

Berninger Environmental, Inc.
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October 13, 2009

Udomlug (Nok) Siriphonlai, P.E.
Senior Engineer
Bureau of Environmental Quality
Westchester County Department of Health (WCDH)
145 Huguenot Street
New Rochelle New York 10801

RECEIVED

OCT 20 2009

Division of Environmental Radiation

Re: Schmukler's Dry Cleaners, 358-364 North Avenue
City of New Rochelle, Westchester County
Brownfield Cleanup Agreement Site No. C360088
Authorization to File Applications and Plans to WCDH
Re: Permit to Construct Active Sub-Slab Depressurization System
Response to September 20, 2009 Letter

Dear Mr. Siriphonlai:

This letter is in reponse to the WCDH's comments on the re-submittal of a permit to *Construct Active Sub-Slab Depressurization System* required at the Schmukler's Dry Cleaners property located at 358-364 North Avenue, City of New Rochelle, Westchester County relative to a Brownfield Cleanup Agreement Site No. C360088.

Comment: Calculations showing the emission rates based on the rated control efficiency of the air pollution control equipment shall be provided. Breakthrough calculation of the air pollution control equipment shall also be included. The sampling inlet values to the air pollution control equipment may be used.

Response: Siemens was contacted regarding the specific vapor phase isotherm design parameters for their vapor phase Granulated Activated Carbon (GAC) such that a calculation could be made for the rated control efficiency of the air pollution control equipment as well as a breakthrough calculation of the air pollution control equipment shall also be included. Information on the air flow rate, system temperature, system pressure, chemical characteristics, inclusive of concentrations of Volatile Organic Compounds (VOCs) was provided to Siemens and they calculated the pounds of carbon individually and collectively for the three VOCs of concern (tetrachloroethylene, trichloroethylene, and 1,2-cis-dichloroethene) present in the sampling inlet sample (influent sample).

As per the attached Vapor Phase Design Sheets prepared by Siemens according to their specific brand of GAC used on this project, total pounds of carbon estimated at breakthrough is 0.1818 pounds of GAC per day. A 55-gallon drum contains 148 pounds of carbon¹. At an estimated breakthrough is 0.1818 pounds of GAC per day, the lead drum should theoretically last 814 days. As a safety margin, 50% of the theoretical usage is typically projected, in this case, 407 days (at least one year). For further safety to ensure no break through of the lag drum, the system will be monitored via a Photoionization detector monthly and/or a sample will be taken to the lab for analysis. Based upon the aforementioned, the emission rates based on the rated control efficiency of the air pollution control equipment should be 99.99 percent effective.

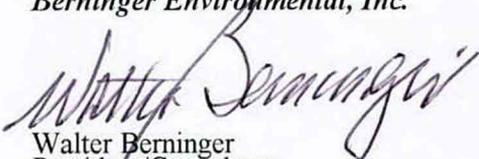
¹ Volume of a 55-gallon drum is 5.3 cubic feet, bulk density of carbon is 28lb/cubic foot = 148 pounds of carbon.

Based upon the above rates, one drum of carbon is theoretically capable of removing 26.91 pounds of VOC contamination at the pilot test concentrations.

Comment: Supporting documents from the manufacturer including specifications for all the equipment, such as make, model, capacity, flow, diameter and dimensions, shall be provided. In addition, the basis for determining the equipment size shall be provided. The capacity, flow and dimension of the air pollution control equipment shall also be included on plans.

Response: Supporting documents from the manufacturer including specifications for all the equipment, such as make, model, capacity, flow, diameter and dimensions, are attached. The pilot test was used as the basis for confirming what equipment size was adequate for this project via the measurement of vacuum monitoring points and a determination of the radius of influence. Vacuum was measured at the six small diameter shallow Pressure Vapor Points. Adequate pressure readings were noted at all six Pressure Vapor Points (0.10 to 2.0 inches of mercury on the magnahelic gauges). The measurements of vacuum present at the Pressure Vapor Points and monitoring points for the four SVE wells confirmed the effectiveness of the system design and an appropriate 20 foot radius of influence.

Sincerely,
Berninger Environmental, Inc.


Walter Berninger
President/Consultant

Michael W. McKeown, P.E.

cc: Lou Carrea, P.E. Associate Engineer
Westchester County Department of Health
Bureau of Environmental Quality
145 Huguenot Street, 7th Floor
New Rochelle, New York 10801

cc: Hal Shapiro, HNJ Realty, LLC.
S. Avena - Garfunkel, Wild, & Travis, P.C.

