

Steam Trap Selection Guide



Yarway Steam Traps



Steam Trap Selection Guide

STEAM TRAP TECHNOLOGY	THERMODYNAMIC											THERMOSTATIC						
Application	Type																	
	29 129Y	29S	711 721	711HP 721HP	721HC 721XHC	731 741	40 40D	460D3 460 515	C250 C260	C500	546	PB40	PB5	PB-HP	AV5	751HP 761HP	751 761	151 151H
INSTRUMENT STEAM TRACING																		
LINE STEAM TRACING																		
• High Temperature: condensate discharged as soon as it forms																		
• Low Temperature: sub-cooled condensate discharged																		
MAIN STEAM SUPPLY LINES (DRIP) Steam distribution manifold, pressure reducing station, low point of slope, expansion loops																		
• High Pressure: over 600 psi																		
• Medium Pressure: 300-600 psi																		
• Low Pressure: up to 300 psi																		
PROCESS STEAM EQUIPMENT																		
• Sterilizer Drainage																		
• Lift and Syphon Drainage																		
• Autoclave Drainage																		
• Platen Presses and Calenders Drainage																		
• Variable Flow and Heat Exchangers																		
• Gravity Drainage (kettles, double jacket)																		
TURBINES DRAINAGE																		
• Upstream (supply)																		
• Downstream (drain)																		
AIR VENT																		
Available																		

Sizing Parameters of a Steam Trap

In order to select the correct steam trap to suit your application, it needs to be properly sized and the following conditions must be known:

- operating inlet pressure
- operating outlet pressure or back pressure
- differential pressure (i.e. the difference between the inlet pressure and the outlet pressure)
- flow capacity of condensate to be removed (if this data is not known, refer below)

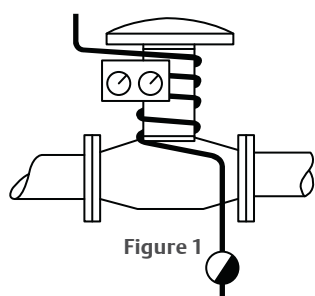
Once these parameters are determined, selection of the required trap can be made from our product bulletins.

Estimation of Flow Rates for Various Applications

(Rule-of-thumb estimates as follows)

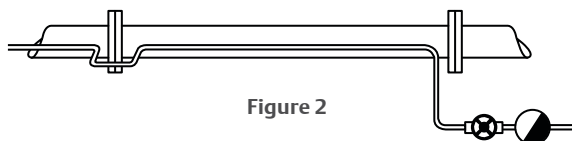
1. Instrument Steam Tracing

Flow does not normally exceed 60 lb/hr



2. Line Steam Tracing

Flow does not normally exceed 100 lb/hr



3. Main Steam Supply Line

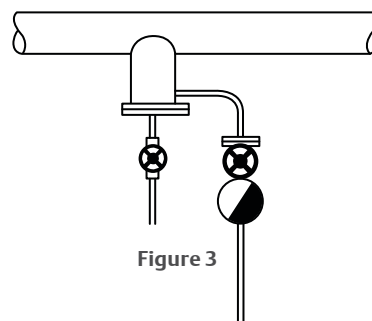
Condensate flow for a properly insulated line is shown below.

Insulated Steam Mains Condensate Load per 100 Ft. Sch. 40 Pipe										
Steam Pressure PSIG	Steam Main Size (In.)									
	2	4	6	8	10	12	16	20	24	
10	4	8	12	15	19	22	28	35	42	
50	6	11	17	22	27	32	41	51	61	
75	7	13	20	26	32	38	47	59	71	
100	8	15	22	29	36	43	54	67	80	
150	10	18	27	35	44	52	67	81	97	
200	11	21	31	41	51	61	71	95	114	
300	14	26	39	50	63	74	93	117	140	
450	17	32	48	62	77	92	115	144	173	
600	20	39	57	74	92	109	137	172	206	

Table based on 70°F ambient temperature; 85% insulation efficiency.
For 0°F ambient - multiply by 1.5

4. Steam Trapping for Turbines

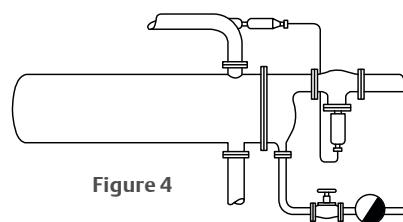
As steam is always superheated, there should theoretically, not be any condensate formation. Here, flow rate is not a determining factor for steam trap selection. Only the operating pressure and the degree of superheat are relevant. In this case, the steam trap is only used as a safety device, on startup or shutdown.



