ZIEHL-ABEGG

1. Especificación de producto - Datos técnicos

N.º de artículo	155160
Tipo	FN050-4DW.4I.A7P1
Denominación	Axial fan with sickle blades
Datos de medición	3~230/400V ±10% D/Y 50Hz P1 0.77kW 2.95/1.7A ΔI=0% 1300/min COSY 0,64 70°C 3~230/400V±10% D/Y 60Hz P1 1.10kW 3.3/1.9A ΔI=0% 1400/min COSY 0,81 70°C 3~265/460V±10% D/Y 60Hz P1 1.20kW 3.50/ 2.00A ΔI=0% 1480/min COSY 0,76 70°C
Conexión eléctrica	Terminal box K62
Datos ErP	Measurement category ErP: A Air flow qv on Eta opt: 5638 m3/h Pressure increase pfs on Eta opt: 148 Pa Input power P1 on Eta opt: 710 W Efficiency ηstatA: 33.4 % Efficiency grade: Nactual = 40.7 / Ntarget = 40* *ErP 2015
Tipo de protección	IP54
Clase de aislamiento térmico	THCL155
Tipo de montaje de la caja de bornas	Mounted on Stator
Diagrama de conexiones	1360-106XB
Placa de características	1x fixed
Posición de montaje	H/Vu/Vo
Protección del motor	thermal contact
Impregnación	Moisture and hot climate protection
condensación	Condensation water holes in stator/rotor open
Calidad de los rodamientos	ball bearing with long-time lubrication
Material del rotor	Aluminium
Material de las palas	Aluminium
Tipo de rejilla	ring grill
Otro	All connecting elements in stainless steel.
Otro	Balancing quality G 2,5
Pintura de la suspensión del motor	Motor suspension powder-coated resistance class 2 (L-TI-0585)
Color de la suspensión	RAL 9005 (jet black)
Weight	13.80 kg

** Operation mode:
Continuous operation with occasional starts (S1) according to DIN EN 60034-1:2011-02.
Occasional starting between -40 °C and -25 °C is permissible. Continuous operation below -25 °C only with special bearings for refrigeration applications on request.

Permissible minimum and maximum ambient temperature for operation:
Please refer to the technical documentation of the product for the minimum and maximum ambient temperature valid for the respective fan. Operation below -25 °C as well as partial load operation for refrigeration applications is only possible with special bearings for refrigeration applications on request. If special bearings for refrigeration applications are installed in the fan, please observe the permissible maximum temperatures in the technical documentation of the product.

2. Product Specification - General product and handling description

Operating conditions:

The product is designed for conveying non-aggressive, non-explosive, non-fluid, non-adherent, non-abrasive, dust and particle-free gaseous media, air-like mixtures und air.
The fans/motors are not ready-to-use products, but are designed as components for refrigeration, air conditioning and ventilation systems. The fans may not be operated until they are installed according to their intended purpose.
Operating conditions, including the installation position of the fan, must be clearly specified by the customer, especially in the case of special operating conditions such as a higher risk of condensate formation and higher humidity or for outdoor use. These customer specifications form the basis for product design including selection and assignment of suitable motors. ZIEHL-ABEGG cannot accept any liability for applications and operating conditions not specified to us; the customer is then responsible for taking precautionary measures against failure or damage to the fan.
To provide error-free operation and prevent damage to the product, the product may only be operated in the admissible operating area according to the mentioned data sheets and air performance curves respectively may only be used for the intended application.
The formation of small rusty spots during usage in accordance with the product specification and this general product and handling description can occur. These do not affect the functionality of the product. In case of sendzimir-galvanized components, corrosion at the cutting edges is possible.
The product must never be used in obviously damaged condition.
External magnetic fields are not allowed if their induced eddy currents would decelerate the fan respectively these may lead to an increase in power consumption or to malfunctions in the electronics.
Temperature change speeds of a maximum of 1 K/min are permissible.
When used below -10 °C, it is a prerequisite that the fans are not subjected to any unusual external influences such as impact-like mechanical loads.

