

## *Installation & Operation Manual*



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## **Package Contents**

The Dehydra 52 is an automatic, demand-activated, compressed air condensate drain trap.

Package should contain:

- One (1) fully assembled drain trap, Dehydra 52
- One (1) instruction manual
- One installation kit consisting of:
  - 10 feet of ¼" airline tubing
  - 2 male straight connector ¼" tube to 1/8" pipe
  - 1 whisper vent needle valve pre-installed in the top center of the head

## **Before Starting**

- Read these instructions in their entirety.
- Check the contents listing.
- Plan the installation.
- Check for all necessary components, tools, and accessories.
- Observe all cautions and warnings noted in this manual.

When all of the above have been satisfied, proceed with the installation.

## **Standard Practices**

- Install unions in all piping.
- Use non-galling liquid pipe sealant on all joints.
- To keep from twisting the ball valve out of alignment when tightening, use a back-up wrench when piping up to the discharge ball valve.
- A separate condensate shut off valve should be installed between the vessel being drained and the trap.
- Install bypass piping around the trap allowing it to be isolated if necessary.

## **Purpose**

The purpose of a self-actuating drain is to automatically drain condensate from a compressed air system at natural collection points. These points include:

- Aftercoolers
- Air Receiver Tanks
- Separators
- Drip legs
- Compressed Air Dryers
- Intercoolers (See special instructions on page 7)
- Filters

### **Note:**

The actuator used on this trap is a single-acting, air-operated cylinder. Compressed air is used to extend the cylinder and open the valve.

In order for the piston to retract, built-up air pressure inside the actuator must be relieved.

By design, this is accomplished by a small relief port in the top of the cylinder.

### **Note:**

Older systems operating at high pressure may require a replacement actuator assembly. See page 9 for installation instructions.

## **DANGER**

Air/oil under pressure will cause severe personal injury or death.

***Before removing valves, caps, plugs, fittings, bolts, and filters:***

- ***Shut down the compressor***
- ***Relieve the system of all pressure***
- ***Disconnect power from compressor***
- ***Tag and lockout power supply to the starter***

## **Condensate Piping Installation**

### **Placement**

The trap should be placed below the point to be drained (the lowest point of vessel should be slightly higher than the top of the trap). Place the trap on the downstream side of the vessel.

