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INTRODUCTION:

The Groth Model 8331 Condensate Accumulator is a large volume chamber which stores and evacuates condensate liquid from biogas process pipelines. The Condensate Accumulator allows the condensate to drain from the pipeline while preventing any gas from escaping. This unit is typically installed downstream from a biogas digester, at the lowest point of the digester gas piping. The removal of condensate from the biogas is necessary to keep the gas train running by protecting the downstream equipment and piping from corrosion, blockage and water hammer.

The Condensate Accumulator must be maintained by a knowledgeable valve technician. It should only be assembled under clean conditions preferably in a shop environment. Carefully read and understand this Manual before installing or repairing this product.

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DESIGN, FUNCTION & OPERATION

The condensate accumulator is designed to allow condensate to drain without allowing process gas to escape. An internal drip leg is used to automatically empty the condensate from the tank. The drain piping will prevent any gas from escaping the vessel. The vessel is operated with a water seal and the internal drip leg will drain the amount of condensate that is added to the water seal.

The operation of removing condensate from within the Condensate Accumulate is managed by a piped connection (drip leg) which penetrates the tank wall, which extends down to the drain elevation. As the condensate level rises to the level of the drain, it will be evacuated through the drip leg. Groth also offers the option of a liquid level switch and solenoid valve (drip leg discharge) for management of condensation from the biogas system.

GENERAL SAFETY INSTRUCTIONS

This section is an overview of safety guidelines that should be followed during the installation, operation and maintenance of Groth Condensate Accumulator. To understand the context of these instructions and warnings, it is necessary to completely read and understand the contents of this manual.

The purpose of a Condensate Accumulator is to remove condensate without allowing process gas to escape. The tank must be designed for the proper MAWP of the system. Consult API Standard 2000 for tank protection sizing procedures. An improperly specified or functioning accumulator may result in structural damage to the tank or system, and can cause severe personal injury or death.

SAFETY WARNINGS

DO NOT ATTEMPT TO REMOVE THE CONDENSATE ACCUMULATOR FROM THE TANK OR PROCESS VESSEL WITHOUT FIRST BLEEDING ALL PRESSURE FROM THE SYSTEM. ALTERNATIVE MEANS OF PRESSURE RELIEF MUST BE PROVIDED WHEN THE ACCUMULATOR IS OUT OF SERVICE.

THE ACCUMULATOR HAS BEEN EXPOSED TO PROCESS VAPORS WHILE IN SERVICE. OBSERVE ALL PLANT PROCEDURES AND MATERIAL SAFETY DATA SHEETS (MSDS) FOR THE PRODUCTS IN THE SYSTEM WHEN INSPECTING, ADJUSTING OR SERVICING THE VALVE. TAKE APPROPRIATE SAFETY PRECAUTIONS REGARDING EYE PROTECTION, RESPIRATION AND SKIN CONTACT.

INSPECTION AND INSTALLATION

The Model 8331 must be installed in the upright position, preferably as near the digester as practical but must be at the lowest point of the digester gas piping. When flange mounting, use suitable gaskets and tighten bolts uniformly. When threaded connections are supplied, use a suitable lubricant/sealant. Note "In" and "Out" connections for proper flow direction. The elevation of the Condensate Accumulator must be sufficient to permit installation of drip trap and/or condensate drain piping and access to the 2" NPT clean-out port.

If a Model 8180 sight level gauge is provided, the glass will be packaged separately. Remove the packing nuts from the two valves [11,12] and insert the glass tube [8]. Replace the nuts and packing and tighten carefully to prevent damage to the glass tube.

If a Groth Model 8450, 8460, 8470, or 8490 Drip Trap is provided, it must be connected to the condensate outlet (1" NPT connection on the side of the housing) using 1" pipe. See drip trap instructions for correct installation procedure. If no drip trap is used, the condensate outlet should be piped to a drain using 1" pipe and suitable valve to prevent gas escaping.

CAUTION!

Do not overtighten threaded connection. Damage or breakage may result.

Refer to assembly drawing C-94965 (or similar drawing) for parts list and dimensional information.

All valves should be installed using the three body lifting lugs. Mount the valve with the pallet assembly in the horizontal plane.

1. Begin by inspecting the gasket; make sure that the material is suitable for the service. Gasket dimensions are listed in Table 2 below:
2. Lubricate all studs and nuts with an appropriate thread lubricant. If stainless steel fasteners are used, select an anti-seize lubricant such as moly-disulfide.
3. Align the gasket with the bolt circle.
4. Set the unit carefully on the flange, keep the gasket between the flanges. Install the studs and tighten nuts hand tight.
5. Torque all fasteners to half the recommended value (see Table 3) in a staggered, alternating pattern or follow appropriate Plant Maintenance guidelines and standards.
**Note: Torque values are based on a gasket factor $m=3.5$, gasket factor $y=2000$ psi, maximum pressure = 2 psi.*
6. Make sure that the flanges are not distorted and that the gasket is evenly compressed.
7. Make up the final torque and check that no further nut rotation occurs.

PREVENTIVE MAINTENANCE

The Model 8331 Condensate Accumulator does not require routine lubrication or adjustments, but should be checked periodically, at least twice a year or per the on-site maintenance schedule.

