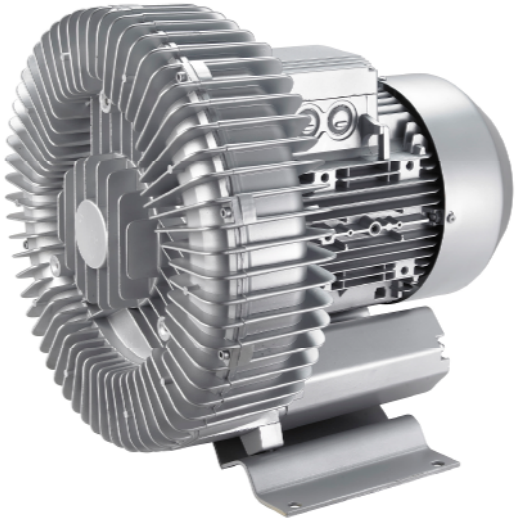
INSTALLATION AND MAINTENANCE INSTRUCTION MAN UAL

VACOM SIDE CHANNEL BLOWERS



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Please read these instructions carefully before installation of your side channel blower and keep these instructions close to your machine.

USE CRITERIA

- Use only clean and dry air
- Do NOT use flammable or explosive gases or atmosphere that contains such gases
- Operate at 0 C ~ 40 C (32 F ~ 104 F)
- Protect unit from dirt & moisture.
- Protect all surrounding items from exhausted air. This exhausted air can be very hot.
- Particulate material, water vapor, oil based contaminants or other liquids must be filtered out.
- This blower must be installed with the properly sizes inlet and inline filter, gauge and relief valve to protect from dirt and over-heating.
- When use the blower at high altitude or high temperature, please contact us for proper consulting.

SAFETY NOTICE

To insure safe operation we have provided many important safety message in this manual and on products, please read this instruction manual carefully and pay attention to instructions with the following signs:

! DANGER： Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

! WARNING： Indicates a potentially hazardous situation, which, if not avoided, could result in death or serious injury.

Installation

(Electrical Shock Hazard)

- Disconnect electrical power at the circuit breaker or fuse box before installing this product.
- Install this product where it will not come into contact with water or other liquids.
- Install this product where it will be weather protected.
- Electrically ground this product.
- Failure to follow these instructions can result in death, fire or electrical shock.

(Notice of Installation)

- Correct installation is your responsibility.
- Make sure that you have proper installation conditions and that installation clearances do not block air flow.
- Blocking air flow over the product in any way can cause the product to overheat.
- The blower must be installed with the properly sized inlet filter, gauge and relief valve to protect the product from dirt and over-heating.
- Recommended piping should be one diameter larger than the inlet and outlet diameter until piping has reached the working area or at least same diameter as inlet or discharge diameter.
- Metal piping is recommended for the first 5 to 8 feet from the blower on pressure systems.
- Elbows increase friction. Piping one diameter larger than the blower port helps to minimize such losses.
- Pressure or relief valves should be installed in a "T" which is at least one pipe diameter larger than the exhaust's port diameter. For safety reasons, it is high recommended to set the relief valve 10% below the blower's continuous duty rating for pressure or vacuum.
- Exhaust air temperature increases at ratings above 65 C of water and the air is too hot for most plastic piping. Therefore, ,metal piping is recommended. In addition, this piping MUST be guarded and marked "DANGER-HOT-DO-NOT-TOUCH".

1-1 Mounting

- Mounting the product to a stable, rigid operating surface and using the delivered rubber pads. They will reduce noise and vibration.

1-2 Rotation

- From the motor side of the blower, check that the blower is rotating clockwise. (The motor side is marked with an arrow on most models) Proper rotation can also be checked by the air flow at the IN and OUT ports. On blowers powered by a 3-phase motor, incorrectly connecting any two power lines can reverse direction.

