

# **SIDE CHANNEL BLOWER SERIES HPE.**

## **INSTALLATION, OPERATION AND MAINTENANCE MANUAL**



**Single stage**



**Double stage in serial**



**Double stage in parallel**

### **INTRODUCTION**



This manual shows the right procedures for the single and double side channel blowers' installation, operation and maintenance. Before start working, please read carefully the instruction written on this manual.

### **SECURITY**

- Inadequate management of equipment can cause serious injury or death.
- The motor terminal box must be opened only after having noted the absence of voltage.
- Use fasteners, joints, pipes, valves and containers of airtightness and resistance enough to the pressure that the equipment can reach.
- The blower includes rotating parts (fan motor, impeller, shaft). Avoid contact with these parts.
- The blower can reach a temperature of more than 100 °C. During and after its operation, take precautions to avoid any accidental contact with the blower.
- If the silencers have deteriorated the sound level of the blower may increase. Use hearing protectors when noise level exceeds 85 dB (A).

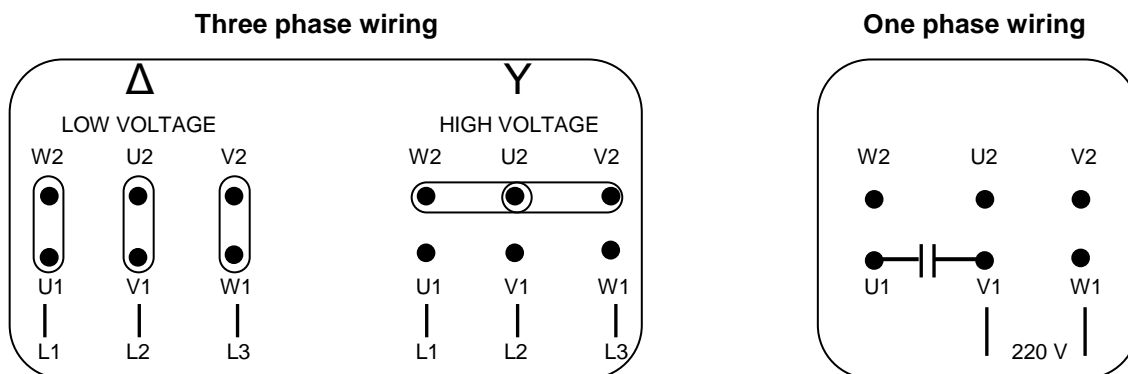
### **GENERAL CONSIDERATIONS**

- Check if any part of the blower has been damaged during the transportation.
- Side channel blowers are used for the transportation of clean air and other non flammable, explosive or aggressive gases.
- Ambient temperature and the temperature of the sucked gas must be between -5 and +40 °C. Relative humidity must be under 80%.
- Side channel blower must not work over the maximum pressure defined by the supplier, otherwise it may be damaged. Adjustable pressure relief or vacuum limitation valve shall be installed to protect the blower.
- We recommend the use of filters applied at the inlet to prevent the entry of materials inside the turbine.
- Side channel blowers can produce vibrations.
- The blower can reach a temperature of more than 100 °C. During and after its operation, take precautions to avoid any accidental contact with the blower.

### **INSTALLATION**

- The blower should be installed in ventilated places. The recommended minimum distance between the blower and the wall should be 50 mm.
- Install the equipment on a rigid and stable surface. Horizontal installation is possible supporting the blower to the ground by its foot, or vertical installation with the compressor cover in the bottom position.
- Avoid contact of water with the engine or electrical components of the blower.
- The rated voltage and frequency must match the information on the plate. A deviation of 5% in voltage and 2% in the frequency is allowed.

- After the installation, turn the blower on briefly and verify that the direction of rotation of the impeller is according the arrow and, therefore, air is sucked and blown by the respective inlet and outlet and not vice versa (see Figures 2, 3, 4 and 5).
- The electrical connection should be done by qualified personnel in compliance with local regulations. Connect earth lines, in order to prevent electrical leakage accident.



Considerations regarding the electrical connection:

- Three-phase star wiring (Y): power supply with the three phases (L1, L2 and L3) must be carried out on the side of the terminal board that has no bridges, regardless of the identification plate showing the terminals (U1, V1, W1).
- Single wiring: power supply with 220 V. must be carried out between the central terminal where the capacitor ( $-| | -$ ) is connected and the pin on the same side that has no cable connected, regardless of the identification plate showing terminals (U1, V1, W1).

