

REGAL™ GAS CHLORINATOR



SAFE
RELIABLE
ECONOMICAL



COMMITTED TO OUR LEGACY

Before 1960, using chlorine gas had truly been considered hazardous. Existing chlorinators used numerous valves and parts that frequently failed and allowed pure chlorine gas to escape.

Jim Haskett changed all that when he designed and patented the first direct-cylinder-mounted *all vacuum gas chlorinator*. He mounted his system directly on the tank and placed the ejector at the point of injection where the water needed to be chlorinated. Vacuum, rather than pressure, now moved the gas from the cylinder valve to the ejector resulting in the reduction of numerous parts, and only a single vacuum line was needed. If that line failed accidentally, the gas flow would STOP immediately.

Jim Haskett's chlorinator was safer and more efficient. It was so innovative and well received that his direct-cylinder mounting concept became the world's standard by the time he sold the company in 1970.

In 1975, he and his wife, Diane, designed a new chlorinator that was even better than his original in terms of serviceability, durability and reliability. They founded Chlorinators Incorporated, which has been as successful as Haskett's original company, and for the same reasons: strong product, ongoing research, continual improvement and an intense devotion to quality, reliability and customer service.

Diane Haskett is still President of Chlorinators Incorporated. Under her leadership, the company's original REGAL™ product line of Gas Chlorinators and Sulphonators has continually expanded to include Gas Ammoniators, Gas Detectors, Residual Analyzers, the REGAL SMARTVALVE™ (Flow Pacing Valve), Single and Dual Cylinder Scales and Vacuum Monitors. Industries served are municipalities, food processing, industrial applications, agriculture, irrigation, commercial pools and any process that needs to disinfect water and wastewater.

Every REGAL Gas Chlorinator component is made with pride in the USA! The company continues to be a world leader in chlorinator technology, while remaining very strongly committed to its founding philosophy.



SAFETY IS DESIGNED AND BUILT INTO THE REGAL CHLORINATOR.

The REGAL Gas Chlorinator mounts directly on the cylinder, which is a major safety factor. From the moment chlorine gas leaves the cylinder until it enters the water, it only comes