1-3 Plumbing

Remove any foreign material (burrs, welding drops, slag, pipe cuttings, excess sealant, sand or lime) from plumbing.
Check motor mounting and rotation before connecting to plumbing. Inlet and outlet are not designed to support plumbing. Remove plugs from the IN and OUT ports. Connect with the pipe and fittings that are the sane size or larger than the product's threaded ports.
Use a relief valve to discharge excess air into the atmosphere.
Install a relief valve to avoid changes in pressure or vacuum that can cause overloading of large blowers. Install an intake filter with a relief valve to prevent foreign material from entering blower if blower is used in a vacuum application in a dirty environment.
In applications where there is high humidity or liquids being used in the process, install a moisture separator.

1-4 Accessories

Install two vacuum gauges, one before and one after the filter, to monitor restriction through filters. As filters become clogged, performance efficiency will reduced. Filters should be checked periodically and replaced when necessary. Install an relief valve to avoid changes in pressure or vacuum that can cause overloading of large blowers. Install an intake filter with a relief valve to prevent foreign material from entering blower if blower is used in a vacuum application in a dirty environment.
In applications where there is high humidity or liquids being used in the process, install a moisture separator. Do not check valves that close with a strong spring. The recommended check valves provide minimal pressure drop, positive sealing and are resistant to the high discharge temperatures of large blowers.

1-5 Motor Control

It is your responsibility to contact a qualified electrician and assure that the electrical installation is adequate and in conformance with all national and local and ordinances.
Select fuses, motor protective switches or thermal protective switches to provide protection. Fuses act as short circuit protection the motor, not as protection against overload. Incoming line fuses must be able to withstand the motor's starting current. Motor starters with thermal magnetic overload or circuit breakers protect motor from overload or reduced voltage conditions. Motors without automatic restart require thermal protection or magnetic over-current cutout to prevent motor overloading from 1-phase in a 3-phase circuit, high starting frequency or jammed blower.

1-6 Electrical Connection

! Electrical Shock Hazard !

- This product must be properly grounded.
- Do not modify the plug provided. If it will not fit the outlet, have a proper outlet installed by a qualified electrician.
- If repair or replacement of the cord or plug is necessary, do not connect the grounding wire to either flat blade terminal. The wire with insulation that is green with yellow stripes is the grounding wire.
- Check the condition of the power supply wiring.

- Do not permanently connect this product to wiring that is not in good condition or is inadequate for the requirements of this product.
- Failure to follow these instructions can result in death, fire or electrical shock.
- This product must be grounded. In the event of an electrical short circuit grounding reduces the risk of electric shock by providing an escape wire for the electric current.
- Check with a qualified electrician or serviceman if the grounding instructions are not completely understood, or if you are not sure whether the product is properly grounded.
- Do not modify the plug provided. If it will not fit the outlet, have the proper outlet installed by a qualified electrician.

OPERATION

! Injury Hazard !

- Install proper safety guards as needed to prevent any close contact with blower suction area.
- Keep fingers and objects away from openings- and rotation parts.
- Product surfaces become very hot during operation, allow product surfaces to cool before handling.
- Air stream from product may contain solid or liquid material that can result in eye or skin damage, wear proper eye protection.
- Wear hearing protection. Sound level from some models may exceed 85 dBA.
- Failure to follow these instructions can result in burns, eye injury or other serious injury.
- It is your responsibility to operate this product at recommended pressures or vacuum duties and room ambient temperatures. Do not throttle discharge or suction pipe to reducer capacity. Throttle will increase differential pressure causing increasing power absorption and working temperatures.

Start Up

Operate blower for an hour and then check:

1. **Ambient temperature -** Check room and discharge air temperatures. Increased room temperatures may require stronger ventilation especially for larger blowers. Exhaust air should 102 C (215 F) for all blowers less than 3.5 Hp. Exhaust air should not exceed 135 C (275 F) for all blowers above 3.5 Hp.

2. **Working pressure and vacuum values** – Adjust relief valve pressure or vacuum setting if needed.

3. **Motor current** – Check that supply current matches recommended current rating on product nameplate.

4. **Electrical overload cutout** – Check that current matches rating on product nameplate.

