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O & M MANUAL

PRODUCT DESCRIPTION

FOR

ECOPOD TREATMENT SYSTEMS

MANUFACTURED AND DISTRIBUTED

BY

CANWEST TANKS & ECOLOGICAL SYSTEMS LTD

TYPE 2 – ECOPOD TREATMENT SYSTEMS
Treatment Plant,

TYPE 3 – ECOPOD TREATMENT SYSTEMS
With Additional Filtration &Disinfection

ABOUT THE ECOPOD TREATMENT SYSTEM.

The ECOPOD Fixed Media Wastewater Treatment System will produce a high quality effluent, suitable for various disposal methods.

Because of the higher quality effluent produced by the method described in a subsequent section of this text, the use of the ECOPOD System will also contribute to a cleaner and safer environment.

The ECOPOD System is classified as being “Aerobic”, the treatment is achieves by means of, Extended Aeration, Activated Sludge, and Fixed Growth Media technology.

A Wastewater Treatment System of this type work by utilizing microorganisms, which are naturally inherent in the waste we produce, to digest the nutrients and break down solids, resulting in a byproduct of carbon dioxide (CO_2) and water (H_2O).

By infusing air into the liquid, combined with the nutrients in the wastewater, the microorganisms (aerobes) multiply at a highly accelerated rate, creating a denser population per cu. ft. than would have occurred under normal conditions.
This overpopulation of aerobes speeds up the digestion and breakdown of the wastewater, making it safe for release into the environment.

The result of this process is a clear, odourless discharge.

The ECOPOD treatment system may be combined with other treatment methods to achieve a specific effluent quality. .

SPECIFICATIONS FOR THE ECOPOD FIXED MEDIA WASTEWATER TREATMENT SYSTEM MEETING THE ANSI/NSF INTERNATIONAL STANDARD 40, CLASS 1`

GENERAL SPECIFICATIONS

The advanced wastewater treatment described in these pages, is the ECOPOD Fixed Media Wastewater Treatment System, as manufactured by Canwest Tanks & Ecological Systems Ltd.

This device shall consist of a media container assembly, engineered growth media, air diffusion system, specially designed discharge outlet tee, blower assembly, and control/alarm panel.
All components to be assembled into a containment tank, as specified by the manufacturer.
Additional features and accessories are as shown on shop drawings and/or described on the following pages.
The Plant shall be ANSI/NSF International, Standard 40, Class 1 approved.

OPERATING PARAMETER

The treatment system shall be capable of treating a specified amount of gallons per day average daily flow (ADF) of domestic strength raw sewage waste with an organic loading of ____ pound BOD_5.
A minimum of 4,8450 cu. feet of Aeration capacity shall be provided for each pound of BOD_5.

CONSTRUCTION

CONSTRUCTION OPTIONS.

Fiberglass Tank

The tank shall be constructed of min. 0.25” thick fiberglass. The tanks shall be molded from Fiberglass Reinforced Plastic (FRP) manufactured by the lay-up and spray technique to ensure that the interior has a smooth resin rich inside finish.

Concrete Tank

The tank shall be constructed of Concrete. The top, bottom, and outer walls of all concrete tanks shall be 3” thick plus minus 0.25” and constructed of concrete with a minimum compressive strength of 3000 PSI. The top, bottom and side walls shall also be reinforced uniformly and completely with 10 gauge steel wire on 6” centers both ways (6x6x10x10) of fiber mesh reinforced at a minimum of 12 pounds per yard Harborlight or equal.

Primary Tank (Trash Tank) / Flow Equalizer Tank.

A primary tank shall be provided, to receive the incoming wastewater flow.
The pre-treatment tank shall provide 24 hours hydraulic retention at the ADF rate.
This primary tank shall be designed to collect large incoming solids and non-biodegradable matter or items entering the system.
The collection and retention of larger solids shall be accomplished by extending the inlet pipe downward below the trash floatable zone and above the settling zone.
The discharge pipe shall also be extended downward to draw pretreated liquid from the median zone, preventing both floatable and settling solids from entering the reactor tank.