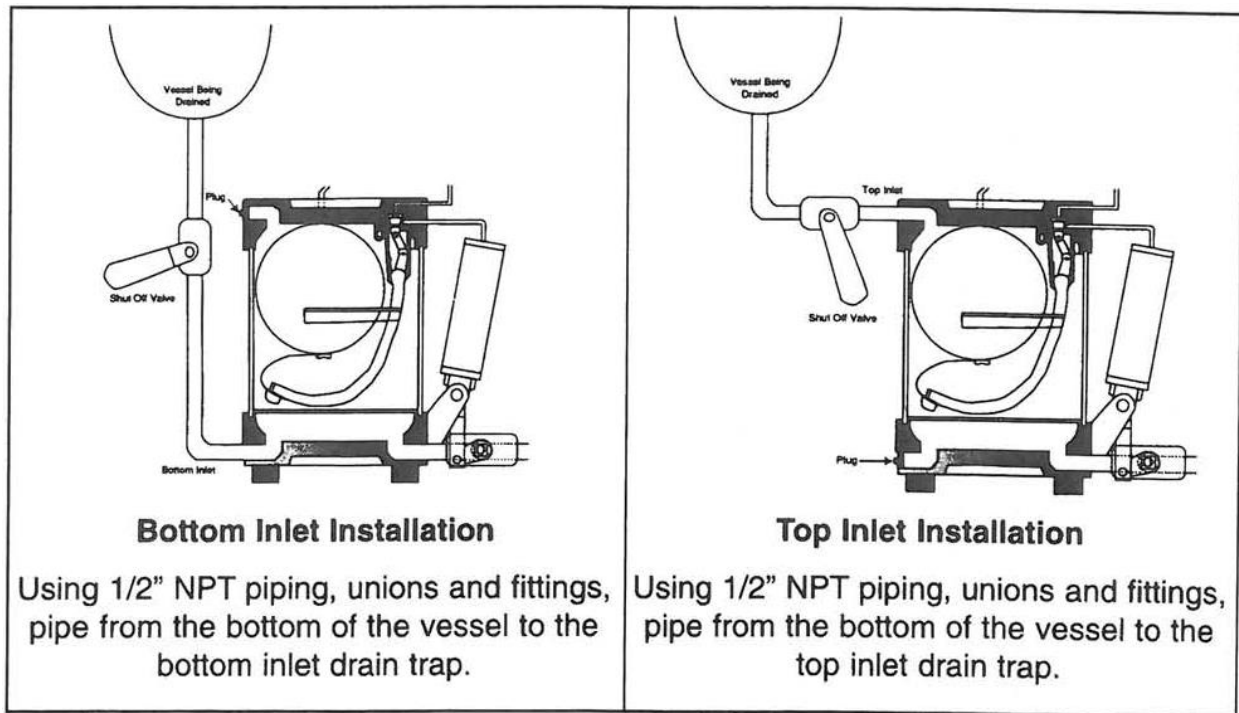
## Inlet

Prior to installing piping from the vessel to the trap, open the vessel drain valve to blow down any accumulated condensate and debris which may be in the bottom of the vessel.

Piping installation to the drain trap may be to the bottom inlet or the top inlet. Route piping to the inlet nearest to the vessel being drained and plug the other inlet.

### CAUTION

Always wear gloves and eye protection while performing the above procedure.

