

# TLV<sup>®</sup>

# PowerTrap<sup>®</sup>

## MODEL GT14L

### COMBINATION PUMPING AND TRAPPING SECONDARY PRESSURE DRAINER

#### Benefits

**Pump/Trap with built-in steam trap for a wide range of applications: drainage of medium 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. 2-year warranty for snap-action mechanism.\*

\* Contact TLV for details



#### Specifications

Model		GT14L
Connection	Pumped Medium Inlet & Outlet	<b>Flanged*</b>
	Motive Medium & Pump Exhaust	Screwed
Size (in)	Pumped Medium: Inlet x Outlet	<b>1½ x 1</b>
	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. 2
Motive Medium**		Saturated Steam
Pumped Medium***		Steam Condensate

\* 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**

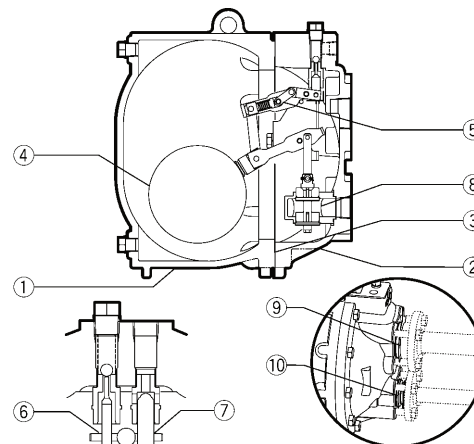


**CAUTION**

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.

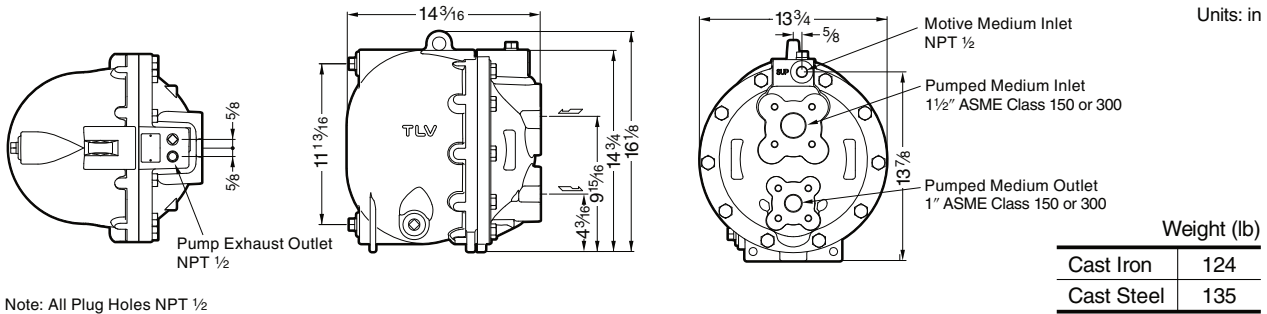
No.	Description	Material	ASTM/AISI*	JIS
①	Body	Cast Iron	A126 Cl.B	FC250
		Cast Steel**	A216 Gr.WCB	—
②	Cover	Cast Iron	A126 Cl.B	FC250
		Cast Steel**	A216 Gr.WCB	—
③	Cover Gasket	Graphite Compound	—	—
④	Float	Stainless Steel	AISI316L	SUS316L
⑤	Snap-action Unit	Stainless Steel	—	—
⑥	Motive Medium Intake Valve Unit	Inlet Valve	Stainless Steel	AISI440C
		Valve Seat	Stainless Steel	AISI420F
⑦	Exhaust Valve Unit	Exhaust Valve	Stainless Steel	AISI440C
		Valve Seat	Stainless Steel	AISI420F
⑧	Trap Unit	Stainless Steel	—	—
⑨	Inlet Check Valve CKF5M	Stainless Steel	AISI304	SUS304
⑩	Outlet Check Valve CKF3M	Cast Stainless Steel	A351 Gr.CF8	—