Reactor Tank

The reactor tank shall be sized to provide a minimum of 33.6-hour hydraulic retention time at the average daily flow (ADF) rate.

Air Delivery System.

Air delivery system shall be constructed of Schedule 40 PVC pipe. Air-ports shall be designed for non-clogging and shall be maintenance free.

Additional Disinfection (optional with TYPE2 systems) can be provided by using U.V. Light, Chlorination / De-Chlorination units or Ozone.

Aeration Blower

Provided from factory is one aeration blower system with sufficient capacity to furnish the treatment unit(s)with the required CFM infused air.
The blower(s) shall be capable of delivering a minimum of 4,850 cubic feet per pound BOD_5 influent at required discharge pressure.

Electrical Controls

An electrical control panel shall be furnished with each compressor this will protect the compressor from overload and failure to start.
Included in the panel shall be a pressure switch alarm system (visual and audible) that will light up and also sound an audible alarm upon loss of air pressure in the air delivery system, or in the event of high water conditions in the treatment unit.

System shall be ANSI/NSF International certified utilizing UL rated components in an indoor/outdoor NEMA3 painted steel enclosure.

Piping.

All necessary piping and valves inside the plant, as shown on the plans, as well as proper sized inlet and outlet connections shall be provide by the manufacturer

The manufacturer shall not provider any connecting or other external pipes, fittings and / or valves.

Contractor / owner shall be responsible for necessary piping and valves between all components of the systems, and ensure that the Installation and burial instructions provided are strictly adhered to.

In the event of other conditions, not covered by the provided literature, contact Canwest Tanks

Sizing of the ECOPOD

The design flow for residential sewage is based on the Sewerage System Standard Practice Manual, as issued for British Columbia by the Ministry of Health Services, and updated from time to time.

When sizing the ECOPOD the Average Daily Flow (ADF) shall be based on the above mentioned Standard Practice Manual, and applied to the various model numbers mentioned in this text.

In cases where the system is installed in locations other than British Columbia, the local Health Regulations and guidelines shall be effect, and must be adhered to.

Solids Removal

Determining need for solids removal can be done through a simple test:

1. A one-liter sample should be pulled from the reactor tank.
   Allow the sample to settle in a clear one-liter jar for an hour.
2. If the solids content exceeds 25 percent of the total volume after settling, the treatment unit should be pumped out.

Call your local authorized sewage disposal service to have the tank's contents pumped out and disposed of in the proper manner.

The method of pumping out should be as follows:

- The air pump should be in the off position
- Remove the solids from both the Primary Tank and Reactor Tank(s)
- For a more efficient start up of the system, a small amount of sludge(6-8 inches) should be left in the digestion chamber of the Reactor Tank(s).

After the pump-out process is completed, fill the tank with clean water to normal operating level and switch the air pump on.

When the system is being used, it will reach normal operational level without need for further action. The treatment process will start automatically; the incoming wastewater carries the necessary nutrients, which in combination with the infused air will activate the biomass.

Should indication of malfunction or improper operation be observed, contact you Registered Maintenance Provider or Canwest Tanks.

PROCESS DESCRIPTION

The primary treatment is done in the Trash Tank; this treatment is anaerobic (absence of oxygen), which is equivalent to the biological processes occurring in a Septic tank.
Settling of larger solid is also achieved in this stage due to flocculation.
Flocculation aids in settling of solids to the bottom of the tank while oils, grease, & fats will float to the surface.

Thus, the effluent drawn from the median of the tank will be free of larger solids while still containing nutrients necessary for the Aerobes in the Digestion Chamber to feed and multiply, forming colonies (Biomass) attached to the Fixed Media.
There are no mechanical parts in this tank; the settled content must be pumped out with intervals determined by the Maintenance Provider.

After the Trash Tank, the wastewater enters, by gravity flow (TYPE II System), into the Treatment Plant, through a four (4) inch inlet pipe, where the liquid is dispersed over the Fixed Media (ECOPOD), situated in the Aeration / Digestion Chamber.

