

# INSTALLATION, OPERATING, AND MAINTENANCE INSTRUCTIONS FOR ELECTRONIC “ZLD” ZERO LOSS DRAIN



The ZLD is designed for trouble-free and maintenance-free draining of unwanted accumulations of condensation and other foreign matter from any collection point in a compressed air system.

## INSTALLATION

### **CAUTION: COMPRESSED AIR CAN BE DANGEROUS.**

Before attempting to install the drain, be certain that the pressure vessel on which the drain will be installed is completely depressurized.

The drain should not be installed in areas that are exposed to freezing temperatures (heater option is available). Maximum working pressure of drain is **250 PSI**. Maximum condensate temperature is **180° F**.

The reservoir **must** be installed horizontally. The ZLD uses gravity to fill the reservoir, and therefore must be installed below the vessel to be drained. Connect the drain line from vessel to the top entry port on the ZLD. The installation of a strainer is not required or recommended.

Install the drain as close to the source to be drained as possible. If flexible tubing is used on the discharge, be certain it is properly fastened to prevent it from whipping when the drain discharges the condensation.

To ensure that condensate will freely enter the reservoir, a vent line should be installed to allow trapped air to exit. Install one end of the vent line in the 1/8" port located on the side of drain. The other end of the vent line should be run back to the air system to a tap down stream from the source that is being drained (Fig 1). If no air system tap is available, then use install adjustable needle valve that bleeds to atmosphere (Fig 2).

The use of shut-off valves on drain line and on vent line, are recommended. A valved bypass around drain is recommended for condensate removal during maintenance functions. A backup wrench should be used on the discharge solenoid valve to prevent it from turning. Use nongalling pipe sealant on all joints.

The ZLD drain operates on 120V AC power. A grounded 3-prong plug is supplied to facilitate power removal for maintenance functions. It is important to connect ZLD to a grounded electrical system to provide personnel shock protection.

High Level alarm contacts are supplied to monitor drain operation. A NO or NC contact can be connected to indicator located remotely. A 1/2" conduit hole needs to be cut in side of enclosure. Use a suitable connector for wire to pass thru that prevents water entry.

## DRAIN OPERATION

The drain reservoir has a magnetic float switch that senses the condensate level. When level rises, the float switch contacts closes and opens the drain solenoid valve. With the valve open, the water level begins to drop allowing float switch contacts to open. An adjustable time delay keeps drain solenoid valve open. When delay is finished, drain solenoid valve closes.

To check without condensate, apply power to ZLD drain and press and hold TEST button to open valve. Valve will stay open as long as TEST button is pressed. Releasing test button starts time delay for valve to close. This method tests the electronic portion for proper operation.

After electronic portion has been checked for proper operation, verify that condensation is properly entering the reservoir by looking through translucent reservoir.

**Caution: Depressurize before disassembly.**

## OPTIONS

- Heater
- High Level Alarm

## WARRANTY

The ZLD is warranted to be free from defects in workmanship and materials for a period of one year from the date of shipment. The liability of the manufacturer is limited to repair or replacement of the drain at its option. In no event shall the manufacturer be liable for special or consequential damages or for delay in performances of this warranty.

**CAUTION:** Any attempt to repair the drain without authorization will void any warranty.

## INSTALLATION DIAGRAMS ON REVERSE SIDE

## IN GENERAL

In order for the condensate to properly enter the ZLD reservoir, the condensate line to the ZLD must always be installed below the bottom of the vessel to be drained. It is equally important to provide a means for the air that is contained in the reservoir to escape (vent) as the condensate enters the reservoir. If the air cannot escape, the condensate will not enter the reservoir. Below are suggestions on how to best install the ZLD on typical types of vessels that have to be drained of condensate. However, it is possible to install the ZLD without a balance line (Dwg. not shown), providing the condensate enters the top inlet and the flow rates are less than 9 GPH (750 cfm for an aftercooler or 1500 cfm drier) for a 1/2" drain line and 19 GPH (1500 cfm for an aftercooler or 3000 cfm drier) for a 3/4" line. The use of unions and shut-off valves are recommended for both the condensate line and the balance line.

## RECEIVER TANK

The preferred installation for a ZLD on a receiver tank is having the condensate enter the top inlet port and having the balance line go back to the tank at a position that is above the level of the condensate (Dwg. 1).

