Steel**	A216 Gr.WCB	—
③	Cover Gasket			Graphite Compound	—	—
④	Float			Stainless Steel	AISI316L	SUS316L
⑤	Snap-action Unit			Stainless Steel	—	—
⑥	Motive 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	Trap Unit			Stainless Steel	—	—
⑨	Inlet Check Valve	Screwed	CK3MG***	Cast Stainless Steel	A351 Gr.CF8	—
		Flanged	CKF5M	Stainless Steel	AISI304	SUS304
⑩	Outlet Check Valve	Screwed	CK3MG***	Cast Stainless Steel	A351 Gr.CF8	—
		Flanged	CKF3M	Cast Stainless Steel	A351 Gr.CF8	—

* Equivalent ** Option: Cast Stainless Steel *** Not shown





Flange connection (1″only)



Discharge Capacity

Filling Head: 25″ from Grade

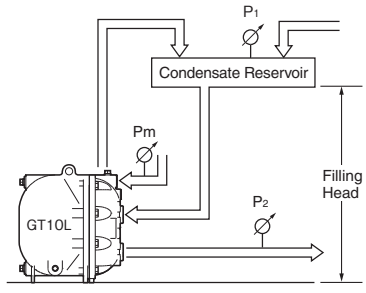
Inlet Pipe Size		A 1½″	B 1″	C 1″
Inlet Check Valve		1½″ CK3MG	1″ CK3MG	1″ CKF5M
Outlet Check Valve		1″ CK3MG	1″ CK3MG	1″ CKF3M
Motive Medium		Steam	Steam	Steam
Motive Medium Inlet Pressure (P_m) (psig)	Total Lift or Back Press. (P_2) psig	(lb/h)	(lb/h)	(lb/h)
150	15	3,080	2,310	2,160
	25	2,850	2,110	1,890
	40	2,520	1,860	1,740
	60	2,160	1,560	1,300
	80	1,820	1,290	1,050
	100	1,520	1,120	810
125	15	2,890	2,260	2,090
	25	2,670	2,010	1,800
	40	2,360	1,740	1,650
	60	2,010	1,440	1,150
	80	1,700	1,180	920
	100	1,360	1,030	690
100	15	2,740	2,160	2,020
	25	2,480	1,930	1,690
	40	2,070	1,610	1,530
	60	1,640	1,270	1,000
	80	1,230	1,030	750
75	15	2,600	2,090	1,870
	25	2,320	1,750	1,540
	40	1,870	1,450	1,270
	60	1,360	1,110	840
50	10	2,620	2,110	1,830
	15	2,520	1,930	1,650
	25	1,970	1,610	1,300
	40	1,390	1,190	980
25	5	2,670	2,080	1,980
	10	2,360	1,850	1,620
	15	2,060	1,600	1,340
10	2	2,620	2,030	1,890

• Correction Factors

For GT10L installed with filling head other than 25″ (minimum filling head: CK3MG: 18″, CKF5M: 12″)

Filling Head from Grade	Inlet Pipe & Check Valve Size		
	1½″ CK3MG	1″ CK3MG	1″ CKF5M
55″	1.30	1.50	1.37
43″	1.27	1.35	1.28
37″	1.23	1.25	1.21
31″	1.15	1.15	1.12
25″	1.00	1.00	1.00
22″	0.90	0.85	0.93
18″	0.60	0.60	0.81
12″	—	—	0.59

• Illustration of Filling Head and Pressures



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

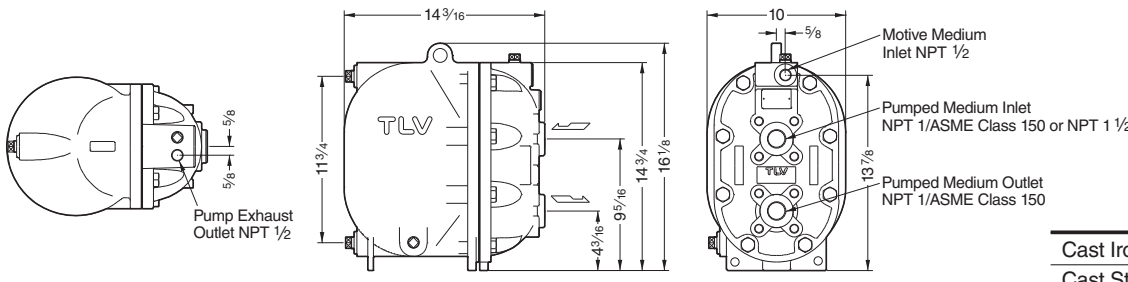
Make sure that:
Discharge Capacity × Correction Factor > Required Flow Rate

