



# Chemical Injection Technologies

## Product/Specification Bulletin

### SUPERIOR™ Gas Chlorinator Series CL-1 Direct Cylinder Mounted - All Vacuum

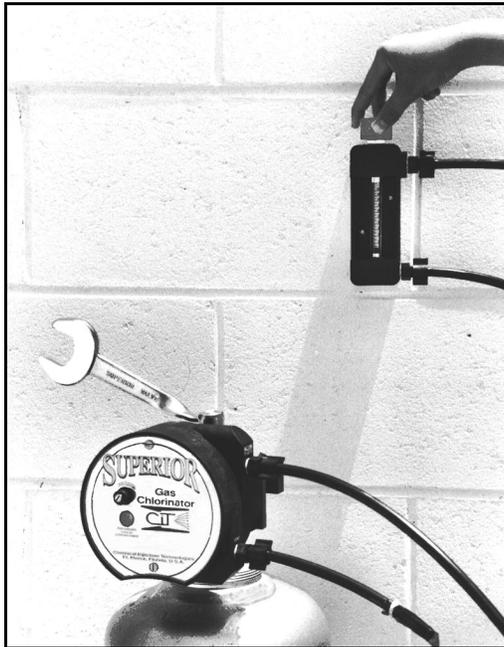
#### GENERAL DESCRIPTION

The SUPERIOR™ Series CL-1 Gas Chlorinator is a state-of-the-art, vacuum-operated, solution feed type which mounts directly on a chlorine cylinder valve. The chlorinator is mounted onto the chlorine cylinder valve using a very heavy-duty, positive yoke clamp connection. 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-1 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. The rate valve "Seat" is pure fluoroplastic and will not swell, stick or become brittle with age or exposure to liquid chlorine.
4. All external bolts and nuts are Titanium for complete corrosion resistance..a SUPERIOR™ exclusive. There are no stainless steel or monel nuts and bolts to corrode and freeze up in the presence of moist chlorine gas.
5. Extra heavy-duty outlet threads on the ejector diffuser prevents accidental breakage from over-tightening or "bumping" of the ejector assembly.
6. The "Universal" ejector diffuser allows use of high pressure solution hose, direct ejector mounting in mains, or in-line piping with rigid solution pipe.
7. Easier to service and perform routine maintenance, with standard size wrench lugs provided on all screwed-together ejector parts. No more pipe wrenches to accidentally tear and scrape plastic surfaces.
8. All vacuum fitting holes are heavily reinforced to prevent the possibility of cracking from over-tightening fittings.
9. "Dual-pressure" check valve is standard on all SUPERIOR™ gas Chlorinators. Proven high back-pressure unitized check valve design protects against sudden surges up to 300 PSIG while a spring-loaded diaphragm check provides positive shutoff even when there is no back-pressure to force the seat closed.
10. PVDF vacuum tubing fittings are standard..another SUPERIOR™ exclusive. "User friendly" design makes it easy to attach tubing, and to tighten or loosen ferrule nuts without tools.



11. 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. Variable area flow metering tubes are available with dual English/Metric scale maximum capacities of 0.8, 1.5, 4, 10, 25, 50 and 100 pounds per 24 hours of chlorine gas, as well as 15, 30, 75, 200, 500, 1000 and 2000 grams per hour, respectively. All metering tubes are interchangeable and may be changed in the field without special tools.

#### MODULAR DESIGN

SUPERIOR™ Gas Chlorinators have been designed to give the maximum flexibility in system installation. Each component of the chlorinator, vacuum regulator, metering tube panel, and ejector can be placed wherever it is safest and most convenient for operating personnel. The regulator may be mounted on the chlorine cylinder in a safe storage area while the remote meter tube panel is placed in an easily accessible place since it operates completely under vacuum. The ejector can be located wherever plumbing and/or hydraulic conditions make it most desirable. Modular design also makes it easy and inexpensive to expand or upgrade the system.