The only maintenance required is periodic cleaning to remove solids accumulation in the Condensate Accumulator housing. Before cleaning, gas pressure to the trap must be blocked and internal pressure safely vented. Then the top cover [4] and the 2" bottom pipe cap [1] can be removed and all solids washed from the tank into a suitable drain or container. Replace the cap and cover, using a new cover gasket [3], if necessary.

If the sight gage glass tube should be accidentally broken, both valves should be closed to prevent escaping gas and/or condensate. The glass tube may then be replaced by following instructions in the installation section.

Inspection of seal tightness should be done to ensure compliance with local air pollution control requirements as needed. When inspecting the sediment levels, gaskets and seals should also be checked. Please refer to handling instructions listed in the Installation section of this manual. Always keep records of maintenance performed.

WARNING

If the unit must be removed from service for any reason, make sure that all pressure has been released before the flange fasteners are loosened. Refer to your company procedures before venting the line pressure and when handling toxic or otherwise hazardous materials.

The main valve body, gaskets and all other components are exposed to the process vapor. Observe all standard safety precautions as specified on Material Safety Data Sheets for the product[s] in the system while removing the unit and when repairing it. Take appropriate safety precautions regarding eye protection, respiration & skin contact.

TESTING PROCEDURE

Whenever the Condensate Accumulator has been serviced or maintained, before being placed back into operation the unit shall be pressure tested to ensure that no leaks are present in the connections. This can be accomplished by plugging all openings in the unit. Connect a pressure regulated line to one of the open ports and pressurize the unit to 1.5 times the MAWP of the unit (as stamped on the original nameplate). Check all connectors with a soap and water solution to detect for leaks.

TROUBLESHOOTING

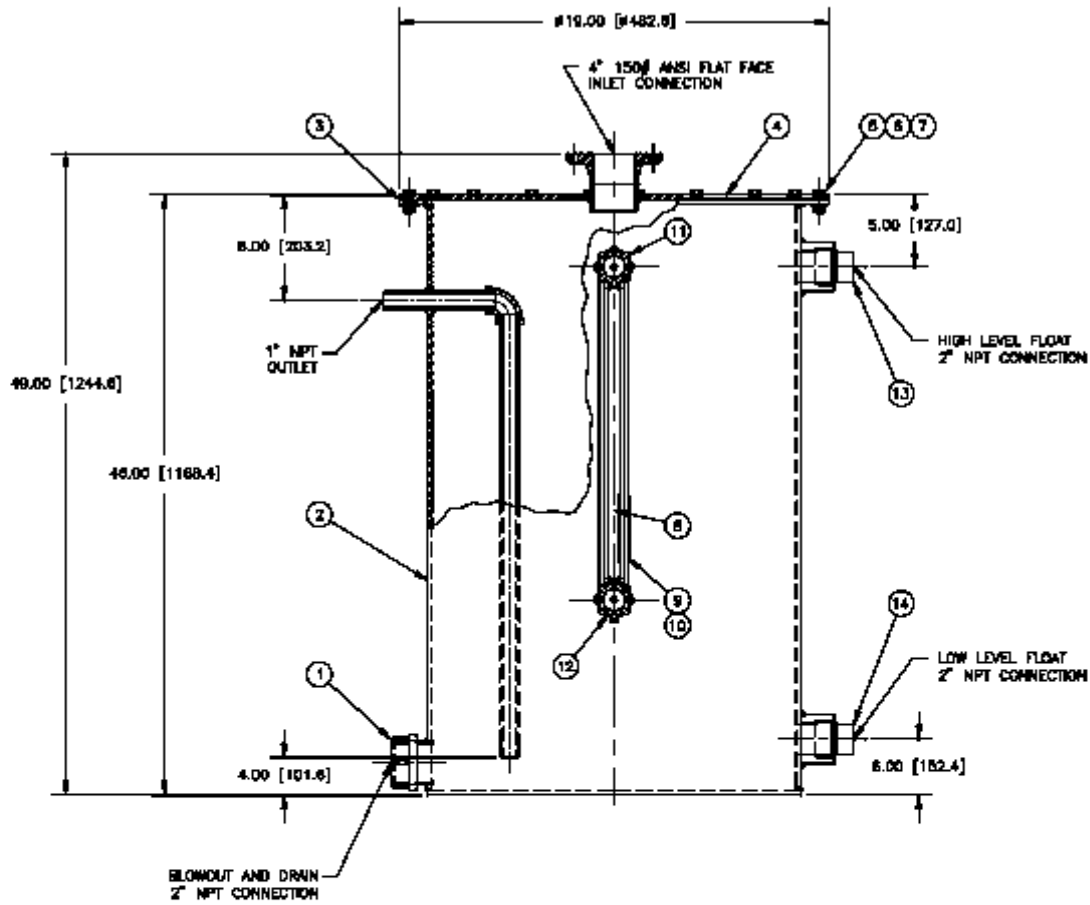
If there is excessive leakage, inspect the following :

- Inspect flange surfaces (Be aware of nicks, scratches and flatness)
- Inspect gasket

In order to maintain a tight seal, components have to be clean and have a smooth surface at the contact areas.

DESCRIPTION

MODEL 8331
CONDENSATE TRAP WITH SIGHT
GLASS FOR 4" 150# FF ANSI BOLTING



ORDER SPECIFICATIONS

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