

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

*hydro*

**SERIES 700 AND 750  
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 700 and 750 components can be used to handle chlorine gas with safety and complete control at capacities up to 500 lbs/day (10,000 grams/hour).

*hydro*

**INSTRUMENTS**

**PROUDLY**  
  
**MADE IN USA**

**ISO**  
**9001**  
Certified



# GAS CHLORINATORS

## 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 pass into the drip leg where the initial liquid is collected. A heater attached to the drip leg evaporates the liquid that is in the eduction tube of the gas valve on startup of a new ton container. This heater remains on constantly, permitting only gas to flow to the vacuum regulator. 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

Maximum total operating rate is 500 pounds per day (10,000 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 containers 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.

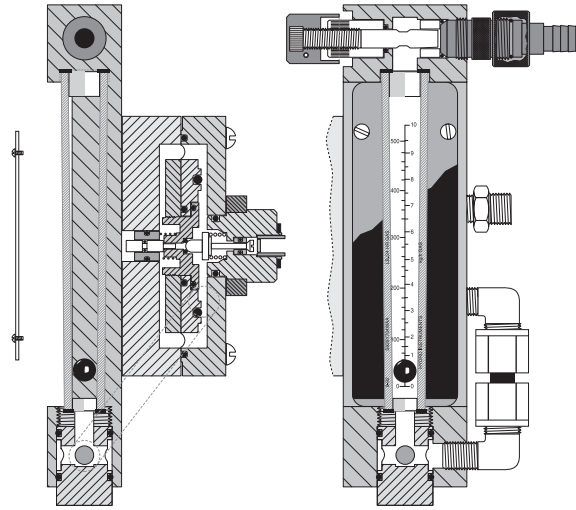
## CHLORINATOR SIZE SHOULD BE BASED ON MAXIMUM POSSIBLE FLOW.

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

### 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 700\* ton-container 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, lower cost with better performance, reliability and long life.*

## HYDRO Series 700 Chlorinator

A ton ironwork\* is used to mount the **Hydro** chlorinator directly to the container. **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 container upon loss of vacuum. Safety valve is encapsulated to permit quick disassembly and cleaning without special tools.

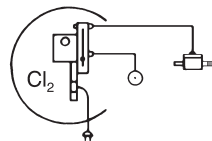
### Inlet Sealing Valve

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 containers 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.

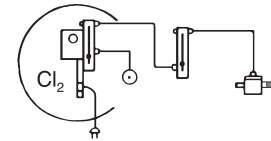
500 PPD systems with one or more wall mounted remote meter(s) (701, 701-2, 702, 702-2, etc.) are standard with chlorinator chlorinator body(ies). The price is reduced if the customer wishes to receive chlorinator(s) with no meter assembly(ies) ("blank" at the source (only at the wall mounted remote meter) and on automatic standby systems one will not be able to visually determine



### Hydro Model 700 Single-Point Application

**Hydro** chlorinator mounted on a single container with direct ejector to pipeline or basin. Chlorine capacity to 500 PPD (10,000 grams/hr).

