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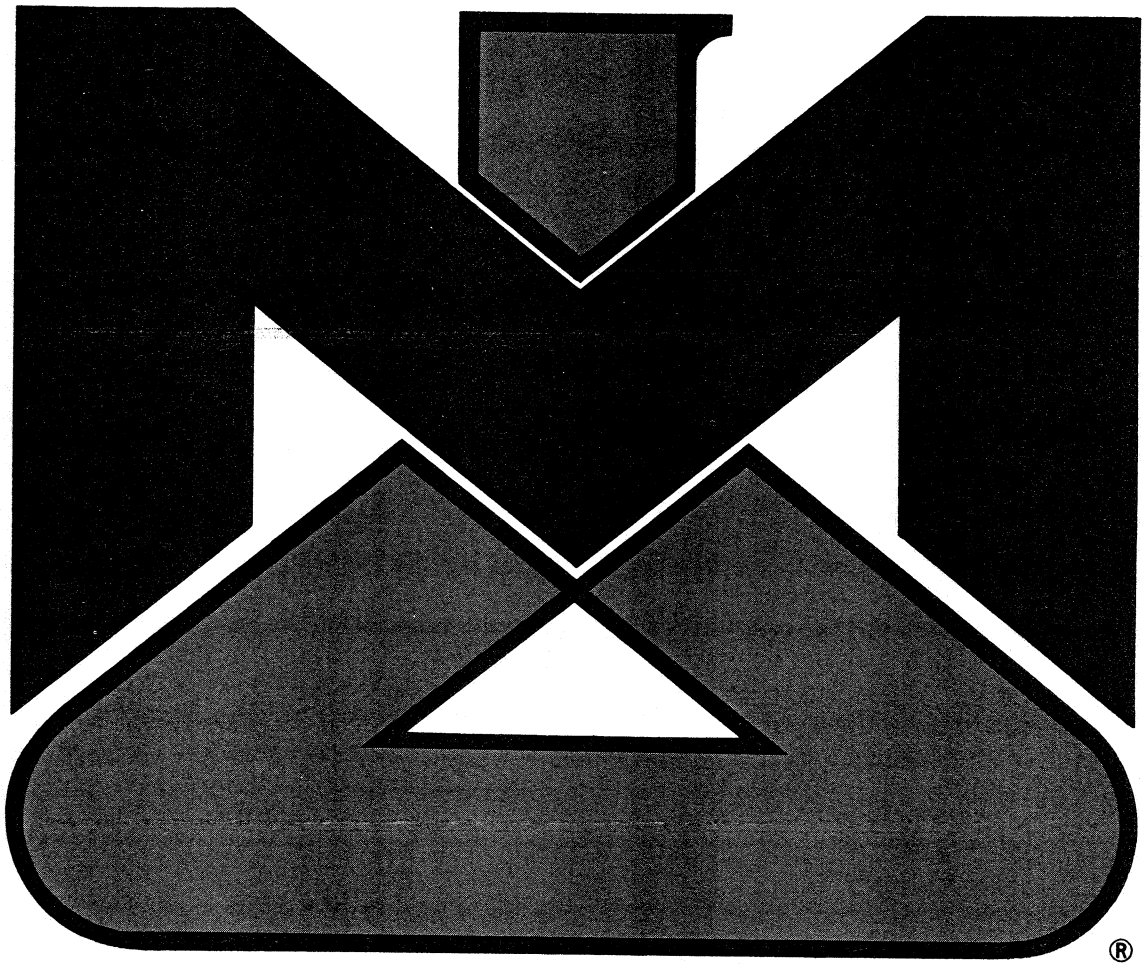
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HYDROX™ PURIFIER

MODEL 8301

INSTRUCTION MANUAL

DESCRIPTION

The Matheson Model 8301 Hydrox Purifier is a gettering furnace to effect removal of water and oxygen from certain gas streams. It is capable of purifying argon, helium, krypton, methane, neon and xenon, as well as mixtures of the same. The unit is capable of purifying gas streams containing 100 ppm oxygen and 100 ppm water and reducing their concentration to 0.1 ppm each. The total theoretical purifying capacity of the gettering charge (or cartridge) is 26 grams of oxygen and/or water. You can easily process 50-70 cylinders, approximately 250 cubic feet each, containing a nominal impurity level of 10 ppm of oxygen and water.

The system is designed to operate with flow rates up to 5 liters/minute and operating pressures to 300 psig.

A recommended Hydrox installation is shown in Figure 1.

OPERATION

Start up instructions are as follows:

1. Attach your lines of ¼" O.D. tubing to the stainless steel inlet and outlet bulkhead fittings as marked.

2. Purge system with inert gas prior to introducing a flammable gas for purification. (See Figure 1 for proper purging set up.)

