

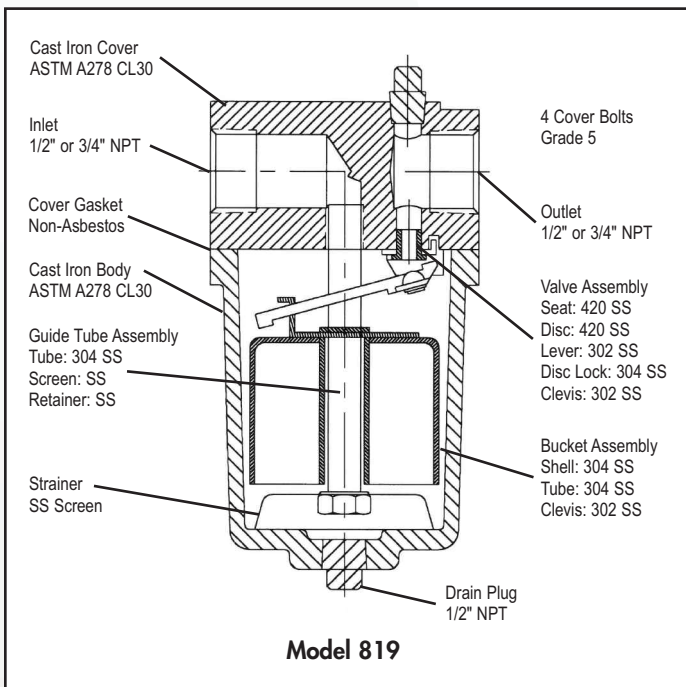
# STEAM TRAPS



## INVERTED BUCKET (HORIZONTAL) OPERATING FUNDAMENTALS

### TYPICAL DESIGN AND MATERIALS

This schematic presents materials commonly used in various components of Sterlco® Inverted Bucket Steam Traps. Information regarding materials in specific models is available upon request. All Inverted Bucket Steam Traps are constructed of cast iron with screwed connections.



### APPLICATIONS

Sterlco® Inverted Bucket Steam Traps are commonly used wherever complete and rapid removal of condensate is essential. Specific uses include installation on steam systems serving autoclaves, steam mains, desuperheaters, stills, water heaters, sterilizers, cylinder or drum dryers and many other steam systems. Models for air systems are available also. Advanced steam trap designs can include optional items such as the integral strainer and air eliminator.

### DESIGN FEATURES

**Duo-Step Leverage:** By using a relatively short trap lever with two fulcrum points, more power is developed to open the trap valve. This allows greater trap capacity without increasing trap size.

### STERLCO RENEWABLE SEATS

All traps offer the economy of renewable seats, either screwed or pressed, greatly extending trap service life.

**Guide Tube:** Many models employ bucket guide tubes. Guide tubes assure precise parts alignment for improved operation. Buckets do not hit trap bodies, reducing wear. Condensate is directed to the bottom of the trap reducing water hammer damage.

### OPTIONS

**Air Eliminator:** Effective trap operation is assured by using air eliminators to expel non-condensing gases that can build up inside the bucket.

**Integral Strainer:** Condensate is directed to the bottom of the trap and any dirt or scale in suspension will be trapped beneath the strainer screen. Periodic cleaning is accomplished by simply removing the drain plug and allowing sediment to drain from the trap.



**Series 60:** Pressures  
up to 250 psi



**Series 19:** Pressures  
up to 200 psi



**Series 21-25:** Pressures  
up to 250 psi



## STEAM TRAPS

### INVERTED BUCKET TRAP CAPACITIES

#### TYPICAL DESIGN AND MATERIALS

Model Number	Model Sizes	Weight (lbs)	Continuous Discharge Capacities in Lbs. Per Hour at Indicated Pressure Orifice Diameters are Shown at the Maximum Operating Pressure for Each Trap									
			5	15	20	30	50	80	125	150	200	250
60DR	1/2 - 3/4	5.0	1/4 850	1/4 1060	13/64 1100	13/64 1400	5/32 1100	5/32 1330	1/8 1050	7/64 900	7/64 980	3/32 825
119	1/2 - 3/4	5.0	1/4 850	1/4 1060	1/4 1200	5/32 710	5/32 900	1/8 860	3/32 680	3/32 710	5/64 580	-
121	1/2 - 3/4	10.0	5/16 1520	5/16 2200	5/16 2600	7/32 2570	7/32 2490	3/16 2170	5/32 2060	5/32 2220	9/64 1920	1/8 1480
122	3/4 - 1	13.8	3/8 2720	3/8 4000	3/8 4500	9/32 3000	9/32 3700	1/4 4300	7/32 4090	7/32 4400	13/64 3700	11/64 3600
123	1 - 1 1/4	30.5	5/8 5100	5/8 8300	5/8 9800	13/32 6500	13/32 8100	13/32 10400	3/8 10500	5/16 8500	1/4 6800	1/4 7800
124	1 1/4 - 1 1/2	43.0	3/4 7200	3/4 11000	3/4 13000	9/16 10700	9/16 13500	7/16 12700	13/32 11500	13/32 12500	3/8 14000	5/16 11500
125	1 1/2 - 2	75.0	1 1/16 21000	1 1/16 34300	1 1/16 40300	3/4 29300	3/4 37400	5/8 23000	1/2 19100	1/2 20500	13/32 16800	3/8 13750