VAPOR PHASE ISOTHERM DESIGN PARAMETERS

System Temperature	13.0000 °C
Air Flow Rate	7.59000 SCFM
System Pressure	14.70000 psi
Relative Humidity	<disabled>

VAPOR PHASE DESIGN

Component Name	Concentration	#GAC/day at Breakthrough
ETHENE, 1,2, cis-DICHLORO-	0.0010 mg/m ³	0.0231
ETHENE, 1,2, cis-DICHLORO-	0.0100 mg/m ³	0.0319
ETHENE, 1,2, cis-DICHLORO-	0.1000 mg/m ³	0.0559
ETHENE, 1,2, cis-DICHLORO-	1.0000 mg/m ³	0.1244
ETHENE, 1,2, cis-DICHLORO-	10.0000 mg/m ³	0.3510
ETHENE, 1,2, cis-DICHLORO-	100.0000 mg/m ³	1.2553
ETHENE, 1,2, cis-DICHLORO-	1000.0000 mg/m ³	5.6932
ETHENE, 1,2, cis-DICHLORO-	10000.0000 mg/m ³	32.7409

Total Carbon Usage Estimated at Breakthrough
40.2758 #GAC/day

The above carbon usage estimates are based on both experimental data as well as predictive models. Actual carbon usage rates observed at various stages of breakthrough depend on many factors, and may therefore differ from the above estimates. Please contact Westates Carbon Products for further assistance.

VAPOR PHASE ISOTHERM DESIGN PARAMETERS

System Temperature 13.0000 °C
Air Flow Rate 7.59000 SCFM
System Pressure 14.70000 psi
Relative Humidity <disabled>

VAPOR PHASE DESIGN

Component Name	Concentration	#GAC/day at Breakthrough
TETRACHLOROETHENE	0.0010 mg/m ³	8.2448e-05
TETRACHLOROETHENE	0.0100 mg/m ³	3.3502e-04
TETRACHLOROETHENE	0.1000 mg/m ³	0.0015
TETRACHLOROETHENE	1.0000 mg/m ³	0.0079
TETRACHLOROETHENE	10.0000 mg/m ³	0.0462
TETRACHLOROETHENE	100.0000 mg/m ³	0.3038
TETRACHLOROETHENE	1000.0000 mg/m ³	2.2515
TETRACHLOROETHENE	10000.0000 mg/m ³	18.8167

Total Carbon Usage Estimated at Breakthrough

21.4282 #GAC/day

The above carbon usage estimates are based on both experimental data as well as predictive models. Actual carbon usage rates observed at various stages of breakthrough depend on many factors, and may therefore differ from the above estimates. Please contact Westates Carbon Products for further assistance.

VAPOR PHASE ISOTHERM DESIGN PARAMETERS

System Temperature 13.00000 °C
Air Flow Rate 7.59000 SCFM
System Pressure 14.70000 psi
Relative Humidity <disabled>

VAPOR PHASE DESIGN

Component Name	Concentration	#GAC/day at Breakthrough
TRICHLOROETHYLENE	0.0100 mg/m ³	0.0020
TRICHLOROETHYLENE	0.1000 mg/m ³	0.0062
TRICHLOROETHYLENE	1.0000 mg/m ³	0.0232
TRICHLOROETHYLENE	10.0000 mg/m ³	0.1021
TRICHLOROETHYLENE	100.0000 mg/m ³	0.5289
TRICHLOROETHYLENE	1000.0000 mg/m ³	3.2319
TRICHLOROETHYLENE	10000.0000 mg/m ³	23.2906

Total Carbon Usage Estimated at Breakthrough

27.1848 #GAC/day

The above carbon usage estimates are based on both experimental data as well as predictive models. Actual carbon usage rates observed at various stages of breakthrough depend on many factors, and may therefore differ from the above estimates. Please contact Westates Carbon Products for further assistance.

VAPOR PHASE ISOTHERM DESIGN PARAMETERS

System Temperature	13.00000 °C
Air Flow Rate	7.59000 SCFM
System Pressure	14.70000 psi
Relative Humidity	<disabled>

VAPOR PHASE DESIGN

Component Name	Concentration	#GAC/day at Breakthrough
ETHENE,1,2,cis-DICHLORO-	0.5655 mg/m ³	0.0999
TRICHLOROETHYLENE	0.7664 mg/m ³	0.0198
TETRACHLOROETHENE	14.5101 mg/m ³	0.0622

Total Carbon Usage Estimated at Breakthrough
0.1818 #GAC/day

The above carbon usage estimates are based on both experimental data as well as predictive models. Actual carbon usage rates observed at various stages of breakthrough depend on many factors, and may therefore differ from the above estimates. Please contact Westates Carbon Products for further assistance.

