

General conditions for the operation of Piller fans

These general conditions indicate the basic regulations for using Piller fans properly. They are supplemented by the stipulations in the operating instructions where necessary. The details of these conditions are as follows:

- All maintenance instructions shall be observed.
- All safety equipment is to be installed properly.
- Factory settings must not be changed without our approval.
- Only lubricants prescribed by the factory or equivalents may be used. Impurities are inadmissible.
- When the machines are being installed permanently the foundation work shall be executed professionally with due consideration of DIN 4024, Section 2, or equivalent, and the machine attached according to our recommendations.
- Constraining forces by ductworks being connected shall be kept to a minimum, for instance by installing flexible connections (compensators). If maximum support load are stipulated in the general arrangement drawing, it must not be exceeded in any case.
- We accept no responsibility for defects resulting from improper start-up or operation by the end user.
- Exceeding the specified maximum temperatures and speeds even briefly is inadmissible.
- Every care should be taken to ensure that solid materials do not get into the impeller.
- Only the medium (gas components) as specified in the order may pass through the fan. Damages following the use of not specified mediums are not covered by warranty.
- The fans may only be operated in a smooth operating condition. If a vibration monitoring system is used, the alarm and shutoff values specified by Piller shall define admissible bearing vibrations.
- The alarm and shutoff functions shall be carried out with the limit values given in the operating instructions. Operation above the alarm level is only admissible for a short time to analyse the cause of vibration. Sudden deterioration in the vibration values may indicate the machine or part of the machine breaking down and endanger operational safety. The causes must be determined promptly and remedial measures taken.
- Operation of fans without vibration monitoring being installed is only admissible, if vibration severity in the bearing levels does not exceed the figures as given in the documentation. (For solid installation 7.1 mm/s acc. ISO 14694 BV-3; for solid installation 4.5 mm/s acc. ISO 14694 BV-4)
- Changes in the impellers in conjunction with on-site balancing shall be agreed upon with us.
- Gasflow swirl in the direction of impeller rotation shall be avoided. Swirling in the opposite direction is inadmissible.
- Permanent operation is allowed only for the operating points as shown in the order confirmation, in particular an operation at a closed slide valve or closed throttle valve is only admissible for a short time (max. 5 min. for start up).
- At fans with inlet guide vanes all positions are approved for operation except a totally closed position (90° or 0°). Operation with closed inlet guide vane is only permissible for start up. After obtaining the final speed the inlet guide vane must be opened efficient. For applications with pressure increases ≥ 10 kPa the permissible inlet guide vane for permanent operation must not exceed 70°.
- A minimum transport quantity of $0.3 \cdot V_{opt}$ must never be fallen below during continuous operation. When having pressure increases ≥ 20 kPa the minimum transport quantity must be increased to a minimum transport quantity of $0.5 \cdot V_{opt}$. Operating points with pressure increases $< 40\%$ of the design point must be blocked!
- At fans with open suction (no inlet ductwork) the inlet flow must not be disturbed or blocked. Minimum dimensions for a free rectangular area in front of the fan inlet are $a = b = 2.5 \cdot d$ (d = inlet diameter). See DIN 24163.
- Heavy coatings, corrosion and visible wear on the impeller is inadmissible. Preventive measures shall be agreed upon with us without delay.
- Liquid gushing into the impeller and inadequate removal of condensation from the fan casing shall be avoided in any case.
- Should the motor be provided by the customer, we do not guarantee for layout, design and function, as well as for operational safety of the coupling in case of electrical malfunction (see VDI 3840).
- The fan may only be started up when the machine is at standstill.
- At process temperatures above 150°C, a standstill of the fan is not permissible as it can cause bearing damages.
- Temperature gradients higher as 50 °C/min are not permissible, if not agreed previously.
- At parallel operation of fans the operation on the left side of the top of the characteristics must be blocked.

Fans in evaporation plants

- The liquid phase in steam is to be kept to a minimum to protect the impellers. The maximum admissible droplet size is approx. 1 mm.
- Reduce of overheating by jets of water shall be admissible up to the saturated steam conditions on the pressure side.
- The ductwork shall be designed, so that no water puddles can form and long pipe sections with great differences in height in front of and behind the fan are avoided.
- Sealing fluids for the shaft seal must be added cleanly and suitably for operation.