The admissibility of operating the fan near of strong heat radiation sources must be checked and approved by the device manufacturer. It must be ensured that the peak temperature of the radiant heat source does not exceed the maximum ambient temperature of the fan (see rating plate). This applies in particular in the event of a fault or when the fan is at a standstill.
The permissible relative humidity is indicated in the assembly and operating instructions.
Condensation in the drive must be excluded.
In case of longer downtimes in a humid atmosphere, the fans must be put into operation monthly for at least 2 hours, at least 80% of the rated speed, to allow any moisture that may have penetrated them or condensation that has formed inside, to evaporate and to redistribute the bearing grease or to avoid standstill markings / bearing rust respectively.
Applications in which the fan runs through several temperature and humidity phases at intervals must be checked and released by the device manufacturer on a case-by-case basis.

Not permissible:

Blocking or slowing down the fan by inserting objects. The impeller may become unbalanced, be damaged and may burst. Danger to life!
Loosening of the impeller and/or balance weights. The impeller becomes unbalanced and the motor bearing life time decreases. Danger to life!
Continuous intentional change of direction of rotation. The motor and the impeller are overloaded.
Reverse current braking. The motor and impeller are overloaded.

AC fans on mains:

The fan is designed for continuous operation S1 according to DIN EN 60034-1:2011-02.
If switching operation (multiple switching per hour) is required, consult ZIEHL-ABEGG stating the planned switching frequency.
Occasional starting between -40 °C and -25 °C is permissible.
Continuous operation below -25 °C only with special bearings for refrigeration applications on request.
The fan may only be operated within the permissible temperature range. Please refer to the technical documentation of the product for the minimum and maximum ambient temperature valid for the respective

fan.

The maximum permissible ambient temperature is also indicated on the fan rating plate, with the following exception: If special ball bearings with “cold grease” lubrication are installed in the fan, the maximum permissible ambient temperature in continuous operation is + 20 °C.
Operation below -25 °C and partial load operation on frequency inverters for cold applications is only possible with special bearings for refrigeration applications on request.
Permissible minimum ambient temperature for operation of 1~ fans with built-in operating capacitor: -25 °C.
For fans with protection class IP55 or higher (protection class according to DIN EN 60529 or DIN EN 60034-4), the existing condensation drain hole must be opened at least every six months.

AC standard fans with frequency converter:

The product only works properly with a suitable frequency converter with integrated all-pole active sine filter. The product can be damaged if it´s used without an all-pole sine filter between the motor and the frequency converter. Voltage peaks and voltage fluctuations can destroy the product. Bearing currents must be avoided.
AC-fans with voltaqe-controllers/phase-cut-controllers:For voltage-regulated motors, note the additional information for the possible current increase with voltage control. With voltage-regulated fans, which are operated at phase cut controllers, an additional current increase occurs due to phase cut control in addition to the current increase due to voltage control. This additional current increase can amount to up to 30% of the rated current and must be added to the normal current increase due to voltage control when selecting and dimensioning the phase cut controller.

EC fans:

The fan is designed for continuous operation S1 according to DIN EN 60034-1:2011-02.
Occasional starting between -35 °C and -25 °C is permissible.
Continuous operation below -25 °C only with special bearings for refrigeration applications on request.
The fan may only be operated within the permissible temperature range. Please refer to the technical documentation of the product for the minimum and maximum ambient temperature valid for the respective fan.
Operation below -25 °C as well as partial load operation for refrigeration applications is only possible with special bearings for refrigeration applications on request. If special bearings for refrigeration applications are installed in the fan, please observe the permissible maximum temperatures in the technical documentation of the product.
For safe operation up to the minimum permissible ambient temperature and to avoid condensation, a continuous power supply must be ensured in refrigeration applications so that the condensation point does not occur due to cooling-down.