Westates® coconut shell based granular activated carbon - VOCarb® 48C

(Formerly CC-601)

For Gas Phase Adsorption Applications

Description

VOCarb® 48C is a high activity, granular activated carbon that is manufactured from selected grades of coconut shell. The granular shape of this carbon maximizes its geometric surface area, significantly increasing surface and pore diffusion rates and thereby increasing its effectiveness for the adsorption of VOCs with a short contact time. The very high surface area and predominately microporous pore size distribution further enhance the effectiveness of this coconut shell based carbon. In addition, VOCarb® carbons also have a high retentivity to hold onto and prevent desorption of previously adsorbed organic compounds. The granular shape of VOCarb® 48C results in excellent gas contacting but still allows the carbon bed to operate at a relatively low pressure drop. The high density and superior hardness of VOCarb® 48C activated carbon provides excellent resistance to dust and fines formation.

Applications

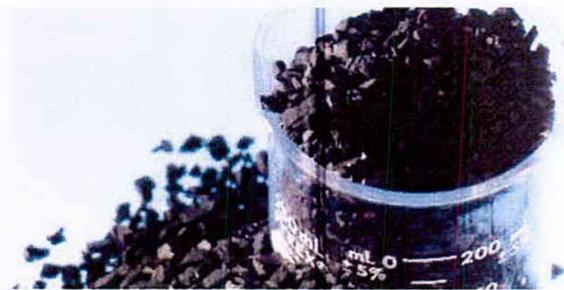
Cost effective VOCarb® activated carbons developed by Siemens have been demonstrated to provide superior performance in an extensive array of gas phase treatment applications. VOCarb® activated carbons are available for:

- Chemical process applications
- VOC control from air strippers, soil vapor extraction and air sparge systems
- Control of tank vent emissions
- HVAC
- Odor control
- Solvent recovery of low boiling point solvents
- Use as a catalyst/catalyst support

Quality Control

All VOCarb® activated carbons are extensively quality checked at our State of California certified environmental and carbon testing laboratory located in Los Angeles, CA. Siemens' laboratory is fully equipped to provide complete quality control analyses using ASTM standard test methods in order to assure the consistent quality of all Westates® carbons.

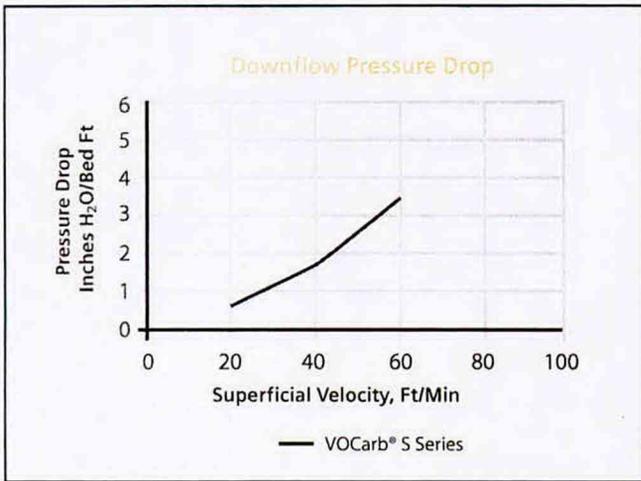
Our technical staff offers hands-on guidance in selecting the most appropriate system, operating conditions and carbon to meet your needs. For more information, contact your nearest Siemens representative.



Features and Benefits

- Exceptionally high VOC adsorption capacity
- Excellent VOC retentivity characteristics, works well for the adsorption of small molecules
- Superior hardness minimizes attrition losses during handling, use and service
- Cost effective
- Easily reactivated for recycle and reuse
- Low pressure drop characteristics
- Backed by technical support and a strong QA/QC program

Typical Properties	
Product Name	VOCarb [®] S
Carbon Type	Reactivated Coconut/Coal
Mesh Size, U.S. Sieve	4 x 10
Butane Activity (1)	19.5 - 21.5
Hardness Number, Wt. %	90
Apparent Density, g/cc	0.45 - 0.56
Moisture as Packed, Wt. %	3
CTC Activity (1)	50 - 55



Safety Note: Under certain conditions, some compounds may oxidize, decompose or polymerize in the presence of activated carbon causing a carbon bed temperature rise that is sufficient to cause ignition. Particular care must be exercised when compounds that have a peroxide-forming tendency are being adsorbed. In addition the adsorption of VOCs will lead to the generation of heat within a carbon bed. These heats of reaction and adsorption need to be properly dissipated in order to fully assure the safe operation of the bed.

Wet activated carbon readily adsorbs atmospheric oxygen. Dangerously low oxygen levels may exist in closed vessels or poorly ventilated storage areas. Workers should follow all applicable state and federal safety guidelines for entering oxygen depleted areas.

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The information provided in this literature contains merely general descriptions or characteristics of performance which in actual case of use do not always apply as described or which may change as a result of further development of the products. An obligation to provide the respective characteristics shall only exist if expressly agreed in the terms of the contract.

