



# Chemical Injection Technologies

## Product/Specification Bulletin

### SUPERIOR™ Gas Sulfonator Series SD-2/5

### 200 PPD & 500 PPD - 5 Kg/hr & 10 Kg/hr

### For Cylinder, Wall Manifold or Ton Container Mounting

#### GENERAL DESCRIPTION

The SUPERIOR™ Series SD-2/5 Gas Sulfonator is a state-of-the-art, vacuum-operated, solution feed type which mounts directly on a sulphur dioxide valve. The Sulfonator is mounted onto the sulphur dioxide valve of a cylinder, wall manifold or ton container adaptor, using a very heavy-duty, positive yoke clamp connection. A sulphur dioxide gas flow meter panel indicates the amount of sulphur dioxide being fed and may be located wherever it is safest and most convenient. Sulphur dioxide 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 Sulfonator. A spring-opposed diaphragm vacuum regulator controls the sulphur dioxide gas flow rate and also acts as the safety shut-off valve.

#### FEATURES

The SUPERIOR™ Series SD-2/5 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. Sulphur dioxide will not diffuse through it to cause coating bubbling and peeling.
2. All molded parts are high strength PVC plastic, designed for SUPERIOR™ strength, warp-resistance and sulphur dioxide resistance.
3. The rate valve "Seat" is pure fluoroplastic and will not swell, stick or become brittle with age or exposure to liquid sulphur dioxide.
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 sulphur dioxide gas.
5. Extra heavy-duty outlet threads on the ejector diffuser prevents 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, without special adaptors.
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 Sulfonators. 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. Fewer parts, combined with SUPERIOR™ materials and a SUPERIOR™ design gives you a SUPERIOR™ Gas Sulfonator.

#### FLOW METER CAPACITIES

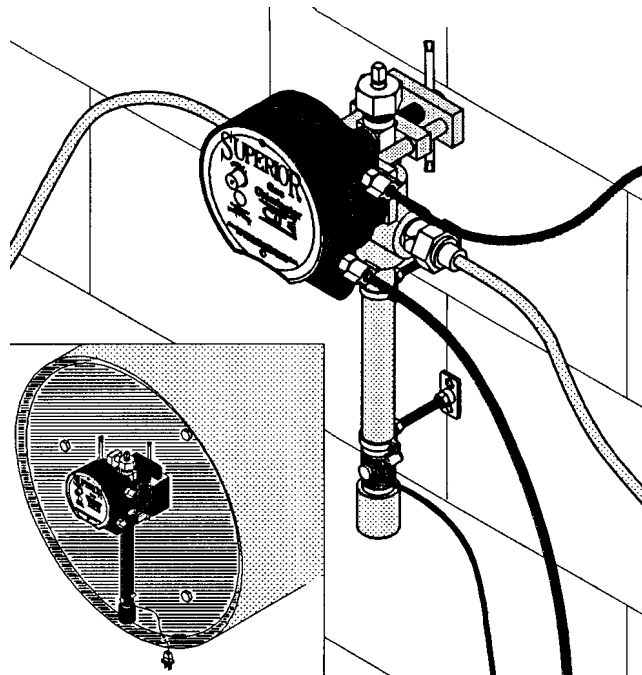
SUPERIOR™'S modular design concept allows the sulphur dioxide gas indicating meter and flow rate control valve to be located wherever it is most convenient for the operator, and also in the safest location. A dual English/Metric scale variable area flow metering tube (20:1 range) is provided with a maximum capacity of 200 pounds per 24 hours - 5 Kg/hr (Model SD-2) or 500 pounds per 24 hours - 10 Kg/hr (Model SD-5). All metering tubes are interchangeable and may be changed in the field without special tools.

#### MODULAR DESIGN

SUPERIOR™ Gas Sulfonators have been designed to give the maximum flexibility in system installation. Each component of the Sulfonator, 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 sulphur dioxide 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 thermoplastics allow SUPERIOR™ Gas Sulfonators to withstand attack by sulphur dioxide in any form and to give the longest operational life. Many parts are guaranteed for the life of the equipment against sulphur dioxide

