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## **Specifications for the Hydro Model 502 Gas Chlorination System** **Specification 502**

HYDRO GAS CHLORINATION SERIES 502 for 4 to 100 PPD CHLORINE FEED

### **1.01 GENERAL**

#### **1.01.1 Completeness**

The system shall be complete with all components, equipment, and appurtenances.

#### **1.01.2 Quality Assurance**

All materials and components shall be new and unused of first quality by well-known manufacturers. Inferior materials or components shall not be allowed.

### **1.02 MANUFACTURER**

The manufacturer shall be Hydro Instruments, Telford, PA, USA or approved equal. The chlorination system shall be Hydro Instruments Model 502.

### **1.03 CHLORINATION SYSTEM**

#### **1.03.1 General**

1. The Chlorination system shall be a vacuum operated, solution feed, automatic, switchover type for dispensing chlorine gas from industry standard one hundred fifty (150) pound cylinders.
2. The Chlorination system shall have a chlorine gas feed capacity of not less than 100 pounds per day (2 kg/hr).
3. The system shall convey the gas under vacuum from the cylinder mounted vacuum regulators to the ejector assemblies.
4. The chlorination system shall automatically switch the gas supply from an empty cylinder to a full one.
5. The system design shall permit the entire system to be vacuum checked in the field without the use of special tools.
6. The system shall be constructed of materials suitable for wet or dry chlorine gas service. Vacuum regulator inlet valve springs shall be tantalum alloy.

#### 1.03.2 Cylinder Mounted Vacuum Regulators

1. The two (2) vacuum regulators shall mount directly on the gas cylinder valve by means of a corrosion resistant and gasketed yoke assembly complying with the standards of The Chlorine Institute, Inc.
2. The vacuum regulator body parts shall be constructed of solid machined PVC material for maximum durability and cracking resistance.
3. Each regulator shall have a spring-opposed diaphragm that controls vacuum and closes tight upon loss of vacuum.
4. Each regulator shall incorporate a pressure relief (vent) valve with separate ports for chlorine feed and chlorine vent. Automatic switchover vacuum regulators, which compromise safety by having a single exit port for vent and feed and rely on a detent mechanism and external pressure relief (vent) valve, shall not be acceptable.
5. Connections shall be provided on each regulator for tubing vented gas away from the pressure relief (vent) port of each vacuum regulator to atmosphere outside the building. The outside end of the vent tubing shall be equipped with an insect screen.
6. Each regulator shall be equipped with a porous PTFE inlet filter to remove particulate matter from the gas before it enters the inlet safety valve.
7. Each regulator shall include a flow meter tube to indicate feed rate and which cylinder is in use.
8. Each regulator shall include a mechanism to indicate when the cylinder is empty and requires replacement.
9. The design of the regulators shall not rely on any o-ring(s) to prevent pressurized Chlorine leaks, into the room, from the region upstream of the inlet safety valve.

#### 1.03.3 Automatic Switchover Module

1. One (1) separate mechanical device shall be provided to automatically switch from empty cylinder to the standby cylinder. The switchover module shall be suitable for wall mounting.

#### 1.03.4 Gas Flow Meter

1. One (1) gas flow meter shall be provided to indicate the gas flow rate. The gas flow meter shall be suitable for wall mounting.
2. This gas flow meter shall be equipped with a control valve for manual feed rate adjustment.
3. The gas flow meter shall incorporate a variable area orifice rate control valve using a captured v-notch stem.
4. Flow meter tubes shall indicate flow rates up to 100 pounds per day and down to a minimum of 1/20 of the maximum value.

#### 1.03.5 Ejector

1. One (1) ejector shall be water operated Venturi nozzle type. The ejector shall provide the operating vacuum for the chlorination system.

2. The ejector shall incorporate a spring loaded, normally closed check valve to prevent the backflow of water into the chlorine gas equipment. The check valve shall be suitable for backpressures up to at least 140 psi.
3. Ejector check valve shall automatically close upon the loss of vacuum in the Ejector.