Vent-Scrub® Vapor Phase Adsorbers

Applications

The Vent-Scrub® adsorbers have been proven to be the simplest and most cost effective way to treat malodorous and VOC emission problems. Sturdy steel construction and specially formulated corrosion resistant internal coating ensures long service life and low maintenance. Applications for Vent-Scrub® adsorbers include:

- API separator vents
- VOC control from soil vapor extraction (SVE) systems and airstrippers
- Wastewater and product storage tank vents
- Process vents
- Refinery and chemical plant wastewater sewer vents
- Laboratory hood exhausts

Installation, Startup and Operation

Siemens can provide a total service package that includes utilizing OSHA trained personnel providing on-site carbon changeouts, packaging and transportation of spent carbon for recycling at our reactivation facilities, where the contaminants are thermally destroyed.



We provide instructions on sampling the spent carbon and completion of our spent carbon profile form. Spent carbon acceptance testing can be performed at our certified laboratory.

When requested, a certificate of reactivation will be issued.

Benefits and Design Features

- Durable, carbon steel construction.
- Abrasion and corrosion resistant baked epoxy lining; urethane exterior finish (Vent-Scrub® 1000, 2000, 3000, 8000 adsorbers).
- Ready-to-use systems; simple installation and operation.
- Applications to 3750 SCFM.
- The Vent-Scrub® 1000, 2000, 3000 and 8000 adsorbers have forklift channels for easy handling.
- The Vent-Scrub® 200, 400, 1000 and 2000 adsorbers are UN/DOT approved transportation containers for RCRA hazardous spent carbon.
- Hose kit and pipe manifold options are available to simplify installation and operation.

Piping Manifold (Optional)

- 2" / 3" sch 80 PVC piping and valves (optional carbon steel and stainless steel piping).
- Series or parallel operation.
- Sampling ports and pressure gauges.
- Flexible hoses with Kamlock fittings allow easy installation and removal during service exchange operations (Vent-Scrub® 200, 400, 1000 and 2000 adsorbers).

Specification					
Vent-Scrub® Adsorber Model No.	200	400	1000/2000	3000	8000
Dimensions, diameter x overall height	22" x 34"	32" x 43"	48" x 59"/48" x 95"	60" x 112"	96" x 131"
Inlet Connection	2" FNPT	4" FNPT	4" FNPT	10" Flange	16" Flange
Outlet Connection	2" MPT	4" FNPT	4" FNPT	10" Flange	16" Flange
Manway	Top	Top	18" Top	16" Top	20" Top/Side
Internal Distribution ⁽¹⁾	PVC	PVC	PVC	FRP/PPL	FRP/PPL
Interior Coating	Epoxy	Epoxy	Epoxy	Epoxy	Epoxy
Exterior Coating	Enamel	Enamel	Epoxy/Urethane	Epoxy/Urethane	Epoxy/Urethane
Carbon Fill Volume (Cu.ft.)	6.8	14	34/68	107	273
Cross Sectional Area (sq.ft.)	2.8	4.9	12.3	19.6	50.2
Approx. Carbon Weight (lbs)	200	400	1000/2000	3000	8000
Empty Vessel Weight (lbs)	50	80	890/1190	2500	5500
Flow, CFM (max.)	100	300	500	1500	3750
Pressure, psig (max.)	3	3	14.9	5	5
Temperature, deg. F (max) ⁽⁴⁾	140	140	140	140	140
Vacuum, in. Hg (max.)	N/A	N/A	12/12 ⁽²⁾	6 ⁽³⁾	12 ⁽³⁾

¹Carbon steel and stainless steel internals are also available.

²For vacuum greater than 12 in. Hg on Vent-Scrub® 2000 Adsorber, contact your Siemens representative.

³For vacuum service on Vent-Scrub® 3000 and 8000 Adsorber, contact your Siemens representative.

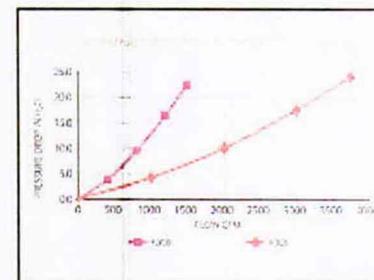
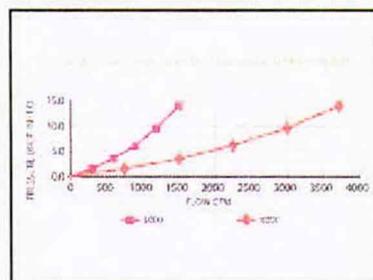
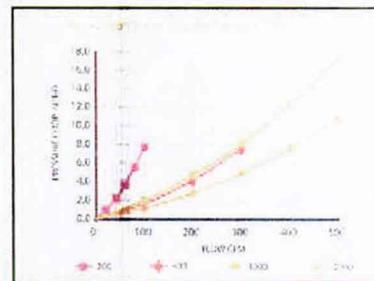
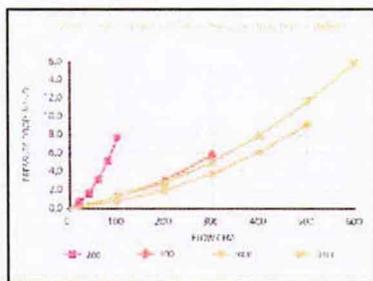
⁴For higher temperatures, stainless and carbon steel internals are available.

