

# Compressed Air Filters

## Condensate Drains - Zero Air / Zero Energy Loss

Compressed Air Filters

### What is a zero air loss condensate drain?

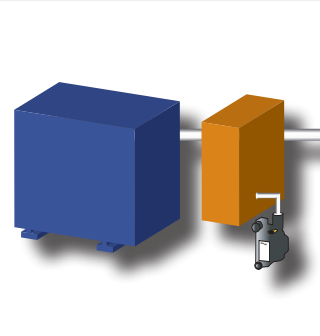
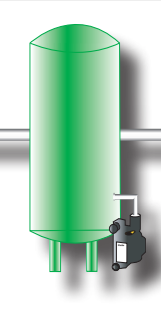
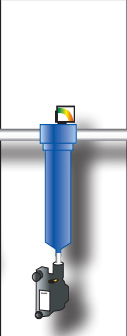
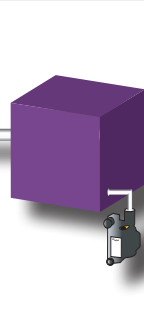
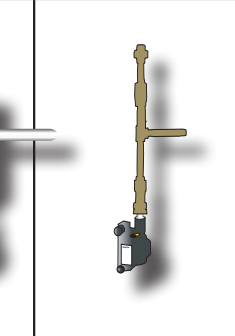
Zero air loss condensate drains are designed for economical removal of unwanted water, oil emulsions, and other liquids. These drains will only open when liquid is present and will not allow any compressed air to escape from the system.

### Why are they needed?

- Condensate is always present in a compressed air system.
- If condensate is not removed from a compressed air system, it will adversely affect product quality and production efficiency and will eventually lead to costly downtime.



### Where are condensate drains used?

				
<b>Compressor with Aftercooler</b>	<b>Receiver Tank</b>	<b>Filter</b>	<b>Air Dryer</b>	<b>Drip Leg</b>
Removes the condensate that is collected after the air cools in the aftercooler	Removes the condensate that is collected when the air cools inside of the receiver tank	Removes the condensate that is collected in the filter bowl	Removes the condensate that is collected in the air dryer	Point-of-use applications: removes the condensate from compressed air pipes in a plant

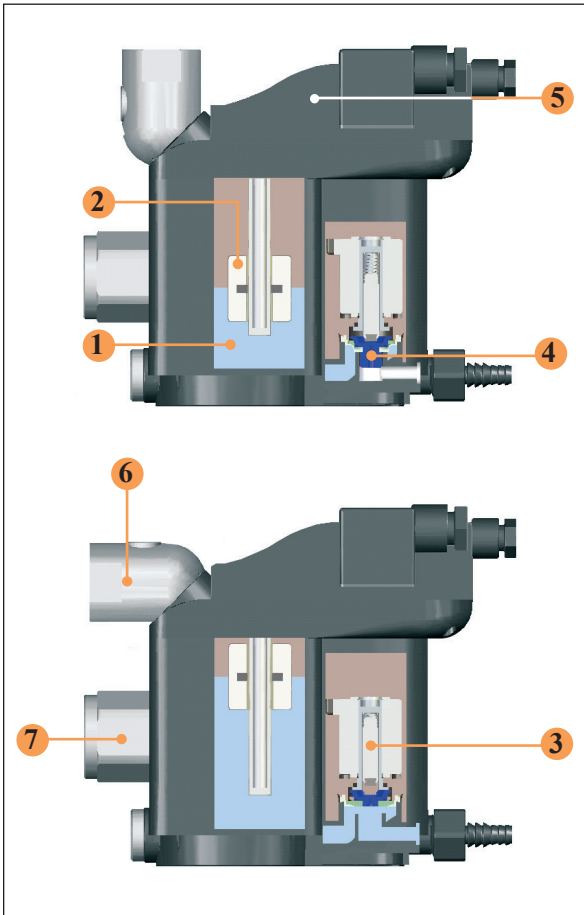
### How does the Zero Air Loss Condensate drain compare to other drains?

