

November 2021

Spence™ Eliminator Series - Steam and Air Separator



Figure 1. Eliminator Series

Features

- **Removal of Entrained Contaminants** - Extracts nearly all moisture and solids above 10 microns
- **Long Service Life** - No moving parts mean less wear and corrosion
- **High Capacities** - Up to 35,000 lbs./hr / 15,876 kg./hr steam
- **Steel bodies and internals** - Withstand unfavorable conditions and water hammer
- **Drain Outlet Below Condensate Level** - Prevents steam leakage
- **Optimal Gravity Discharge** - Drain located directly below the line
- **Maintenance Free** - Regular maintenance is not required

Introduction

Steam and air separators are used to separate imprinted water droplets and other foreign particles from the steam to have clean and dry steam in the system.

Eliminator Series

Specifications

This section lists the specifications for Eliminator Series. Factory specifications are stamped on the nameplate fastened on the unit at the factory.

<p>Available Configuration Type ES-150: CL150 Type ES-300: CL300 Type ES-600: CL600, NPT and Socket weld</p> <p>Body Size NPS 1/2, 3/4, 1, 1-1/4, 1-1/2, 2, 2-1/2, 3, 4, and 6 / DN 15, 20, 25, 32, 40, 50, 65, 80, 100 and 150</p> <p>End Connection Style CL150, CL300, CL600, NPT and Socket weld</p> <p>Maximum Operating Pressure⁽¹⁾ See Table 1</p> <p>Maximum Operating Temperature⁽¹⁾ See Table 1</p>	<p>Materials of Construction Body, End Caps, Coupling, Plug: Carbon steel Baffle: Carbon steel or Stainless steel</p> <p>Applications Steam, compressed air, and gas systems Drip stations before temperature control or pressure reducing valves Steam inlets to process equipment which require dry saturated steam Before filters and on the compressed air supply to sensitive instruments</p> <p>Option Insulation Jacket</p> <p>Approximate Weight 9 to 551 lbs / 4.1 to 250 kg</p>
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1. The pressure/temperature limits in this Bulletin and any applicable standard or code limitation should not be exceeded.

Table 1. Eliminator Series Pressure and Temperature Ratings

BODY SIZE	END CONNECTION STYLE	MAXIMUM PRESSURE		MAXIMUM TEMPERATURE	
		psig	bar	°F	°C
NPS 1/2 to 2 / DN 15 to 50	NPT and Socket weld	990	68.2	100	34
NPS 2-1/2 to 6 / DN 65 to 150	CL150	285	19.6	100	34
	CL300	740	51.0	100	34
	CL600	990	68.2	100	34

Principle of Operation

When the vapor enters the steam separator, a series of baffles change its flow direction several times. During this process, the baffles in the housing collect impinged water droplets that are carried in the system. Gravity allows the accumulated water droplets and other foreign particles to fall to the drain and exit the system through a steam trap. The remaining steam in the system is clean and dry, allowing improved and maintained performance.

Installation

1. Install the steam separator as close as possible to the point of use.
2. Install the steam separator in a horizontal pipe configuration with the drain directly below the line, see Figure 2.
3. Install the steam separator according to the directional flow arrow for effective operation. The flow is from left to right with the faceplate showing.
4. Install a properly sized mechanical steam trap on the NPT drain connection at a minimum of 6 in. / 152 mm below the steam separator.

Note

For every inch of horizontal piping to trap, add one inch to the vertical piping. Do not reduce separator drain size except at trap inlet. Never allow the top of the trap to extend above separator drain connection. A Y-strainer positioned after the steam separator drain and before the steam trap will help prevent dirt and scale from reaching the steam trap and is highly recommended.

- For steam systems where air is present, install an air vent on the top NPT connection of the steam separator. If an air vent is not installed, the standard plug must remain in the NPT connection port.

Note

An insulated steam separator provides more efficient operation.

Always install a Steam Trap after the Steam Separator.

Ordering Information

When ordering, complete the ordering guide on this page. Refer to the Specifications section on page 2.

Review the description to the right of each specification and the information in each referenced table or figure. Specify your choice whenever a selection is offered.

Ordering Guide

Type (Select One)

- Type ES-150
- Type ES-300
- Type ES-600

End Connection Style (Select One)

- CL150
- CL300
- CL600
- NPT
- Socket weld

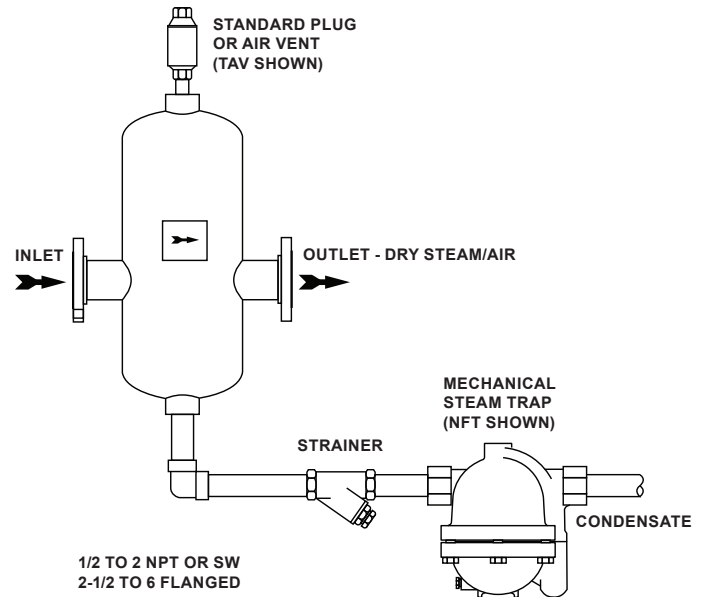


Figure 2. Eliminator Series Typical Installation

Body Size (Select One)