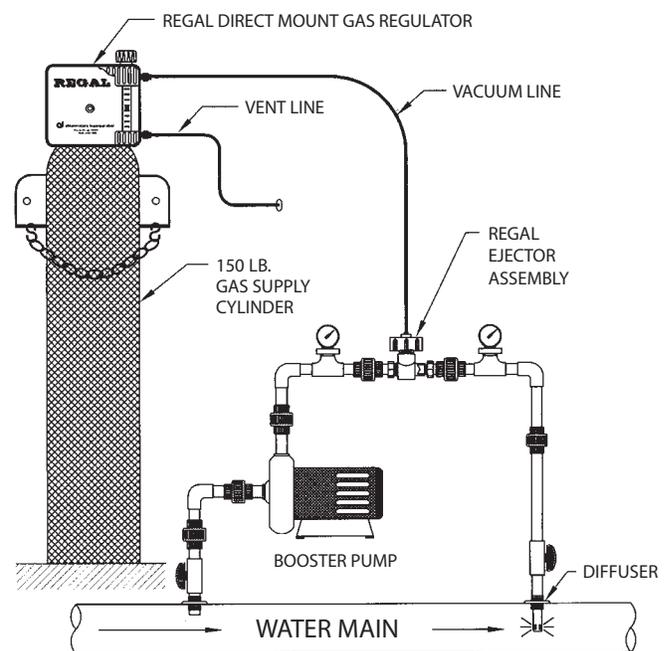
SAFE

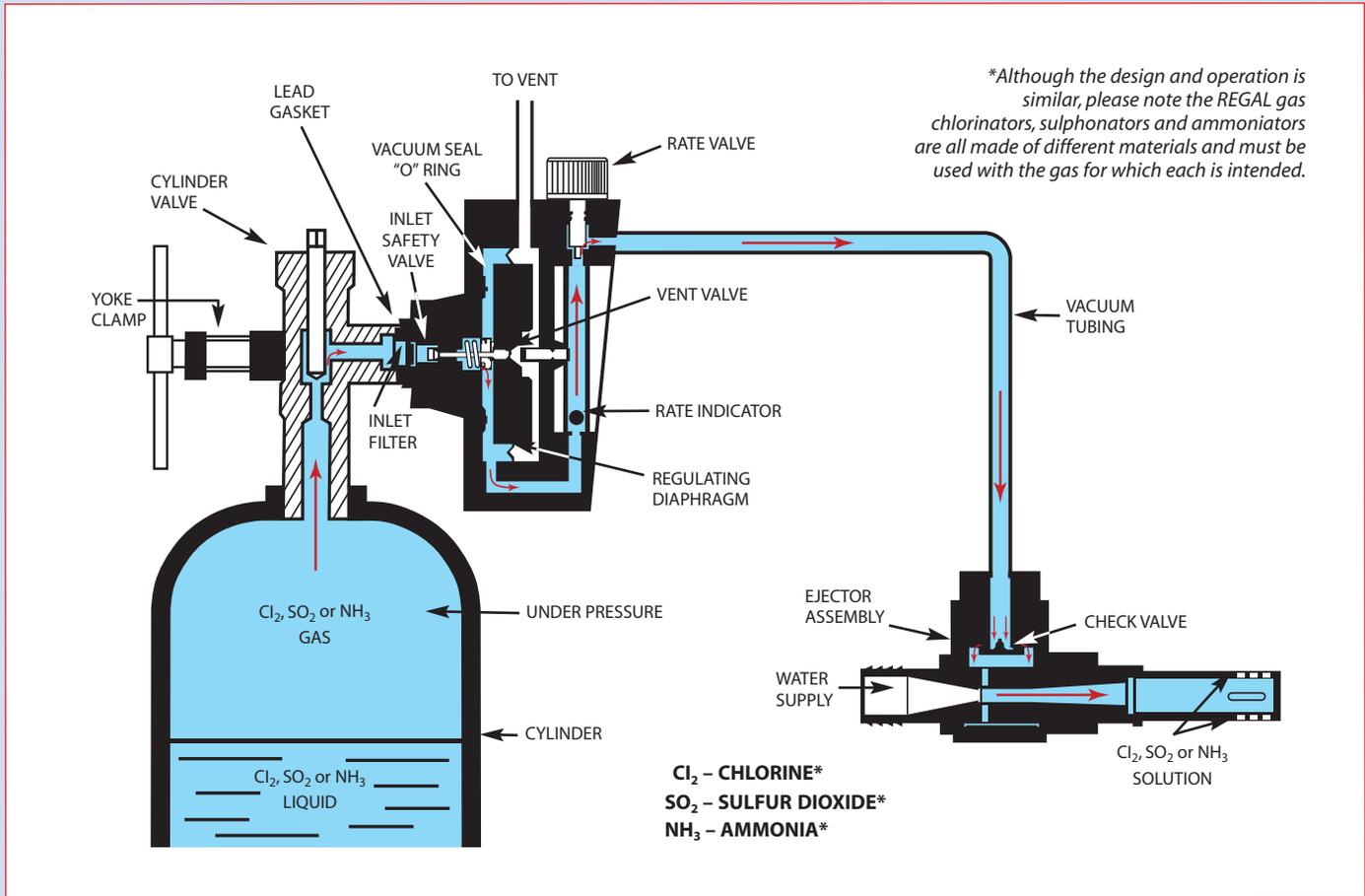
in contact with highly advanced, corrosion-resistant materials. When a REGAL is directly mounted on a cylinder there are no pressure lines. Should anything happen to cause a break in any part of the system, the

vacuum will be lost. With no vacuum, the spring on the inlet safety valve snaps the valve shut, stopping the gas supply immediately and automatically.