5. Steam Trapping for Process Equipment

If the flow rate is unknown, condensate flow rate can be simply estimated by means of the calorific power of the heating apparatus expressed in BTU/hr and by using the following formula:

$$\text{Condensate Flow Rate lb/hr} = \frac{\text{BTU Rating (in millions)}}{100}$$



Steam Trap Overview

Thermodynamic Traps

	MODEL NUMBER	PRESSURE RANGE	MAXIMUM CAPACITY	SIZE (In.)	CONNECTION	SECTION
	29 29-S	4 to 600 psig 4 to 300 psig	10,000 lb/hr 500 lb/hr	3/8, 1/2, 3/4, 1 1/4	T T	Drip & Tracer Non-repairable
	129-Y	4 to 400 psig	3000 lb/hr	3/8, 1/2, 3/4, 1	T	Drip & Tracer Non-repairable
	711/721 711-HP/721-HP 711-HC/721-HC	4 to 450 psig 150 to 600 psig 4 to 450 psig	700 lb/hr 440 lb/h 1200 lb/hr	3/8, 1/2, 3/4, 1	T, SW T, SW T, SW	Drip & Tracer Repairable
	711-F2 711-HC-F2	4 to 450 psig 4 to 450 psig	600 lb/hr 1000 lb/hr	-----	-----	Drip & Tracer
	731-L/741-L 731-H/741-H	20 to 300 psig 40 to 600 psig	3000 lb/hr 4100 lb/hr	1/2, 3/4, 1 1/2, 3/4, 1	T, SW T, SW	Drip & Tracer Repairable
	731-F2	20 to 450 psig	3500 lb/hr	-----	-----	Drip & Tracer
	40-D 40	10 to 600 psig 20 to 600 psig	10,000 lb/hr 80,000 lb/hr	1/2, 3/4, 1 1-1/2, 2, 3	T, SW T, SW	Process Thermodynamic
	460	40 to 600 psig	5000 lb/hr	1/2, 3/4, 1	SW	Drip & Tracer Repairable
	515	150 to 1500 psig	4800 lb/hr	1/2, 3/4, 1	SW	Drip & Tracer Repairable
	460D3 515D3	150 to 900 psig	500 lb/hr	1/2, 3/4, 1	SW	Drip & Tracer
	C-250 C-260	50 to 600 psig 50 to 1500 psig	13,000 lb/hr 12,000 lb/hr	1, 1-1/2 1, 1-1/2, 2	SW SW	Process Thermodynamic
	C-500 546	300 to 2500 psig 300 to 4500 psig	5000 lb/hr 7500 lb/hr	1/2, 3/4, 1 1	SW SW	Drip & Tracer Repairable

Thermostatic Traps

	MODEL NUMBER	PRESSURE RANGE	MAXIMUM CAPACITY	SIZE (In.)	CONNECTION	SECTION
	PB PB-HP PB-S	1 to 300 psig 1 to 600 psig 1 to 200 psig	800 lb/hr 1000 lb/hr 600 lb/hr	1/2, 3/4 1/2, 3/4 1/2, 3/4	T T T	Drip & Tracer Non-repairable
	751-5/ 761-5 751-HP/761-HP	1 to 300 psig 1 to 600 psig	700 lb/hr 900 lb/hr	3/8, 1/2, 3/4, 1 3/8, 1/2, 3/4, 1	T, SW T, SW	Drip & Tracer Repairable
	751-F2	1 to 450 psig	800 lb/hr	-----	-----	Drip & Tracer
	151/151-H Angle 151/151-H In-line 151-S/151-HS	1 to 300 psig 1 to 300 psig 1 to 200 psig	12,000 lb/hr 12,000 lb/hr 12,000 lb/hr	3/4 3/4, 1 3/4, 1	T T T	Process Thermostatic
	Air Vent AV-5	1 to 600 psig	26 scfm	1/2, 3/4	T	Process Thermostatic

T = Threaded
F = Flanged
SW = Socketweld

Emerson Automation Solutions

Americas

T +1 800 558 5853
T +1 972 548 3574

Europe

T +39 051 419 0611

Asia Pacific

T +65 6777 8211

Middle East / Africa

T +971 4811 8100

 webadmin.regulators@emerson.com

 Emerson.com

 [Facebook.com/EmersonAutomationSolutions](https://www.facebook.com/EmersonAutomationSolutions)

 [LinkedIn.com/company/emerson-automation-solutions](https://www.linkedin.com/company/emerson-automation-solutions)

 [Twitter.com/emr_automation](https://twitter.com/emr_automation)