

*The most durable  
gas chlorinator  
on the market...*

*hydro*

**SERIES 200**

# **GAS CHLORINATORS**



*For...*

- Potable Water Systems • Industrial Process Water
- Sanitary Sewage • Industrial Waste Water
- Community Water Systems • Power Plants • Swimming Pools & Fountains

**EASY INSTALLATION:**

Advanced product design eliminates the probability of troublesome installations.

**FEWER PARTS:**

Proven product engineering results in fewer parts for exceptional operating reliability, lower cost, and longer life.

**TOTAL RELIABILITY:**

Every part is optimally designed and manufactured using materials proven to be chemically resistant to chlorine gas. Therefore, Hydro Instruments' Series 200 components can be used to handle chlorine gas with safety and complete control at capacities from 10 to 250 lbs/day (200 to 5000 grams/hour).

*hydro*

**INSTRUMENTS**





# GAS CHLORINATORS

**Hydro Series 200 cylinder or manifold mounted gas chlorinators** are designed for manual or semi-automatic operation to meet the highest standards of reliability. They incorporate advanced design features gained through years of research and in-the-field experience. Simplified design and fewer parts mean less maintenance, less cost with better performance, reliability and long life.

## Principle of Operation

For a particular ejector back pressure, a minimum water supply is required at the ejector inlet to create vacuum at a level strong enough to operate the chlorinator. This vacuum originates in the throat of the ejector's Venturi nozzle and after opening the ejector check valve, extends into the body of the chlorinator. There it causes the regulating diaphragm to open the inlet safety valve, allowing gas under pressure to enter the chlorinator. As it flows across the inlet safety valve assembly, it is filtered and reduced to a vacuum.

The gas then enters a chamber where the vacuum level is maintained by a spring-opposed, sealed regulating diaphragm. It is then drawn through the chlorine flow meter, across the rate control valve and on to the ejector where it dissolves in water. The resultant, highly concentrated solution exits at the ejector outlet and flows to the desired point of application.

## Accuracy

Flow meter accuracy is within 4% of the meter's maximum capacity.

## Capacities Available

250 pounds per day (5000 grams per hour). Minimum feed rate is 5% of maximum.

## Installation of Hydro Gas Chlorinators

Units of the **Hydro Gas Chlorinator System** can be used for practically any requirement. The schematics show various types of installations using single or multiple cylinders as well as application of chlorine to pool, basin or pipeline... direct or remote. Basic **HYDRO** gas chlorinator units are simply combined to cover all applications.

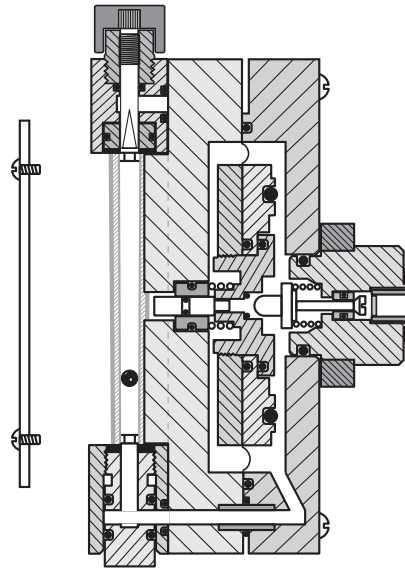
## CHLORINATOR SIZE SHOULD BE BASED ON MAXIMUM POSSIBLE FLOW.

$$\text{GPM} \times 0.012 \times (\text{PPM}) \text{ Dosage} = \text{PPD}$$

### Example:

$$600 \text{ GPM} \times 0.012 \times 3 \text{ PPM} = 21.6 \text{ PPD}$$

In this example a **Hydro 50 PPD** chlorinator would be adequate.



## HYDRO Series 200 Chlorinator

A heavy steel yoke is used to mount the **Hydro** chlorinator directly to the cylinder. This eliminates all pressure lines. Chlorine gas is taken under vacuum to the point of injection. This eliminates pressurized solution lines.

## Operator Indicator

During operation the indicator window remains gray; red indicates depletion of the chlorine source.

## Inlet Safety Valve

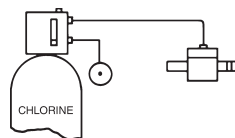
Spring opposed safety valve seals off chlorine in cylinder upon loss of vacuum. Safety valve is encapsulated to permit quick disassembly and cleaning without special tools.

## Inlet Sealing Valve

A sealing valve at the chlorinator inlet closes if chlorine supply is interrupted or depleted, sealing the entire vacuum system. Dirt or moisture cannot enter the system when cylinders are changed.