For detailed dimensional information or drawings, contact your local Siemens sales representative.

The adsorption of organic compounds onto activated carbon generates heat. In rare instances, adsorbed compounds may also react on the carbon surface to generate additional heat. If these heat sources are not properly dissipated, the carbon bed temperature may rise to the point where the carbon can ignite, leading to a fire or other hazardous condition. A description of industry-accepted engineering practices to assure the dissipation of heat and safe operation of the carbon bed can be provided upon request. In certain applications where the risk of ignition is significant, activated carbon may not be a recommended treatment technology. Please contact your Technical Sales Representative for more details.

Wet activated carbon readily adsorbs atmospheric oxygen. Dangerously low oxygen levels may exist in closed vessels or poorly ventilated storage areas. Workers should follow all applicable state and federal safety guidelines for entering oxygen depleted areas.

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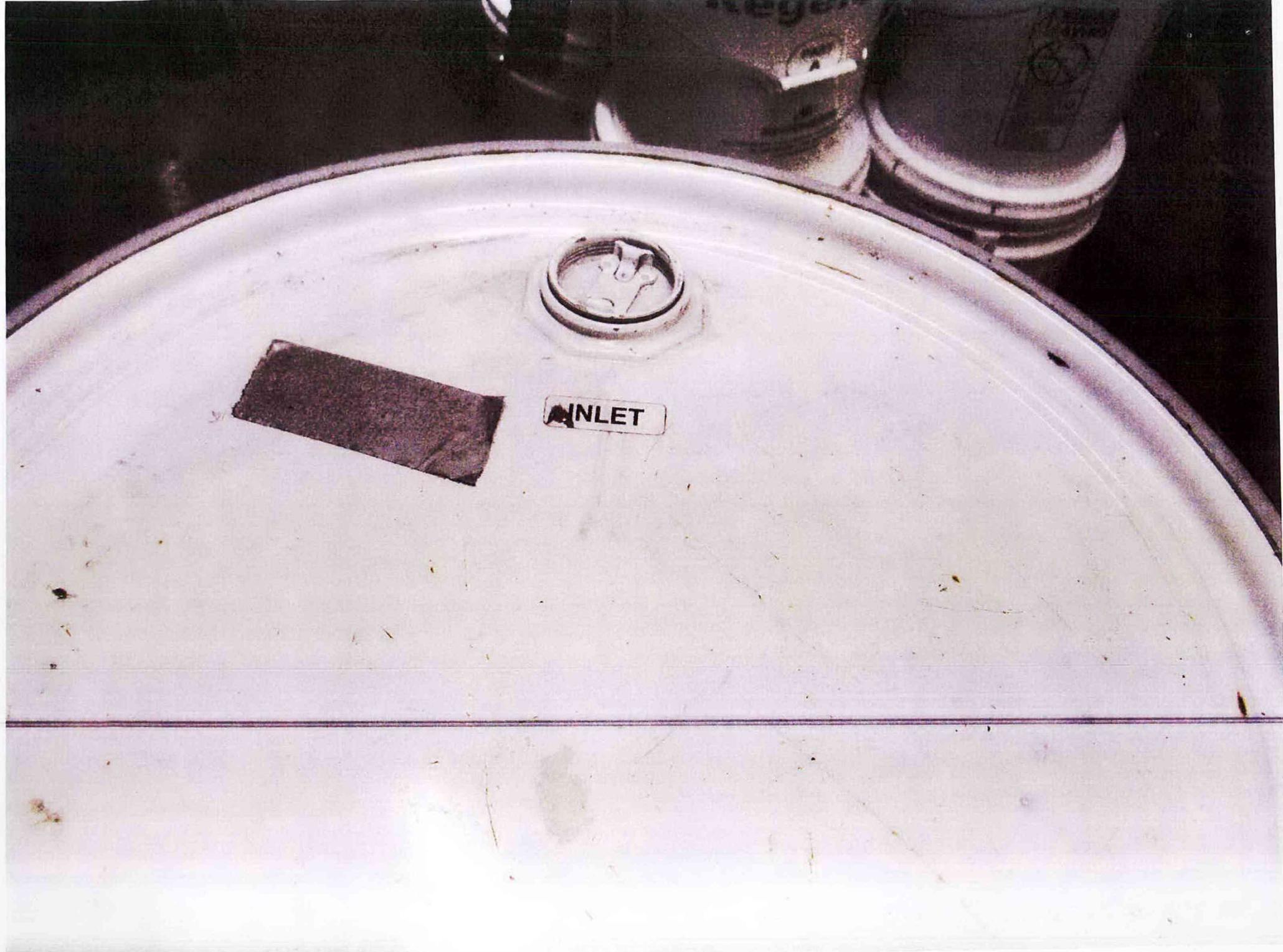