3. Establish gas flow of 100 cc/minute through unit for purging.

4. Firmly connect the female end of the power cord into the plug on the side of the unit. Check for positive engagement. Plug other end of cord into 110-117 volts A.C., 50/60 Hz, grounded outlet.

5. Allow 30-45 minutes for unit to reach operating temperature equilibrium, depending on the flow rate.

6. The Model 8301 Purifier will now be operating at its designed temperature under typical conditions. Oxygen and water concentrations will be reduced to approximately 0.1 ppm or better.

7. Adjust to desired flow rate; up to 5 liters/minute maximum.

8. Exit gas temperature may vary from room temperature to 55°C depending on flow rate.

9. CAUTION - Unit case will be hot to the touch; handle carefully.

Shut down procedure is as follows:

1. Remove power plug from 110-117 volt outlet.

2. Preferably maintain gas flow of 100 cc/minute through unit during first hour of cooldown. If no gas flow is used, make sure system is not opened to air until cold to the touch.

3. ALLOW TWO HOURS FOR COOLDOWN with flowing gas. Flow rate may be reduced to 25 cc/minute after first hour.

4. Stop gas supply. If tubing is to be disconnected from the unit, it is advisable to cap the inlet and outlet fittings, thus reducing chances of contaminating the gettering charge.

HOW TO EXTEND THE LIFE OF YOUR GETTERING CHARGE

The Hydrox Purifier employs a newly developed alloy of zirconium, titanium and nickel. The bulk charge of this special alloy is in a heliarc welded cartridge and is consumed as it purifies.

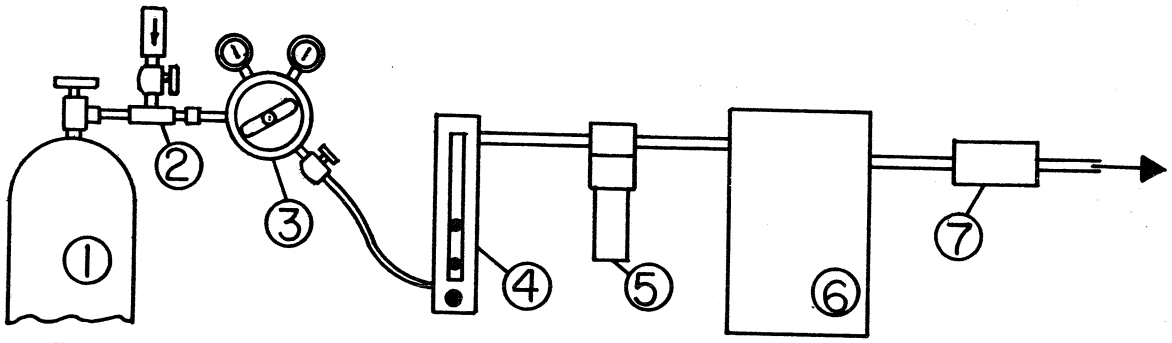
There is no simple way to determine when the gettering alloy has been totally consumed. Instruments that are capable of measuring such low concentrations of oxygen and water are expensive and generally not available at application sites where the Model 8301 would normally be used. In most applications your process will provide an indication that impurity breakthrough is occurring.

The diagram in Figure 1 (back page) describes the recommended installation to provide the longest life for your Hydrox Purifier. We cannot overemphasize the need for a tight system employing a metal diaphragm regulator, metal tubing and diaphragm packless valves as a minimum requirement. The use of a 450 purifier with a 452 cartridge to remove water from your gas stream prior to entering the Hydrox Purifier will greatly extend the life of your unit.

FIGURE 1

RECOMMENDED HYDROX^{R} INSTALLATION

To obtain maximum performance from your Hydrox Purifier we recommend the installation illustrated.



1. GAS SOURCE - may be from cylinders or plant line.

2. PURGE ASSEMBLY - recommended mainly when flammable gases are used, but could be used for inert gases as well. Actual model should be selected to match your pressure regulator. (Consult current Matheson Catalog.)

3. PRESSURE REGULATOR - A Metal Diaphragm Diffusion Resistant Regulator should be used to prevent the diffusion of atmospheric oxygen and water into your gas stream. Such diffusion will add to contaminant levels and consume your gettering charge.

4. FLOWMETER - If a flow measuring device is not already incorporated in your system you may wish to add a flowmeter. (Consult current Matheson Catalog.)

5. GAS PURIFIER MODEL 450 W/CARTRIDGE 452 - This inexpensive cartridge purifier will remove water from your gas and extend the useful life of your Hydrox by as much as 100%. (Actual gain is dependent upon the initial water content.)

6. HYDROX PURIFIER

7. POINT OF USE FILTER 6164T - A high purity point of use filter is good insurance in any critical application.

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