Condensate Removal Method	Disadvantages of Other Drains	Advantages of ZLD
<b>Manual Drain</b> (operators must manually open valves to discharge condensate)	<ul style="list-style-type: none"> <li>• Requires constant attention</li> <li>• Always leads to excess air loss because air escapes when the valve is left open to drain the condensate</li> </ul>	<ul style="list-style-type: none"> <li>• Automatically drains condensate</li> <li>• When a minimum level of condensate is reached, the valve closes in time before compressed air can escape</li> </ul>
<b>Float Drain</b> (uses a float connected to a drain valve that opens when enough condensate is present and closes when condensate has been removed)	<ul style="list-style-type: none"> <li>• Float is susceptible to blockage from particulate contamination in condensate</li> <li>• Often sticks in open (leaks excess air) or closed position (no condensate is drained)</li> </ul>	<ul style="list-style-type: none"> <li>• Includes an integrated dirt screen between the level measurement and drain valve to protect the diaphragm valve</li> <li>• Particulate contamination is removed by the integrated dirt screen before fouling the moving parts</li> </ul>
<b>Solenoid Operated Drain Valves</b> (uses a timer which allows user to open and close valve at specified intervals)	<ul style="list-style-type: none"> <li>• The period for which the valve is open might not be long enough for adequate drainage of accumulated condensate</li> <li>• The valve will operate even if little or no condensate is present, resulting in air loss</li> <li>• Often requires a strainer to remove particulate contamination which can block the inlet and outlet ports</li> </ul>	<ul style="list-style-type: none"> <li>• Drain will remove condensate when liquid reaches the high level sensor</li> <li>• The drain will not operate until the liquid level reaches the high level sensor</li> <li>• Particulate contamination is removed by the integrated dirt screen before fouling the outlet port</li> </ul>

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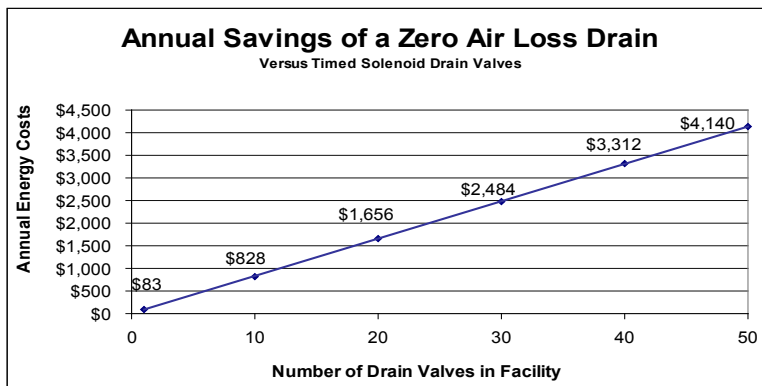
## Condensate Drain - Zero Air / Zero Energy Loss

How does this drain work?



- 1 This collection vessel stores condensate until it is drained away.
- 2 This electronic level controller continuously monitors the liquid level inside the drain.
- 3 This depicts the electric drain valve. As soon as the electronic level controller detects a buildup of liquid, the valve opens and condensate is drained. When a minimum liquid level is reached, the valve closes before compressed air can escape.
- 4 The diaphragm valve ensures that contaminants are flushed out and that the condensate is prevented from forming an emulsion that would need expensive condensate treatment.
- 5 If an error has occurred (i.e. if the condensate cannot be discharged), the electronic control board (5) of the condensate drain generates an alarm signal. This allows timely detection of a problem and helps avoid excessive costs associated with condensate carryover to downstream components.
- 6 Unique swivel inlet connection for easy adaptability on 20-613 and 20-623. This allows the condensate line to be connected from the top or the rear. The 20-606 has a fixed inlet port with dynamic seal which allows the filter bowl to be removed while the drain is attached (not shown).
- 7 An additional liquid inlet on the 20-623 allows for the connection of a balance or vent line. This provides new connections so that condensate can no longer back up into the feed lines.

The cost of compressed air when using a timed drain valve



The annual cost of compressed air was calculated using data from the U.S. Department of Energy and several compressed air consultants. The average annual energy cost to maintain a compressed air system is \$0.23 per 1000 ft<sup>3</sup>. If a timed solenoid drain valve opens 3-4 times per hour, the cost of the wasted air will be \$80 per valve, per year.