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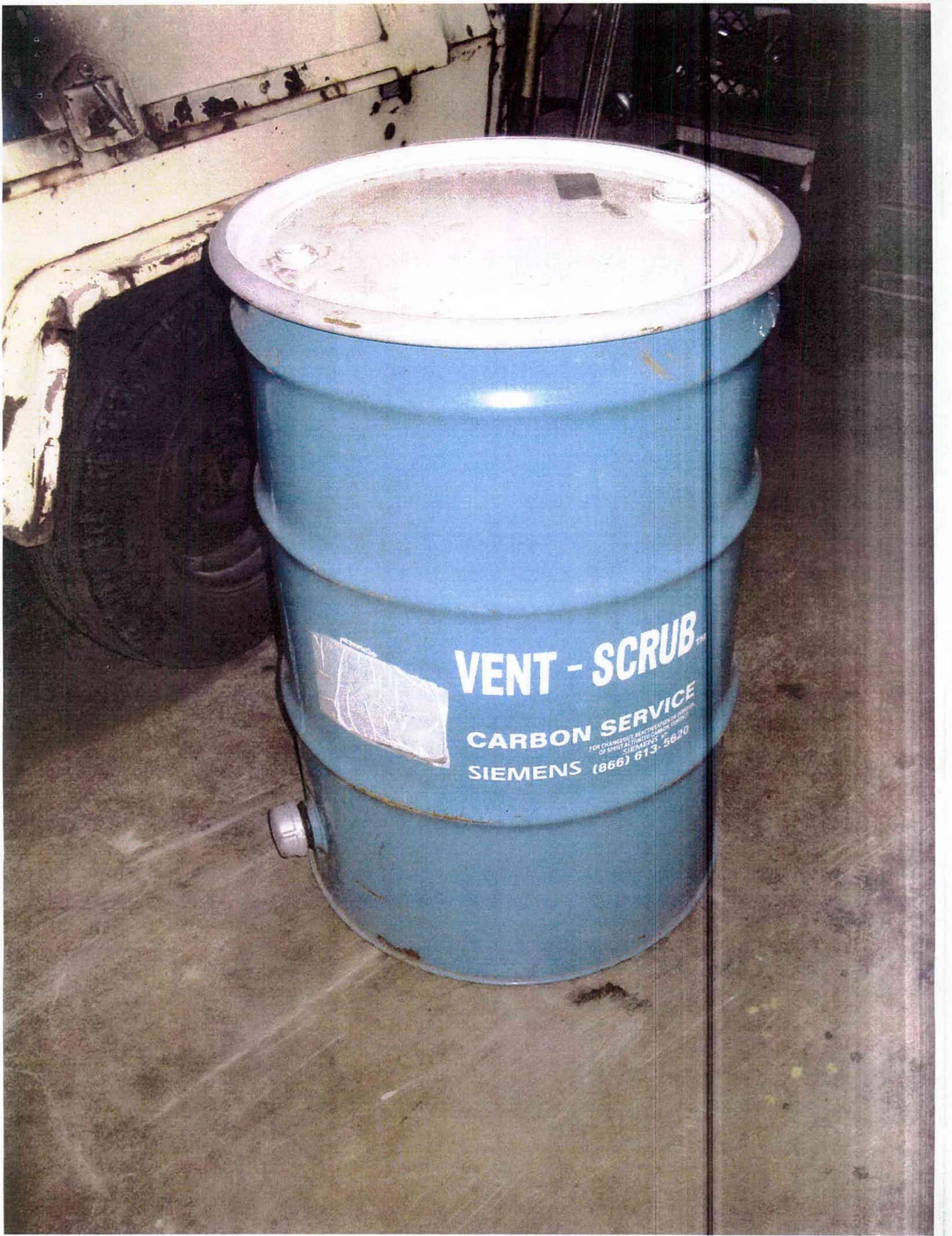
INLET