## Regulating Diaphragm

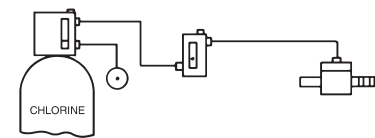
Constant vacuum level is maintained inside the chlorinator by the diaphragm which is O-ring sealed along its entire inner and outer surface to prevent leakage or warping of parts from excessive tightening of the body bolts.



## Hydro Model (T or W)\* 200 Single-Point Application

**Hydro** chlorinator mounted on a single cylinder with direct ejector to pipeline or basin. Chlorine capacity to 250 PPD (5000 grams/hr).

○ Vent to outside

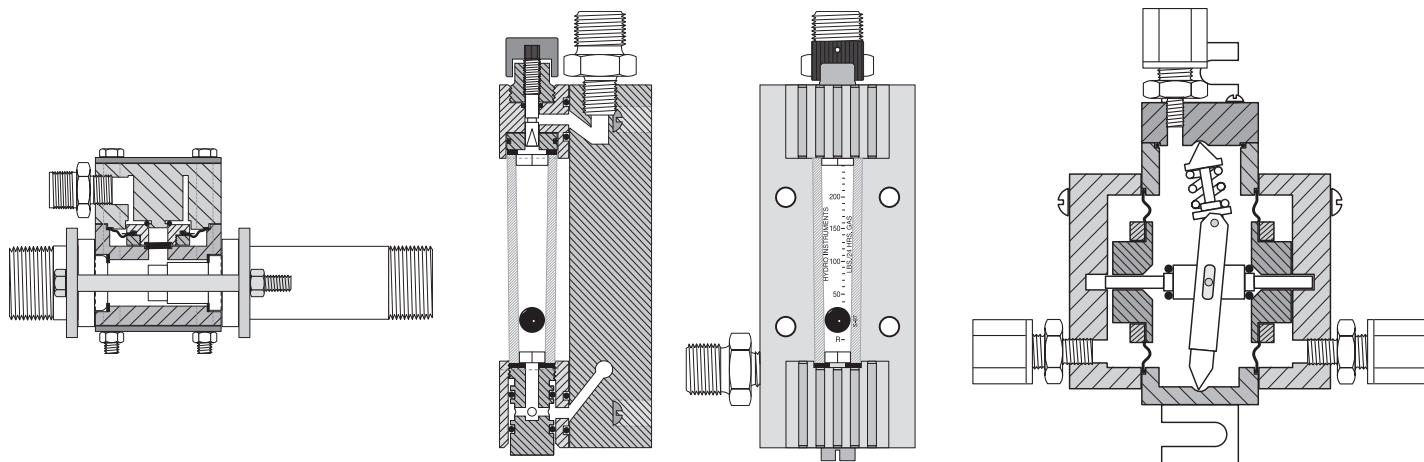


## Hydro Model (T or W)\* 201 Remote Meter for Single Point of Application

**Hydro** chlorinator mounted on a single cylinder feeding a remote wall mounted meter with rate valve supplying a single ejector. Chlorine capacity to 250 PPD (5000 grams/hr).

\* When ordering: Prefix # with T for ton container mounting or W for wall manifold or cylinder

# A complete system for totally reliable control.



## HYDRO EJ-2000 Ejector

The **Hydro** ejector utilizes a specially designed O-ring seal check valve which prevents the backflow of water into the chlorinator. The ejector operates on a venturi created by water passing through the ejector nozzle causing the spring opposed diaphragm check valve to open and mix the chlorine gas with the water. The ejector should be supplied with reasonable clean water at temperatures below 110°F (43°C). The **Hydro** ejector is made of durable materials that are resistant to wet and dry chlorine gas use.

## HYDRO RM-200 Remote Meter

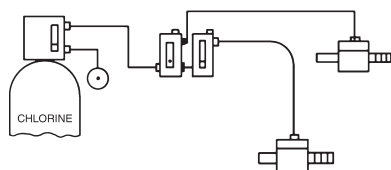
Any number of **Hydro** Remote Meters may be used in an installation if required. Only the vacuum line is required to the individual ejector which it supplies. Chlorine gas can then be precisely metered at each remote location. If more (or less) is required at one location the meter is simply set at the desired level for that location. By this control of metering at remote locations a perfectly balanced system can be maintained. **Hydro** Remote Meters are practically maintenance free.

## HYDRO SP-200 Automatic Switchover

Multiple chlorine cylinders, which prolong the time span before depletion, are easily installed and automatically switch over from a depleted cylinder to the unused cylinder. A **Hydro** Chlorinator is installed on each cylinder and only one Automatic Switchover is required to handle the two cylinders. The **Hydro** Automatic Switchover can be used with either one remote meter or with two or more remote meters. Use of this switchover module is a great time saver and is a great aid in assuring a more constant supply of chlorine. Once installed, the **Hydro** Automatic Switchover is completely automatic and needs no adjustment or setting.