3 Maintenance

! Electrical Shock Hazard !

- Disconnect electrical power supply cord before performing maintenance on this product.
- If product is hard wired into system, disconnect electrical power at the circuit breaker or fuse box before performing maintenance on this product.
- Failure to follow these instructions can result in death, fire or electrical shock.

! Injury Hazard !

- Product surfaces become very hot during operation, allow product surfaces to cool before handling.
- Air stream from product may contain solid or liquid material that can result in eye or skin damage, wear proper eye protection.
- Failure to follow these instructions can result burns, eye injury or other serious injury.

It's your responsibility to regularly inspect and make necessary repairs to this product in order to maintain proper operation. Make sure that pressure and vacuum is released from product before starting maintenance.
Check filter elements and noise absorbing foam used in mufflers and clean motor and blower after first 500 hours of operation. Replace filter elements and determine how frequently mufflers should be checked during future operation.
This one procedure will help assure the product's performance and service life.
When there is an increase in the differential pressure across the inlet filter it is beginning clog with dirt.
Replace the cartridge when the filter will not come clean.

Relubricating Interval

To relubricate the bearings, the rolling contact bearings and adjacent bearing housing should have the spent grease removed and replaced with fresh grease. About 50 % of the rolling balls should be filled and not more than 65 % of the adjacent bearing housing should be filled.
Sealed bearings, should be replaced within the above conditions with new bearings or as conditions warrant.

Hours of service Per year	Relubricating Intervals
5,000	3 years
Continual Normal Service	1 years
Season Service (motor idle for 6 months or more)	1 year at the beginning of the season
Continuous- High ambient, dirty or moist applications	6 months

Bearing Types

A variety of types and lubricants are used in all (VACOM) blowers. A summary of data is include in Table (Bearing Specification) Regreasable bearings are supplied with a sufficient amount of lubricant at the factory to permit initial operation.
The frequency of replacing the grease depends upon application.

Grease Types

The VACOM blower utilize proprietary lubricants from long experience. These lubricants are available from Esso or Exxon. You can check with your local supplier for a recommended equivalent. (high temperature resistance & high Speed : NLGI N3 Grade) Lubricants of different manufacturers should not be mixed. If changing lubricant types, the bearing and housing should be thoroughly cleaned to remove all lubricant before adding grease from a new supplier.

TROUBLESHOOTING CHART

Problem	Reason	Remedy
Increased sound.	Noise absorbing foam is damaged. Impeller rubbing inside.	Replace foam. Send unit to an Induvac Authorized Service Facility.
Excessive vibration	Damaged impeller. Motor and/or impellor are dirty.	Replace impeller. Clean motor and impeller periodically.
Ambient and exhaust temperature increases.	Motor and/or blower are dirty. Filters dirty.	Clean motor and blower periodically. Replace filters.
Decreased inlet air pressure	Inlet air filter is clogged.	Clean inlet filter. Replace cartridge.
Unit is very hot.	Wrong wiring. Low voltage. Inlet air filter is clogged. Motor and/or blower are dirty. Operating at too high a pressure or vacuum.	Check wiring. Supply proper voltage. Clean inlet filter. Replace cartridge. Clean motor and blower periodically. Install a relief valve and pressure or vacuum gauge.
Unusual sound	Impeller is damaged or dirty. Bearing going bad.	Clean or replace impeller. Send unit to an Induvac authorized service facility.
Motor overload.	Low voltage.	Check power source. Check wire size and wire connections.
Unit does not start.	Incorrect electrical connection or power source. Impeller is damaged.	Check wiring diagram, circuit fusing and circuit capacity. Clean or replace impeller. Install proper filtration.