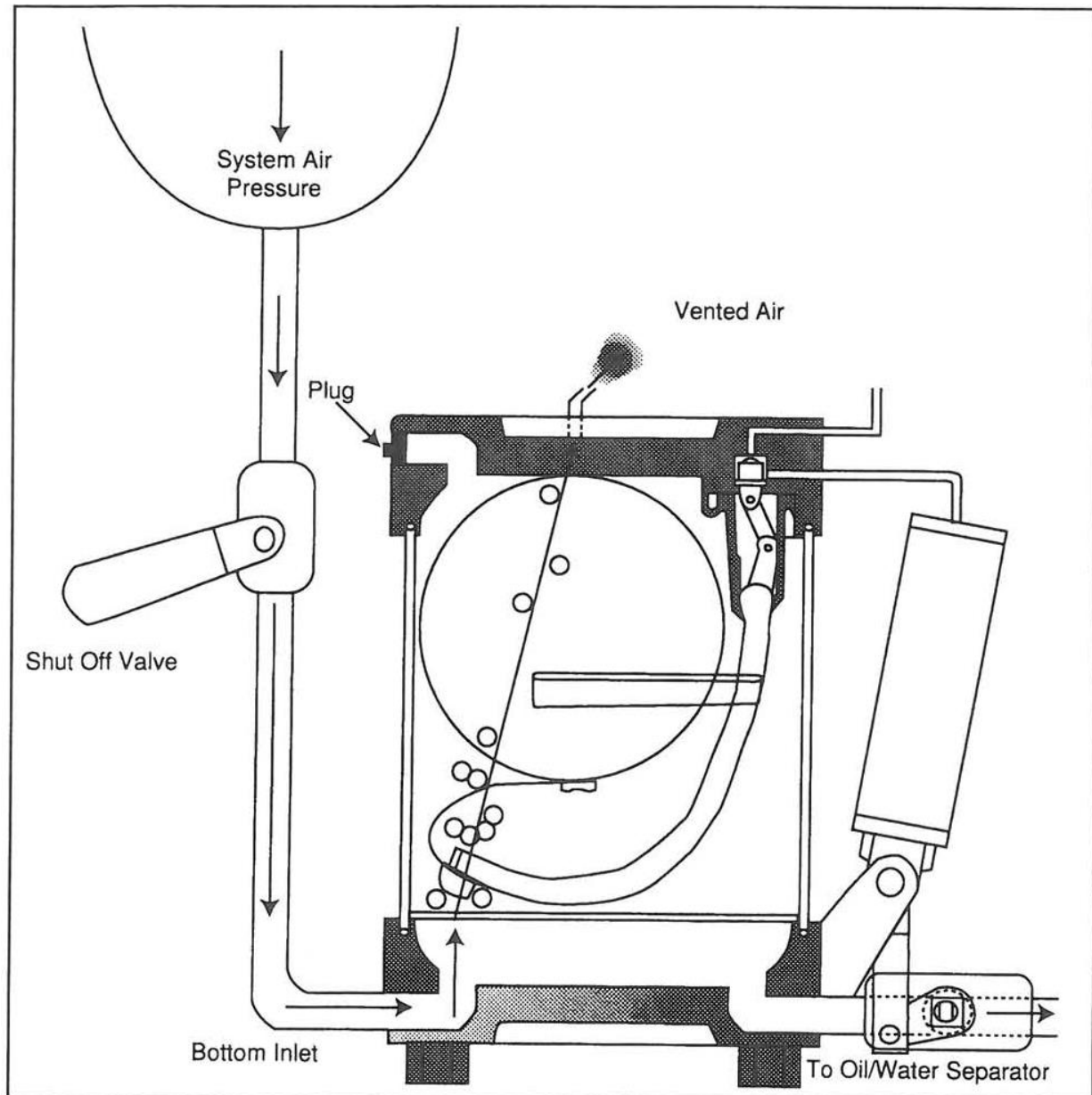


Completed piping should enable the condensate to flow continuously downward into the trap.

## Venting Air

Venting (or pressure relief) is a must for proper condensate flow. Trapped air inside the reservoir may form an air lock and prevent the drain trap from operating.

A small needle valve (whisper vent) installed in the top center of the trap allows trapped air to escape. **Since this needle valve is closed upon shipment, this valve must be opened prior to turning on condensate flow.** To open this valve, turn the adjusting screw on top approximately 1/16 turn counterclockwise. This creates a continuous air flow, negating any possibility of an air lock. If desired, the vented air can be recaptured by installing a vent air capture line (see Vent Air Capture Line Installation, page 6).