Motor protection:

Implement the thermal motor protection depending on the design of the motor and observe the attached wiring diagram.
A) For EC fans:
Relay: Please note the minimum switching voltage of 5 V as well as the minimum current of 100 mA at the relay contact to ensure a reliable switching change.
The maximum voltage at the relay contact must not exceed 380 V AC / 220 V DC. The maximum switching current is 5 A.
B) For AC fans:
The motors can be equipped with temperature sensors "TP" (PTC thermistor), internally connected thermostat switches "TB", outgoing thermostat switches "TB" or can be delivered without thermal protection.
B1) Thermostat switch: Please observe the minimum current of approx. 50 mA at the thermostat switch so that the contact switches permanently and safely. The maximum voltage at the thermostat switch must not exceed 250 V AC or 60 V DC
(Note: all values and especially the maximum switching current of the TB depend on system parameters as cycle of operation and the output current of the monitoring unit. For specific parameters contact our technical support).
B2) PTC thermistor (PTC):
Standard internal rotor motors: Please observe the specifications and application limits, such as maximum voltage, in the operating instructions of the respective motor manufacturer.

External rotor motors: The maximum voltage at the PTC thermistor must not exceed 2.5 V per PTC element.

Thermal motor protection is ensured exclusively by the use of temperature monitors, thermostat switches or PTC thermistors. These motor protection devices must be connected.
If there are no temperature monitors, thermostat switches or PTC thermistors, a motor protection switch must be used. However, motor protection switches do not provide temperature protection for the motors.

Assembly:

The assembly has to meet the requirements of the assembly instructions to enable error-free operation. The fans may not be operated until they are installed according to their intended use. The included or supplied guard grille of ZIEHL-ABEGG fans is usually designed according to EN ISO 13857 Table 4 (for persons with a minimum age of 14 years). If the grilles are of a different design, the device manufacturer must take further structural protective measures to ensure safe operation.

Commissioning:

Commissioning must be done by appropriately qualified technical personnel according to the specifications in the operating and assembly instructions.
During start-up check the following:
1. Check the direction of rotation (see rotation direction arrow on the fan blade, impeller base plate or support plates on suction side or rating plate).
2. Inspect the motor bearings for proper operation prior to installation. Check smooth, noiseless running during commissioning, replace motor bearings if necessary.
3. Check for quiet, low vibration operation. Strong vibrations due to uneven running (imbalance), e.g. caused by transportation damage or improper use, can lead to failure.
4. For variable speed fans: If resonance vibrations occur, it is possible to hide certain speed ranges.
5. A-rated sound power levels of over 80 dB(A) are possible.
6. Fans from ZIEHL-ABEGG SE are delivered balanced in accordance with DIN ISO 21940-11 for the appropriate fan category in accordance with ISO 14694. Check the fan for mechanical vibrations after installation. If the limit values of the corresponding fan category are exceeded in start-up, you must have the motor/impeller unit checked by an expert and rebalanced if necessary before continuous operation is permitted.
During commissioning, unexpected and hazardous conditions can arise in the entire installation due to defective adjustments, defective components or incorrect electrical connections. Remove all persons and objects from the hazardous area.
Do not start up the fan until you have read and understood all the safety instructions (DIN EN 50110, IEC 364), safety distances are observed (DIN EN ISO 13857 / EN 60335) and a hazard is excluded.
Acclimatize the fan to the permissible operating temperature range.
The device manufacturer must ensure low-vibration operation. The relevant standards must be observed e.g. DIN ISO 10816.
In the case of applications with external vibrations, the device manufacturer must decouple the fan from the vibration source.
The complete assembly must be checked for resonance by the device manufacturer when installed. For variable-speed applications, the assembly must be checked for resonances over the entire speed range. If excessive vibrations are detected, it must be avoided that the unit and the fan is operated in this resonance. If the fan is operated with increased vibrations, service life will be considerably reduced or a failure can occur.

Temporary decommissioning and longer downtimes:

The fan may only be decommissioned by qualified personnel who, due to their training, experience and instruction, have sufficient knowledge of the safety regulations, the accident prevention regulations and the recognized rules of technology (e.g. VDE regulations, IEC, EN, DIN standards).The fan should be protected from the weather.
In case of longer downtimes in a humid atmosphere, the fans must be put into operation monthly for at least 2 hours, at least 80% of the rated speed, to allow any moisture that may have penetrated them or condensation that has formed inside, to evaporate and to redistribute the bearing grease or to avoid standstill markings / bearing rust respectively.

Only for AC fans: For fans with protection class IP55 or higher (protection class according to DIN EN 60529 or DIN EN 60034-4), the existing condensation drain hole must be opened at least every six months.