The REGAL system does not operate under pressure from the chlorine gas cylinder. Instead, water being forced through the ejector nozzle creates vacuum. The vacuum pulls on an extremely tough and resilient diaphragm which pushes open a spring-loaded inlet safety shut-off valve. The vacuum draws the gas from the cylinder, through the regulator, into high-strength vacuum tubing, and into the ejector where it is diffused into the water being treated. The all-vacuum REGAL system makes gas chlorination very safe.

REGAL ALL-VACUUM GAS CHLORINATION SYSTEM





REGAL SAFETY EXTENDS THROUGHOUT THE ENTIRE ALL-VACUUM SYSTEM.

The design and structure of the REGAL mounting yoke is an additional safety feature. The yoke is built with the heaviest slide bar and tightening bolt assembly in the industry. Our convenient, built-in tightening handle makes it easier to mount the chlorinator to the cylinder while reducing the chance of misaligning the inlet adaptor with the cylinder valve. Unlike competitors that require a wrench to tighten the yoke assembly, this handle also discourages the use of excessive force which could cause improper sealing of the lead gasket between the inlet adaptor and the cylinder valve outlet. An innovative, high-strength fluoropolymer coating gives the REGAL yoke high resistance to corrosion.

The **ALL VACUUM REGAL SYSTEMS** virtually eliminate the problems associated with **Pressure Type Manifold Systems**. The safety and reliability of REGAL systems has been proven by years of customer usage worldwide.



Safety starts right at the cylinder valve, with the REGAL heavy-duty vise-type mounting yoke.



Built-in tightening handle

RELIABILITY IS DESIGNED AND BUILT INTO THE REGAL.

Simplicity is a key to reliability – and the REGAL design is simpler and more efficient than any other comparable unit. It has only 68 parts – up to 60% fewer than competitor's units. Corrosion resistance is also essential for reliability. Every one of REGAL's 68 parts is made of materials best suited to handle chlorine gas. The design is so simple and logical that very little time is needed for learning how to use and service the REGAL Gas Chlorinator.

RELIABLE

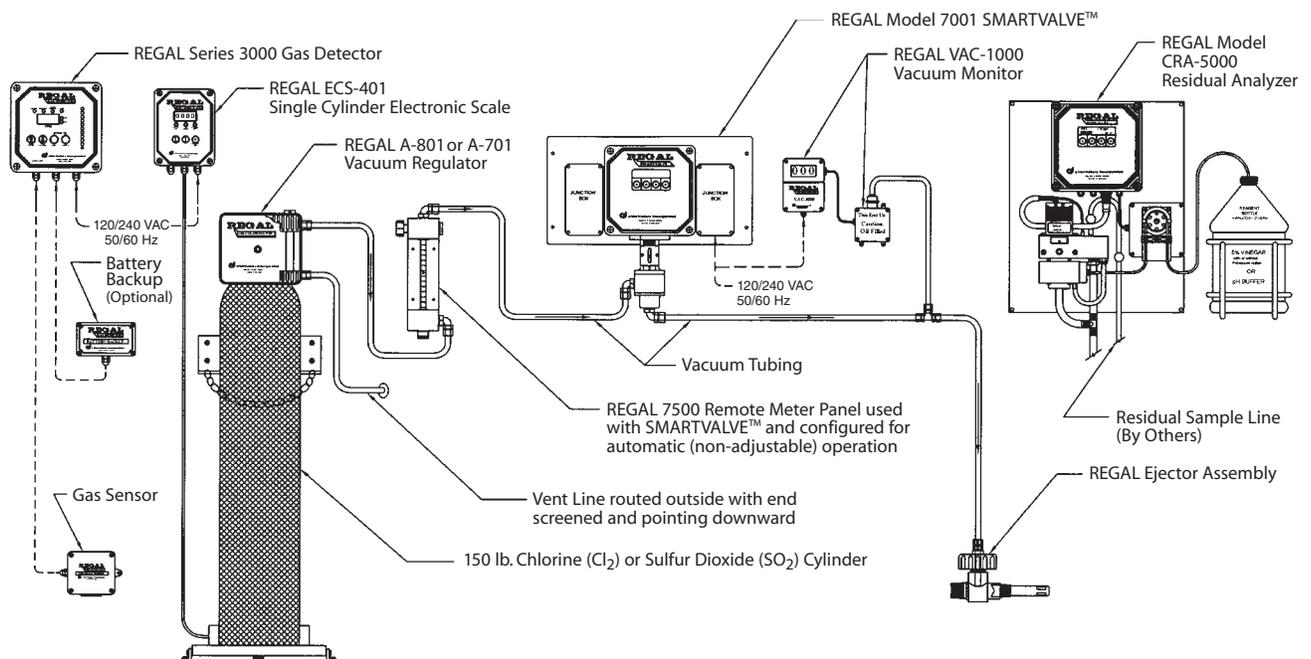
Every REGAL is proudly **MADE IN THE USA**. Completely hand-assembled by highly skilled technicians, every unit must pass inspection before leaving the assembler's hands. Inspection involves careful visual evaluation at every step of