Here the wastewater is introduced into an oxygen rich environment.
In this oxygen rich environment, a colony of bacteria called a Biomass develops, capable of digesting (breaking down) the biodegradable waste, and the byproduct is carbon dioxide (CO_2 and water (H_2O)

The biomass attaches itself to the Fixed Media; this media is especially engineered in a honeycomb fashion, affording maximum surface area, thus promoting maximum growth and consequently facilitate the most efficient breakdown and digestion of solids and nutrients present in the wastewater.

This is a continuing process for as long as the biomass is supplied with incoming wastewater / nutrients and oxygen.

An external Air Blower is connected to the air diffuser assembly, which provides the necessary air (oxygen) to the system. The aeration system is constructed in such a manner as to keep solids in constant suspension, and in contact with the ECOPOD.
There are no moving parts or filters in the ECOPOD System.

In this type of system, conditions are favorable only to attached growth bacteria.
This means that most common disadvantages of other types of systems are eliminated.
No rising sludge, floating sludge or washouts can occur.

In addition to BOD and TSS reduction, ammonia / nitrogen is one of the contaminants in wastewater
In the ECOPOD System, nitrification of the ammonia and de-nitrification of the nitrates occur within the bacteria masses. A 60%+ removal rate of total nitrogen is common without any type of re-circulation or cycling of the blower.

The final discharge resulting from this process is a clear odourless liquid, which will meet or exceed the required standards set out by the Health and Safety Regulations.

An added benefit to this type of system is the increased amount of Dissolved Oxygen (DO) present in the final discharged liquid. The DO will ensure that the dispersal field maintains a “sweet” condition, and stays healthy and maintenance free for a long time.

ECOPOD – TYPE III SYSTEM.

A TYPE III System will be expected to accommodate specific design criteria where site restrictions or other conditions demands a particular effluent quality.
The effluent quality specified for the Type III system is:

- BOD - 10 mg/l
- TSS - 10 mg/l

Nitrogen Reduction

Nitrification / DeNitrification – ECOPOD SYSTEM

Total Kjeldahl Nitrogen (TKN) is organic nitrogen (NH_3) and ammonia (NH_4+), which in wastewater leaves a domestic residence average of about 38 mg/l with 32% (or 12 mg/l) in the ammonium (NH_4+) form.
Nitrification is an aerobic reaction performed primarily by obligate autotrophic organisms and nitrate (NO_3-) is the predominant end- product. Nitrification can therefore be expressed as:
$NH_4+ \rightarrow NO_2- \rightarrow NO_3-$

De-Nitrification is a biological process performed primarily by ubiquitous facultative heterotrophs. In the absence of O_2, NO_3- acts as an acceptor of electrons generated in the microbial decomposition of an energy (carbon) source. De-Nitrification converts nitrates back to nitrites then to nitrogen gas, which is vented out of the treatment system.

For de-nitrification to occur, nitrogen must usually be in NO_3- form and an energy (carbon) source available. Therefore, nitrification must occur before **de**-nitrification.

The nitrification occurs in the aeration chamber and by cycling the effluent back through the trash chamber (anoxic), creating the conditions for de-nitrification.

This type of systems is usually a project-by-project design, however there are commonalities or certain characteristics that distinguish this category of design.

The treatment process is, essentially, the same as in a Type II system, using Extended Aeration and ECOPOD Fixed Media technology, however the size and number of tanks involved will increase with the effluent quality demanded.

Typically, a Type III system will have larger capacity for primary settling, additional filtration and / or backwash capabilities as well as a disinfection unit(s) added before the final discharge.

The disinfection can be accomplished by chlorination/de-chlorination, Ozone treatment, or Ultra Violet Light. The U.V. light being the most common.

MAINTENANCE

The basic Maintenance Requirements for the TYPEIII are similar to the TYPEII system . However, the disinfection unit, filtration system, and/or other added features, depending on the type, will be specified on a project basis. Any further maintenance necessary will be outlined in he accompanying literature

I cases where a UV Light Unit is used, the lamp should be changed once a year, for the unit to stay efficient.

