

> operations and
maintenance manual

1. INTRODUCTION

To insure safe operation of your Zepher Vacuum Pump or Air Blower, please read this instruction manual and pay particular attention to instructions market 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.

CAUTION Indicates a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury.

1.1 Application

The Zepher Vacuum Pump or Air Blower is a complete unit, ready for immediate installation either as a vacuum pump or air blower. It is designed for handling air and other non-flammable, non-corrosive and non-explosive gasses only.

1.2 Suction and Compressor Pressure

The drive motor can be loaded to the total differential pressure given in the Technical Data table (available upon request). Vacuum pumps or air blowers with limited performance curves in the high pressure range should be fitted with relative pressure relief valves in order to avoid an overload of the motor. Pressure relief valves can be mounted directly on the outlet and vacuum relief valves can be mounted directly on the inlet.

1.3 Temperature

The maximum permissible ambient temperature and gas temperature at the inlet is 40°C (104°F). For higher temperature use, refer to Zepher uk Ltd.

2. OPERATION

2.1 Transport and Storage

When lifted by crane, Zepher Vacuum Pump or Air Blower must be secured at the eye-bolt on the pump casing. Attention should be paid to the load-bearing capacity of the hoisting equipment.

The bearings should be regreased or should be replaced with new ones if more than four years have elapsed between delivery and machine commissioning under favorable conditions (storage in a dry, dust-free and vibration-free area.) Under unfavorable storage conditions, the bearings should be replaced sooner.

2.2 Installation

Zepher Vacuum Pump or Air Blower can be installed and mounted in any horizontal or face mounted position (Anti-vibration mounts required for face mounting). Quiet vibration-free running is achieved by insuring the blower is mounted or secured onto a firm foundation or structure. Keep ventilation gratings and openings clear. Rotation is clockwise see arrow on diagram 2 overleaf.

WARNING On installation or after maintenance, it is required to check that the blower rotation is correct before returning to service. See arrow on diagram 2 overleaf.

WARNING Do not operate the blower with the outlet/inlet blocked or restricted.

Solid particles and impurities must be filtered and eliminated from the air or gas before entering the blower by installing a filter on the inlet. Open discharge or inlet are to be fitted with protective screens. If the blower is face mounted or close to a wall, a minimum of 30mm (1.¼") clearance must be maintained between the housing and the mounting surface or wall.

On the discharge side, the cover, impeller, silencer housing must not come into contact with flammable materials.

The flow noise is reduced by built-in silencers. In the case of free-gas intake or exhaust, the noise can be further reduced by attaching additional silencers. In order to reduce noise emissions further, the Zepher Vacuum Pump or Air Blower should not be attached or mounted onto components that radiate sound such as thin-wall structural steel or metal plates. If necessary, intermediate sound absorbent material should be included in the installation.

2.3 Electrical Connection

DANGER The electric power must be disconnected before any work is performed on the Zepher Vacuum Pump or Air Blower associated equipment.

The system voltage and frequency must be the same as stated on the Zepher Vacuum Pump or Air Blower nameplate. +/- 5% voltage and +/- 2% frequency variations are permissible without affecting the blower performance. The incoming electrical power should be connected according to the wiring diagram located in the terminal box cover. The protective earth conduction should be connected to the earth terminal.

CAUTION High surface temperatures of more than 70°C (158°F) can occur on the Zepher Vacuum Pump or Air Blower's surface. No heat-sensitive parts such as normal electrical leads or electronic components can make contact with or be attached to the Zepher Vacuum Pump or Air Blower. Warning signs and protective screens must be installed around the Zepher Vacuum Pump or Air Blower surfaces to prevent accidental contact by individuals.

The rated motor currents are based on 40°C gas inlet and ambient temperature. Select motor circuit breakers to match the rated motor current. Zepher Vacuum Pump or Air Blower are suitable for operation on VFD (Variable Frequency Drives). Shielded power leads are recommended to control high frequency currents and voltage harmonics that cause electromagnetic interference.



Exceeding the rated operating speed (2850 rpm), causes increased noise and vibration and reduces the life of bearing lubricant. If the Zepher Vacuum Pump or Air Blower is to operate at higher speeds, Zepher uk Ltd should be contacted.

2.4 COMMISSIONING

CAUTION The Zepher Vacuum Pump or Air Blower must not be operated with the inlet or outlet closed or blocked.

CAUTION If the Zepher Vacuum Pump or Air Blower is started without firstly being bolted to a mounting base, the initial starting torque of the motor may cause the vacuum pump or air blower to move suddenly and possibly topple over.

For safe operation, the following conditions, as a minimum must be followed:

The Zepher Vacuum Pump or Air Blower should be assembled and operated according to the data on the nameplate.

When VFDs are used, operating speeds are not to be exceeded unless the Zepher Vacuum Pump or Air Blower has been specifically designed for VFD operation.

Ensure the Zepher Vacuum Pump or Air Blower is properly assembled (Two Stage) aligned. Rotation test must be checked before connecting any pipework.

Ensure installation elevation is taken into account when adjusting the Zepher Vacuum Pump or Air Blower pressure or vacuum control and relief valves.

Ensure the direction of the Zepher Vacuum Pump or Air Blower is correct. See arrow on diagram 2 overleaf.

Ensure all fastening and bolts and electrical connections are secure.

