Wallace & Tiernan® Gas Feed Systems S10k™ Chlorinator

Introduction

The S10k™ chlorinator is an all vacuum operated, sonically regulated unit. The option of direct cylinder mounting puts the vacuum-regulating valve right at the source, reducing gas pressure to a vacuum immediately. It provides for economic low capacity gas feed applications for municipal and industrial water and wastewater treatment and disinfection, swimming pools and industrial process water.

Its ability to handle all water treatment gases as well as its flexible mounting configurations for cylinders, manifolds or tonne containers provides versatility for all installations. Two basic arrangements are available in capacities of 4 kg/h and 10 kg/h of chlorine gas.

Key Benefits

- Positive indication of operating status
- Positive shut-off
- Optional built-in automatic switchover
- Captive universal yoke mounting
- Detachable flowmeter

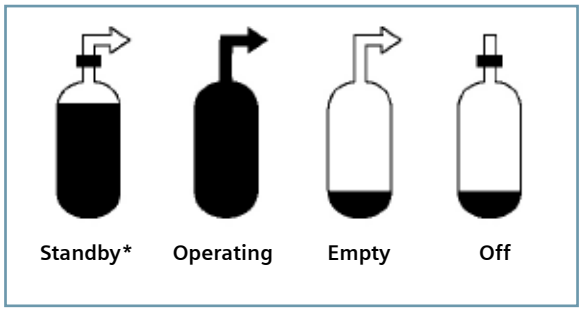
Product Sheet

Water Technologies

SIEMENS

Features

Positive indication of Operating Status
Three icons provide visual indication of gas state.



*Where automatic changeover system is used

Positive Shut off
An OFF position on the face of the regulator allows for positive shut off. Containers can be changed without admitting air, dirt of moisture into the control unit and without shutting off the injector.

Unique Secondary Check (option)
The regulators can include a unique secondary check designed to confine gas under pressure should primary valve seat not completely seal due to contamination. This minimises the possibility of venting gas to atmosphere.

Built-in Automatic Switchover (Option)
Built-in switchover eliminates the need for external switching devices. For complete gas consumption a non-isolating feature allows the cylinders to be fully emptied, with the option to maintain a positive pressure in the empty cylinder.

Handles all Water Treatment Gases
The unit can handle all typical water treatment gases e.g. chlorine, sulphur dioxide and ammonia.

Captive Universal Yoke Mounting
A unique self aligning captive yoke clamp makes it easy to line up and connect the Chlorinator to the gasketed outlet of any container valve. A one tonne container kit is also available as a standard option.

Detachable Flowmeters
Two sizes of flowmeters, 75mm and 125mm, are available in 13 capacities between 0.02kg/h and 10kg/h chlorine (comparable capacities for other gasses). These flowmeters can be integral to the unit, or mounted remote, for installation flexibility. Flowmeters can be ganged together for multiple point application.

Automatic control

The S10k™ chlorinator can be fitted with automatic feed rate control from simple to complex schemes. The control system consists of an actuator and either SCU (Signal Conditioning Unit) or PCU (Process Control Unit).

SCU (See WT.040.100.000.DE.PS)
- Operating Modes: Flow proportional, manual
- Inputs: 4-20 mA DC (from flow transmitter)
- Outputs: Control out to actuator: also 4-20 mA output for retransmission of gas feed (actuator position)
- Control Capability: Dosage and flow scaling

PCU (See WT.040.200.000.GE.PS)
- Operating Modes: Direct residual feed back, compound loop, feed forward, flow proportional, manual
- Ranges: Set points up to 50 mg/l and centre-zero capability for dechlorination
- Control Logic: Proportional with process delay
- Alarms: 4 user-configurable alarms for 16 different conditions

Options
Regulated options include: cylinder valves and connections; header valves with manifolding and connections; vent; injector water and injector outlet lines and clamps, main connections; solenoid valves; water line pressure gauge; gas inlet heater; gas mask; Siemens Water Technologies chlorine detectors; on line analysers; two cylinder scales; residual test kits; injector vacuum gauges; spare parts.

Chlorine Gas Warning
All unattended chlorine gas containers and chlorination equipment should be monitored for leaks. Sensitive chlorine detectors, which respond quickly to chlorine in the atmosphere, should be installed at each site.

