SEVERN TRENT SERVICES

Disinfection Products

Capital Controls®
CHLOR-A-VAC®
Chemical Induction Unit
Series 1420

The Capital Controls® CHLOR-A-VAC® Series 1420 chemical induction unit offers improved chlorination/dechlorination through the high efficiency mixing of gaseous or liquid chemicals with process water. CHLOR-A-VAC® features superior, cost-effective design, and is ideal for use in all-vacuum gas feed systems or to complement chemical feed pumping systems. CHLOR-A-VAC® is the winning choice at industrial and municipal water and wastewater plants for use in contact basins, headwaters, return sludge processes, clarifier inlets, collection boxes, equalizer tanks, and clear wells.

CHLOR-A-VAC® offers a full range of gaseous and liquid chemical feed rates. The CHLOR-A-VAC Mosquito®, designed to meet the specific needs of smaller plants, feeds up to 100 PPD (2 kg/h) chlorine gas or 4 gpm (15 lpm) of a liquid chemical. The larger model provides for chlorine gas feed rate of 750 PPD (15 kg/h) or a liquid chemical feed rate of 15 gpm (56 lpm).

- High Efficiency Mixing
- Safe, Reliable Vacuum Feed
- Reduced Chemical Consumption
- Lower Operating Costs
- Easy Retrofit
- No “Off Gassing”
- Reduced Support Requirements
- CE Marked 1/2 and 2 HP units



130.0001.13

Applications

For process water, potable water and wastewater treatment at municipal and industrial plants.

- **Potable water: Disinfection, coagulation**
- **Wastewater: Disinfection, dechlorination, coagulation**
- **Industrial water and wastewater treatment, pre-treatment**
- **Wet weather/Combined Sewer Overflow (CSO): flash disinfection/oxidation and dechlorination**
- **Filamentous bacteria control**
- **Zebra mussel control**
- **Post aeration**
- **pH control**
- **Coagulation/flocculation**
- **Manganese oxidation**
- **Phosphate reduction**

Design Features

- **High efficiency mixing:** CHLOR-A-VAC's design provides rapid, uniform chemical transfer resulting in reduction or elimination of chemical breakout and stratification.
- **Chemical savings:** CHLOR-A-VAC users report an average 40% savings in the quantity of chemicals used.
- **Reduced support requirements:** Single compact unit eliminates cost and support requirements for separate ejector, booster pump, diffuser and auxiliary mixer.
- **Reliable vacuum:** Built-in vacuum orifice combined with process water flow through the unit creates a strong, reliable vacuum up to 25 inches of mercury.
- **Gas or liquid chemical:** Units feed a broad range of gas and liquid chemicals including chlorine, sulfur dioxide, carbon dioxide, ammonia, sodium hypochlorite, sodium bisulfite, aluminum sulfate, ferric chloride and ferric sulfate, among others.
- **Heavy-duty motor:** Submersible motor supported by two heavy-duty, permanently lubricated bearings for long life and low maintenance and protected from water damage by a double mechanical seal.
- **Thermal overload protection:** Motor designed with built-in overload protection and capable of running dry for an extended period of time without damage.
- **Rugged design:** Designed to operate as a compact, unitized product, CHLOR-A-VAC consists of an orifice housing with an enclosed impeller, containing water inlet ports, chemical inlet fittings, and a heavy-duty motor suitable for underwater use. Constructed from Hastelloy C, the impeller is protected from corrosion and pitting. High density PVC used for the orifice housing and chemical inlet fitting provides further corrosion protection.

Principle of Operation

The chemical induction unit is completely submersed in a contact tank or stream. An enclosed, rotating impeller draws process water into the orifice housing through a series of inlet ports, moving anywhere from 200 to over 550 gallons per minute. The water is drawn through the orifice housing where a strong vacuum is created, pulling the chemical through a series of inlet holes, equally spaced around the circumference. The chemical saturates the process water flowing through the orifice housing and discharges at high velocity into the contact tank where chemical dispersion and mixing takes place. (Figure 1).