NOTE:

- A check valve must be installed at both the pumped medium inlet and outlet. To achieve the above capacities with the standard GT10L configuration, either TLV check valves CK3MG (inlet & outlet), or CKF5M (inlet) and CKF3M (outlet) must be used. depending on connection type.
- Motive medium pressure minus back pressure must be greater than 7 psi.
- A strainer must be installed at the motive medium and pumped medium inlets.

Dimensions

Units: in



Weight (lb)	
Cast Iron	101
Cast Steel	110

Note: All Plug Holes NPT 1/2

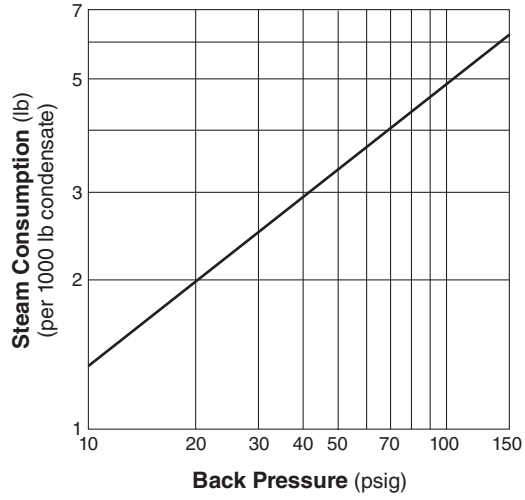
Reservoir Sizing Table

The reservoir must have a capacity sufficient to store the condensate produced during the PowerTrap operation and discharge.

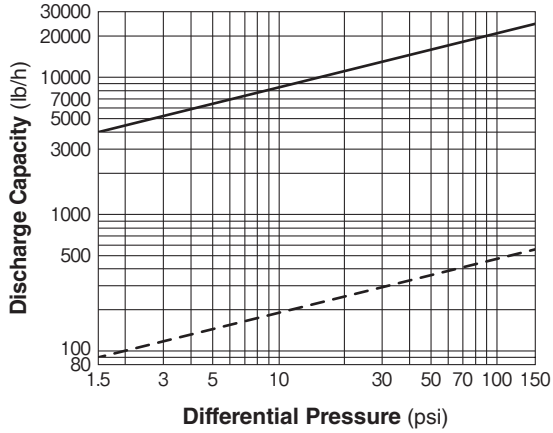
Amount of condensate lb/h	Reservoir diameter (in) and length (ft)						
	1½	2	3	4	6	8	10
500 or less	3.0 ft	2.0					
700	4.0	2.5	1.0				
1000	5.5	3.5	1.5				
1200		4.5	2.0	1.0			
1500			2.5	1.5			
2000			3.5	2.0			
3000			4.5	3.0			
4000			6.5	4.0	1.5		
5000				5.0	2.5		
6000				5.5	2.5	1.5	
7000				6.5	3.0	1.5	
8000					3.5	2.0	
9000					4.0	2.5	1.5
10000					4.5	2.5	1.5
12000					5.0	3.0	2.0
14000					6.0	3.5	2.5
16000					6.5	4.0	2.5
18000						4.5	3.0
20000						5.0	3.5

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

Steam Consumption (Motive Medium)



GT10L Steam Trap Discharge Capacity



——— : Capacity of GT10L as a steam trap ($P_1 > P_2$). Instantaneous condensate loads above the rated trap capacity will cause the pump to cycle and therefore reduce the discharge capacity.