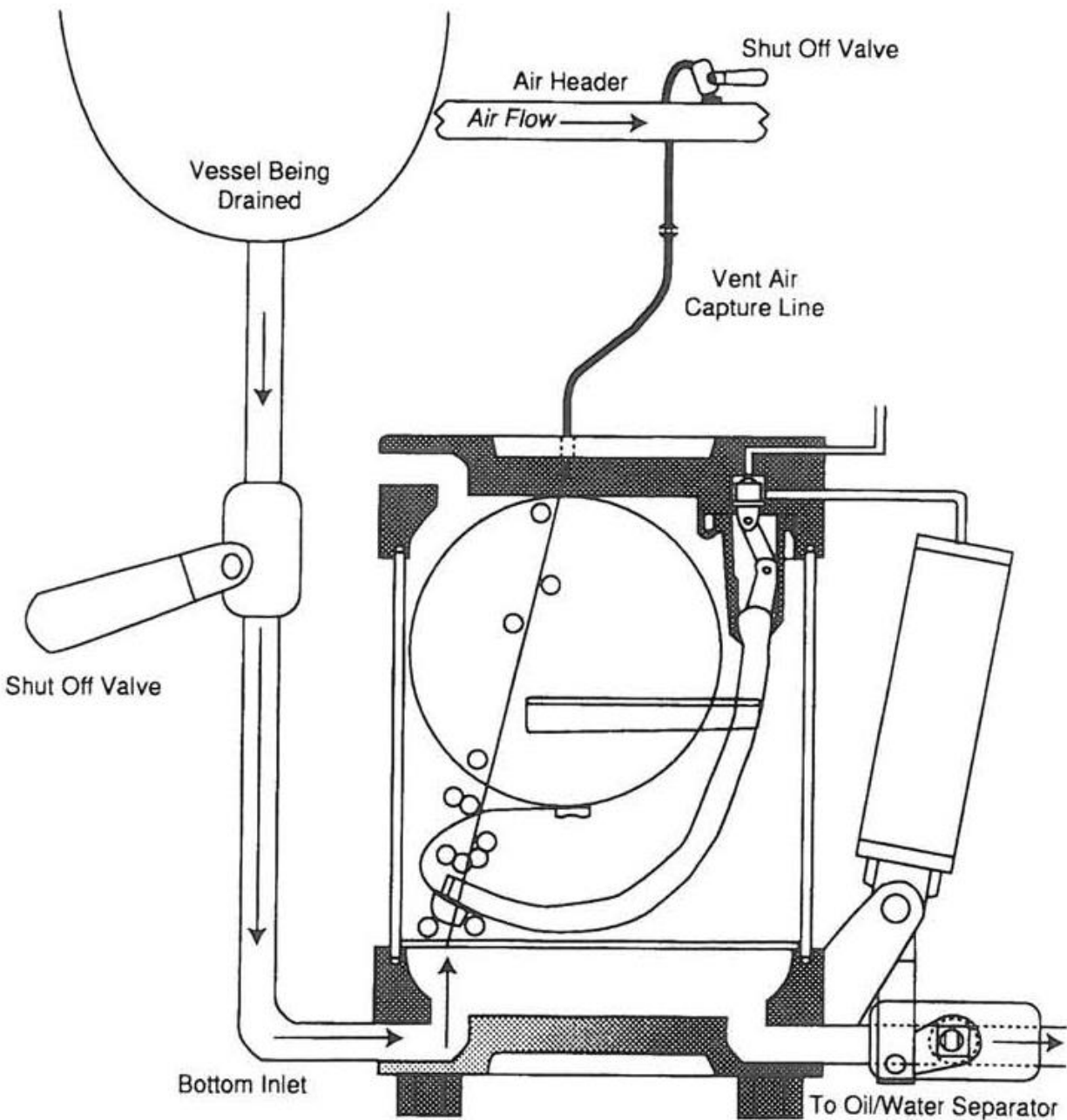
## **Vent Air Capture Line Installation**

Installing a vent air capture line will conserve the compressed air that would otherwise be lost to the atmosphere through the whisper vent.

### **Note:**

This line must be connected to a point of equal or lesser pressure.

**Never install the vent air capture line downstream of the dryer since moist air will be absorbed into the system at that point.**



1. Locate the 10 feet of air tubing and male straight connector provided.
2. Tap into the air header about 4 to 8 feet downstream from the positive flow of air through the reservoir, allowing condensate to flow into the drain.

**When tapping into the air header, follow local codes and be sure there is no pressure in the line while work is being performed.**

- Tap only into the top of the air header.
  - Be sure that there is no other equipment such as dryers or filters between the vessel being drained and the point being tapped.
3. Install the male straight connector in the tapped hole in the header.
  4. Install shut-off valve between the air header and vent air capture line as shown.
  5. Run the ¼" air tubing (rated for system pressure) to the vent fitting on top of the pneumatic no-loss drain valve.

### **Vent Air Capture Line Installation on Intercoolers**

When installed on an intercooler, the vent air capture line (if used) must be connected only to the same stage being drained. Do not connect to a later stage with higher pressure or the condensate will be forced to flow backwards into the intercooler.

If there is no existing point where the vent air capture line can be connected, use only the whisper vent to create condensate flow.

#### **Note:**

Total closure systems are employed on some compressors. In operation, the intake valves close during the unload cycle, resulting in an instantaneous vacuum being created. Improper drain installation on the first stage of an intercooler of such a compressor can result in condensate be drawn back into the intercooler from the trap. On these compressor systems, always direct the condensate from the first stage of an intercooler into the top inlet port of the trap. Also, take the additional precaution of installing a swing check valve just prior to the inlet connection to the trap. These steps will minimize the risk of back flow into the intercooler.