Documentation:

In case of defective parts or products or in case of any warranty, it may be necessary to analyses the root cause of the defect.
Therefore, ZIEHL-ABEGG may ask for documentation of proper life-cycle handling according to the operating and assembly instructions and the general product and handling description. ZIEHL-ABEGG may ask for appropriate documentation records in order to assess root cause of the defect.

Maintenance and inspection:

Any maintenance and inspection has to be carried out in accordance with the operating and assembly instructions.
Taking the above mentioned lifetime values into consideration, the fan has to be inspected regularly (see assembly and operating instructions).
The inspection has to include, but is not limited to:

- Inspection for vibration that has not occurred in the past
- Dirt / dust / deposits on the impeller and on the motor
- Integrity of the impeller, firm fixation of the impeller.

If service (e.g. bearing change) is necessary, it has to be considered that the motor-impeller-combination has to be balanced dynamically in two planes according DIN ISO 21940-11.

Packaging, storage and transport:

Packaging, storage and transport must be carried out in accordance with the operating and assembly instructions to avoid product damage.
Avoid impacts and shocks during transport and storage to avoid product damage.
The limit values of ISTA 3E resp. ISTA 3B must be observed during transport. Improper transport can cause damage to fan components such as the motor bearings and accessories which leads to a reduction in product service life and / or functional restrictions.
The device manufacturer must ensure that the vibrations and shocks acting on the fans do not exceed the limit values according to DIN EN 60721-2-2 Category 2M1 when the device is transported with mounted fans.
Observe the weight specifications (see rating plate) and the permissible payloads of the transportation means.
Fans may only be transported protected from the weather, unprotected transport is not permitted. Moisture ingress into the packaging is not permitted.
Transport the fans either originally packed or larger fans using the transport devices provided: holes in support arms, wall ring plates and motor supports.
Pay attention to possible packaging or fan damages.
Store the product in its original packaging and protect it from dirt and weather until final assembly.
When storing, ensure a dry, vibration-free and condensation-free environment. Avoid extreme exposure to heat, cold or humidity. Temperature range for storage and transport see technical data in the assembly instructions. Recommended values: temperature 0 °C to 40 °C, max. relative humidity 60%. Condensate formation inside the product and / or the packaging can lead to product deterioration and must be prevented.
In case of longer storage in a humid atmosphere, the fans must be put into operation monthly for at least 2 hours, at least 80% of the rated speed, to allow any moisture that may have penetrated them or condensation that has formed inside, to evaporate and to redistribute the bearing grease or to avoid standstill markings / bearing rust respectively.
Only for AC fans: For fans with protection class IP55 or higher (protection class according to DIN EN 60529 or DIN EN 60034-4), the existing condensation drain hole must be opened at least every six months. Fans may be stored for a maximum of 1 year. For longer storage periods, the fans must be turned by hand at least 30 revolutions per month to avoid damage to the motor bearing. If this has not been done, a pre-damage of the ball bearings must be expected. In this case ZIEHL-ABEGG cannot assume any warranty for the function of the motor bearings. After 2 years storage at the latest, the ball bearings must be replaced before commissioning.

Spare parts:

In all warranty cases repairs have to be carried out by ZIEHL-ABEGG. In all other cases spare parts shall meet the specifications of the original installed parts to ensure error-free operation. Use of original ZIEHL-ABEGG spare parts is recommended.