The TYPE III SYSTEM can be installed in vertical tanks similar to the Whitewater system or be arranged into one (1) horizontal cylindrical tank, containing all components of the system, becoming a single unit system.

Service / Maintenance Considerations

The ECOPOD system has been designed and built to provide long term, reliable and efficient service. Once the unit has been installed, it will operate with a minimum of attention.

To properly service the system the following requirements should be available:

- Certified Maintenance Provider
- The Operation and Maintenance Manual
- Maintenance Log

Maintenance Log should consist of the following:

- Name, address and date of installation
- Type of system, treatment, pumps, and disposal method
- Capacity of the system
- Reason for call; routine, alarm, odour, or malfunction
- Scheduled pump out

These procedures must be followed during each service call:

- Observe warning devices, which comes on when the power to the air pump has been disrupted or when the air supply system has malfunctioned.
- If the alarm is activated, check for a blown fuse or thrown circuit breaker.
- Check air pump to be sure it is operating
- Check the treatment plant for offensive odours.
- Clean the air pump's intake filter(s) using warm water. Ensuring that the filter is completely dry before replacing it in the pump, if necessary dry with hair dryer.
- Inspect and make all necessary adjustments of the mechanical and electrical components as needed to ensure proper operation.
- Check effluent quality by visually inspection for colour, turbidity, and scum overflow.
- If any improper operation is observed, which cannot be corrected at the time of the service call, the user shall be notified immediately in writing of the condition and an estimated date and, if any, cost of correction

TROUBLE SHOOTING GUIDE FOR THE ECOPOD TREATMENT UNITS

AIR SUPPLY MALFUNCTION

1. - Check to be sure air distribution is working properly. There should be bubbling activity evenly across the reactor chamber surface. A septic odour (like rotten eggs) could mean that the system is not getting enough air. The air distribution is not working, partially working or working very little (slight or no bubble action) if so check the following:

A. Check to be sure the air blower is working

- Check timer if one is used
- Bypass timer / temporarily connect directly to source
- Check the electrical source
- If electrical source is ok – check service guide on blower unit for trouble shooting information
- Wash air intake filter on blower, ensuring the filter is completely dry before replacing
- Consult manufacturer for servicing information

B. Check for broken or cracked airlines both outside and inside the tank

C. Ants will destroy an air blower. Check to see if there is an ant's nest around the location of the air pump.

D. Air blower should be protected from rising water, and be in a weatherproof location

E. Always check to see if inlet & outlet lines are installed correctly.

INTERNAL ASSEMBLY MALFUNCTION

1. – Check to be sure all internal piping and connections are tight

DESIGN OVERLOAD

1. – The system could be hydraulic overloaded, i.e. more liquid is being introduced into the system than the design allows for

2. – The system could be biologically overloaded, i.e. the influent waste volume is higher than allowed by the design parameters

IMPROPER INSTALLATION OR SETTLING.

1. - The installation procedures provided by the manufacturer must be followed very carefully.

2. - Where ground settling is common, approx. 2" of sand should be placed and tamped at the bottom of the bed

Troubleshooting cont'd

NO HARSH CHEMICALS SHOULD BE ALLOWED INTO THE SYSTEM.

1. – The liquid in the aeration chamber should be the colour of chocolate milk, blue or gray liquid indicates heavy use of detergent or other household chemicals. If the liquid appears sudsy, too much detergent is being used.

2. - Liquid in the clarifier zone should be clear, but scum and debris may appear on the surface. The outlet tee is located 6-8 inches below the surface, and a sample must be taken to determine the correct color of the liquid in the clarifier zone.

3. – Oils grease and fats should be kept to a minimum, grease tends to form in little white balls.

TROUBLE SHOOTING THE ELECTRICAL SYSTEM

1. – Air blower does not run.

   a. Check main service for power
   b. Check breaker and / or fuse, if necessary replace with new of the same rating as is in control panel.