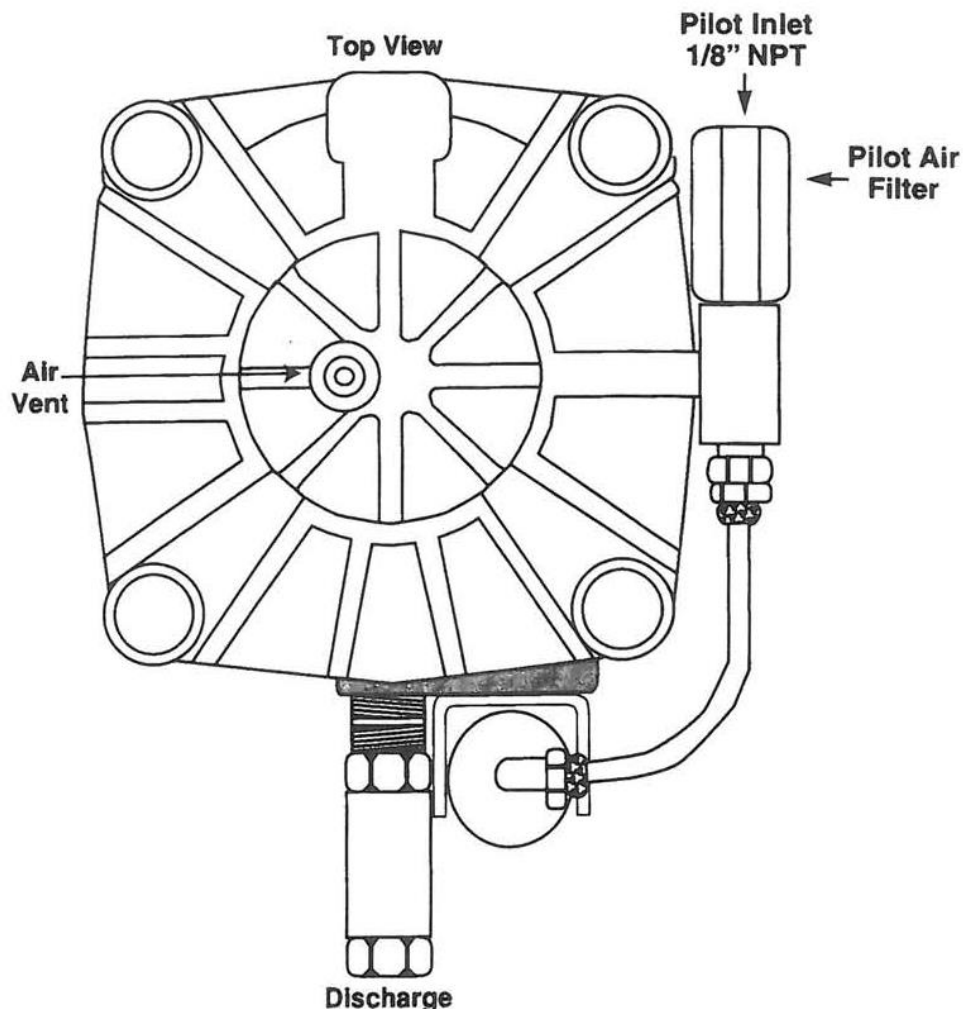
## **Pilot Air Installation**

The discharge ball valve is opened to discharge the accumulated condensate when the reservoir fills to the trigger point (approximately 52 ounces). The actuator requires a minimum of 55 psig to open the valve and discharge the condensate. Pilot air necessary for this actuation may come from either a compressed air source different from the system being drained (instrument air preferred), or if necessary, the same system downstream of filters and traps. In either case, the actuator will last longer if you:

- Use clean, dry air if available.
- Use 55 to 120 psig. (Use a regulator if necessary.)

Once the source of pilot air is determined, connect it to the pilot air filter using the  $\frac{1}{4}$ " tube to 118" NPT fitting and  $\frac{1}{4}$ " tubing provided in the installation kit.

Be sure to provide an independent shut off to the air supply.



## **Drain Outlet**

Using ½" NPT piping, condensate from the trap should go directly to an oil/water separator, a containment vessel, or a drain leading to a treatment facility.

### **CAUTION**

Be sure to anchor the pipe securely since discharge under pressure may cause chattering (water hammer), lifting, or bending leading to possible damage or personal injury.