- NPS 1/2 / DN 15
- NPS 3/4 / DN 20
- NPS 1 / DN 25
- NPS 1-1/4 / DN 32
- NPS 1-1/2 / DN 40
- NPS 2 / DN 50
- NPS 2-1/2 / DN 65
- NPS 3 / DN 80
- NPS 4 / DN 100
- NPS 6 / DN 150

Option

- Insulation Jacket

Sizing Information:

Please provide the following

1. Steam or Compressed Air System _____
2. Flow Rate (lb/hr / kg/hr) _____
3. Separator Connection Size _____
4. System Pressure _____

Eliminator Series

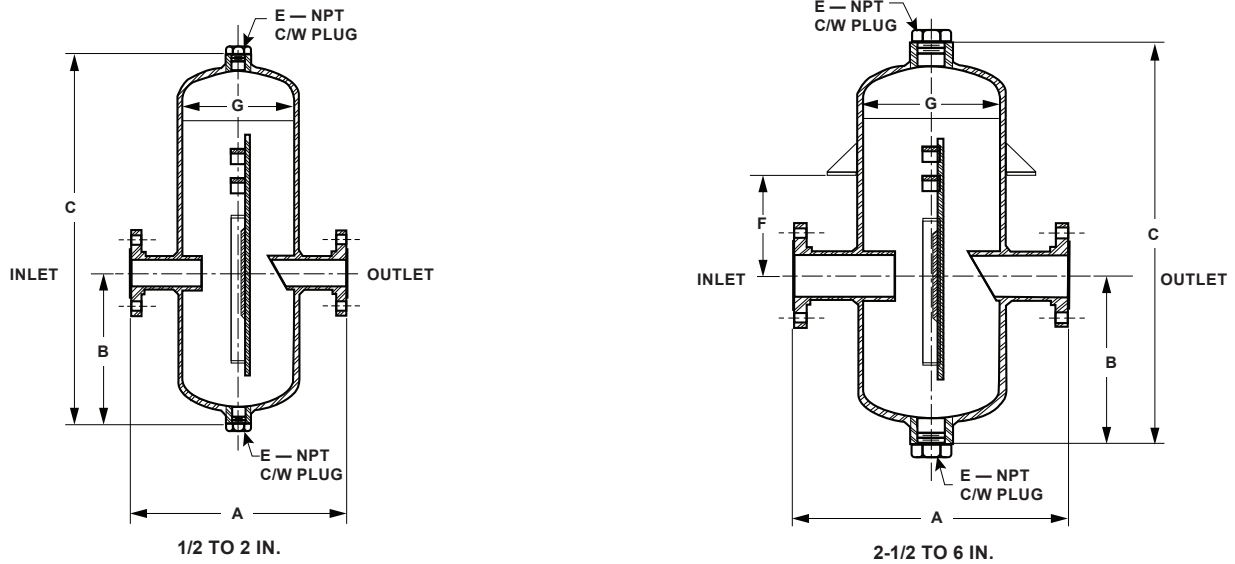


Figure 3. Eliminator Series Dimensions

Table 2. Eliminator Series Dimensions and Approximate Weight

BODY SIZE		CONNECTION	A		B		C		E		F		G		WEIGHT	
NPS	DN		In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	In.	mm	Lbs.	kg
1/2	15	NPT/SW	3-5/8	218	5-1/4	132	10-5/8	269	3/4	20.3	----	6	152.4	9	4.1	
3/4	20	NPT/SW	8-3/4	224	5-7/8	150	12-1/8	307	3/4	20.3	----	6	152.4	10	4.5	
1	25	NPT/SW	9-1/4	236	6	152	14-1/8	358	3/4	20.3	----	6	152.4	19	8.6	
1-1/4	32	NPT/SW	9-3/8	238	7-1/8	180	16-3/8	416	3/4	20.3	----	6	152.4	30	13.6	
1-1/2	40	NPT/SW	11-1/8	287	7-5/8	193	19	483	1	25.4	----	8	203	43	19.5	
2	50	NPT/SW	11-5/8	295	11-1/8	206	20-5/8	523	1	25.4	----	8	203	50	22.7	
2-1/2	65	CL150	22-1/2	572	9-3/8	239	24-1/2	622	1	25.4	7-1/8	180	10	254	109	49.4
		CL300	22-1/2	572	9-3/8	239	24-1/2	622	1	25.4	7-1/8	180	10	254	112	50.8
		CL600	22-1/2	572	9-7/8	251	25-5/8	650	1	25.4	7-1/8	180	10	254	113	51.3
3	80	CL150	25-1/8	643	12	305	28-5/8	726	2	50.8	8	203	10	254	163	73.9
		CL300	25-1/4	643	12	305	28-3/4	732	2	50.8	8	203	10	254	169	76.7
		CL600	25-1/4	643	12-3/4	323	29-7/8	759	2	50.8	8	203	10	254	189	85.7
4	100	CL150	29	737	12-5/8	320	31-1/4	792	2	50.8	8	203	12	305	237	108
		CL300	29	737	12-5/8	320	31-1/4	792	2	50.8	8	203	12	305	256	116
		CL600	29	737	13-1/4	335	31-1/4	792	2	50.8	8	203	12	305	297	135
6	150	CL150	35-3/4	909	12-1/4	312	36-3/4	932	2	50.8	11-3/8	290	16	406	365	166
		CL300	35-3/4	909	12-3/8	315	36-7/8	937	2	50.8	11-3/8	290	16	406	401	182
		CL600	35-3/4	909	13	330	37-3/4	960	2	50.8	11-3/8	290	16	406	551	250

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