the process, followed by bench testing for vacuum integrity. After assembly, every REGAL unit must pass a second series of stringent tests to ensure specified operating performance.

An adjustable feed rate valve and feed rate indicator are built into REGAL to allow the flow of gas to be manually adjusted and observed. The high degree of accuracy unique to REGAL along with 100% pure chlorine gas, offers the best option for consistent and reliable chlorine residuals.

Typical REGAL Installation Drawing Featuring All REGAL Products (See pages 7 and 8 for product information)



THE REGAL EJECTOR IS ANOTHER FACTOR IN THE SYSTEM'S RELIABILITY.

The REGAL ejector consists of four components, all made of a very strong, special plastic, which enables it to withstand a back-pressure rating of 200 pounds per square inch (psi). It can be taken apart for cleaning, and put back together in minutes.

The ejector performs three vital functions:

1. The ejector nozzle creates the vacuum that allows for safe entry of gas into the system.
2. The diffuser of the ejector mixes the gas with the water.
3. The check valve of the ejector prevents water from back flow into the system.

The REGAL ejector nozzle is uniquely designed to produce the highest vacuum at the lowest pressure and water flow rate. A booster pump is usually required depending on backpressure conditions. Our single-piece nozzle will never misalign. Our single-piece nozzle virtually eliminates the possibility of misalignment. Each nozzle is individually tested against an optimum performance curve.

A check valve is incorporated into the ejector assembly to prevent water from entering the vacuum tubing when the system is shut off. REGAL offers different check valve options which include: high pressure, low pressure or a combination of the two. Dual check valves are also available. Check valves are designed and built for the highest reliability, highest performance and lowest maintenance.

HOW THE EJECTOR PRODUCES A VACUUM

Vacuum is created by water under pressure flowing through a very efficient, constant differential venturi in the nozzle. At the venturi, there is a pressure drop as the molecules of water pass at high speed through the restricted venturi and immediately step back out to a larger unrestricted area. This always forms a vacuum as long as the inlet supply pressure is high enough to overcome the total system backpressure.



HIGH PRESSURE EJECTOR

LOW PRESSURE EJECTOR

REGAL IS ECONOMICAL DUE TO LOW OPERATING COST.

Strongest materials and fewest parts – that means low maintenance cost and long performance life. Added to this, 100% pure chlorine gas is the lowest cost disinfection option available today.

ECONOMICAL

The combination of the two makes an unbeatable system for low cost operation.

REGAL is **MADE IN THE USA**, so customers can expect

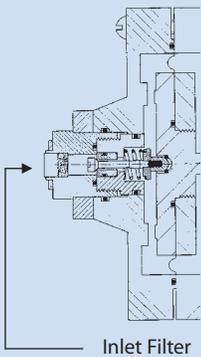
not only well made products, but availability of parts when needed.