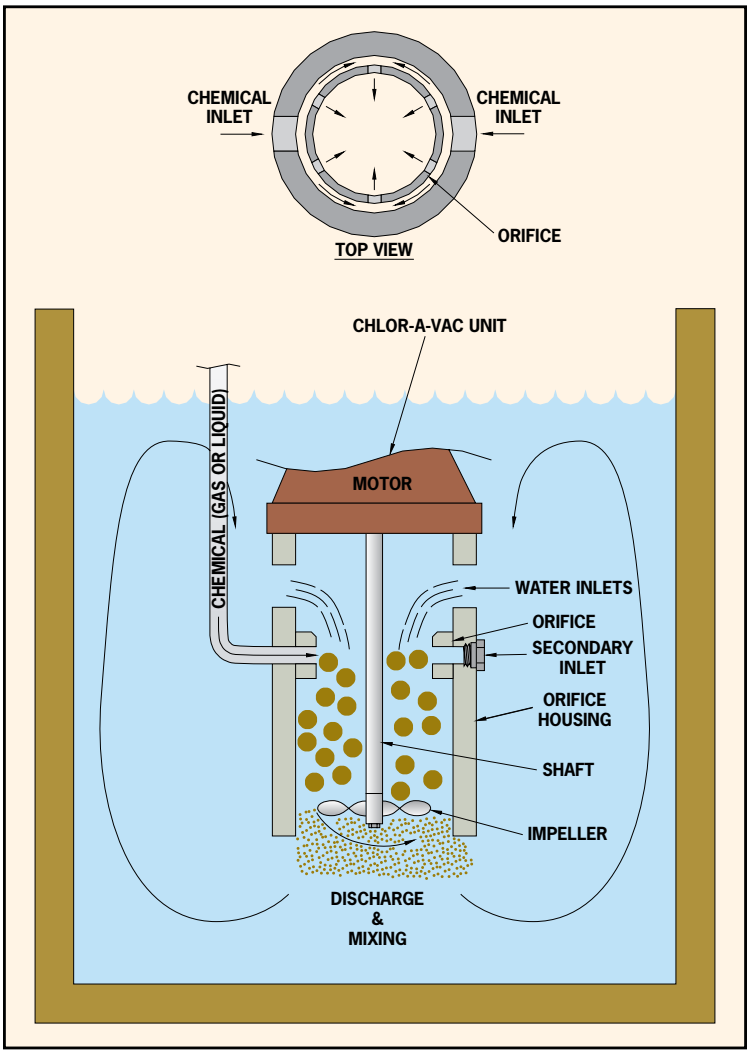

Figure 1 - Flow Diagram

Technical Data -
CHLOR-A-VAC® Chemical Induction Units

PERFORMANCE DATA												
Model	60 Hz						50 Hz					
	Maximum Chlorine Gas Feed[1]		Maximum Liquid Feed[2]		Discharge Pumping Capacity		Maximum Capacity Gas Feed[3]		Maximum Liquid Feed [1,2]		Discharge Pumping Capacity	
	PPD	kg/h	gpm	lpm	gpm	lpm	PPD	kg/h	gpm	lpm	gpm	lpm
1421A	100	2	4	15	220	850	80	1.6	3.3	12.5	180	700
1422A	750	15	15	56	550	2100	625	13	12	45	460	1750

1. Refer to the Series 1520 Specification Sheet, Bulletin 130.0002, for larger capacity units.
2. Maximum chemical feed using 5/8" tubing on Model 1421A and 1" hose on Model 1422A.
3. Liquid chemical feed rates are based upon vacuum feed, and are subject to pressure head and to temperature and the specific gravity of liquid. When chemical metering pumps are used, the metering pump determines the feed rate.
4. Sulfur dioxide feed is 95% of chlorine feed.

ELECTRICAL REQUIREMENTS

Quality Standards: ISO 9001 Certified

Compliance: CE

Electrical requirements: CHLOR-A-VAC units are available for operation from 60 Hz or 50 Hz power sources.

60 Hz:

Model 1421A - 115 Vac, 1 phase
All models 208/230 Vac, 3 phase,
460 Vac, 3 phase, or 575 Vac, 3 phase

50 Hz:

All Models - 380 Vac, 3 phase or
415 Vac, 3 phase
Contact factory for other voltages.

Model 1 4 2 _ _ _ _

Feed Capacity

1A - 100 PPD/4 gpm

2A - 750 PPD/15 gpm

Line Voltage

1 - 115 Vac, 1 phase, 60 Hz (Model 1421A only)

2 - 460 Vac, 3 phase, 60 Hz

3 - 208/230 Vac, 3 phase, 60 Hz

4 - 380 Vac, 3 phase, 50 Hz

5 - 415 Vac, 3 phase, 50 Hz

6 - 575 Vac, 3 phase, 60 Hz

Pump Oil

01 - Standard pump oil

02 - USDA approved pump oil

Mounting Harness

01 - Vertical mounting

02 - Horizontal mounting

03 - No harness

Warranty and Capability

CHLOR-A-VAC® Chemical Induction Units are warranted for eighteen months from date of invoice or twelve months from date of installation, whichever is earlier.

Severn Trent Services is ISO 9001 certified to provide quality and precision materials. Disinfection technologies, water quality monitors and instrumentation for water and wastewater are areas of specialization. Over 35 years of industrial and municipal application experience in the water and wastewater industries is incorporated into the equipment design to provide high quality comprehensive solutions for the global market.

Brief Specification

The chemical induction unit shall provide for the conveying of gas under vacuum up to a maximum feed rate of _____ PPD from the gas feeder to the unit's orifice housing, or shall connect to a customer-supplied chemical pump and provide for a maximum liquid feed rate of _____ gpm.

System hydraulics shall provide for a minimum of 10 inches of mercury vacuum at maximum feed rate without use of auxiliary equipment. The unit shall pump no less than ___ gpm of process water through the orifice housing for efficient chemical feed. Chemical induction and mixing shall be accomplished by a single unit without use of booster pumps, ejectors, diffusers or auxiliary mixers. The chemical induction unit shall have the capability of passing solids up to 1/2 inch diameter or stringy materials that may be present in the process water.

The motor shall be submersible, rated for continuous duty, operate from a ___ Vac, ___ Hz ___ phase power source, and have a service factor of 1.15. The motor shall be air filled with Class F insulation, have moisture resistant copper windings, be supplied with thermal overload protection, and be capable of running dry for an extended period of time without damage. The motor shaft shall be supported by two (2) permanently lubricated ball bearings with a B-10 life of 50,000 hours.

The wetted portion of the motor shaft shall be titanium. The impeller shall be Hastelloy C and enclosed in a high density PVC orifice housing.

The chemical induction unit shall be Capital Controls® Series 1420.

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