



PowerTrap®

MODEL GT10/GT14

COMBINATION PUMPING AND TRAPPING SECONDARY PRESSURE DRAINER

Benefits

Pump/trap with built-in steam trap for a wide range of applications: drainage of heat exchangers, flash steam recovery systems and non-vented receivers such as low-pressure stages of turbines and absorption chillers, 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. Externally removable motive medium intake valve protected by an internal screen provides excellent serviceability.
4. Intake/exhaust valve heads are both Rockwell 65C with 55C/45C seats for maximum durability.
5. High quality stainless steel internals ensure reliability.
6. Two-year snap-action mechanism and lifetime spring warranty.*
7. Float resists shock to 1340 psig.

* Contact TLV for details



Specifications

Model		GT10			GT14		
Body Material		Cast Iron			Cast Steel		
Connection	Pumped Medium Inlet & Outlet	Screwed	Screwed	Flanged	Screwed	Screwed	Flanged
	Motive Medium & Pump Exhaust						
Size (in)	Pumped Medium: Inlet x Outlet	3 x 2		2 x 2, 3 x 2	3 x 2		2 x 2, 3 x 2
	Motive Medium Inlet	1			1		
	Pump Exhaust Outlet	1			1		
Maximum Operating Pressure (psig)	PMO	150			200		
Maximum Operating Temperature (°F)	TMO	365			392		
Maximum Allowable Pressure (psig)	PMA	200		230	200		230
Maximum Allowable Temperature (°F)	TMA	428			428		
Motive Medium Pressure Range (psig)		5 – 150			5 – 200		
Maximum Allowable Back Pressure (psig)		7 psi less than motive medium pressure used			7 psi less than motive medium pressure used, but not to exceed 150 psig		
Volume of Each Discharge Cycle (gal)		approximately 8					
Motive Medium*		Saturated Steam					
Pumped Medium**		Steam Condensate					

* 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.



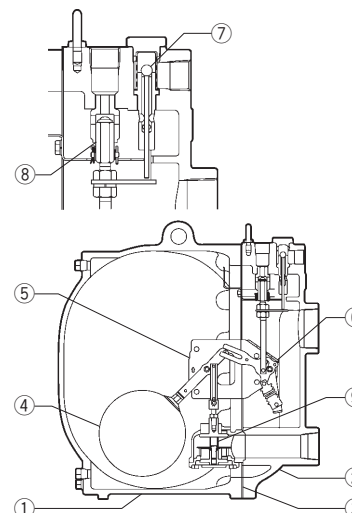
To avoid abnormal operation, accidents or serious injury, DO NOT use products outside of the specification range. Local regulations may restrict the use of this product to below the conditions quoted.

Connections and sizes in bold are standard

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	GT10	Graphite Compound	—
		GT14	Graphite/Stainless Steel	— /SUS316L
④	Float	Stainless Steel	AISI316L/303	SUS316L/303
⑤	Lever Unit	Stainless Steel	—	—
⑥	Snap-action Unit	Stainless Steel	—	—
⑦	Motive Medium Intake Valve Unit	Intake Valve	Stainless Steel	AISI303/440C
		Valve Seat	Cast Stainless Steel/Stainless Steel	A351 Gr.CF8/AISI440C
⑧	Exhaust Valve Unit	Exhaust Valve	Stainless Steel	AISI303/440C
		Valve Seat	Stainless Steel	AISI420F
⑨	Trap Unit	Stainless Steel	—	—
⑩	Check Valve***	CK3MG	Cast Stainless Steel	A351 Gr.CF8
		CKF3MG	Cast Stainless Steel	A351 Gr.CF8

* Equivalent ** Option: Cast Stainless Steel

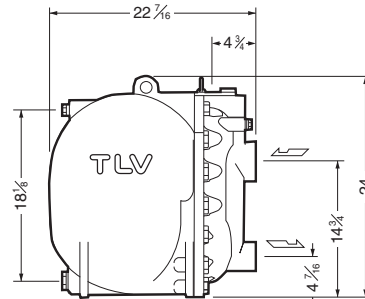
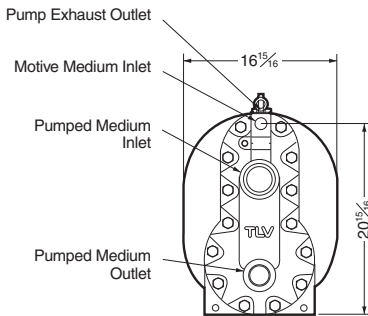
*** Not shown, model depends on connection; CK3MG for screwed, CKF3MG for flanged