The following figures show the general structure of the side channel blower and the direction of rotation of impellers:

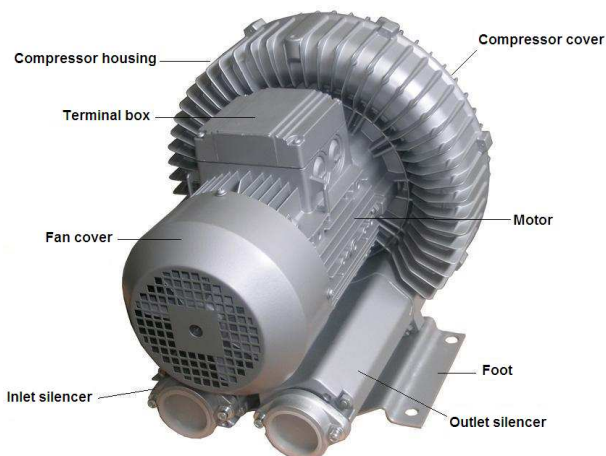


Fig. 1: Side channel blower parts

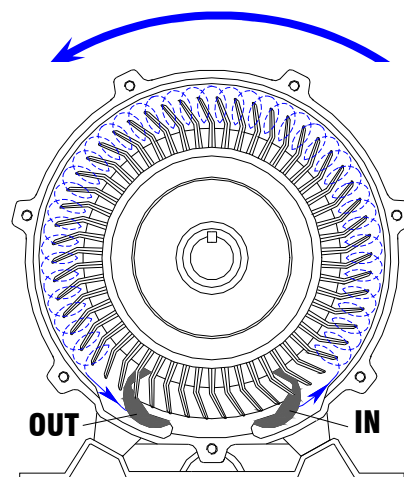


Fig. 2: Rotation and movement of air through the impeller, as seen from the compressor cover.

The following figures show the layout of the inlet and outlet silencers for each type of side channel blower:

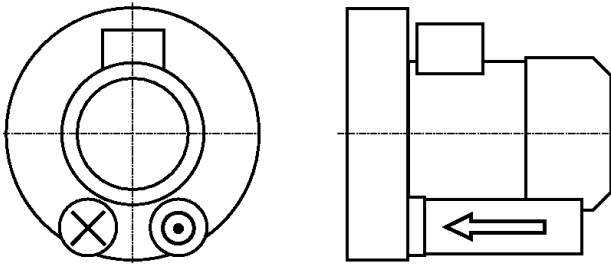


Fig. 3: Single stage side channel blower (one impeller)

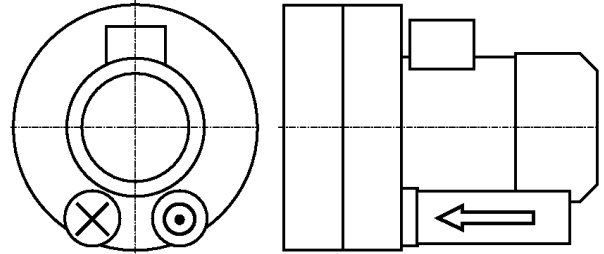


Fig. 4: Double stage side channel blower (two impellers in parallel)

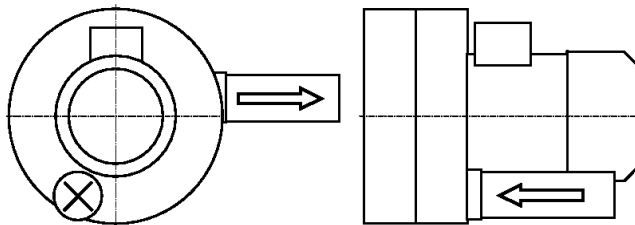


Fig. 5: Double stage side channel blower (two impellers in serial)

**Double stage side channel blowers with impellers in serial are supplied with the outlet silencer loose and it must be mounted by the installer.**