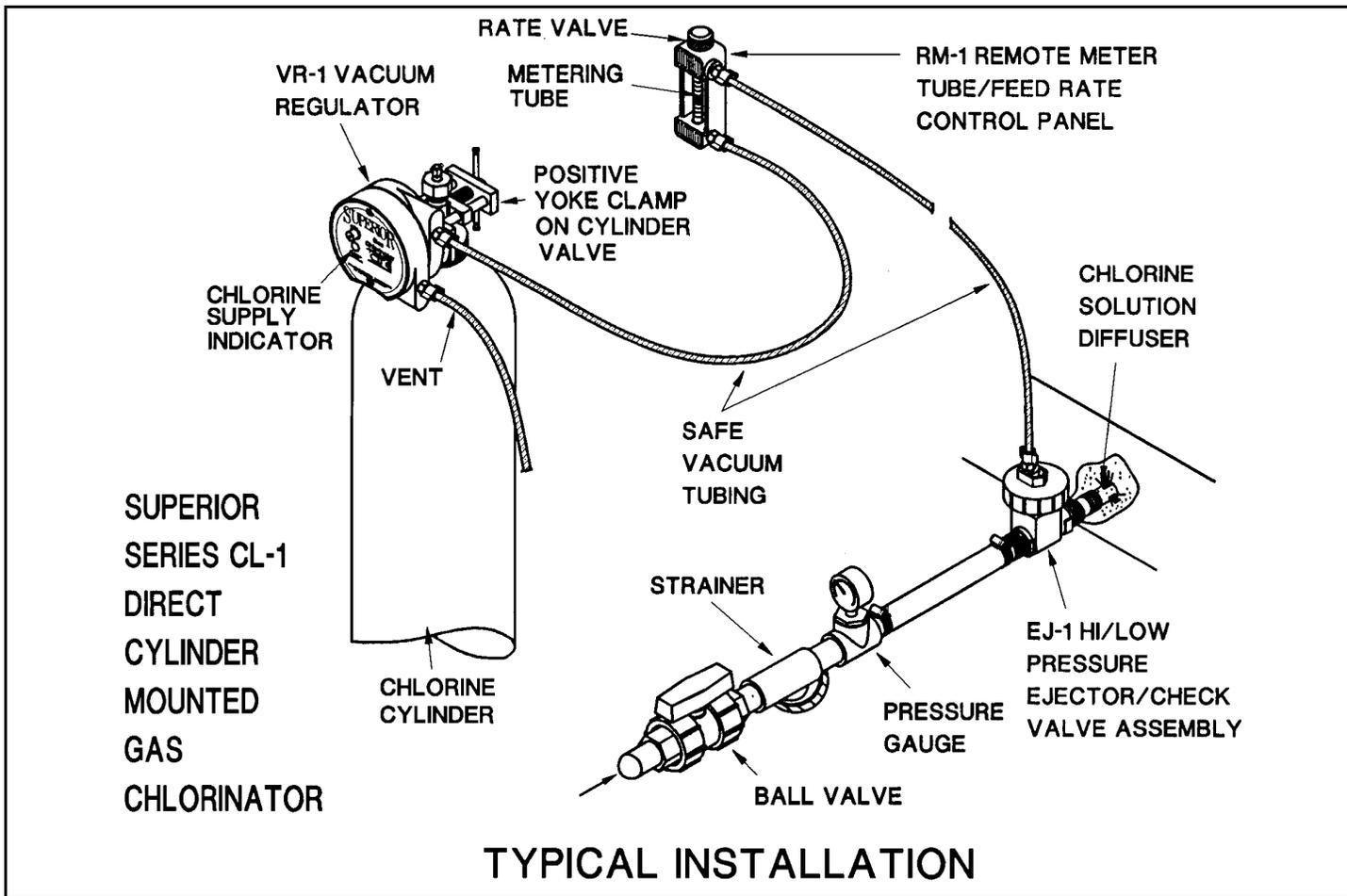
#### MATERIALS OF CONSTRUCTION

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 longest operational life. Many parts are guaranteed for the life of the equipment against chlorine damage.

#### SYSTEM OPERATION

The vacuum regulator is securely clamped onto the chlorine cylinder valve. Water under pressure flows through the ejector at high velocity which causes a strong vacuum to be created. This opens the check valves in the ejector assembly and transmits a vacuum signal through the remote meter tube/rate valve panel and back to the vacuum regulator. When the vacuum reaches a pre-set level, the diaphragm in the regulator moves to open the chlorine inlet safety valve, permitting 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 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.



### SPECIFICATIONS

The chlorinator shall be SUPERIOR™ MODEL CL-1 manufactured by Chemical Injection Technologies, Inc., Ft. Pierce, Florida, and shall have a maximum capacity of \_\_\_\_\_ pounds per day (gr/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 a vacuum regulator, flow meter/rate valve panel, and ejector/check valve. Each of these assemblies shall be capable of being individually located wherever safety and/or operator convenience dictates.

The vacuum regulator shall mount directly on the cylinder valve 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 cylinder. The cylinder 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. A fluoroplastic filter shall be installed in the vacuum regulator inlet and shall be capable of removing impurities greater than 25 microns. A pressure relief valve shall be incorporated into the vacuum regulator to prevent pressure from building up in the system. All external screws and nuts shall be made of Titanium to prevent corrosion.

The flow meter/rate control valve panel assembly shall be separate from the vacuum regulator and ejector assemblies and shall be capable of mounting wherever it is safest and most convenient for operating personnel. The panel shall be constructed of fiberglass reinforced 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 metal which is completely impervious to the effects of wet, dry or liquid chlorine attack. Design shall provide for full closing of the rate valve without engaging the control surfaces, to prevent damage. Minimum calibrated feed rate shall be 1/20<sup>th</sup> of maximum flow meter scale (20:1 turndown ratio). Accuracy shall be ±2% of maximum.

Vacuum shall be created by a fixed-throat venturi/ejector system connected directly to the chlorine solution diffuser. A dual high-pressure/low-pressure check valve system shall prevent water from entering the gas system. The ejector assembly shall be capable of withstanding water pressure up to 300 PSIG (20.7 Bars). A universal-type chlorine solution diffuser shall be provided which shall allow close-coupling of the ejector to a water main, use of flexible solution hose or rigid solution pipe without the use of special adaptors.

### STANDARD ACCESSORIES

- 25 ft. - 3/8" Vent & vacuum tubing
- 10 - Lead cylinder connection gaskets
- 1 - Cylinder Wrench
- 1 - Vent insect screen

### 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

- VACUFEEED LIQUID CHEMICAL FEED SYSTEMS
- AUTOMATIC SWITCHOVER GAS CHLORINATORS
- MULTIPLE-POINT GAS CHLORINATORS
- 200 POUNDS PER DAY (5 KG/HR)
- 500 POUNDS PER DAY (10 KG/HR)
- GAS SULFONATORS (DECHLORINATOR)
- AMMONIATORS
- AUTOMATIC FLOW PROPORTIONING
- AUTOMATIC RESIDUAL CONTROL



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