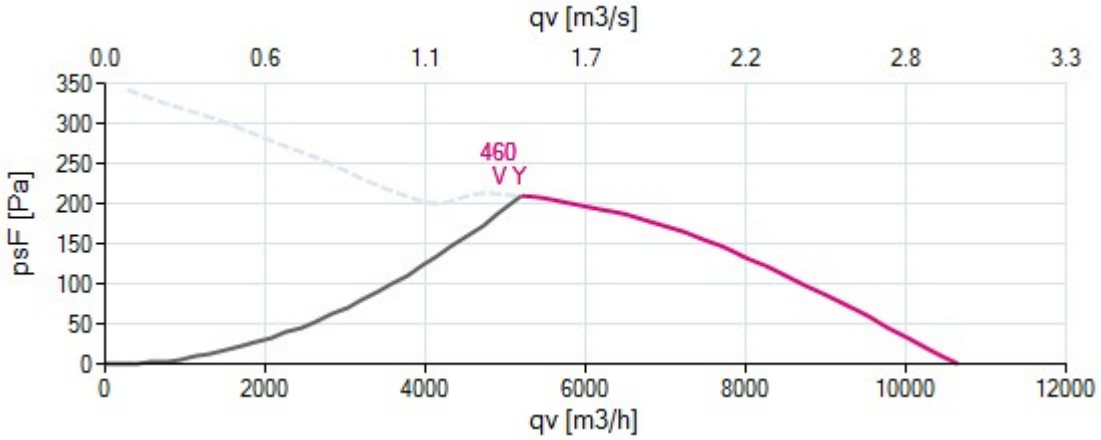
Specific application/Intended purpose:

This product was designed with the above-mentioned features.
Suitability of the product for specific application is beyond the control of ZIEHL-ABEGG.
ZIEHL-ABEGG can therefore neither guarantee nor prove the suitability of this product for the specific application or customer's intended purpose.
The customer is responsible for testing and releasing the product for his intended application.

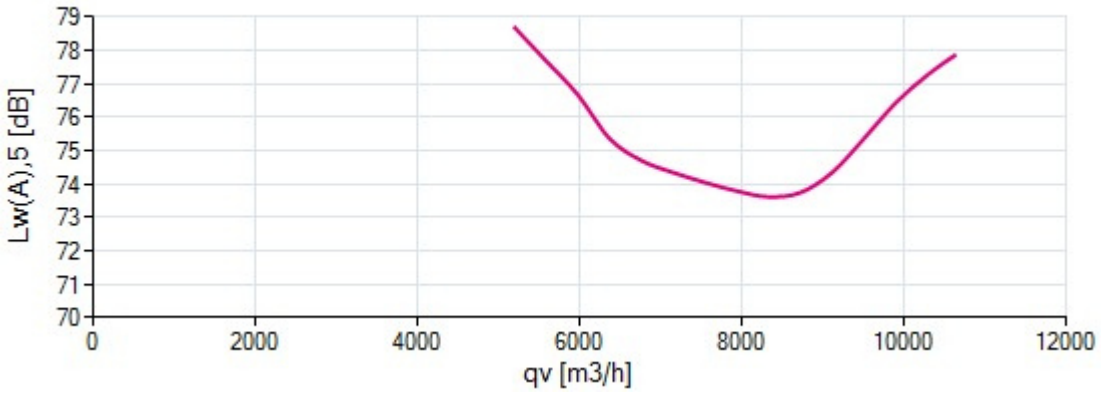
3. Curva característica

FN050-4DW.4I.A7P1	Measured in full nozzle without guard grille in air flow direction V in installation type A according to ISO5801
3~ 460V 60Hz Y	Densidades de medida 1,16 kg/m³