HIGHLIGHTS OF KEY DESIGN FEATURES THAT SET REGAL APART:

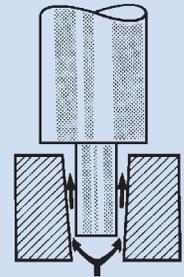
REGAL FILTER CATCHES FINER PARTICLES

REGAL uses an innovative corrosion-resistant filter. It saves money because it reduces build up of impurities on the inlet safety shut-off valve and because it can be cleaned and reused.



RATE VALVE WITH TAPERED OPENING ELIMINATES VALVE SEAT

The "seat" used in most rate valves is subject to wear and is frequently damaged, particularly at low feed rates. By eliminating the "seat" and relying instead on a tapered opening to control the flow, the life of the rate valve is greatly extended and the rate valve has better accuracy. Rates can be set as easily and accurately at the bottom end of the metering tube as at the top.



"Seatless" Rate Valve

CORROSION-RESISTANT INLET ADAPTER

The inlet adapter is made of a strong, corrosion-resistant material which forms a tight seal using a lead gasket between the inlet adapter and cylinder valve outlet.



SUPER-STRONG DIAPHRAGM

The diaphragm opens the inlet safety valve to allow and maintain a steady flow of gas while the system is in operation. Any damage to the diaphragm, even a tiny crack or pinhole, would prevent it from performing these functions. Therefore, the REGAL diaphragm is made from a highly advanced material that is much thicker and stronger than the competition.



CORROSION-PROOF, HEAVY-DUTY INLET SAFETY VALVE SPRING

Impurities in chlorine gas may eventually get past any filter and build up on the inlet safety shutoff valve, including the valve seat and spring. Therefore, all inlet valves require periodic cleaning to ensure proper function. Although this procedure can be very time consuming and costly for systems of lesser quality, the REGAL's encapsulated design provides easy removal and disassembly of the valve using just a screwdriver and pliers. This makes cleaning and reassembly both quick and easy. The heavy duty spring, one of the most critical parts in any gas chlorinator, carries a LIMITED LIFETIME WARRANTY.*



*We have placed LIMITED LIFETIME WARRANTIES against corrosion on the diaphragm and inlet safety shut-off spring in all REGAL chlorinators and sulphonators.

THE SAME QUALITY, SIMPLICITY AND EASE OF MAINTENANCE HAS BEEN DEVELOPED INTO ALL MODELS OF REGAL STANDARD UNITS, SWITCHOVER SYSTEMS AND HIGH CAPACITY GAS CHLORINATORS.

REGAL SERIES 2000 HIGH CAPACITY GAS CHLORINATORS

All the features that have made the REGAL Series 200 low to medium-capacity units the standard of the industry are embodied in the Series 2000 High Capacity Gas Chlorinators.

- They mount directly to the valves of approved gas manifold assemblies.
- They employ the same safe operating principle: chlorine is drawn through the regulator and metering panel by a vacuum created by water being forced under pressure through an ejector nozzle.
- Their simple design uses fewer parts than competitive units; all parts are designed for maximum strength, and are made of corrosion resistant or corrosion proof materials.
- They do not require cabinets, therefore they save space.
- They are quick and easy to service and maintain.
- They can be used in multi-point applications.
- Automatic switchover models are available.

REGAL SERIES 216 AUTOMATIC SWITCHOVER CHLORINATORS

The Regal Automatic Switchover gas chlorinator consists of two vacuum regulators fitted with indicators that show which unit is in use and which is in standby. One unit supplies chlorine until the gas cylinder approaches "empty." At this point, the second vacuum regulator begins to open up, keeping the gas chlorine supply steady.