#### HORIZONTAL CAST IRON WITH STRAINER

62DRS	1/2 - 3/4	5.0	1/4 850	1/4 1060	13/64 1100	13/64 1400	5/32 1100	5/32 1330	1/8 1050	7/64 900	7/64 980	3/32 825
819	1/2 - 3/4	6.0	1/4 850	1/4 1060	1/4 1200	5/32 710	5/32 900	1/8 860	3/32 680	3/32 710	5/64 580	-
821	1/2 - 3/4	10.	5/16 1520	5/16 2200	5/16 2600	7/32 2570	7/32 2490	3/16 2170	5/32 2060	5/32 2220	9/64 1920	1/8 1480
822	3/4 - 1	13.8	3/8 2720	3/8 4000	3/8 4500	9/32 3000	9/32 3700	1/4 4300	7/32 4090	7/32 4400	13/64 3700	11/64 3600
823	1 - 1 1/4	30.5	5/8 5100	5/8 8300	5/8 9800	13/32 6500	13/32 8100	13/32 10400	3/8 10500	5/16 8500	1/4 6800	1/4 7800

#### HORIZONTAL CAST IRON

Model Number	Model Sizes	Max. PSI and Temp. (°F)	Capacity Range	Standard Performance Features					Option	
				S/S Valve and Seat	All S/S Internals	Renewable Screwed	Seat Pressed	Integral Strainer	Air Elim.	
60DR	1/2 - 3/4	250/450	825/1400	•	•	•	-	-	•	
119	1/2 - 3/4	200/450	390/1650	•	•	-	•	-	•	
121	1/2 - 3/4	250/450	600/2680	•	•	•	-	-	•	
122	3/4 - 1	250/450	1220/4800	•	•	•	-	-	•	
123	1 - 1 1/4	250/450	2250/10500	•	-	•	-	-	•	
124	1 1/4 - 1 1/2	250/450	3240/14000	•	-	•	-	-	•	
125	1 1/2 - 2	250/450	9200/40300	•	-	•	-	-	•	

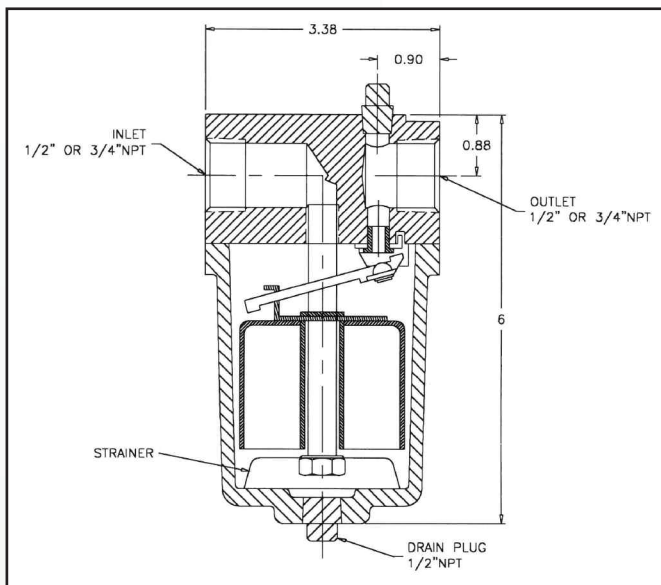
#### HORIZONTAL CAST IRON WITH STRAINER

62DRS	1/2 - 3/4	250/450	825/1400	•	•	•	-	•	•
819	1/2 - 3/4	200/450	390/1650	•	•	-	•	•	•
821	1/2 - 3/4	250/450	600/2680	•	•	•	-	•	•
822	3/4 - 1	250/450	1220/4800	•	•	•	-	•	•
823	1 - 1 1/4	250/450	2250/10500	•	-	•	-	•	•

