



# Chemical Injection Technologies

## Product/Specification Bulletin

### SUPERIOR™ Automatic Switchover Gas Chlorinator Series CL-1016/2016, 1000 PPD & 2000 PPD - 20 Kg/Hr & 40 Kg/Hr High Capacity

#### GENERAL DESCRIPTION

The SUPERIOR™ Series CL-1016/2016 Automatic Switchover Gas Chlorinator is a state-of-the-art, vacuum-operated system designed to automatically switch chlorine feed from an empty chlorine source to a full source. The Series CL-1016/2016 allows round-the-clock chlorination without being concerned about running out of chlorine when the system is unattended. Series CL-1016/2016 chlorinators are of the vacuum-operated solution feed type designed to mount directly on the auxiliary valve of a wall manifold, for high chlorine gas feed rates up to 2000 pounds per 24 hours (40 Kg/hr). Two vacuum regulators, each containing an integral and independent latching mechanism, are mounted directly onto two chlorine manifold auxiliary valves. A chlorine gas flow meter panel indicates the amount of chlorine being fed and may be located wherever it is safest and most convenient. Chlorine flow rate is manually adjusted and the design permits easy addition of a number of automatic flow rate control devices. A high efficiency, water operated ejector produces the vacuum necessary to operate the system. The ejector assembly contains a back-flow check valve system to prevent pressurized water from entering the chlorinator. A spring-opposed diaphragm vacuum regulator controls the chlorine gas flow rate and also acts as the safety shut-off valve.

#### FEATURES

The SUPERIOR™ Series CL-1016/2016 represents the most modern design technology coupled with the very best materials available to create an outstanding, user friendly piece of equipment. It is designed with user safety as a primary concern.

1. A new ultra-thick, fluoroplastic yoke coating gives superior corrosion resistance, won't crack, peel or chip. Chlorine will not diffuse through it to cause coating bubbling and peeling
2. All molded parts are fiber-glass reinforced ABS plastic, designed for superior strength, warp-resistance and chlorine resistance.
3. All external bolts and nuts are Titanium for complete corrosion resistance...a SUPERIOR™ exclusive.
4. All vacuum fitting holes are heavily reinforced to prevent the possibility of cracking from over-tightening fittings.
5. "Y-Check" check valve design offers very low cracking pressure and virtually no pressure drop due to friction. Check valves are complete modules and can be close-coupled to the ejector or located anywhere in the vacuum piping system for maximum flexibility.
6. Built-in switchover "detent" mechanism in each regulator requires no field adjustment, and allows operator to easily designate the standby and operating cylinders.
7. "Capsule" type inlet safety valve design allows easy removal for inspection or cleaning, using no special tools.
8. All-vacuum operation, combined with modular design of the major operating components, allows pressurized chlorine gas to be isolated from the operating areas for greater safety.

9. All SUPERIOR™ gas chlorinators carry a 3-year limited warranty, in addition to a lifetime warranty on 4 vital parts: main diaphragm, springs, inlet adaptor and body bolts.

10. Fewer parts, combined with SUPERIOR™ materials and a SUPERIOR™ design gives you a superior gas chlorinator.

#### FLOW METER CAPACITIES

SUPERIOR™'s modular design concept allows the chlorine gas indicating meter and flow rate control valve to be located wherever it is most convenient for the operator, and also in the safest location. A dual English/Metric scale variable area flow metering tube is provided with a maximum capacity of 1000 pounds per 24 hours - 20 Kg/hr (Model CL-1016) or 2000 pounds per 24 hours - 40 Kg/hr (Model CL-2016). All metering tubes are interchangeable and may be changed in the field without special tools.

#### MATERIALS OF CONSTRUCTION

One of SUPERIOR's major competitive advantages is the use of the finest, strongest and most durable materials available. Extensive use of Fluoroplastics and fiberglass reinforced thermo-plastics allow SUPERIOR™ Gas Chlorinators to withstand attack by chlorine in any form and to give the longer operational life. Many parts are *guaranteed for the life of the equipment* against chlorine damage.