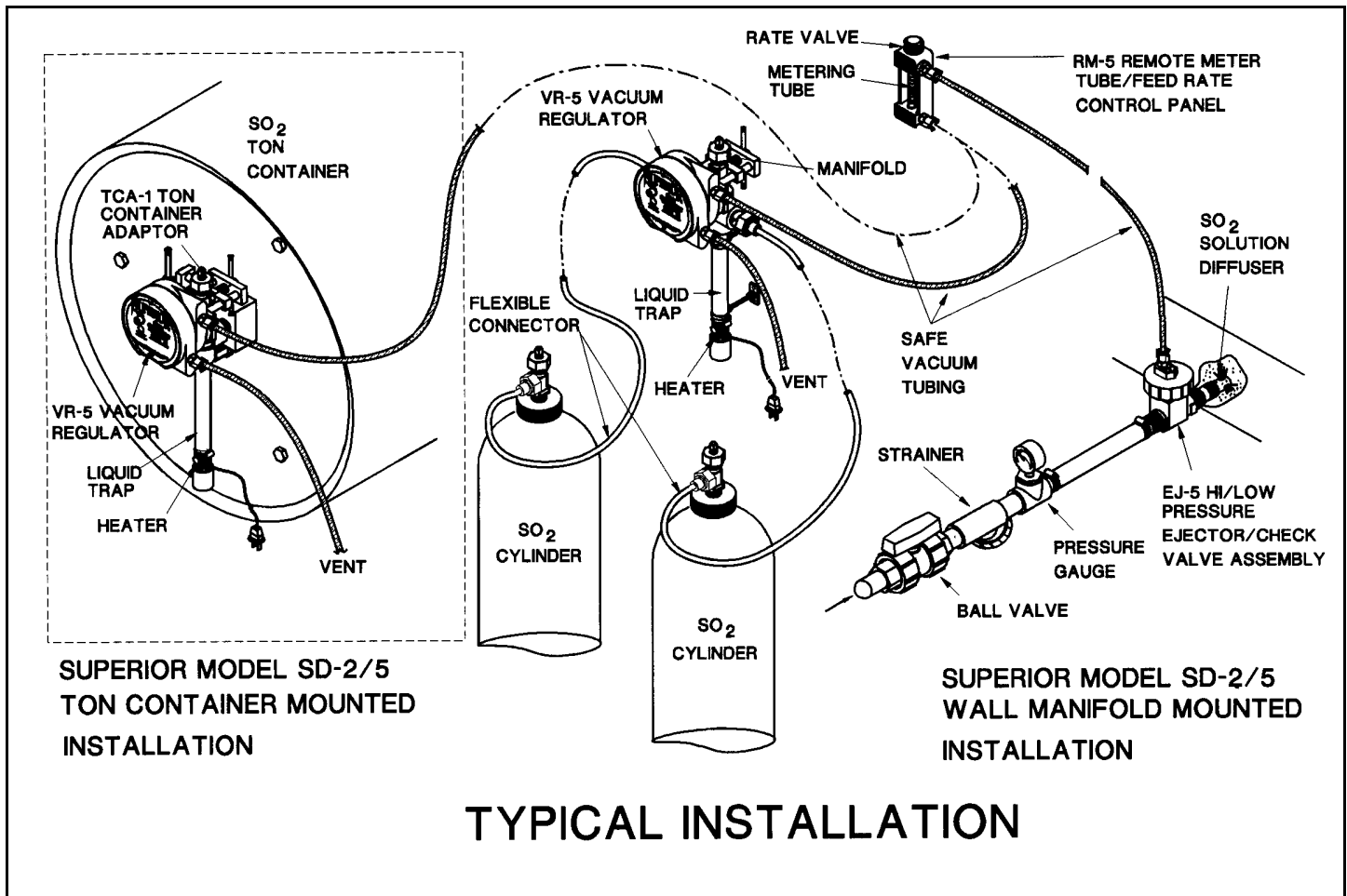


damage.

#### SYSTEM OPERATION

The vacuum regulator is securely clamped onto the sulphur dioxide 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 sulphur dioxide inlet safety valve, permitting gas to flow from the sulphur dioxide cylinder. The spring-opposed diaphragm and inlet valve regulate the vacuum at this point.

Sulphur dioxide 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.



## TYPICAL INSTALLATION

### SPECIFICATIONS

The Sulfonator shall be SUPERIOR™ MODEL SD-2/5 manufactured by Chemical Injection Technologies, Inc., Ft. Pierce, Florida, and shall have a maximum capacity of \_\_\_\_\_ pounds per day (gr/hr) of sulphur dioxide feed and shall be equipped with a sulphur dioxide flow meter of \_\_\_\_\_ pounds per day (gr/hr).

The Sulfonator 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 sulphur dioxide valve of a sulphur dioxide cylinder, wall manifold or ton container adaptor 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 sulphur dioxide valve. The sulphur dioxide valve/Sulfonator inlet adaptor shall be constructed of corrosion-proof fluoroplastic material which shall be inert to the effects of wet, dry or liquid sulphur dioxide. 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 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 sulphur dioxide. 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.

Vacuum shall be created by a fixed-throat venturi/ejector system connected directly to the sulphur dioxide 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 sulphur dioxide 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

- 50 ft. - 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     | Sulphur dioxide Comparators |
| Ton Container Adaptors | Others Available            |

### OTHER SUPERIOR™ SYSTEMS AVAILABLE

- AUTOMATIC SWITCHOVER GAS SULFONATORS
- MULTIPLE-POINT GASSULFONATORS
- 100 POUNDS PER DAY (2000 GR/HR)
- GAS CHLORINATORS
- AMMONIATORS
- AUTOMATIC FLOW PROPORTIONING
- AUTOMATIC RESIDUAL CONTROL

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