# **PowerTrap** TLV

## 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		Flanged*		
	Motive Medium & Pump Exhaust		Screwed		
Size (in)	Pumped Medium: Inlet × Outlet		1½×1		
	Motive Medium Inlet		1/2		
	Pump Exhaust Outlet		1/2		
Maximum Operating Pressure (psig) PMO		PMO	200		
Maximum Operating Temperature (°F) TMO		TMO	428		
Maximum Allowable Pressure (psig) PMA		PMA	Cast Iron: 230 Cast Steel: 300		
Maximum Allowable Temperature (°F) TMA		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		
ange connection, see picture at bottom right.		at bottom right	Connections and sizes in bold are standard		

ange connection, see picture at bottom right. uids.

\*\*\* 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 this product outside of the specification range. Local regulations may restrict the use of this product to below the conditions quoted. CAUTION

No.	Descri	otion	Material	ASTM/AISI*	JIS
	Body		Cast Iron	A126 CI.B	FC250
U	ВОЦУ		Cast Steel**	A216 Gr.WCB	—
2	Cover		Cast Iron	A126 CI.B	FC250
	COVER		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	SUS440C
		Valve Seat	Stainless Steel	AISI420F	SUS420F
Ø	Exhaust Valve	Exhaust Valve	Stainless Steel	AISI440C	SUS440C
	Unit	Valve Seat	Stainless Steel	AISI420F	SUS420F
(8)	Trap Unit		Stainless Steel		-
9	Inlet Check Valve	CKF5M	Stainless Steel	AISI304	SUS304
(10)	Outlet Check Valv	e CKF3M	Cast Stainless Steel	A351 Gr.CF8	



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



## **Consulting & Engineering Service**

## Dimensions



## **Discharge Capacity**

#### Filling Head 25" from Grade

Inlet Check Valve         1½" CKF5M           Outlet Check Valve         1" CKF3M           Motive Medium Inlet Pressure (Pm) (psig)         Total Lift or Back Press. (P2) psig         Ib/h           200         25         4100           40         3300         60           200         60         2870           200         80         2210           100         1720         150           150         1050         25           150         1050         2670           80         2050         100           175         60         2670           100         1620         150           150         860         2050           100         1620         150           150         860         2460           25         3860         2460           80         1850         25           150         40         2830           25         3530         25           100         1180         15           125         3160         320           125         3160         320           100         1180         1370	Inlet Pig	be Size	11/2″			
Outlet Check Valve         1" CKF3M           Motive Medium Intel Pressure (Pm) (psig)         Total Lift or Back Press.         Ib/n           200         25         4100           40         3300         60           200         60         2870           80         2210         100           150         1050         150           150         150         1050           175         80         2050           100         1620         150           175         80         2050           100         1620         150           155         4390         25           150         860         2670           150         860         2050           100         1620         150           150         860         2050           100         1520         860           150         820         25           151         4290         25           150         80         1600           150         150         80           125         3160         3300           125         3160         3320 <tr< td=""><td>Inlet Che</td><td>eck Valve</td><td colspan="3">11/2" CKF5M</td></tr<>	Inlet Che	eck Valve	11/2" CKF5M			
Motive Medium         Steam           Motive Medium Inlet Pressure (Pm) (psig)         Total Lift or Back Press. (P2) psig         Steam           40         3300         6           200         60         2870           80         2210         100           100         1720         150           100         1720         150           175         60         2670           80         2210         100           175         60         2670           175         80         2050           100         1620         160           150         860         2670           150         860         2050           100         1620         160           150         860         2050           150         860         2150           80         1850         100           155         4390         25           25         3530         240           25         3530         240           25         3160         2460           80         1600         1600           100         180         1600      <	Outlet Ch	eck Valve	1″ CKE3M			
Motive Medium Inlet Pressure (Pm) (psig)         Total Lift or Back Press. (P2) psig         Ib/h           25         4100           40         3300           60         2870           80         2210           100         1720           150         1050           25         3900           40         3240           60         2670           150         1050           150         1050           25         3900           40         3240           60         2670           80         2050           100         1620           155         860           25         3860           25         3860           25         3530           150         100           150         150           150         25           151         4220           25         3530           100         1500           15         3830           25         3160           100         1180           15         3320           25         2770	Motive	Vedium	Steam			
Index Median         Ibak Press. (Pa) psig         Ib/n           200         Back Press. (Pa) psig         Ib/n           40         3300         60           200         60         2870           100         1720         100           150         1050         1050           25         3900         40           175         60         2670           60         2670         100           175         80         2050           100         1620         1620           150         3900         25           150         860         2650           100         1620         1620           150         860         2460           80         1850         100           150         4220         25           25         3530         100           15         4330         60           100         1500         15           125         60         2150           80         1600         100           100         1180         160           100         1230         15           2	Motivo Modium	Total Lift or	Oldum			
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#### 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.

#### Correction Factor

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

Filling Head	Inlet Pipe & Check Valve Size				
from Grade	11/2" 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

## TLV

## 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	Reservoir Diameter (in) and Length (ft)						
(lb/h)	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 pressure (Pm) divided by back pressure (P<sub>2</sub>) equals 2 or greater (when Pm  $\div$  P<sub>2</sub>  $\ge$  2).



### GT14L Steam Trap Discharge Capacity

## **Steam Consumption (Motive Medium)**



 Capacity of GT14L as a steam trap (P1 > P2). 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.

Differential pressure is the difference between inlet and outlet pressure of the trap.



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



## **Consulting & Engineering Service**

Memo:



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.

## TLY CORPORATION

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ISO 9001/ISO 14001



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