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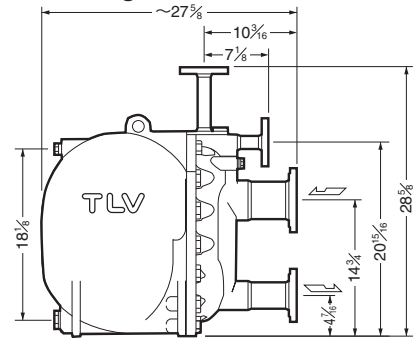
Dimensions

• Screwed*



Weight (lb): 280 (Cast Iron), 306 (Cast Steel)
* NPT, other standards available

• Flanged**



Weight (lb): 328 (Cast Steel)
** ASME Class 150 RF (GT10, option for GT14), Class 300 RF (GT14), other standards available

Units: inch

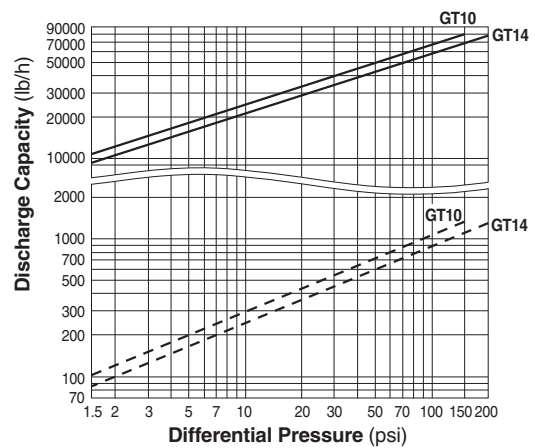
Reservoir Sizing Table

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)						
	1 1/2	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 Trap Discharge Capacity



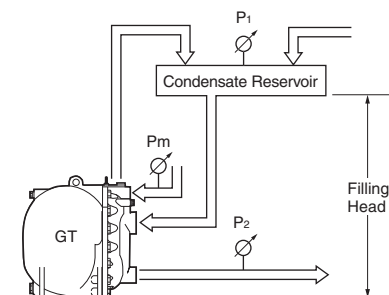
— : Capacity of GT10/GT14 as steam traps ($P_1 > P_2$).
Instantaneous condensate loads above the rated trap capacity will cause the pump to cycle and therefore reduce the discharge capacity.
- - - : Minimum amount of condensate required to prevent steam leakage.

- Capacities are based on continuous discharge of condensate 11 °F below steam temperature.
- Differential pressure is the difference between 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!

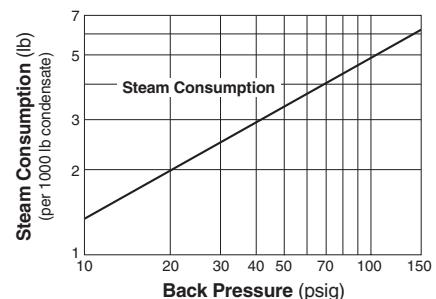
Filling Head and Pressure



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

Motive Medium Consumption



Discharge Capacity

● GT10 (Filling Head: 36" from Grade)

Inlet Pipe Size		A	B	C	D	E	F
Inlet Check Valve		1" CK3MG	1½" CK3MG	2" CK3MG	3" CK3MG	2" CKF3MG	3" CKF3MG
Outlet Check Valve		1" CK3MG	1½" CK3MG	2" CK3MG	2" CK3MG	2" CKF3MG	2" CKF3MG
Motive Medium		Steam	Steam	Steam	Steam	Steam	Steam
Motive Medium Inlet Pressure (P _m) (psig)	Total Lift or Back Pressure (P ₂) (psig)	(lb/h)	(lb/h)	(lb/h)	(lb/h)	(lb/h)	(lb/h)
150	15	3,200	7,000	10,900	17,100	9,800	15,400
	25	3,100	6,400	10,000	14,600	9,000	13,100
	40	2,900	5,900	8,500	11,600	7,700	10,400
	60	2,700	5,000	7,000	8,800	6,300	7,900
	80	2,500	4,300	6,000	6,800	5,400	6,100
	100	2,300	3,600	5,000	5,700	4,500	5,100
	120	2,100	3,000	4,300	4,800	3,900	4,400
130	2,000	2,700	4,100	4,800	3,700	4,400	
125	15	3,000	6,700	10,600	16,100	9,500	14,500
	25	2,900	6,200	9,500	13,800	8,600	12,400
	40	2,700	5,600	7,800	10,800	7,000	9,700
	60	2,600	4,700	6,300	8,300	5,700	7,500
	80	2,300	4,000	5,200	6,300	4,700	5,700
	100	2,000	3,300	4,700	5,200	4,200	4,700
100	15	2,900	6,500	10,400	14,900	9,400	13,400
	25	2,800	6,100	9,000	12,700	8,100	11,400
	40	2,600	5,300	7,400	10,000	6,700	9,000
	60	2,400	4,500	5,900	7,400	5,300	6,700
	80	2,100	3,600	4,600	5,500	4,100	5,000
75	15	2,800	6,200	10,100	13,600	9,100	12,200
	25	2,700	5,800	8,400	11,300	7,600	10,200
	40	2,500	5,000	7,000	8,200	6,300	7,400
	60	2,200	4,000	5,400	6,100	4,900	5,500
50	10	2,700	6,100	10,000	13,700	9,000	12,300
	15	2,600	5,800	8,600	12,100	7,700	10,900
	25	2,500	5,000	6,700	9,200	6,000	8,300
	40	2,300	3,900	5,300	6,000	4,800	5,400
25	5	2,700	5,900	9,600	11,900	8,600	10,700
	10	2,600	5,300	7,500	9,000	6,800	8,100
	15	2,400	4,700	5,900	6,800	5,300	6,100