REGAL WALL-MOUNTED CHLORINATORS FOR MULTI-CYLINDER CHLORINATION

When larger reserve and/or feed rate capacities are needed, REGAL offers a choice of wall manifolds interconnecting one or more cylinders/ton containers to vacuum regulator(s).



REGAL TON-CONTAINER MOUNTING ADAPTOR TAY-200

These adaptors make it possible for users with continuous feed rate requirements of 500 ppd or less to benefit from REGAL safety, reliability, and economy, and still benefit from the lower gas costs associated with ton containers.

The REGAL mounts directly on the adaptor, with its positive mounting yoke, and the adaptor is then mounted directly on the ton container – eliminating the need for hazardous, pressurized, flexible connectors while providing greater flexibility in locating the container.



THE REGAL AMMONIATORS AND SULPHONATORS ARE ALSO EASY TO MAINTAIN.



REGAL AMMONIATORS

REGAL Ammoniators service industries such as potable water, wastewater, petroleum, paper and wool processing industries, and are used to combat disinfection byproducts (DBPS) in chloramination and to neutralize acids. Built with rugged materials designed to resist the effects of ammonia, REGAL Ammoniators feature all the benefits of the acclaimed REGAL Gas Chlorinator. Capacities from 4 to 100 PPD.

REGAL SULPHONATORS

REGAL Sulphonators are based on the same simple, efficient design that has made REGAL Gas Chlorinators the industry standard. They are used to de-chlorinate water, wastewater and industrial process water with sulfur dioxide. Built with heavy duty corrosion resistant and corrosion proof vital parts, REGAL Sulphonators provide long-lasting service. Capacities from 4 to 500 PPD.



REGAL PRODUCTS – SAFE, RELIABLE AND ECONOMICAL

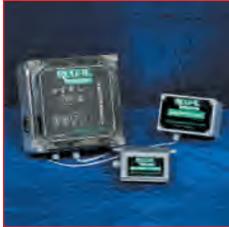
REGAL MODEL CRA 5000 CHLORINE RESIDUAL ANALYZER

The REGAL Model CRA 5000 Chlorine Residual Analyzer is designed to continuously measure the level(s) of Free or Total chlorine in water and wastewater. The CRA 5000 may be used exclusively to monitor chlorine residual levels or it may be integrated with the REGAL Model 7009/7010 SMARTVALVE™ for Compound Loop (Feedback) chlorination and/or Feed Forward dechlorination.



REGAL SERIES 3000 GAS DETECTOR

Designed for use wherever chlorine or sulfur dioxide is stored, distributed, or where potential leakage would pose a risk for personnel and property. The gas detector senses the presence of free chlorine or sulfur dioxide and displays the concentration in parts per million. Sounds “warning” alarm at 1 PPM for chlorine and 2 PPM for sulfur dioxide and a “danger” alarm at 3 PPM for chlorine and at 5 PPM for sulfur dioxide.



REGAL SERIES 7000 SMARTVALVE™

Used to treat water with varying flow rates, the SMARTVALVE™ features “flow-proportional” or “step-rate” control modes, fully automatic or manual operation and an adjustable “low flow” alarm. The SMARTVALVE™ is also made available for residual only, compound loop or feed forward applications.



REGAL MODEL 7500 REMOTE METER PANEL

The Regal 7500 Remote Meter Panel is designed to be used with the Regal Smartvalve. It has a unique feature that allows chlorine gas to bypass the rate valve adjustment, ensuring that the valve is fully open while in automatic mode.



REGAL MODEL SC401 DUAL CYLINDER SCALES

Two separate scales in one unit, the REGAL Model SC401 accurately and simultaneously weighs and measures the chlorine remaining in a cylinder to $\pm 1\%$ full scale, surpassing industry standards.



REGAL MODELS ECS401/402 ELECTRONIC CYLINDER SCALES

REGAL Series ECS provide the user with instantaneous and accurate readings of Gross and Net cylinder weights on bright LCD displays.



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