**Zero Loss Drains don't waste any compressed air and have a payback of approximately 6 months - 1 year.**

**Easy**  
installation &  
servicing!

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## Condensate Drain - Zero Air / Zero Energy Loss

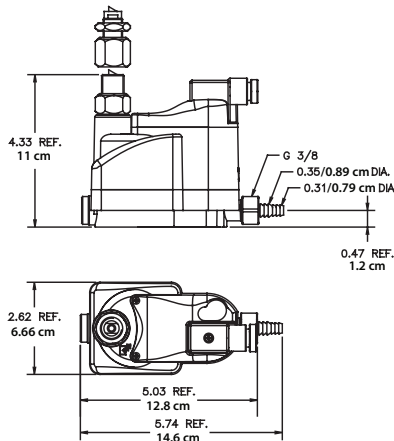
Dimensions and Specifications

Compressed  
Air Filters



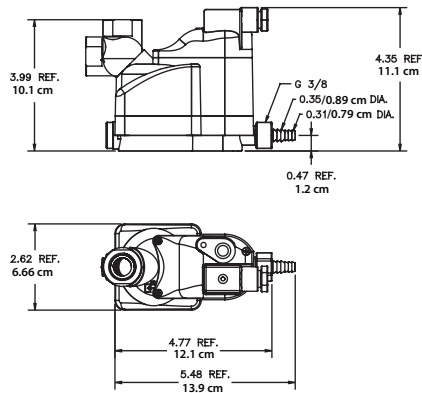
20-606

Dimensions (Inches/cm)



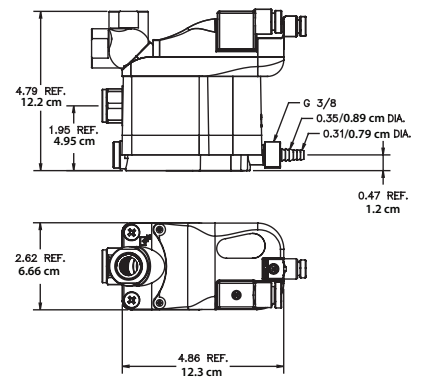
20-613

Dimensions (Inches/cm)



20-623

Dimensions (Inches/cm)



Model Number	Maximum Compressor Capacity	Maximum Refrigerated Dryer Capacity <sup>1</sup>	Maximum Filter Capacity <sup>2</sup>	Pressure Range	Temperature Range	Connection Size	Drain Capacity	Electrical Requirement
20-606	Not Recommended	Not Recommended	424 SCFM (720 m <sup>3</sup> /h)	3 - 232 PSIG (0.2 - 16 bar)	35 -140°F (2 - 60 °C)	3/8" NPT	6 Gallons/23 liters per day	120VAc (60Hz)
20-613	141 SCFM (240 m <sup>3</sup> /h)	283 SCFM (480 m <sup>3</sup> /h)	1413 SCFM (2,400 m <sup>3</sup> /h)	3 - 232 PSIG (0.2 - 16 bar)	35 -140°F (2 - 60 °C)	1/2" NPT	13 Gallons/49 liters per day	120VAc (60Hz)
20-623	247 SCFM (420 m <sup>3</sup> /h)	494 SCFM (840 m <sup>3</sup> /h)	2472 SCFM (4,200 m <sup>3</sup> /h)	3 - 232 PSIG (0.2 - 16 bar)	35 -140°F (2 - 60 °C)	1/2" NPT	23 Gallons/87 liters per day	120VAc (60Hz)

<sup>1</sup>Based on 100 psi (6.9 bar) working pressure, air compressor inlet at 77°F (25°C) at 60% RH, air discharge temperature of 95°F (35°C) following the aftercooler, pressure dewpoint of 37°F (2.8°C) after the refrigerated dryer.

<sup>2</sup>Condensate from aftercooler or refrigerated dryer to be drained upstream – only for residual oil content or small quantities of condensate.

Note: Drains are available with BSP threads; 24V/50 - 60Hz versions are available; 24V DC on request. A 6 ft. (2 m) line cord will be included with each drain.