\* Equivalent \*\* Option: Cast Stainless Steel



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**Dimensions**



**Discharge Capacity**

Filling Head 25" from Grade

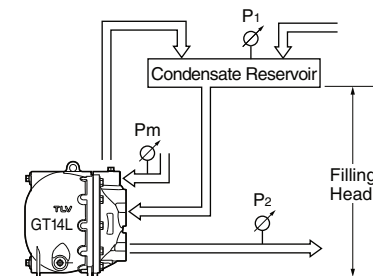
Inlet Pipe Size		1 1/2"
Inlet Check Valve		1 1/2" CKF5M
Outlet Check Valve		1" CKF3M
Motive Medium		Steam
Motive Medium Inlet Pressure (Pm) (psig)	Total Lift or Back Press. (P2) psig	lb/h
200	25	4100
	40	3300
	60	2870
	80	2210
	100	1720
175	150	1050
	25	3900
	40	3240
	60	2670
	80	2050
150	100	1620
	150	860
	15	4390
	25	3860
	40	3080
125	60	2460
	80	1850
	100	1500
	15	4220
	25	3530
100	40	2830
	60	2150
	80	1600
	100	1180
	15	3830
75	25	3160
	40	2400
	60	1760
	80	1230
	15	3320
50	25	2770
	40	1870
	60	1310
	10	3490
25	15	2970
	25	2240
	40	1370
	5	3490
10	10	2790
	15	2220
	2	2890

• **Correction Factor**

For GT14L installed with filling head other than 25" (minimum filling head: 12")

Filling Head from Grade	Inlet Pipe & Check Valve Size
	1 1/2" CKF5M
55"	1.10
43"	1.09
37"	1.07
31"	1.05
25"	1.00
22"	0.94
18"	0.82
12"	0.60

• **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

**NOTE:**

- A check valve must be installed at both the pumped medium inlet and outlet. To achieve the above capacities with the standard GT14L 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.
- A strainer must be installed at the motive medium and pumped medium inlets.

### Size of Reservoir

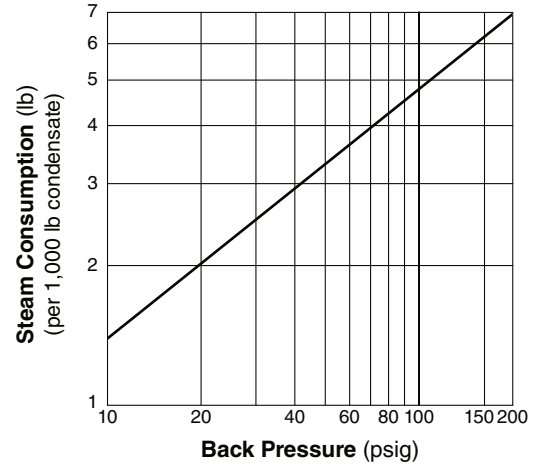
The reservoir must have a capacity sufficient to store the condensate produced during the **PowerTrap** operation and discharge.

#### Reservoir Dimensions (flash steam is not involved)

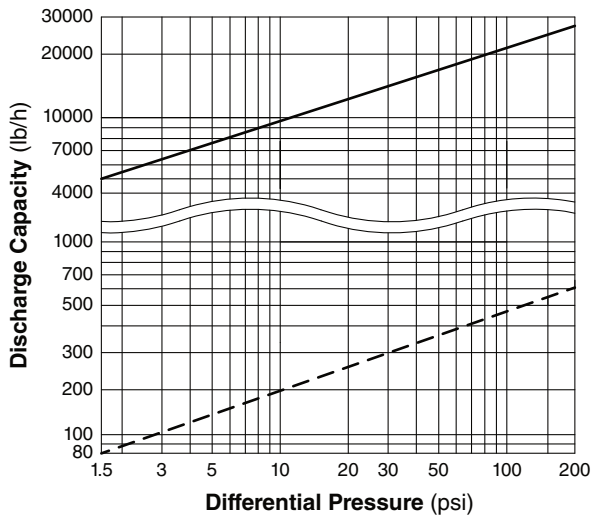
Amount of Condensate (lb/h)	Reservoir Diameter (in) and Length (ft)						
	1 ½	2	3	4	6	8	10
500 or less	3.0 ft	2.0					
700	4.0	2.5	1.0				
1,000	5.5	3.5	1.5				
1,200		4.5	2.0	1.0			
1,500			2.5	1.5			
2,000			3.5	2.0			
3,000			4.5	3.0			
4,000			6.5	4.0	1.5		
5,000				5.0	2.5		
6,000				5.5	2.5	1.5	
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 (P<sub>m</sub>) divided by back pressure (P<sub>2</sub>) equals 2 or greater (when P<sub>m</sub> ÷ P<sub>2</sub> ≥ 2).

### Steam Consumption (Motive Medium)



### GT14L Steam Trap Discharge Capacity



- : Capacity of GT14L as a steam trap (P<sub>1</sub> > P<sub>2</sub>). 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 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!

Memo:



**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.

**TLV CORPORATION**

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

ISO 9001/ISO 14001