⊙ Vent to safe outside location

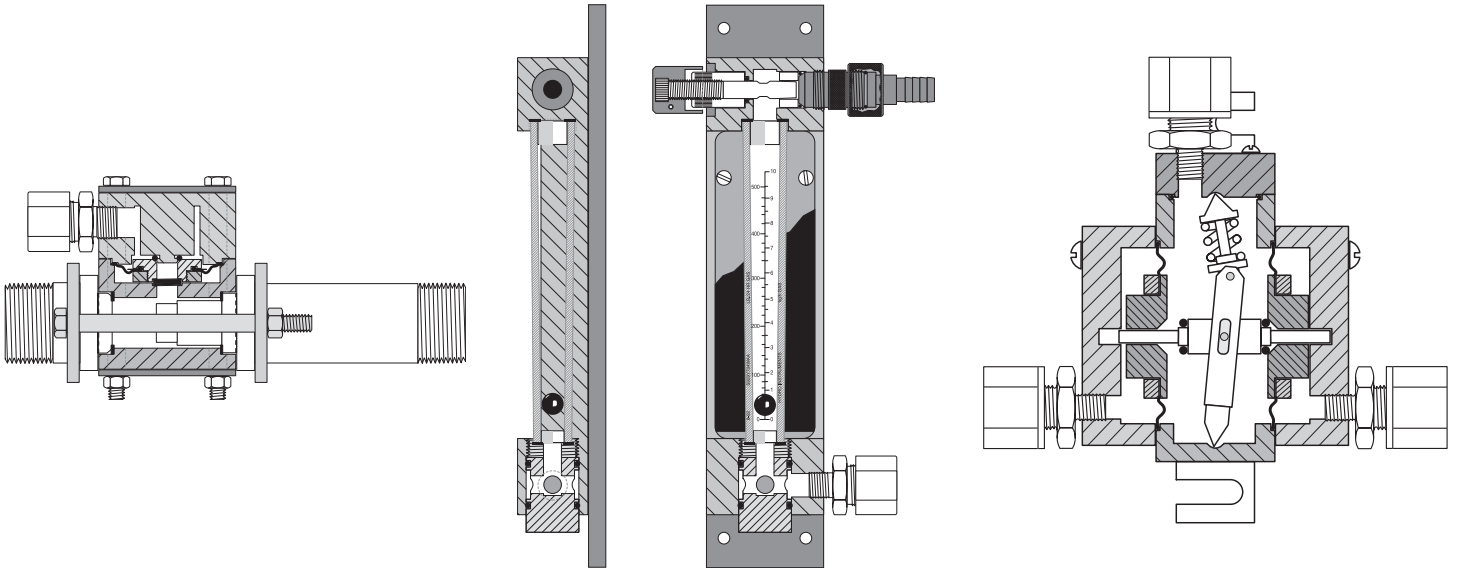


### Hydro Model 701 Remote Meter for Single Point of Application

**Hydro** chlorinator mounted on a single container feeding a remote wall mounted meter with rate valve supplying a single ejector. Chlorine capacity to 500 PPD (10,000 grams/hr).

\* The Series 750 is the same as the Series 700 but without the ton ironwork. The Series 750

# A complete system for totally reliable control.



## HYDRO EJ-5000 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 reasonably clean water at temperatures below 80°F (27°C). The **Hydro** ejector is made of durable materials that are resistant to wet and dry chlorine gas use.

## HYDRO RM-701 Remote Meter

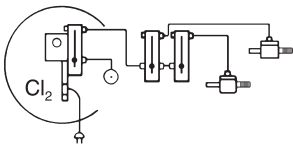
Any number of **Hydro** Remote Meters may be used in an installation if required. Only the vacuum line is required to the individual ejector which it supplies. Chlorine gas can then be precisely metered at each remote location. If more (or less) is required at one location the meter is simply set at 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** Remote Meters use a solid silver rate valve. Flow meters are accurate to  $\pm 4\%$ .

## HYDRO SW-500 Automatic Switchover

Multiple chlorine containers, which prolong the time span before depletion, are easily installed and automatically switch over from a depleted container to the unused container. A **Hydro** Chlorinator is installed on each container and only one Automatic Switchover is required to handle the two containers. 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.

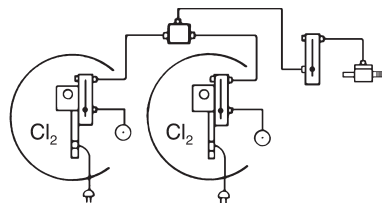


...s that have a remote meter without a rate valve ("plugged") on the (ed"), however it will not be possible to measure the chlorine feed rate ...mine which unit is regulating the chlorine supply.



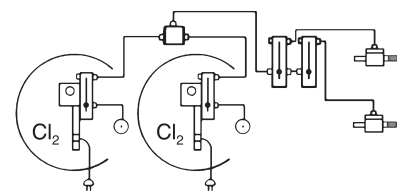
### Hydro Model 701-2 Multi-Point Application

**Hydro** chlorinator mounted on a single container feeding two remote meters for two points of injection using two ejectors. Each meter and ejector operates independently. Chlorine capacity to 500 PPD (10,000 grams/hr).



### Hydro Model 702 Automatic Stand-By

**Hydro** chlorinators – two chlorinators mounted on two containers with switchover module feeding one remote meter with rate valve feeding a single ejector. Capacity to 500 PPD (10,000 grams/hr) maximum.



### Hydro Model 702-2 Automatic Stand-By with Multi-Point Feeding

**Hydro** chlorinators – two chlorinators mounted on two containers with switchover module feeding two or more remote meters with rate valves supplying two ejectors. Capacity to 500 PPD (10,000 grams/hr) maximum.

chlorinator comes complete with a yoke assembly and is used for manifold mounting.



# Series 700 and 750 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)	
200 4000	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

### Ejector Installation

1. Ejector connections must be kept above freezing temperatures.
2. At point of application maximum back pressure for standard ejector is 100 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	200 PPD (4000 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-5000 (500 PPD) Ejector Connections

	Standard	Options
Ejector Water Inlet (Nozzle)	EN-296 Nozzle for 1 1/4" NPT	EN-275 Nozzle for 1 1/4" NPT
Ejector Water Outlet (Diffuser)	EDH-560 Diffuser for 1 1/2" ID Hose	EDT-560 Diffuser for 1 1/4" NPT

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# INSTRUMENTS