Discharge piping may also be run vertically (where necessary) to transport the discharge to a collection point or oil/water separator. As a rule of thumb, up to 25 linear feet of ½" pipe can be run vertically and still successfully discharge at a system pressure of 100 psig. Contact Air System Products for assistance whenever vertical piping is to be run.

## **Start-Up**

Once all the connections have been made and checked:

- Turn on pilot air.
- Open the drain valve in bottom of the vessel being drained, allowing condensate to flow into the trap.
- Check the needle valve (if used) on top of the trap—a slight whisper of air should be flowing through the valve.

Observe operation of the trap. If an insufficient amount of condensate flows initially to actuate discharge, depress the manual bypass button to force actuation. Water should drain down to about ½" above the bottom, at which point the actuator arm will withdraw, closing the discharge ball valve and returning the actuator and the ball valve to their original closed position.

## **Preventive Maintenance**

To ensure proper operation, observe the operation of the trap frequently during the first week following installation. **The pilot air filter should be checked at least weekly if plant air is used instead of instrument air to operate the actuator.** Weld slag and rust particles may impede the air flow through the filter and into the pilot chamber. If the element is dirty or clogged, the actuator will operate slowly or not at all. If this occurs, replace the filter (part number RDP-FILTER).

## **Cylinder/Relief Elbow Replacement**

Models prior to 2012 featured a bleed hole in the relief elbow (RDP-FIT4C) to allow the cylinder to retract. After 2012, this function has been incorporated into the cylinder. If a system is operating at high pressure (over 120 psi) the cylinder assembly may need to be replaced with one optimized for high pressures. Contact Air System Products.