## FILTER and AFTERCOOLER MOISTURE SEPARATOR

If a cyclone separator or filter has pipe plugs located in the top of the head, the plug closest to the discharge pipe should be removed and the balance line should be installed (Dwg. 2). If there is no provision on the cyclone separator or filter for a balance line, install it in the discharge side of the pipe line and as close to the cyclone separator as possible.

## REFRIGERATED DRYER

If a balance line is required, it must be connected to the port located on top of the separator that is closest to the discharge side (Dwg. 2), or between the separator and the air-to-air heat exchanger. If a port is not available as described above, then venting to atmosphere is recommended. When venting to atmosphere, the condensate should enter through the bottom entry port on the drain. The bleed or needle valve is installed on the 1/8" NPT vent port and allows the air in the ZLD reservoir to escape to the atmosphere (Dwg 3). The bleed valve (not included) should be adjusted so that only 3 to 5 bubbles per second are visible. We do not recommend installing a vent line down stream from the dryer. The vent line can be a conduit for transferring moisture from the drain to the previously dried air. This can result in unwanted moisture being sent down stream.

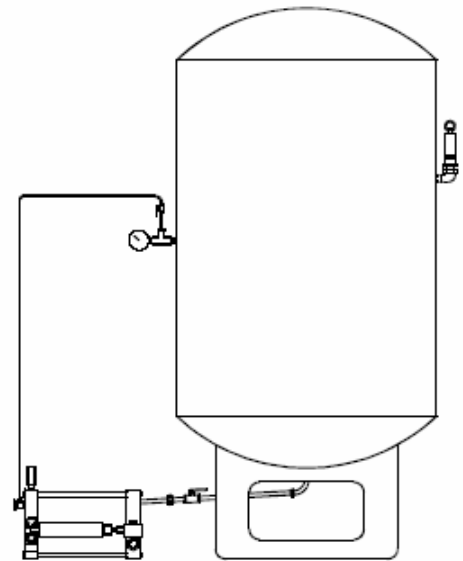
## INTERCOOLERS

Install the condensate drain line into the upper port only. This will prevent the possibility of condensate being drawn back into the intercooler on some systems. It is important that the vent line be installed on the same stage that is being drained or to atmosphere.

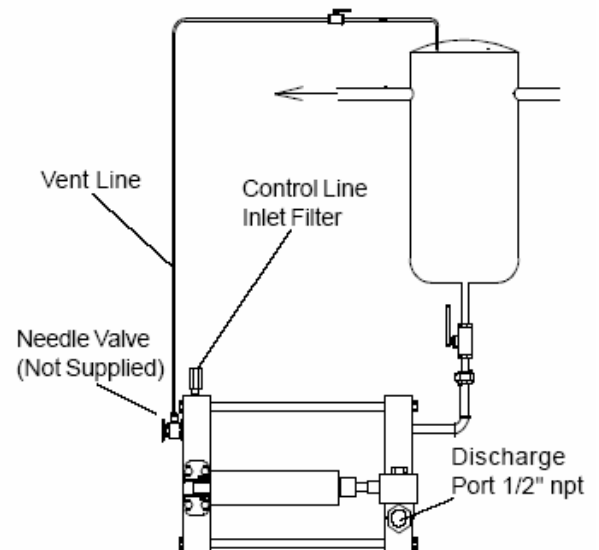
## BALANCE LINE

As mentioned above, both the use and the placement of a balance line is very important. Most drain failures are the result of an improper balance line installation. The balance line should be 1/4" tubing or larger, and installed on top of a pipe or vessel, not the bottom. A needle valve is recommended for controlling the air flow. Avoid having any loops or low areas in the balance line that might allow moisture to collect in the line and prevent the passage of air from the drains reservoir.

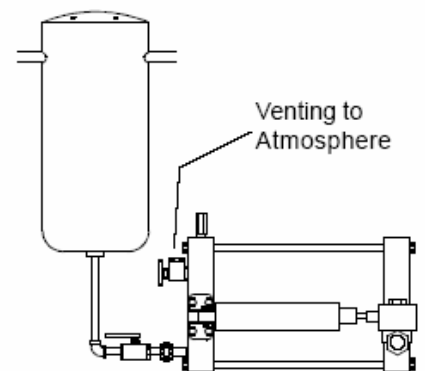
Dwg. 1



Dwg. 2



Dwg. 3



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