VENT - SCRUB™

CARBON SERVICE

SIEMENS (866) 613-5620

FOR CHANGEOUT, REACTIVATION OR DISPOSAL
OF SPENT ACTIVATED CARBON CONTACT
SIEMENS



ROTRON® Regenerative Blowers

EN 656 & CP 656

Sealed Regenerative Blower w/Explosion-Proof Motor

FEATURES

- Manufactured in the USA – ISO 9001 compliant
- Maximum flow: 212 SCFM
- Maximum pressure: 70 IWG
- Maximum vacuum: 70 IWG
- Standard motor: 3.0 HP, explosion-proof
- Cast aluminum blower housing, cover, impeller & manifold; cast iron flanges (threaded); teflon lip seal
- UL & CSA approved motor with permanently sealed ball bearings for explosive gas atmospheres Class I Group D minimum
- Sealed blower assembly
- Quiet operation within OSHA standards

MOTOR OPTIONS

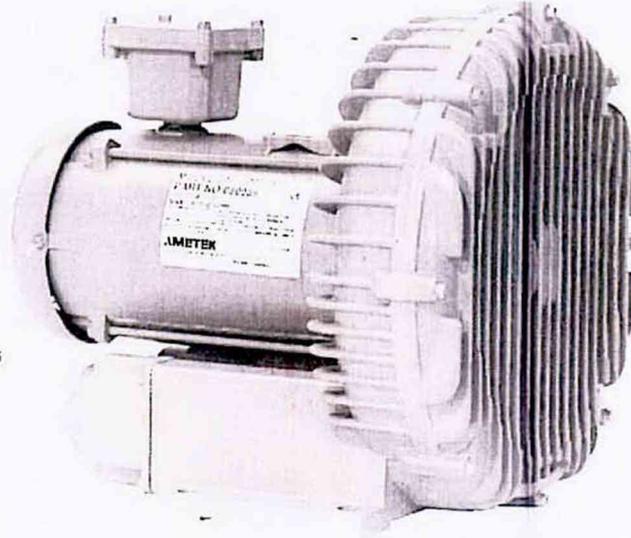
- International voltage & frequency (Hz)
- Chemical duty, high efficiency, inverter duty or industry-specific designs
- Various horsepowers for application-specific needs

BLOWER OPTIONS

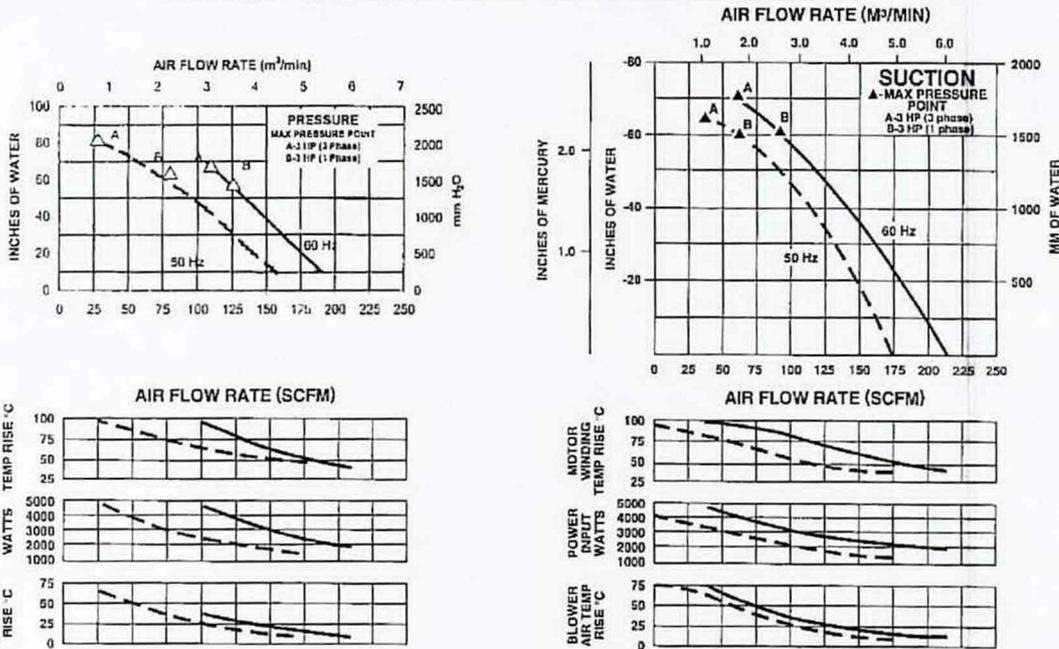
- Corrosion resistant surface treatments & sealing options
- Remote drive (motorless) models
- Slip-on or face flanges for application-specific needs

ACCESSORIES (See Catalog Accessory Section)

- Flowmeters reading in SCFM
- Filters & moisture separators
- Pressure gauges, vacuum gauges & relief valves
- Switches – air flow, pressure, vacuum or temperature
- External mufflers for additional silencing
- Air knives (used on blow-off applications)
- Variable frequency drive package