## MAINTENANCE

- The side channel blower is a technical product, please do not dismantle or repair without consulting professional technician to avoid danger.
- Before doing any operation in the blower, be sure that it is switched off and disconnected from the power supply.
- Do not touch the blower until it has reached a non dangerous temperature.
- Clean the inlet and outlet silencers with compressed air, periodically. Substitute silencers when necessary.
- Clean the dust and oil on the blower housing to ensure best heat dissipation performance.
- Check and replace the bearings, periodically. Bearings lifetime depends on several ambient and operation factors, specially pressure and temperature.
- Conveying air with higher moisture may make blower shorter service life, and moist air shall be avoided, if not avoidable, shall inspect blower parts periodically to prevent blower damage or injury occurred due to corrosion problem.
- If damage occurs to blower, please check if the problem is one of the detailed at the following blower problem diagnosis table and try the purposed solutions.

## DIAGNOSOS TABLE

Status	Cause	Solution
Motor does not work; it does not make any sound.	<ol style="list-style-type: none"> <li>Any power supply phase is not connected.</li> <li>Wire disconnected.</li> <li>Electro-magnetic switch broken.</li> <li>Motor coil burn out.</li> </ol>	<ol style="list-style-type: none"> <li>Check power condition.</li> <li>Check wiring connection.</li> <li>Check electro-magnetic switch condition.</li> <li>Send for repair.</li> </ol>
Motor does not work with its current sound.	<ol style="list-style-type: none"> <li>Blower impeller stuck.</li> <li>Bearing locked.</li> <li>Screws loosen.</li> </ol>	<ol style="list-style-type: none"> <li>Clean blower inside.</li> <li>Replace bearings.</li> <li>Check all screws and tighten if loosen.</li> </ol>
Motor RPM not regular, no strange sound.	<ol style="list-style-type: none"> <li>Wrong wiring.</li> <li>Wrong voltage.</li> <li>Motor coil burnout.</li> </ol>	<ol style="list-style-type: none"> <li>Check wiring connection.</li> <li>Check power voltage.</li> <li>Send for repair.</li> </ol>
Motor RPM not regular, blower with strange sound.	<ol style="list-style-type: none"> <li>Impeller deformed or corrosion.</li> <li>Worn bearing.</li> <li>Blower housing damaged.</li> </ol>	<ol style="list-style-type: none"> <li>Replace impeller.</li> <li>Replace bearings.</li> <li>Send for repair.</li> </ol>
Blower noisy.	<ol style="list-style-type: none"> <li>Blower crack from deformation or corrosion.</li> <li>Problems in silencers.</li> <li>Pressure too high.</li> </ol>	<ol style="list-style-type: none"> <li>Send for repair.</li> <li>Replace silencer.</li> <li>Check piping or filter blocked or choose blower with bigger capacity.</li> </ol>
Blower works regularly, but pressure or flow rate is lower than standard.	<ol style="list-style-type: none"> <li>Wrong motor rotation direction.</li> <li>Worn blower impeller.</li> <li>Blocked piping or filter.</li> <li>Worn bearing.</li> <li>Pressure loose or installation leak.</li> </ol>	<ol style="list-style-type: none"> <li>Change motor rotation direction.</li> <li>Replace impeller.</li> <li>Clean piping and filter.</li> <li>Replace bearings.</li> <li>Check or redesign the installation.</li> </ol>

## CONDITIONS OF THE WARRANTY

The duration of the warranty for the side channel blowers is 12 months from the date of delivery (in accordance with the date of the invoice). During this warranty period, the supplier has the obligation to replace or repair pieces or parts found to be defective because of a manufacturing failure, covering those labour costs included in the disassembly and re-assembly of said parts.

Warranted repairs will only be done in the workshops and by the personnel of the supplier. The customer will be responsible for the delivery and pick up of the machine.

The warranty will only apply for the supply of new equipment.

The warranty will not apply if the equipment was not been properly installed, if the equipment has been used in an irregular way, or moreover, if the required maintenance has not be done.

The warranty will not apply if the conditions of use of the equipment have been outside the established parameters, as specified by the manufacturer, examples of which may include but are not limited to the following: use of incorrect power supply, use of non-officially-recognized lubricants, use under inappropriate pressure or operation of the equipment in excessive ambient temperature, which could alter the performance or durability of the equipment.

The responsibility of the supplier is strictly limited to the conditions specified herein and does not include compensating the purchaser of the equipment for any other type of damage to or harm caused by the equipment.