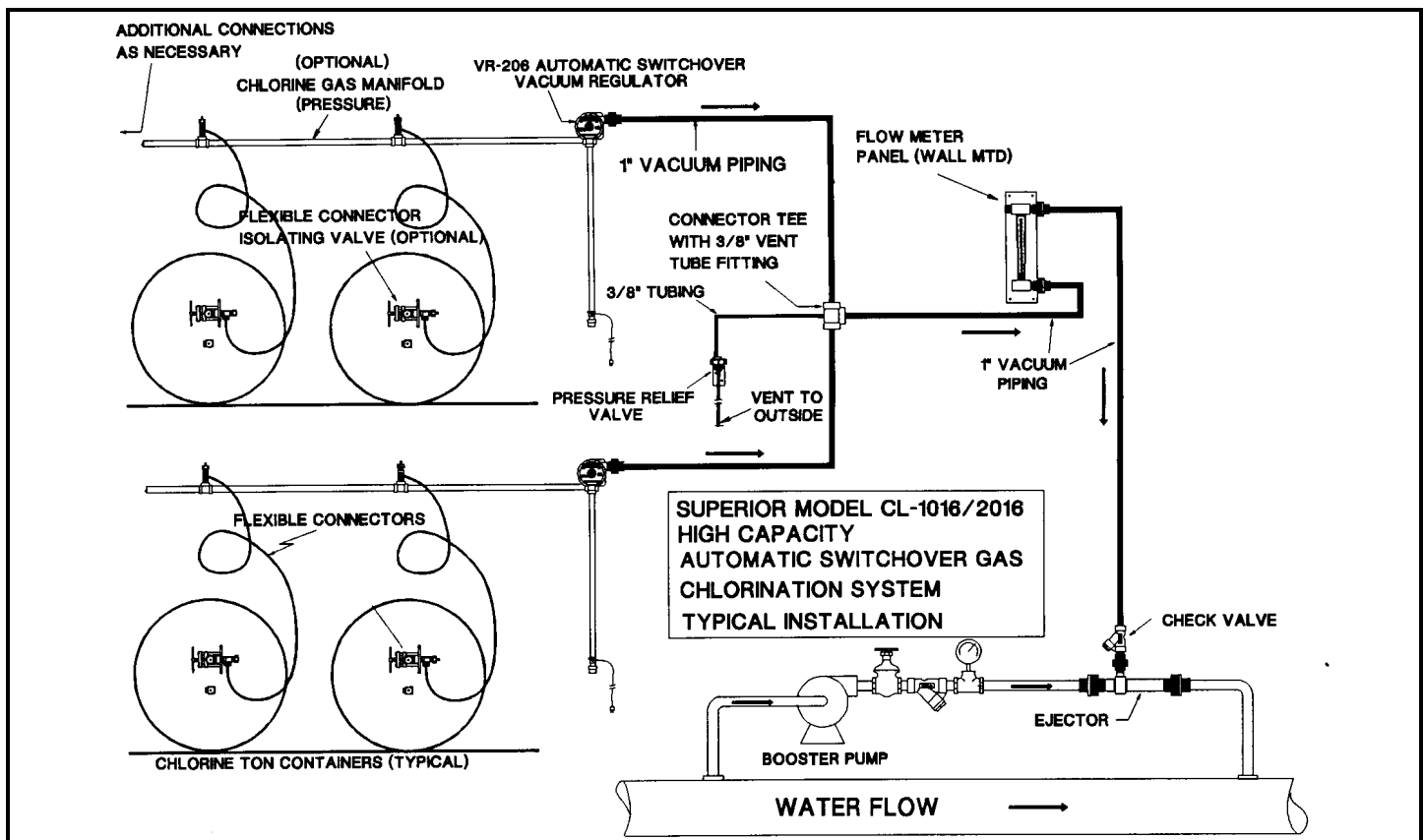
#### SYSTEM OPERATION

The automatic switchover vacuum regulators are securely clamped onto the auxiliary chlorine valves of wall manifolds. Vacuum piping connects each regulator to a junction point. A single piece of vacuum piping connects the junction to the wall mounted remote meter tube/rate valve panel. The ejector is connected to the remote meter panel with a single piece of vacuum tubing. A wall mounted pressure relief/vent valve is connected by a piece of vacuum tubing to the junction point.

Water under pressure flows through the ejector at high velocity causing a strong vacuum to be created. This opens the check valve in the ejector assembly and transmits a vacuum signal through the remote meter tube/rate valve panel, back to the vacuum regulators. When the vacuum reaches a pre-set level, the diaphragm in the regulator moves, opening the chlorine inlet safety valve, and permits gas to flow from the chlorine cylinder. The spring-opposed diaphragm and inlet valve regulate the vacuum at this point.