Ensure earth and equi-potential bonding connections are proper.

Ensure all measures are taken to prevent contact with moving or energize parts.

CAUTION The inlet/outlet must be sited so that no foreign elements are allowed to enter the Zepher Vacuum Pump or Air Blower and/or to be ejected through the exhaust (discharge) outlet. This is a potential hazard for eyes and skin.

CAUTION When air is drawn in from the atmosphere, the inlet must be covered with protective screens to prevent foreign matter from being sucked into the Zepher Vacuum Pump or Air Blower, including parts of the body and clothing.

DANGER Covers which prevent contact with rotating parts are not to be opened during operation.

3. MAINTENANCE

DANGER Before any work is performed on the Zepher Vacuum Pump or Air Blower equipment, you must be approved and authorised by Zepher to carry out such works. the motor must be disconnected from the electrical power supply.

DANGER Do not connect the electrical power supply until the Zepher Vacuum Pump or Air Blower and other equipment have been completely re-assembled.

3.1 Cleaning

The surface of the Zepher Vacuum Pump or Air Blower should be clean and free from dust or any other contaminants. Surface dust can be blown with a low pressure air hose or supply periodically to prevent a build-up of such material. When required by the operating conditions, dismantle the cover from the Zepher Vacuum Pump or Air Blower by removing the screws or nuts from the cover. Do not lose the screws or nuts, they are required for reassembly. Remove and clean the cover. Clean the impeller and the internal portion of the Zepher Vacuum Pump or Air Blower with low pressure air after covering the bearing and bearing grease housing. Be careful not to blow any dirt or contaminants into the bearing grease. If dirt enters the lubrication or bearing, remove the contaminated grease, clean the bearing and replenish with new grease.

WARNING After removing the Zepher Vacuum Pump or Air Blower cover screws or nuts, some parts held with alignment fits can suddenly separate, fall and possibly cause injury and damage to the parts. Care needs to be taken during disassembly to insure all parts are securely held in place.

3.2 Lubrication

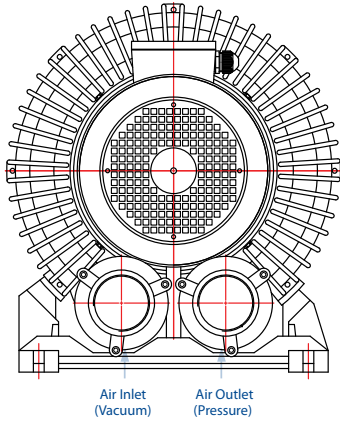
The following applies in conjunction with normal operating conditions (gas inlet and ambient temperature at 40°C and permissible maximum differential pressure). After approximately 20,000 hours or operation, or after two and a half years at the latest, the rolling contact bearings and adjacent bearing housing should have the spent grease removed and replaced with fresh grease. About 50% of the bearing space should be filled and about 65% of the adjacent bearing housing should be filled with fresh grease. Closed (sealed) bearings, should be replaced with new bearings. Their adjacent bearing housing should not be filled with grease. The information given concerning bearing life and grease useful life only applies to normal operation as defined above. For severe duty applications (high ambient and/or operating temperatures, dust or dirty environments will require more frequent re-lubrication. Mixing different types of grease should be avoided. Grease Esso UNI-REX N3.

> PLEASE NOTE: Any suction filter installed to a Zepher Vacuum Pump or Air Blower MUST BE inspected and cleaned at regular periods to prevent any possible damage and performance loss.

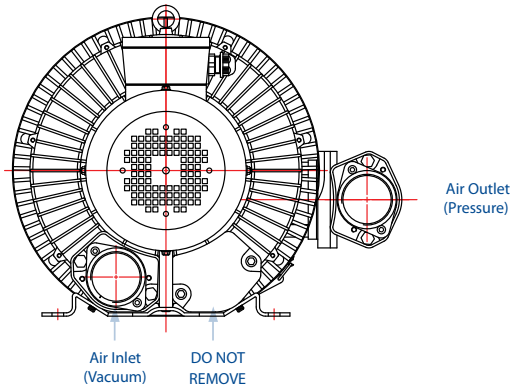
> e: info@zepher-uk.com

> technical helpline: 07753 650624

> Range of Single Stage (diagram 1)



> Range of Double Stage (diagram 2)



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> EC Declaration of Conformity

Conforms to the following directives: 89/336/EEC,89/392/EEC,91/368/EEC,71/23/EEC,93/44/EEC,93/68/EEC

Standards

Electromagnetic Compatibility-
General Emission Standard Part 2.
Industrial Environment.

EN292-1, EN292-2, prEN563,
prEN1012-1, prEN1012-2,
EN60204-1, EN294, EN349,
EN50081-2, EN50082-2

Machinery Directive

89/392/EEC TEC FILE HB-96-001

Low Voltage

73/23/EEC

Council Directive

89/336/EEC

Annex IV EC Machinery Directive

AIB-VINCOTTE Inter n.f.p., Avenue
A. Drouart 27-29, B-1160 Brussels

ISO 9001

Effective October, 2003, Our
Vacuum Pumps & Air Blowers
have been certified as meeting
ISO 9001 manufacturing
standards. This certification
demonstrates our interest in
providing our customers with
the highest quality products
manufactured under
international standards.

ISO Standards

ISO3266, ISO3529, ISO3744