2. – Alarm does not activate when blower is off:

   a. Malfunctioning pressure switch – replace
   b. Malfunctioning light or buzzer – replace

3. – Alarm occurs continuously even when the air blower is running.

   a. Air leak in the main air system or air tubing to pressure switch – repair leak or replace airline
   b. Malfunctioning pressure switch – replace
   c. High water level in treatment plant, - inspect for cause
   d. Electrical short in float switch wire or float switch – repair or replace.

NOTE: Replacement parts are available from Canwest Tanks

CAUTION: Electrical components should always be serviced by certified electrician.

GENERAL COMMENTS

1. Only factory approved equipment can be used for replacement on individual treatment systems

2. If the decision is made to pump out the system, be sure to contact a licensed waste hauler

3. If a persistent problem develops and all items have been checked, contact Certified Installer or Canwest Tanks

BURIAL PROCEDURE
FOR ALL FIBERGLASS TANKS

National Standard of Canada CAN 4-S615-M83 Installation Instructions and Regulations applicable to all tanks supplied by Canwest Tanks & Ecological Systems Ltd.

1. The manufacturer shall supply installation instructions with each tank, which shall include the minimum requirements stated in this section.

2. Reinforced plastic underground tanks shall be handled and installed according to the regulations established by the authority having jurisdiction. In addition, the minimum requirements set forth in this section shall be met.

3. In freezing weather conditions, special measures shall be employed to ensure an unfrozen firm bed under tanks and a compacted backfill free from ice, snow or other frozen material, without the use of calcium chloride. Under such conditions, backfilling shall be completed in one working day.

4. Tanks shall be visually inspected prior installation, for any indication of damage or defect.

5. Excavation shall provide a minimum of 600 mm clearance between tanks and 450 mm between tanks and excavation sides. All rocks, boulders, and any obtrusive materials must be removed from the excavation.

6. Excavation and any de-watering shall be performed in a manner to preserve firm, uniform, foundation support for bedding the tank.

7. Tank shall be embedded in the excavation on a minimum of 300 mm pea gravel or washed crushed stone.

8. Tanks shall be carefully lowered into excavation by use of lifting straps and spreader-bar when necessary and under no circumstances shall chains or wire slings be used around the tanks nor shall any other method of handling be used which may result in damage to the tank.

9. In high water-table areas, tanks shall be anchored by one of the following methods:

A By use of concrete slab under the tank and anchor straps
In case of vertical tanks an Anti-Floatation Flange must be installed on tank

Or

B by use of ground anchors and anchor straps

10. Anchoring shall be engineered based on the tank size, ground cover, water-table elevation, and calculated uplift force on the empty tank. Anchoring shall be accomplished in such a manner that anchor straps are hand tight and are designed and applied so that they do not damage the tank. Tanks shall not be in direct contact with concrete but shall be separated by at least 300 mm (12 inches)of bedding material.

11. The excavation shall be backfilled with pea gravel to a maximum level of 300 mm above the top center line of the tank. Compaction shall not be required.

12. Where pea gravel is not available, washed crushed stone shall be used to backfill the excavation to a maximum level of 300 mm above the top center line of the tank. Compaction shall not be required.

13. Any vehicular traffic passing over the tank or passing within a distance of 3 meters from the outline of the tank shall void the warranty and may damage the tank unless installed to 14.

Burial Procedures cont'd

14. A tank that is likely to be subjected to vehicular traffic shall be installed so that the top of the tank is, in addition to the 300 mm (12") of backfill, covered with either of

- minimum of 150 mm (6") of backfill material plus 150 mm (6") thick reinforced concrete.

Or of

- minimum of 460 mm (18") of backfill material plus 200 mm (8") thick un-reinforced concrete or asphalt.

In conditions of high water table and vehicular traffic, the tank must have a minimum of 900 mm (36") of specified backfill material and either 200 mm (8") of asphalt or 150 mm (6") of reinforced concrete.

In all cases, the cover slab of either concrete or asphalt shall extend at least 3 meters, in all directions from the outline of the tank.

15. Pea Gravel is a naturally rounded aggregate 6 mm in nominal size (ranging from 3 to 20 mm , clean and free flowing)
Crushed Stone is angular material with a particular size of not less than 3 mm nor more than 13 mm diameter and clean.