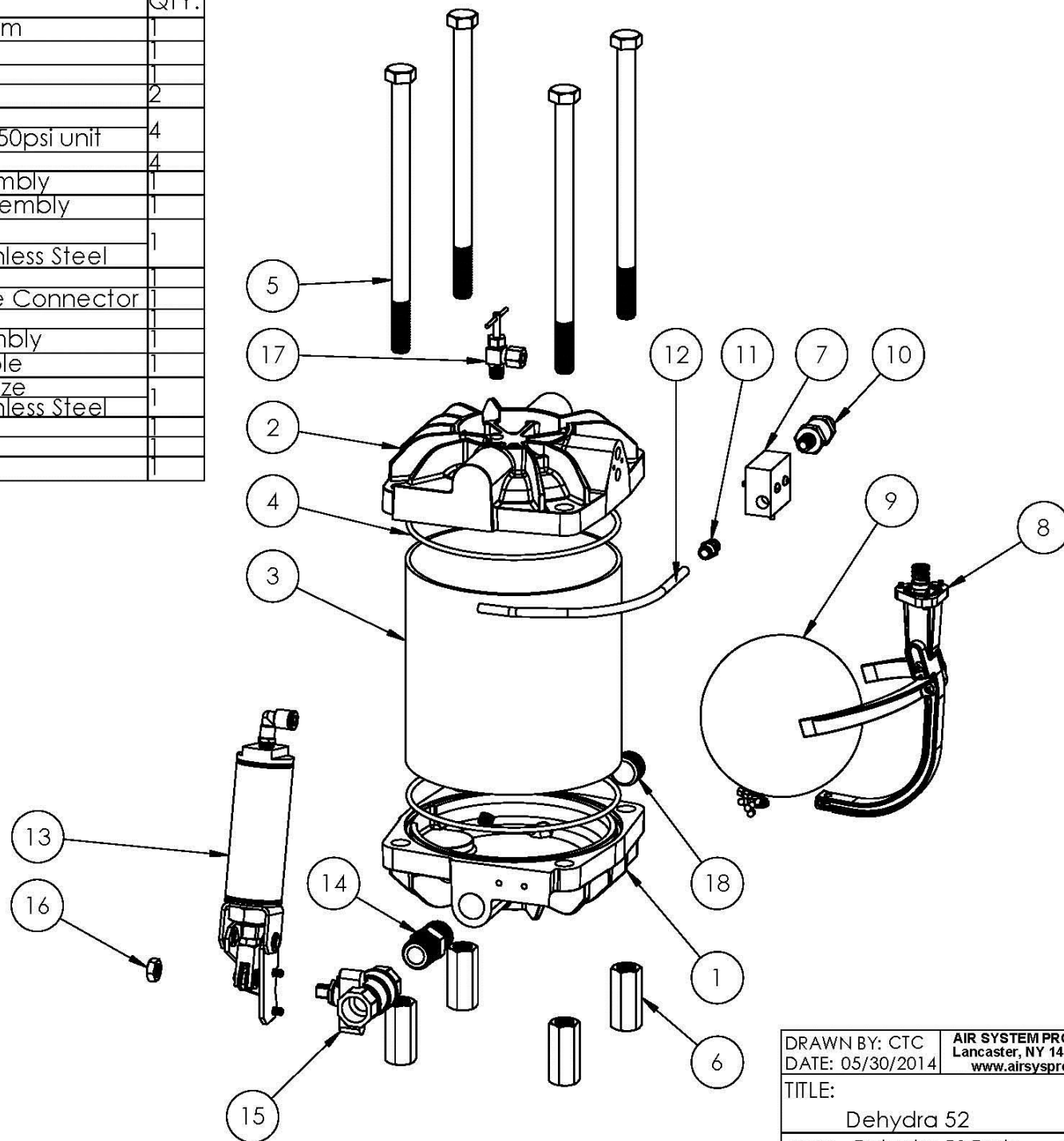
## **Troubleshooting**

Condensate will not flow into the reservoir	<ul style="list-style-type: none"><li>• Check for blockage in the bottom of the vessel or piping.</li><li>• Check to be sure whisper vent in top of drain is not closed. It should be open about 1/16 turn counterclockwise.</li></ul>
Excessive bubbling in reservoir	<ul style="list-style-type: none"><li>• Whisper vent in top of unit is open too much. Adjust by turning the screw clockwise until bubbling slows to 1 to 2 small bubbles every few seconds.</li></ul>
Drain will not open when trigger point is reached	<ul style="list-style-type: none"><li>• Check pilot air filter to be sure it is not plugged</li><li>• Confirm pressure on pilot air line is at least 55 PSIG. Actuator may open slowly or not at all at lower pressures.</li></ul>
Drain releases air at the end of drain cycle	<ul style="list-style-type: none"><li>• Check valve linkage for damage/binding.</li><li>• If system pressure is high (above 120 psi) you may need a replacement cylinder assembly. See page 9, contact Air System Products.</li></ul>
Drain does not completely shut off at the end of cycle	<ul style="list-style-type: none"><li>• Check valve linkage for damage/binding.</li><li>• If air flow is constantly present at cylinder bleed hole, trigger assembly is worn. Replace trigger assembly.</li></ul>

## **Parts**

See next page.

LABEL	PART NO.	DESCRIPTION	QTY.
1	PN-10110	End Cap, Bottom	1
2	PN-10120	End Cap, Top	1
3	PN-10200	Wall	1
4	PN-15300	End Cap Seal	2
5	PN-10400	Tiedown Bolt	4
6	Pn-10402	Tiedown Bolt, 450psi unit	4
7	PN-10410	Tiedown Nut	4
8	PN-12199	Test Block Assembly	1
9	PN-11099	Pilot Trigger Assembly	1
10	PN-11848	Float Asm. Poly	1
11	PN-11851	Float Asm. Stainless Steel	1
12	RDP-FILTER	Air Filter	1
13	RDP-FIT13	1/8in x 1/4 Tube Connector	1
14	PN-17300	Tube	1
15	PN-15555	Acuator Assembly	1
16	FDP-VA1	Discharge Nipple	1
17	BV6-B12	Ball Valve, Bronze	1
18	BV6-S12-20R	Ball Valve, Stainless Steel	1
19	PN-40350	Ball Valve Nut	1
20	RDP-VENT	Vent	1
21	DD2P-PLUG	Inlet Plug	1



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