See WT.050.450.000.IE.PS for further information.

Carbon Dioxide Warning
Because of the high pressure in carbon dioxide container, the vacuum regulating valve cannot be mounted directly on the container. A pressure reducing valve and pressure relief valve must be installed between the container and the vacuum regulating valve.

Technical data

Accuracy
Gas feed is ± 4% of the indicated flow.

Operating Range
Manual 20:1 for any flowmeter
Automatic 10:1

Control Modes
Manual control, start-stop or program, flow proportional direct residual, compound-loop, multiple rate control and multiple point operation.

Distance, Supply to the Control Unit
For flexibility, it is not necessary to install the vacuum regulating valve close to the control unit. It can be up to 500 metres from the gas control unit, depending on maximum feed rate, the diameter of the connecting pipe of tubing and system performance requirements.

Injector Operating Water
Injector operating water must be reasonably clean. Injectors are fixed-throat differential type. Maximum inlet pressure is 20 bar to a maximum of 40°C: 10 bar to a maximum of 55°C.

Pressure At Application Point
Maximum pressure with hose of polyethylene tubing is 5 bar. High pressure hose or rigid pipe will allow application against back pressure of up to 11 bar.

Overall Dimensions

Chlorinator: (mm)	
75mm Flowmeter	200 x 180 x 300
125mm Flowmeter	210 x 300 x 300
Automatic Panel	635 x 190 x 190

Shipping Weight

Gas metering unit	2.03 kg
Automatic panel	7.3 kg

Connections

Pipe and plastic tubing sizes

Vacuum regulating valves
Tubing to 4 kg/h control unit:-
1/4" x 3/8" Compression fitting or 1/2" union or 20mm solvent connection

Container valve:-
Gas inlet yoke connection to a cylinder or header valve or, with optional adaptor, to a tonne container valve.

Tubing to 10 kg/h control unit:-
1/2" x 5/8" Compression fitting or 1/2" union or 20mm solvent connection

Container valve:-
Gas inlet yoke connection to a cylinder or header valve or, with optional adaptor, to a tonne container valve.

Injectors
Connection to 4 kg/h control unit:-
3/4" NPT male or 20mm ID hose

Solution Outlet:-
Same as inlet

Connection to 10 kg/h control unit:-
Female RI

Solution Outlet:-
3/4" NPT male or 25mm ID hose

Gases and Capacities				
Maximum Capacity	**Chlorine kg/hr**	**Carbon Dioxide kg/hr**	**Sulphur Dioxide kg/hr**	**Ammonia kg/hr**
75mm flowmeter 5 kg/h	0.02/0.06/0.20/0.40/ 0.60/1.00/1.50/2.00/ 3.00/4.00/5.00	0.02/0.05/0.16/0.32/ 0.48/0.80/1.20/1.60/ 2.40/3.20	0.02/0.06/0.20/0.40/ 0.60/1.00/1.50/2.00/ 3.00/4.00	0.01/0.03/0.10/0.20/ 0.30/0.50/0.74/1.00/ 1.50/2.00
125mm flowmeter 5 kg/h	0.06/0.20/0.40/0.60/ 1.00/1.50/2.00/3.00/ 4.00/5.00/6.00/10.00	0.05/0.20/0.30/0.50/ 0.80/1.20/1.60/2.40/ 3.20/4.00/4.80/6.40/8.00	0.06/0.20/0.40/0.60/ 1.00/1.50/2.00/3.00/ 4.00/5.00/6.00/10.00	0.03/0.10/0.20/0.30/ 0.50/0.74/1.00/1.50/ 2.00/2.50/3.00/5.00

Automatic control system

The control system consists of;-
a) a wall mounted, remote vacuum S10k™ gas metering unit, comprising an electrically actuated, NEMA 4X reversible motor type V-notch positioner with thermal overload protection, mechanical manual override and
position feedback potentiometer, a 125mm glass tube rotameter with housing, and a V-notch type gas flow control valve chamber, all fitted to an extremely compact, corrosion resistant panel, and;
b) a separately mounted dedicated electronic controller, most frequently either an SCU (signal conditioning Unit) for simple ratio control, PCU (process control Unit) for simple compound loop control or

V600® controller for complex control schemes.

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