● GT14 (Filling Head: 36" from Grade)

Inlet Pipe Size		G	H	I	J
Inlet Check Valve		2" CK3MG	3" CK3MG	2" CKF3MG	3" CKF3MG
Outlet Check Valve		2" CK3MG	2" CK3MG	2" CKF3MG	2" CKF3MG
Motive Medium		Steam	Steam	Steam	Steam
Motive Medium Inlet Pressure (P _m) (psig)	Total Lift or Back Pressure (P ₂) (psig)	(lb/h)	(lb/h)	(lb/h)	(lb/h)
150 – 200	15	8,700	11,900	7,800	11,500
	25	7,700	10,500	7,000	10,000
	40	6,400	8,500	5,900	8,000
	60	5,100	6,500	4,800	6,000
	80	4,000	4,900	3,900	4,500
	100	3,200	3,800	3,200	3,500
	120	2,800	3,200	2,800	3,000
	140	2,800	3,200	2,800	3,000
125	15	8,100	10,700	7,100	10,300
	25	7,100	9,300	6,300	8,800
	40	5,800	7,300	5,300	6,800
	60	4,400	5,400	4,100	4,900
	80	3,300	3,900	3,200	3,500
	100	2,600	3,000	2,400	2,600
100	15	7,500	9,700	6,500	8,800
	25	6,500	8,200	5,600	7,400
	40	5,100	6,200	4,500	5,600
	60	3,800	4,300	3,400	3,900
	80	2,700	2,900	2,400	2,600
75	15	6,800	8,500	5,800	7,600
	25	5,900	7,000	5,000	6,300
	40	4,500	5,000	3,800	4,500
	60	3,200	3,300	2,600	2,900
50	10	6,600	7,900	5,300	6,800
	15	6,000	7,100	4,900	6,200
	25	4,700	5,600	4,000	4,900
	40	2,900	3,600	2,800	3,200
25	5	5,600	6,600	5,000	5,700
	10	4,600	5,500	4,200	4,700
	15	3,900	4,700	3,500	4,000

● Correction Factors

(For GT10 and GT14 with filling heads other than 36")