Warranties,

Canwest Tank & Ecological Systems Ltd. provide a warranty for all tanks manufactured by Canwest Tanks for a period of 2 years, this covering materials & workmanship to any part of the system.

This warranty does not cover any damage that may occur during transport, off loading, storage, installation into excavation, back filling or any subsequent unauthorized / unintended usage resulting in failure of equipment and/or expected effluent quality.

All equipment shipped must be visually inspected before off loading and any indications of damage, missing components or parts must be reported to Canwest Tanks within 24 hours.

In the event that damage is evident or suspected, the system shall not be installed / buried, until it has been assessed by Canwest Tanks' personnel, or a representative appointed by Canwest Tanks & Ecological Systems Ltd.

Any repair or other corrective action being undertaken to any of the components, without the expressed consent of Canwest Tank may void warranty.

The Air Blower(s), Effluent Pump(s), Ultra Violet Unit(s) and other equipment / components installed as part of the system, but not manufactured by Canwest Tanks, are covered by the respective Manufacturers Warranty.

APPENDIX "A"

AERATION BLOWER
&
ELECTRICAL SPEC'S

INSTALLATION OF AIR BLOWER SYSTEM

Mount the control panel in an area such that the alarm can be heard and easily observed. A 3-wire grounded GFI circuit is required for safety. Install a disconnect switch near the panel to visually disconnect the control panel from the power source. All electrical work shall be done according to local code requirements. The control panel must be grounded. Connect the source ground wire to the ground location on the panel.

The control panel contains a fuse or circuit breaker for the air pump. An electrical malfunction in the air pump or wiring to the air pump will cause the fuse or circuit breaker to blow. The control panel also contains a pressure switch, visual and audible alarm.
Loss of air pressure caused by air pump system failure or a high water condition in the treatment plant will cause the alarm to sound and the red visual alarm to illuminate.

Attach control panel to suitable mounting surface using all four mounting holes on back of box.
Use proper screws of sufficient length to ensure a secure and permanent mounting.

Do not place control panel where it can be exposed to water or snow cover, the panel must be placed in a weather proof enclosure or in basement, garage or other suitable location where the alarm features can be observed.

The control panel must never be connected to a circuit that is not properly grounded. Never connect the unit to a non-grounded circuit. If there is doubt have a qualified electrician check for the proper grounding. The control panel must be connected to a 20 amp maximum electrical source equipped with a ground fault interrupter (GFI0 circuit breaker. The standard circuit breaker can be replaced with a GFI circuit breaker which can be obtained from almost any electrical supplier.

Connect the pressure air tubing to the 1/8” barb-fitting in the air piping system. The air tubing should be protected by conduit

Install 2” sched. 40 PVC between air blower and treatment unit. A minimum of 12” ground cover is recommended.

Turn power on to control panel, air pump should start

PUMP SPEC'S

® FPZ, Inc
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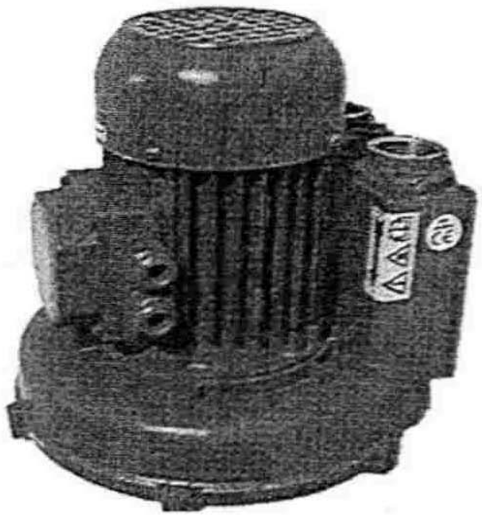
REGENERATIVE BLOWERS
SCL 06

