![Parker logo]

Zero Air Loss
Condensate Drains
For Compressed Air and Gas

Bulletin 1300 - 160/USA

Finite®

Zero Air Loss Condensate Drains
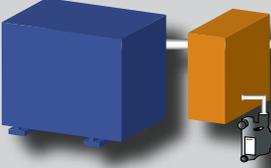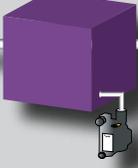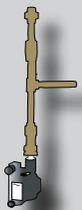
BY Finite®

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What is a zero air loss condensate drain?

Finite's 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?

Compressor with Aftercooler	Receiver Tank	Filter	Air Dryer	Drip Leg
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

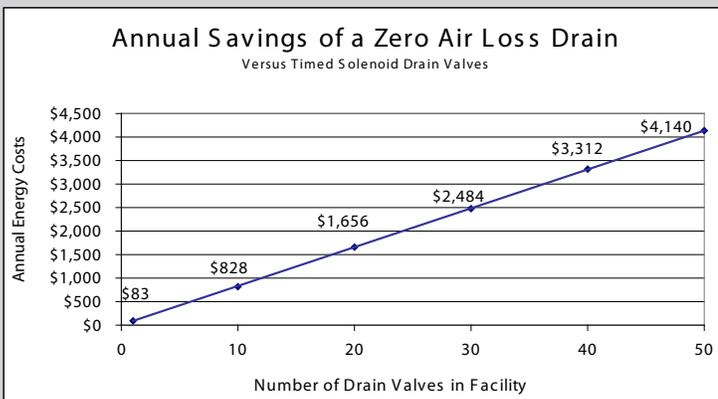## How does the Finite Zero Air Loss Condensate drain compare to other drains?

Condensate Removal Method	Disadvantages of Other Drains	Advantages of Finite's ZLD
Manual Drain (operators must manually open valves to discharge condensate)	• Requires constant attention	• **Automatically drains condensate**
	• Always leads to excess air loss because air escapes when the valve is left open to drain the condensate	• **When a minimum level of condensate is reached, the valve closes in time before compressed air can escape**
Float Drain (uses a float connected to a drain valve that opens when enough condensate is present and closes when condensate has been removed)	• Float is susceptible to blockage from particulate contamination in condensate	• **Includes an integrated dirt screen between the level measurement and drain valve to protect the diaphragm valve**
	• Often sticks in open (leaks excess air) or closed position (no condensate is drained)	• **Particulate contamination is removed by the integrated dirt screen before fouling the moving parts**
Solenoid Operated Drain Valves (uses a timer which allows user to open and close valve at specified intervals)	• The period for which the valve is open might not be long enough for adequate drainage of accumulated condensate	• **Drain will remove condensate when liquid reaches the high level sensor**
	• The valve will operate even if little or no condensate is present, resulting in air loss	• **The drain will not operate until the liquid level reaches the high level sensor**
	• Often requires a strainer to remove particulate contamination which can block the inlet and outlet ports	• **Particulate contamination is removed by the integrated dirt screen before fouling the outlet port**

How does this drain work?
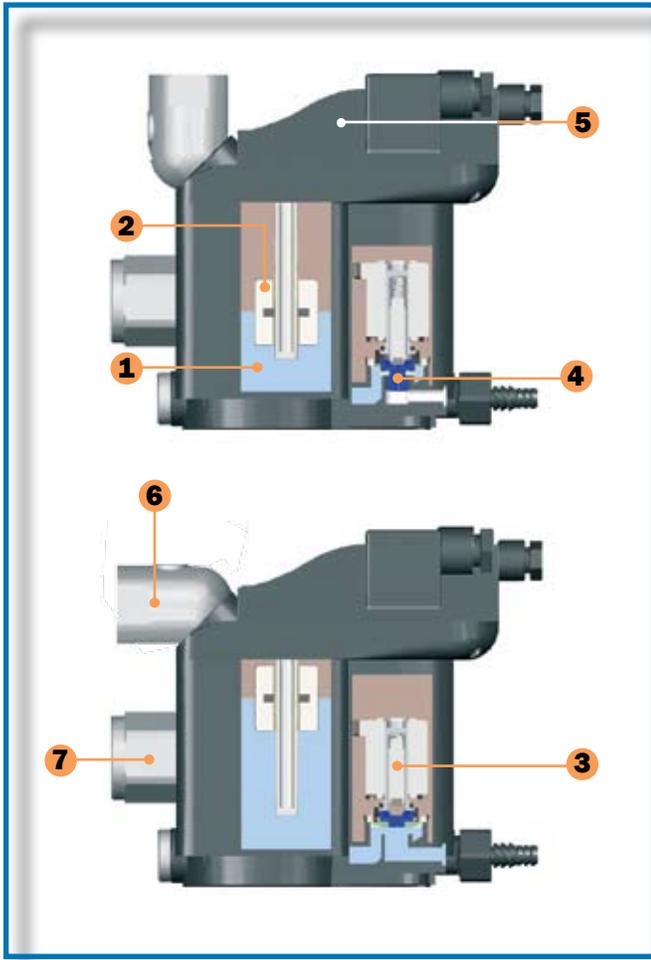
1. This collection vessel stores condensate until it is drained away.