BLOWER PERFORMANCE AT STANDARD CONDITIONS



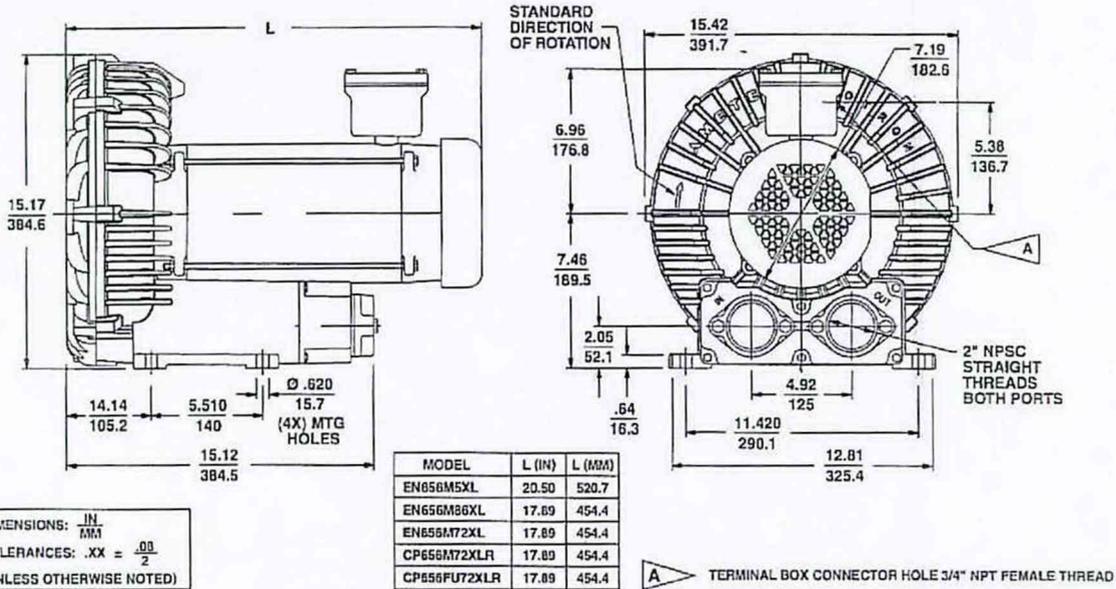
Rev. 2/04

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ROTRON® Regenerative Blowers

EN 656 & CP 656 Sealed Regenerative Blower w/Explosion-Proof Motor

Scale CAD drawing available upon request.



SPECIFICATIONS

MODEL	EN656M5XL	EN656M72XL	EN656M86XL	CP656FU72XLR
Part No.	080060	080059	080058	080142
Motor Enclosure - Shaft Material	Explosion-proof-CS	Explosion-proof-CS	Explosion-proof-CS	Chem XP - SS
Horsepower	3	3	3	Same as EN656M72XL 080059 except add Chemical Processing (CP) features from catalog inside front cover
Phase - Frequency ¹	Single - 60 Hz	Three - 60 Hz	Three - 60 Hz	
Voltage ¹	208-230	208-230	460	
Motor Nameplate Amps ³	15.5-14.5	7.4	3.7	
Max. Blower Amps ³	16.3-16.8	8.2	4.1	
Inrush Amps	95-86	54	27	
Starter Size	1	0	0	
Service Factor	1.0	1.0	1.0	
Thermal Protection ²	Class B - Pilot Duty	Class B - Pilot Duty	Class B - Pilot Duty	
XP Motor Class - Group	I-D, II-F&G	I-D, II-F&G	I-D, II-F&G	
Shipping Weight	135 lb (64 kg)	110 lb (50 kg)	110 lb (50 kg)	

¹ Rotron motors are designed to handle a broad range of world voltages and power supply variations. Our dual voltage 3 phase motors are factory tested and certified to operate on both: 208-230/415-460 VAC-3 ph-60 Hz and 190-208/380-415 VAC-3 ph-50 Hz. Our dual voltage 1 phase motors are factory tested and certified to operate on both: 104-115/208-230 VAC-1 ph-60 Hz and 100-110/200-220 VAC-1 ph-50 Hz. All voltages above can handle a ±10% voltage fluctuation. Special wound motors can be ordered for voltages outside our certified range.

² Maximum operating temperature: Motor winding temperature (winding rise plus ambient) should not exceed 140°C for Class F rated motors or 120°C for Class B rated motors. Blower outlet air temperature should not exceed 140°C (air temperature rise plus inlet temperature). Performance curve maximum pressure and suction points are based on a 40°C Inlet and ambient temperature. Consult factory for inlet or ambient temperatures above 40°C.

³ Maximum blower amps corresponds to the performance point at which the motor or blower temperature rise with a 40°C inlet and/or ambient temperature reaches the maximum operating temperature.

Specifications subject to change without notice. Please consult your Local Field Sales Engineer for specification updates.

Rev. 2/04

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