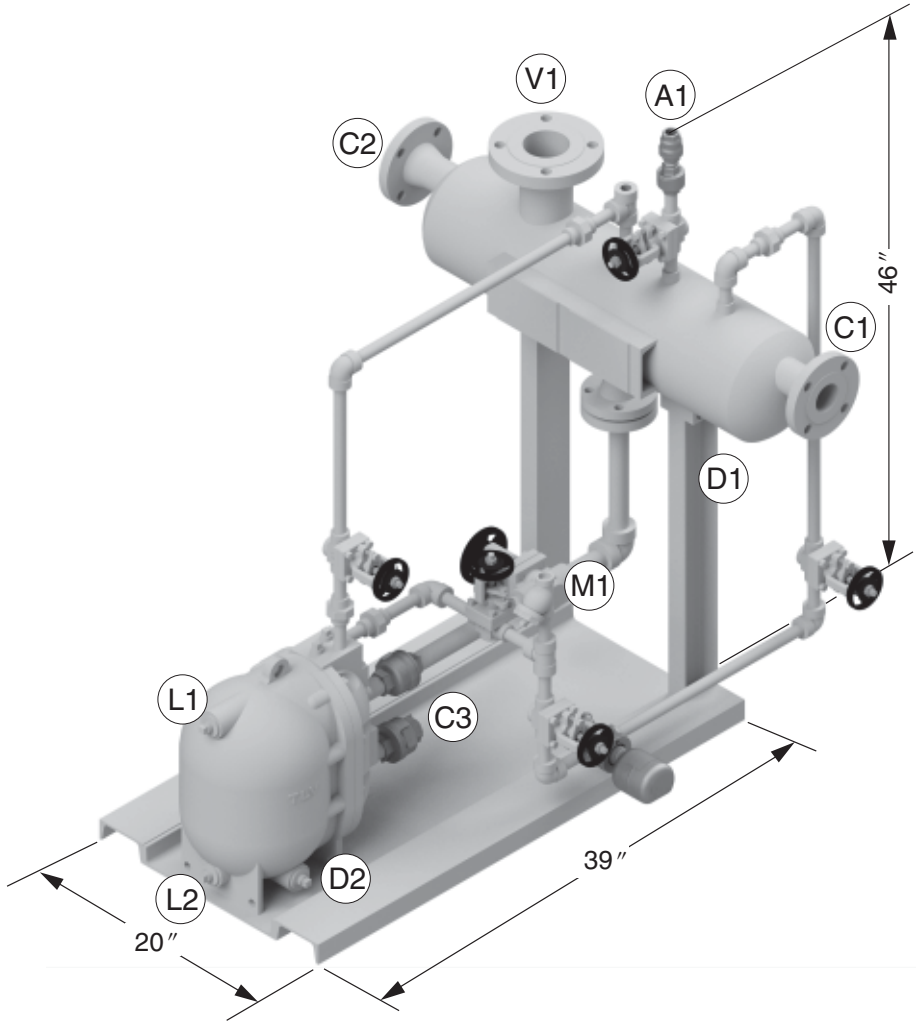
– – – – : Minimum amount of condensate required to prevent steam leakage.

1. Capacities are based on continuous discharge of condensate 11 °F below steam temperature.
2. Differential pressure is the difference between the inlet and outlet pressure of the trap.

⚠ CAUTION DO NOT use this product under conditions that exceed maximum differential pressure, as condensate backup will occur!

System Package Configuration

Single System Package[1)]



Standard System Package Configuration

Single GT10L: 6 Gallon Tank

Weight: approx. 370 lb

Tag	Qty.	Size (in)	Process
A1	1	½	Air Vent Connection
B1	1	½	Balance Line Connection to Equipment
C1	1	2	Condensate Inlet/Auxiliary Connection
C2	1	2	Condensate Inlet/Auxiliary Connection
C3	1	3	Condensate Inlet/Auxiliary Connection
C4	1	1	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	½	Motive Steam Inlet Connection
V1	1	3	System Vent Connection

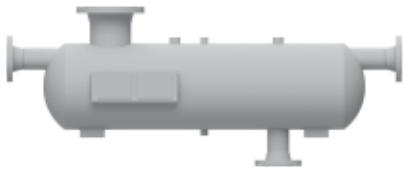
Discharge Capacity: see discharge capacity graph column **B**

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:	ASME 150RFWN flanged fittings
Connections 1 ½″ and smaller:	300# socket weld fittings
Corrosion Allowance:	1/32″

Standard Design Option:	Industrial	Power & Refining
PowerTrap		
Body Material	Cast Iron	Cast 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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Manufacturer
TLV CO., LTD.
Kakogawa, Japan
is approved by LRQA Ltd. to ISO 9001/14001

ISO 9001
ISO 14001
CERTIFIED ISO 9001 · ISO 14001

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