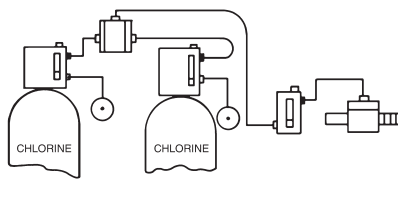


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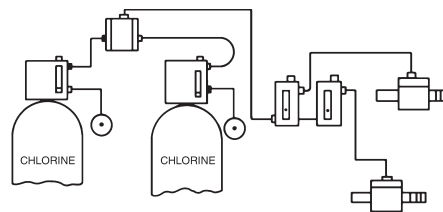
**Hydro Model (T or W)\* 201-2**  
Multi-Point Application

**Hydro** chlorinator mounted on a single cylinder feeding two remote meters for two points of injection using two ejectors. Each meter and ejector operates independently. Chlorine capacity to 250 PPD (5000 grams/hr).



**Hydro Model (T or W)\* 202**  
Automatic Stand-By

**Hydro** chlorinators – two chlorinators mounted on two cylinders with switchover module feeding one remote meter with rate valve feeding a single ejector. Capacity to 250 PPD (5000 grams/hr) maximum.



**Hydro Model (T or W)\* 202-2**  
Automatic Stand-By with Multi-Point Feeding

**Hydro** chlorinators – two chlorinators mounted on two cylinders with switchover module feeding two or more remote meters with rate valves supplying two ejectors. Capacity to 250 PPD (5000 grams/hr) maximum.

er mounting. (Manifold mounting requires additional equipment.)



# Series 200 GAS CHLORINATORS

The installation of **Hydro Gas Chlorinators** is easily accomplished. The following will be useful information.

### System Operating Temperatures

For best operation and safety, the chlorinator and chlorine supply should be protected from the elements and from direct sunlight.

### Methods of Control

#### Manual

Adjustment of rate valve and start/stop of water to ejector.

#### Semi-Automatic

- Shutting off booster pump to ejector.
- Using solenoid valve to close vacuum line to ejector.

**Step-Feed** to multiple flow meters is available using solenoid valves in the vacuum line or water line to the ejector.

### STANDARD TUBING CONNECTIONS

Vacuum Tubing Size		Vent		
Feed Rate	Length of Tubing			
PPD Gr/Hr	100 Feet (30m)	200 Feet (60m)	25 Feet (7.5m)	
50 1000	3/8" (9.52mm)	3/8" (9.52mm)	3/8" (9.52mm)	
100 2000	3/8" (9.52mm)	1/2" (12.7mm)	3/8" (9.52mm)	
250 5000	1/2" (12.7mm)	5/8" (15.8mm)	3/8" (9.52mm)	
500 10,000	5/8" (15.8mm)	3/4" (19mm)	3/8" (9.52mm)	

### ACCESSORY EQUIPMENT AVAILABLE

- Loss of Chlorine Alarm
- Multiple Remote Flow Meters and Ejectors
- Inlet Water Assemblies
- Automatic Switchover System
- Booster Pumps
- Analyzers
- Gas Masks
- Leak Detectors

### CHLORINE WITHDRAWAL RATE from Horizontal Ton Container

Maximum Chlorinator Withdrawal Capacity		Minimum Ambient Temperature	
PPD	gr/hr	°F	°C
500	10,000	40	4
250	5000	16	-9
150	3000	0	-18
100	2000	-6	-21
50	1000	-20	-29

### Ejector Installation

1. Ejector connections must be kept above freezing temperatures.
2. At point of application maximum back pressure for standard ejector is 145 psig. (High pressure ejectors are available.)
3. Long solution lines from ejector should be avoided and if not, solution lines must be of adequate ID to reduce friction loss.
4. To create a vacuum the water supply to the ejector inlet must be higher than the pressure at the point of application (approximately 40 psig differential).
5. Maximum ejector operating temperature is 110° F (43° C).
6. Ejector may be wall mounted for remote applications.

Series No.	(PPD) Maximum Capacity	Mounting
500 Series	100 PPD (2000 gr/hr)	150 lb. cylinder, manifold*, or ton container
200 Series	250 PPD (5000 gr/hr)	150 lb. cylinder, manifold*, or ton container
700 Series	500 PPD (10,000 gr/hr)	Ton container
750 Series	500 PPD (10,000 gr/hr)	Manifold

\* For manifold units there is the additional cost of wall mounting manifolds.

### Hydro Model EJ-2000 Ejector Connections

	Standard	Options
Ejector Water Inlet (Nozzle)	EN-275 Nozzle for 1 1/4" NPT	None
Ejector Water Outlet (Diffuser)	EDH-380 Diffuser for 1 1/2" ID Hose	EDT-380 Diffuser for 1 1/4" NPT

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## INSTRUMENTS