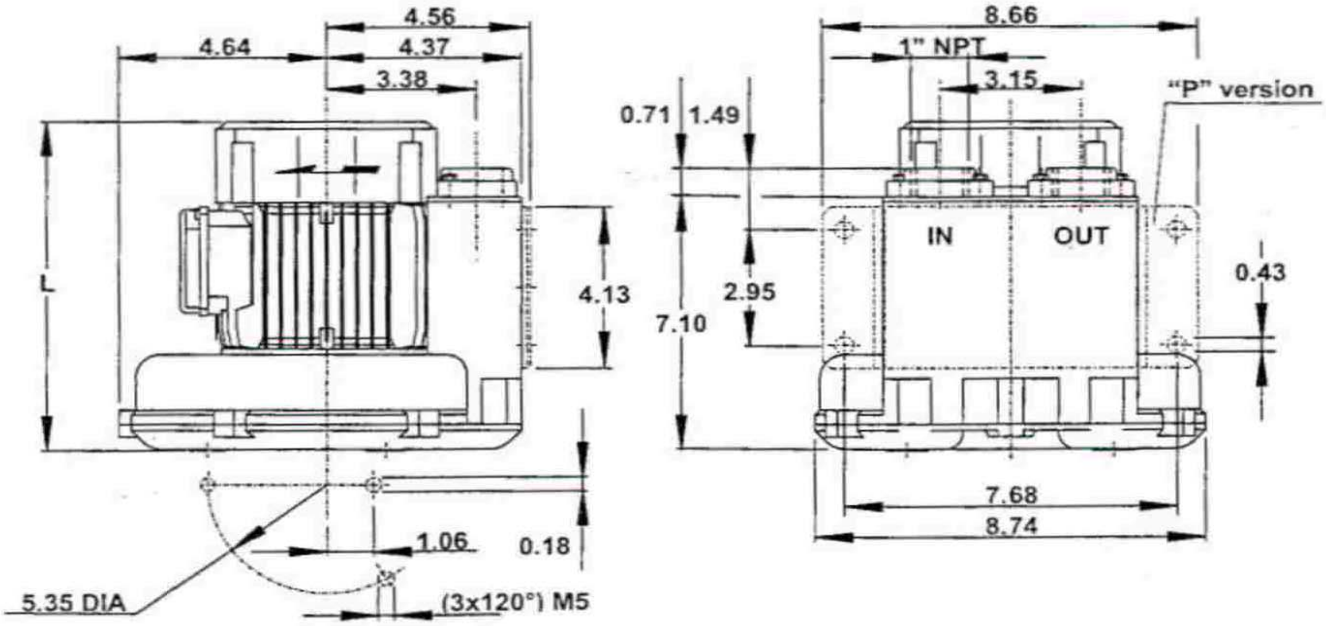
Standard features
- Low weight die cast aluminum construction.
- Quiet operation with integral inlet and outlet muffling.
- Recognized TEFC motor.
- High efficiency / low noise impeller design.
- No lubrication / maintenance required.
- Allowed ambient: +5 °F to +104 °F.
- Mountable in any plane.

Options
- Remote drive models (belt or coupling).
- Special voltages.
- Surface treatment or plating.
- Gas tight sealing.
- Special designs available.

Accessories
- Inlet and/or inline filters.
- Additional inlet/outlet silencers.
- Safety valves.
- Flow converting devices.
- Optional connectors.

Max. continuous operating Pressure	1.9 psig / 52.0 In. WG
Vacuum	3.5 In. Hg / 47.6 In. WG





Dimensions in inches

Motor power	Hp 60 Hz	1/3	1/2
	Hp 50 Hz	-	5/12
L	In.	10.23	10.23
Weight	Lbs.	17.60	17.80