Chlorine gas passes through the regulator, junction point, remote flow meter panel and rate control valve to the ejector. The gas mixes with the ejector water and is discharged through the diffuser into the water being treated.

When the chlorine supply is depleted in one source, vacuum starts to increase in the system. This causes the diaphragm in the "stand-by" regulator to be pulled back, overcoming the detent mechanism and opening the inlet/safety valve. Chlorine gas is then withdrawn from the "stand-by" cylinder to satisfy the increased system vacuum and the vacuum returns to the operating level. The empty chlorine source(s) is replaced at the operator's convenience, and the regulator then placed on "stand-by".



## SPECIFICATIONS

The chlorinator shall be SUPERIOR™ MODEL CL-1016/2016 manufactured by Chemical Injection Technologies, Inc., Ft. Pierce, Florida, and shall have a maximum capacity of \_\_\_\_\_ pounds per day (kg/hr) of chlorine feed and shall be equipped with a chlorine flow meter of \_\_\_\_\_ pounds per day (gr/hr).

The chlorinator shall be of modular design consisting of two (2) automatic switchover vacuum regulators, one (1) pressure relief/vent valve, one (1) flow meter/rate valve panel, and one (1) ejector/check valve. Each of these assemblies shall be capable of being individually located wherever safety and/or operator convenience dictates.

The vacuum regulators shall mount directly on the auxiliary chlorine valves of wall manifolds by means of a positive yoke type clamp having an integral tightening screw with slide bar handle. No wrenches or other tools shall be required to mount or dismount the vacuum regulator from the chlorine valve. The chlorine valve/chlorinator inlet adaptor shall be constructed of corrosion-proof fluoroplastic material which shall be inert to the effects of wet, dry or liquid chlorine. The inlet safety shut-off/vacuum regulating valve shall be of capsulated design, easily removable as a unit from the outlet side of the yoke. All external screws and nuts shall be made of Titanium to prevent corrosion.

Each automatic switchover vacuum regulator shall contain it's own built-in diaphragm detent mechanism, which shall be made entirely of non-metallic corrosion resistant materials. The detent mechanism shall be factory pre-set and shall not require any field adjustment.

The flow meter/rate control valve panel shall be capable of mounting wherever it is safest and most convenient for operating personnel. The panel shall be constructed of chlorine resistant thermoplastic material and shall incorporate a flow rate control valve made of fluoroplastic material which is inert to the corrosive effects of chlorine. The rate valve metering tip shall be constructed of fine, hard-drawn silver. Design shall provide for full closing of the rate valve without engaging the control surfaces, to prevent damage.

Vacuum shall be created by a fixed-throat venturi/ejector system. A spring loaded "Y" type check valve system shall prevent water from entering the gas system. The ejector assembly shall be capable of withstanding water pressure up to 150 PSIG (10.2 Bars)

## STANDARD ACCESSORIES (Included with chlorinator)

- |                                  |                         |
|----------------------------------|-------------------------|
| 2- Remote vacuum regulators      | 25 ft. -cl" Vent tubing |
| 1- Remote metering panel gaskets | 20 - Lead cylinder      |
| 1- Remote Ejector assembly       | 1 - Cylinder Wrench     |
| 1- Check Valve assembly          | 1 - Vent insect screen  |
| 1- Pressure relief/vent valve    |                         |

## OPTIONAL ACCESSORIES AVAILABLE

- |                        |                      |
|------------------------|----------------------|
| Inlet Water Assembly   | Gas Masks            |
| Wall manifold kits     | Gas Detectors        |
| Booster pumps          | Scales               |
| Residual Analyzers     | Gauges               |
| Automatic Controls     | Chlorine Comparators |
| Ton Container Adaptors | Others Available     |

## OTHER SUPERIOR™ SYSTEMS AVAILABLE

- MULTIPLE-POINT GAS CHLORINATORS
- 100 POUNDS PER DAY (2000 GR/HR)
- 200 POUNDS PER DAY (5 Kg/hr)
- 500 POUNDS PER DAY (10 Kg/hr)
- GAS SULFONATORS (DECHLORINATOR)
- AMMONIATORS
- AUTOMATIC FLOW PROPORTIONING
- AUTOMATIC RESIDUAL CONTROL

## **Chemical Injection Technologies, Inc.**

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