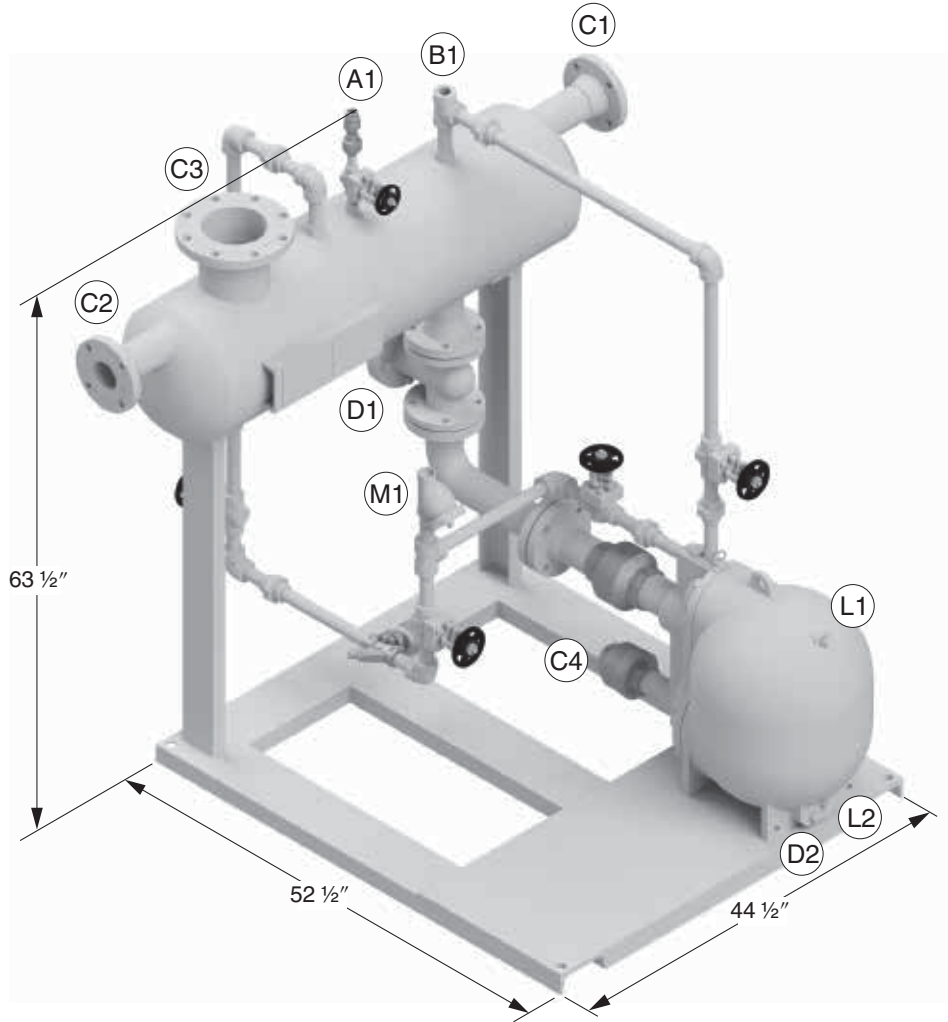
Filling Head from Grade	Inlet Check Valve Size (in)				
	GT10		GT14		
	1	1½, 2	3	2, 3	2, 3
60"	1.34	1.27	1.14	1.14	1.14
54"	1.29	1.24	1.12	1.12	1.12
48"	1.22	1.18	1.09	1.09	1.09
42"	1.13	1.11	1.05	1.05	1.05
36"	1.0	1.0	1.0	1.0	1.0
30"	0.71	0.75	0.88	0.88	0.88

NOTE:

- A check valve must be installed at both the pumped medium inlet and outlet. To achieve the above capacities with the standard GT10 or GT14 configuration, TLV CK3MG or CKF3MG check valves must be used.
- 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.

System Package Configuration

Single System Package¹⁾



Available Standard System Package Configurations

Single GT10/GT14: 29 Gallon Tank

Weight: approx. 1060 lb

Tag	Qty.	Size	Process
A1	1	1/2	Air Vent Connection
B1	1	1	Balance Line Connection to Equipment
C1	1	3	Condensate Inlet/Auxilliary Connection
C2	1	3	Condensate Inlet/Auxilliary Connection
C3	1	6	Condensate Inlet/Auxilliary Connection
C4	1	2	Pumped Condensate Outlet Connection
D1	1	1/2	Tank Drain Connection
D2	1	1/2	PowerTrap Drain Connection
L1	1	1/2	PowerTrap Level Gauge Connection
L2	1	1/2	PowerTrap Level Gauge Connection
M1	1	1	Motive Steam Inlet Connection

Discharge Capacity: see discharge capacity graph column **D** for GT10, column **H** for GT14.

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.

Twin GT10/GT14: 50 Gallon Tank

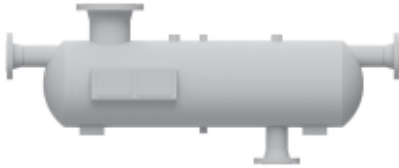
Weight: approx. 1650 lb

Tag	Qty.	Size	Process
A1	1	1/2	Air Vent Connection
B1	1	1 1/2	Balance Line Connection to Equipment
C1	1	3	Condensate Inlet Connection
C2	1	1	Auxilliary Connection
C3	—	—	N/A
C4	2	2	Pumped Condensate Outlet Connection
D1	1	1/2	Tank Drain Connection
D2	2	1/2	PowerTrap Drain Connection
L1	2	1/2	PowerTrap Level Gauge Connection
L2	2	1/2	PowerTrap Level Gauge Connection
M1	1	1 1/2	Motive Steam Inlet Connection

Discharge Capacity: double the discharge capacity found in column **D** for GT10, column **H** for GT14.

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	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