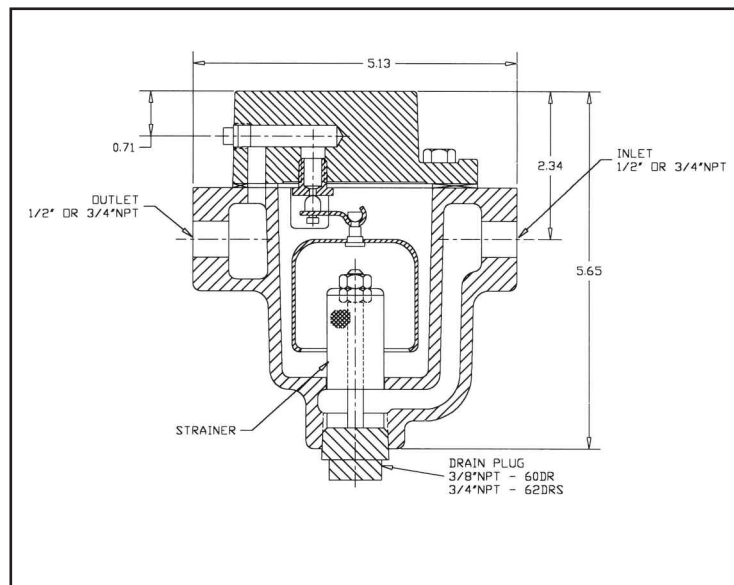
# STEAM TRAPS



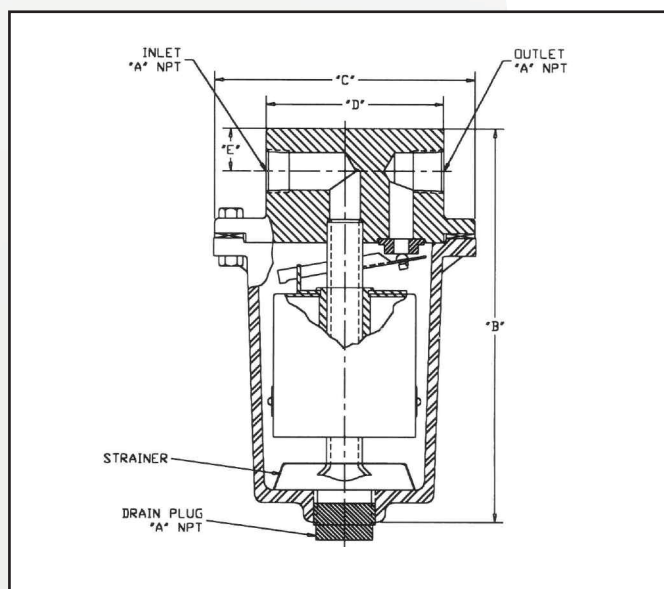
## INVERTED BUCKET TRAP DIMENSIONS AND FEATURES



**MODEL 119 - WITHOUT STRAINER**  
**MODEL 819 - WITH STRAINER**



**MODEL 60DR - WITHOUT STRAINER**  
**MODEL 60DRS - WITH STRAINER**



**100 SERIES - WITHOUT STRAINER**  
**800 SERIES - WITH STRAINER**

Model	A	B	C	D	E
121 and 821	1/2 or 3/4	7.25	5.00	3.00	0.97
122 and 822	3/4 or 1	8.75	5.50	3.75	0.91
123 and 823	1 or 1 1/4	12.50	7.38	4.75	2.25
124	1 1/4 or 1 1/2	14.95	8.25	5.50	2.38
125	1 1/2 or 2	17.40	9.75	7.00	3.13

## INVERTED BUCKET SIZING INFORMATION

### GUIDES TO SELECTING THE PROPER STEAM TRAP SIZE

1. Determine the amount of steam condensate (per hour) to be handled by the trap. This information can usually be supplied by the equipment manufacturer, or the condensate amount can be determined by weighing it. Step-by-step formulas for calculating hourly condensate amounts are available upon request.

2. Determine the differential pressure. This is the supply pressure or maximum steam operating pressure, less any back pressure in the return main. If discharged into a vacuum, the amount of vacuum would be added to the operating pressure. (Note the various Differential Pressures listed in the DIMENSIONS & DISCHARGE CAPACITIES TABLE)

3. Determine the trap capacity factor. A steam trap's listed "continuous discharge capacity" indicates the pounds per hour of condensate that can be discharged by a trap when the trap valve is wide open. For all the bucket trap models described in this catalog section, continuous capacities are presented in the DISCHARGE CAPACITIES TABLE provided.

However, to select the correct size trap for a specific application, it is important to know that steam traps do not operate continuously in the wide open valve position. To compensate for this, a variable "factoring number" must be applied.