Ring Blower Part List

Single Stage	Double Stage	Electrical Excution
VC304-100 / VC304-230	VC305-102	3 ph 400V / 50 Hz
VC307-200 / VC307-410	VC307-202 / VC307-220	
VC315-300 / VC316-510	VC311-302 / VC313-320	
VC322-400 / VC322-510	VC315-402 / VC316-420	
VC322-500 / VC322-710	VC322-402 / VC322-420	
VC330-600 / VC330-710	VC322-502 / VC322-720	
VC340-700 / VC340-710	VC330-602 / VC330-520	
VC355-800 / VC355-810	VC340-702 / VC340-520	
/VC355-830	VC340-802 / VC343-720	
VC375-900 / VC375-810	VC355-902 / VC355-720	
/ VC375-830	VC375-1002 / VC375-720	
VC311-1000	VC375-1102 / VC311-820	
VC311-1010	**VC311-1102/** VC311-820	
VC311-1100 / VC385-910	/ VC311-840	
VC315-1200 / VC312-910	**VC315-1202**	
/ VC312-930	VC311-1112	
/ VC315-943	VC315-1212	
	VC315-1302	
	VC318-1402 / VC316-920	
	VC322-1502 / VC320-920	
		1 ph 230V / 50 Hz
VC104-101 / VC104-230	VC104-102	
VC107-201 / VC108-410	VC107-202 / VC107-220	
VC115-301 / VC115-510	VC115-302 / VC111-320	
VC122-401 / VC122-710	VC115-402 / VC115-420	
	VC122-402	

The series that are bulky typed in this schedule are corresponding with the exploded view II, the other series are corresponding with exploded view I.

Number	Description
IHF.001	Bearing
IHF.002	Bearing cover
IHF.003	Plain washer
IHF.004	Space washer
IHF.005	Cheese head screw
IHF.006	Socket head cap screw
IHF.007	Lock plate
IHF.008	Cap bolt
IHF.009	O-ring seal
IHF.011	Spring washer
IHF.012	Mating ring
IHF.013	Disc
IHF.014	Grease nipple
IHF.016	Hexa head bolt
IHF.017	Plain washer
IHF.018	Internal retaining ring
IHF.019	Compensate ring
IHF.020	Spring washer
IHF.021	Sealing ring

Number	Description
IHB.001	Compressor housing
IHB.002	Spring washer
IHB.003	Cap bolt
IHB.004	Spring washer
IHB.005	Impeller
IHB.006	Compressor cover
IHB.007	Eye bolt
IHB.008	Centre section
IHB.009	Threaded rod
IHB.010	cheese head screw
IHB.012	Compressor cowl
IHB.015	Disc
IHB.016	Plain washer
IHB.018	sleeve

Number	Description
MTF.001	Compressor housing
MTF.002	Spring washer
MTF.003	Cap bold
MTF.004	Spring washer

Number	Description
MTB.001	Bearing
MTB.003	Resilient preloading ring
MTB.004	End shield
MTB.005	Cheese head srew
MTB.007	Lock ring