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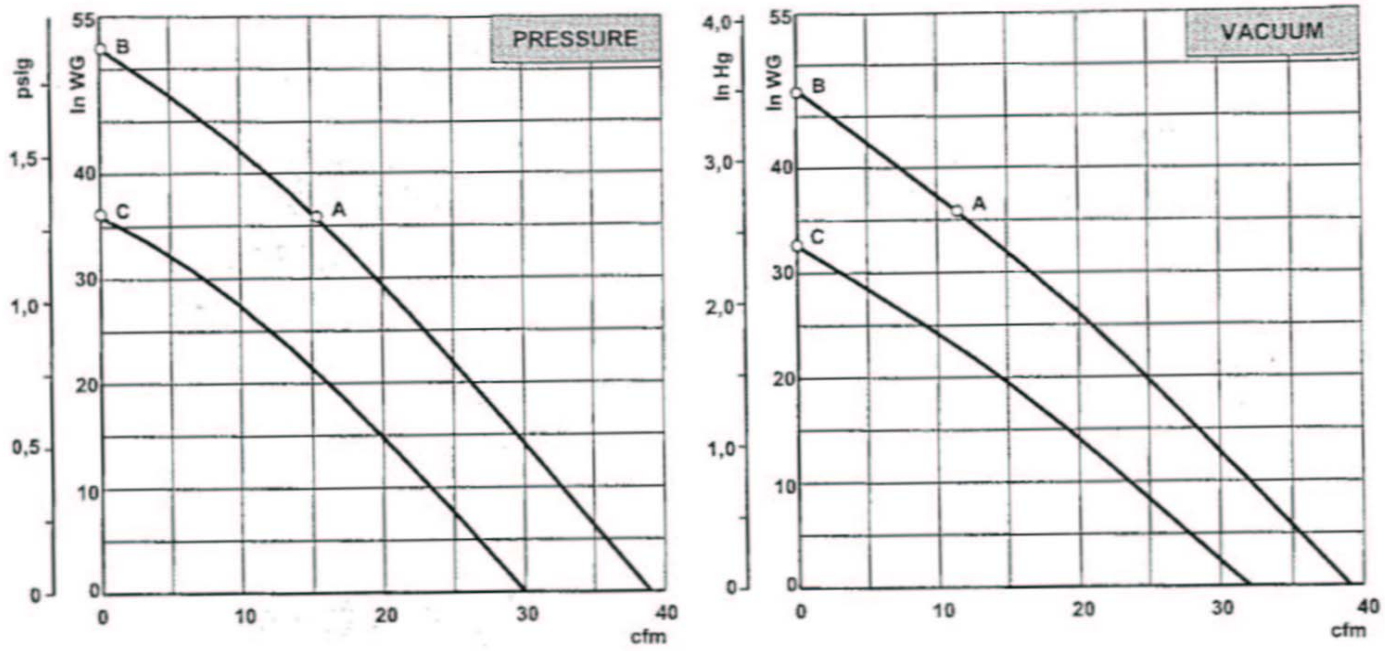

Notes:

- **Curves indicate performance rated for continuous operation.**
- Performance data based on ambient / inlet air temperature of 68 °F and barometric pressure of 29,92 in. Hg
- Performance values may vary by ±10%
- Sound level measured at 1 m distance with inlet and outlet piped.
- Specifications are subject to change without notice.

SCL 06

60 Hz – 3500 rpm				
Reference		**A**	**B**	
Maximum airflow	cfm	39	39	
Maximum continuous pressure	In. WG	36	52	
Maximum continuous vacuum	In. Hg	2.7	3.5	
Maximum sound level	dB(A)	59	59	
Motor horsepower	**Hp**	**1/3**	**1/2**	
Standard voltage	Volt	115 or 208-230	115 or 208-230	208-230/460
Phase		1	1	3
Rated F.L. current	Amps	3,5 or 1,8-1,7	6,6 or 3,7-3,3	2,0-1,8/0,9
Rated locked rotor current	Amps	13 or 6,9-6,3	23 or 13-12	8-7,2/4
Insulation	Class	F	F	F

50 Hz – 2900 rpm			
Reference		**C**	
Maximum volume	cfm	32	
Maximum continuous pressure	In. WG	36	
Maximum continuous vacuum	In. Hg	2.4	
Maximum sound level	dB(A)	58	
Motor horsepower	**Hp**	**5/12**	
Standard voltage	Volt	230	200/400
Phase		1	3
Rated F.L. current	Amps	3,3	2,0/0,9
Rated locked rotor current	Amps	12	8/4
Insulation	Class	F	F

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