For example, if you have determined that your equipment will discharge condensate at 900 pounds per hour, this 900 figure must be multiplied by a factor of 2, 3, 4, 5 or 6, depending on the type of equipment being trapped. The Table of Factors presented here provides the proper factoring information.

### EXAMPLE

Condensate to be Handled: 900 lbs. per hour

Type of Equipment: Steam Mains

Equipment Factor: Multiply by 4

Factored Condensate: 3600 lbs. per hour

### TABLE OF FACTORS

Autoclaves	3-4
Blast Coils	3-4
Dry Cans	2-3
Dryers	3-4
Dry Kilns	3-4
Fan System Heating Service	3-4
Greenhouse Coils	3-4
Hospital Equipment	2-3
Water Heaters	4-6
Kitchen Equipment	2-3
Paper Machines	3-4
Piple Coils (still air)	3-4
Platen Presses	2-3
Purifiers	3-4
Separators	3-4
Steam Kettles	4-5
Steam Mains	3-4
Submerged Surfaces	5-6
Tracer Lines	2-3
Unit Heaters	3-4

Minimum Operating Pressure (lbs.)	Maximum Operating Pressure																		Minimum Operating Pressure (lbs.)
	5	10	15	20	30	40	50	60	70	80	90	100	125	150	200	225	250	300	
1/10	.14	.10	.09	.08	.07	.06	.05	.05	.05	.04	.04	.04	.04	.04	.03	.03	.03	.03	1/10
1/4	.22	.16	.14	.12	.10	.09	.08	.07	.07	.07	.06	.06	.06	.05	.05	.04	.04	.04	1/4
1/2	.32	.22	.19	.17	.14	.12	.11	.10	.09	.09	.08	.08	.07	.07	.06	.06	.05	.05	1/2
1	.45	.32	.26	.23	.19	.17	.15	.14	.13	.12	.11	.11	.10	.10	.09	.08	.08	.08	1
2	.63	.45	.36	.33	.27	.23	.20	.19	.18	.17	.16	.16	.15	.13	.12	.11	.11	.11	2
3	.78	.55	.45	.40	.33	.29	.27	.24	.23	.21	.20	.19	.18	.16	.15	.14	.13	.13	3
4	.89	.64	.52	.46	.38	.33	.30	.27	.26	.24	.23	.23	.20	.19	.17	.16	.15	.15	4
5	1.00	.71	.58	.52	.43	.37	.34	.31	.29	.27	.26	.25	.23	.21	.19	.18	.18	.16	5
10		1.00	.82	.72	.61	.52	.48	.44	.41	.39	.37	.36	.32	.30	.27	.26	.25	.23	10
15			1.00	.85	.73	.62	.59	.56	.51	.48	.45	.43	.39	.36	.32	.30	.29	.27	15
20				1.00	.83	.73	.66	.61	.58	.55	.51	.49	.44	.42	.36	.34	.33	.31	20
25					.91	.80	.73	.69	.65	.61	.55	.53	.47	.46	.40	.38	.37	.34	25
30					1.00	.88	.79	.75	.70	.66	.60	.59	.54	.50	.45	.42	.41	.38	30
40						1.00	.90	.84	.80	.76	.69	.67	.61	.57	.50	.48	.46	.43	40
50							1.00	.93	.89	.84	.78	.75	.68	.63	.56	.53	.51	.48	50
60								1.00	.93	.88	.83	.80	.73	.68	.60	.57	.55	.52	60
70									1.00	.94	.89	.85	.78	.73	.64	.61	.59	.55	70
80										1.00	.95	.91	.82	.75	.68	.66	.63	.59	80
90											1.00	.95	.87	.81	.71	.68	.66	.61	90
100												1.00	.91	.85	.75	.73	.70	.64	100
125													1.00	.93	.83	.80	.75	.71	125
150														1.00	.89	.86	.80	.75	150
175															.94	.92	.87	.81	175
200															1.00	.96	.90	.85	200
225																1.00	.97	.90	225
250																	1.00	.93	250
275																		.96	275
300																		1.00	300
400																		1.00	400
500																		1.00	500
600																		1.00	600
700																		1.00	700

### DETERMINING TRAP CAPACITY AT REDUCED PRESSURES

**Problem** What is the rating of a Model 122 suitable for 200 lbs. operating pressure - when operating at 70 lbs. pressure?

**Solution** Rating of a Model 122 at 200 lbs. operating pressure is 3700 lbs. per hour. Referring to the Reduced Capacity Table provided here, locate the 200 lbs. column and move down to the figure opposite the 70 lbs. line - where you locate the .64 factor. Using this .64 factor (3700 x .64), the Model 122 rating at the reduced pressure of 70 lbs. is 2368.