

Prysky, Mike (DEQ)

From: Matta, Samir <SFMatta@lan-inc.com>
Sent: Wednesday, March 19, 2014 6:49 PM
To: Prysky, Mike (DEQ)
Subject: FW: City of Flint WTP Improvements Phase II - MDEQ Comments.
Attachments: Flint WTP 2013 Site Plan.pdf

Hi Mike,

Does this address your needs for the "current yard piping diagram"?

The language below was also used for the addendum that the City issued to the contractor for the Mid-Point Chlorination

1. Sheet C-104 – Construction Notes: Add the following Note 6 – A 1" Anti-syphon / Back Pressure Valve and additional 1" ball valve shall be added just prior to the trough wall penetration. The anti-syphon / back pressure valve shall be PVC and designed for use with chlorine systems. The valve shall be a LMI #35856, Walchem E90422, or engineer approved equivalent. The valve shall be installed between the two 1" ball valves to allow for isolation during servicing. The valve shall be located above the high water level in the trough. The Contractor shall install a 1" drain line from the relief port to the finished floor elevation of the pipe gallery.

Jeremy will provide written responses for your file on the other questions as requested.

Thanks.

Samir F. Matta
 Senior Project Manager

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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 suction 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.

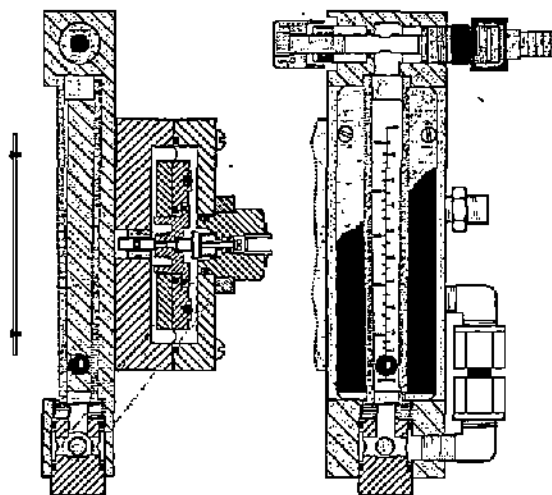
CHLORINATOR SIZE SHOULD BE BASED ON MAXIMUM POSSIBLE FLOW.

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

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.

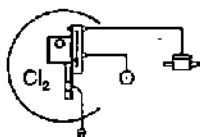
Inlet Sealing Valve

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.

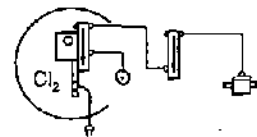
500 PPD systems with one or more wall mounted remote meter(s) (701, 701-2, 702, 702-2, etc.) are standard with chlorinator body(ies). The price is reduced if the customer wishes to receive chlorinator(s) with no meter assembly(ies) ("blank" at the source (only at the wall mounted remote meter) and on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



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