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 ZLD-013 and ZLD-023. This allows the condensate line to be connected from the top or the rear. The ZLD-006 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 ZLD-023 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 co$t of compressed air when using a timed drain valve

Annual Savings of a Zero Air Loss Drain
Versus Timed Solenoid Drain Valves

Annual Energy Costs

$4,500
$4,000
$3,500
$3,000
$2,500
$2,000
$1,500
$1,000
$500
$0

$83
$828
$1,656
$2,484
$3,312
$4,140

0 10 20 30 40 50

Number of Drain Valves in Facility

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 ft³. 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.

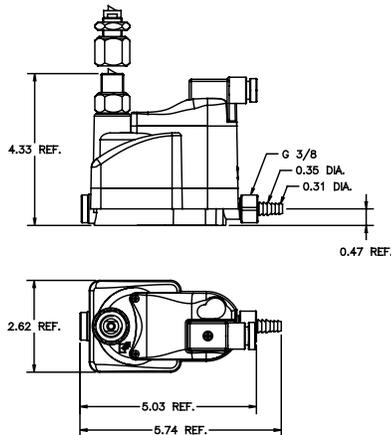**Finite's Zero Loss Drains don't waste any compressed air and have a payback of approximately 6 months - 1 year.**

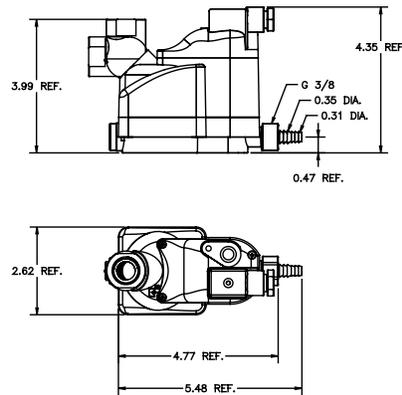# Easy installation & servicing!

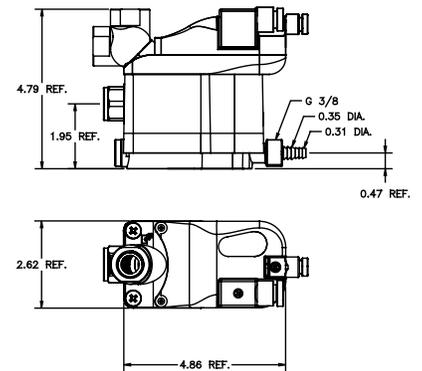# Dimensions and Specifications

ZLD-006

Dimensions (Inches)

4.33 REF.
G 3/8
0.35 DIA.
0.31 DIA.
0.47 REF.
2.62 REF.
5.03 REF.
5.74 REF.

ZLD-013

Dimensions (Inches)

3.99 REF.
4.35 REF.
G 3/8
0.35 DIA.
0.31 DIA.
0.47 REF.
2.62 REF.
4.77 REF.
5.48 REF.

ZLD-023

Dimensions (Inches)

4.79 REF.
1.95 REF.
G 3/8
0.35 DIA.
0.31 DIA.
0.47 REF.
2.62 REF.
4.86 REF.

Model Number	Maximum Compressor Capacity	Maximum Refrigerated Dryer Capacity*1	Maximum Filter Capacity*2	Pressure Range	Temperature Range	Connection Size	Drain Capacity	Electrical Requirement
ZLD-006	Not Recommended	Not Recommended	424 SCFM (720 m³/h)	3 - 232 PSIG (0.2 - 16 bar)	35 -140°F (2 – 60 °C)	3/8" NPT	6 Gallons per day	120Vac (60Hz)
ZLD-013	141 SCFM (240 m³/h)	283 SCFM (480 m³/h)	1413 SCFM (2,400 m³/h)	3 - 232 PSIG (0.2 - 16 bar)	35 -140°F (2 – 60 °C)	1/2" NPT	13 Gallons per day	120Vac (60Hz)
ZLD-023	247 SCFM (420 m³/h)	494 SCFM (840 m³/h)	2472 SCFM (4,200 m³/h)	3 - 232 PSIG (0.2 - 16 bar)	35 -140°F (2 – 60 °C)	1/2" NPT	23 Gallons per day	120Vac (60Hz)

*1Based on 100 psi working pressure, air compressor inlet at 77°F at 60% RH, air discharge temperature of 95°F following the aftercooler, pressure dewpoint of 37°F after the refrigerated dryer.

*2 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. line cord will be included with each drain.