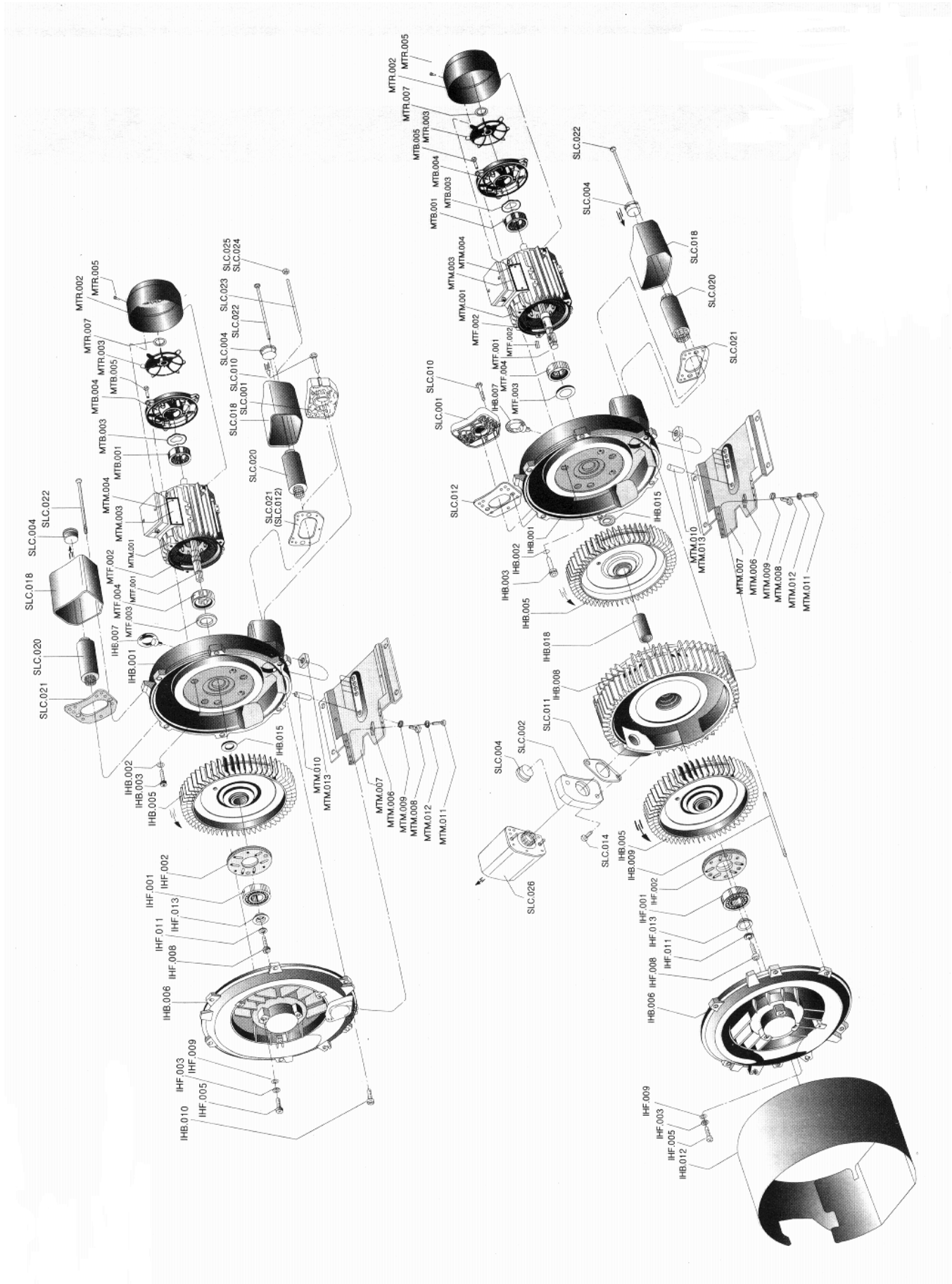
Number	Description
MTM.001	Stator
MTM.003	Rating plate
MTM.004	Screw
MTM.006	Square nut
MTM.007	Foot
MTM.008	Hexagonal head screw
MTM.009	Spring washer
MTM.010	Sleeve
MTM.011	Cap bold
MTM.012	Spring washer
MTM.013	Square nut

Number	Description
MTR.002	Fan cowl
MTR.003	External fan
MTR.004	External fan
MTR.005	Screw
MTR.007	circlip

Number	Description
SLC.001	Plug
SLC.002	Flange
SLC.003	Cap bold
SLC.004	Plug
SLC.005	Hexagonal nut
SLC.006	Graded tube
SLC.007	Graded tube
SLC.008	Clip
SLC.009	Cap bold
SLC.010	Cap bold
SLC.011	Gasket
SLC.012	Gasket
SLC.013	Cap bold
SLC.014	Cap bold

SLC.015	Cap bold
SLC.016	Cap bold
SLC.017	Silencer casing
SLC.018	Silencer casing
SLC.019	Silencer insert
SLC.020	Gasket
SLC.021	Flat head screw
SLC.022	Threaded rod
SLC.023	Hexagon nut
SLC.024	Hexagon cap nut
SLC.025	silencer

EXPLODED VIEW I



EXPLODED VIEW II