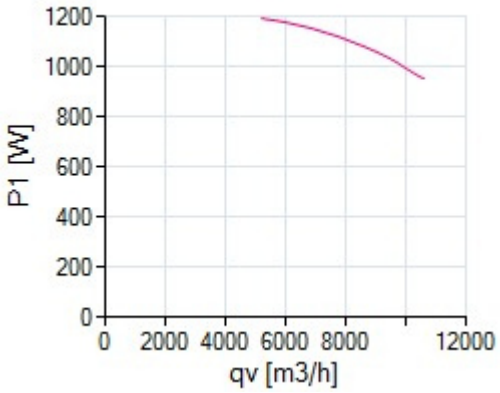
Rendimiento del aire



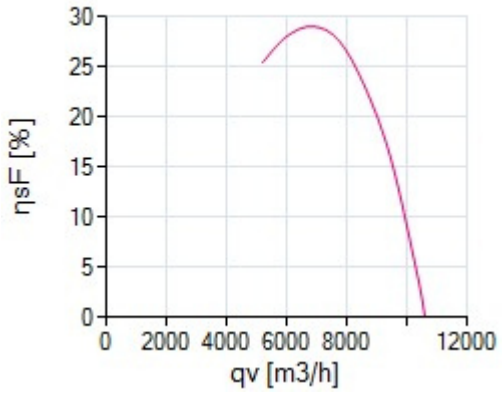
Acústica



Potencia de entrada



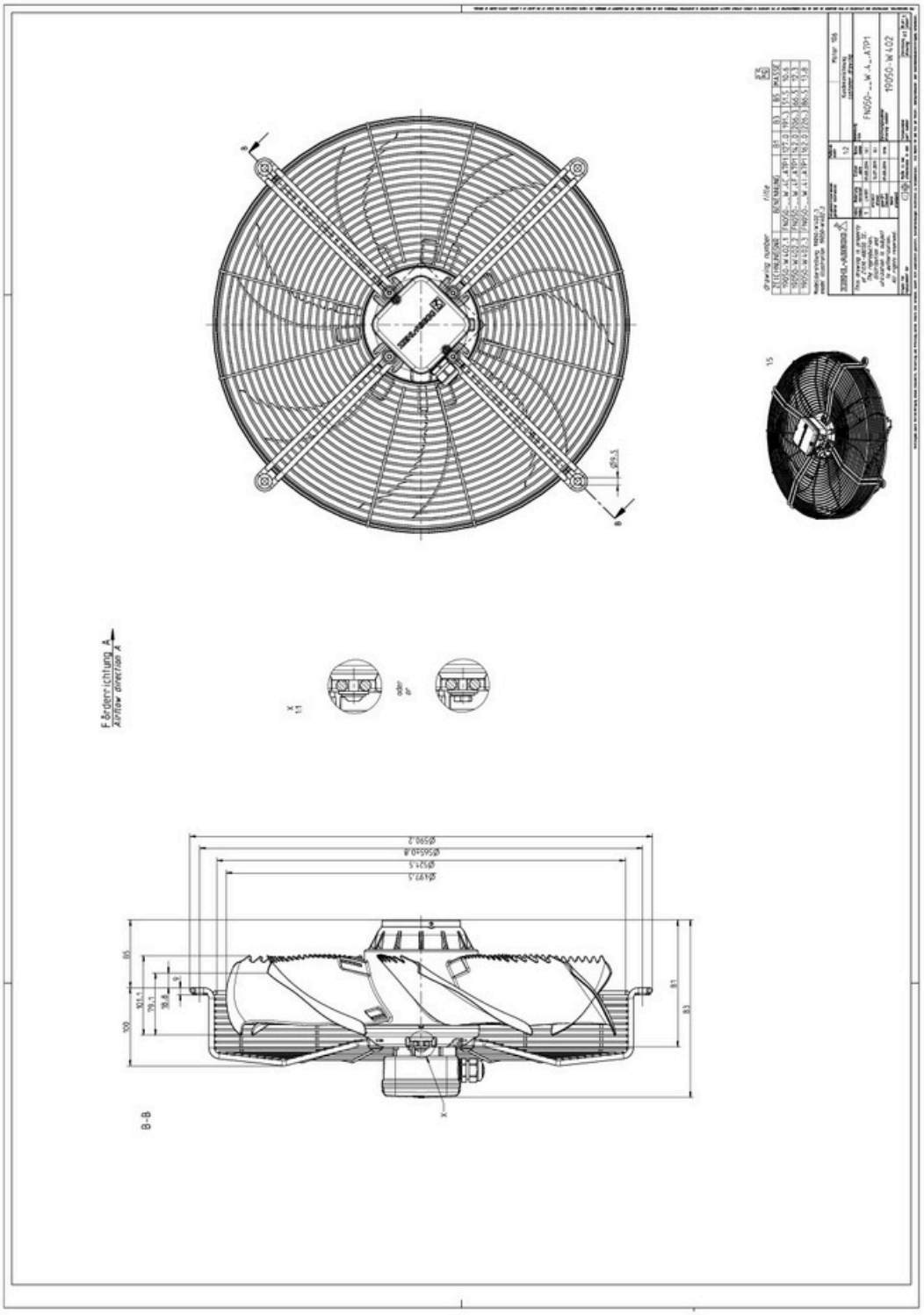
Eficiencia



Please note: It's not allowed to use this fan in the stall area!*

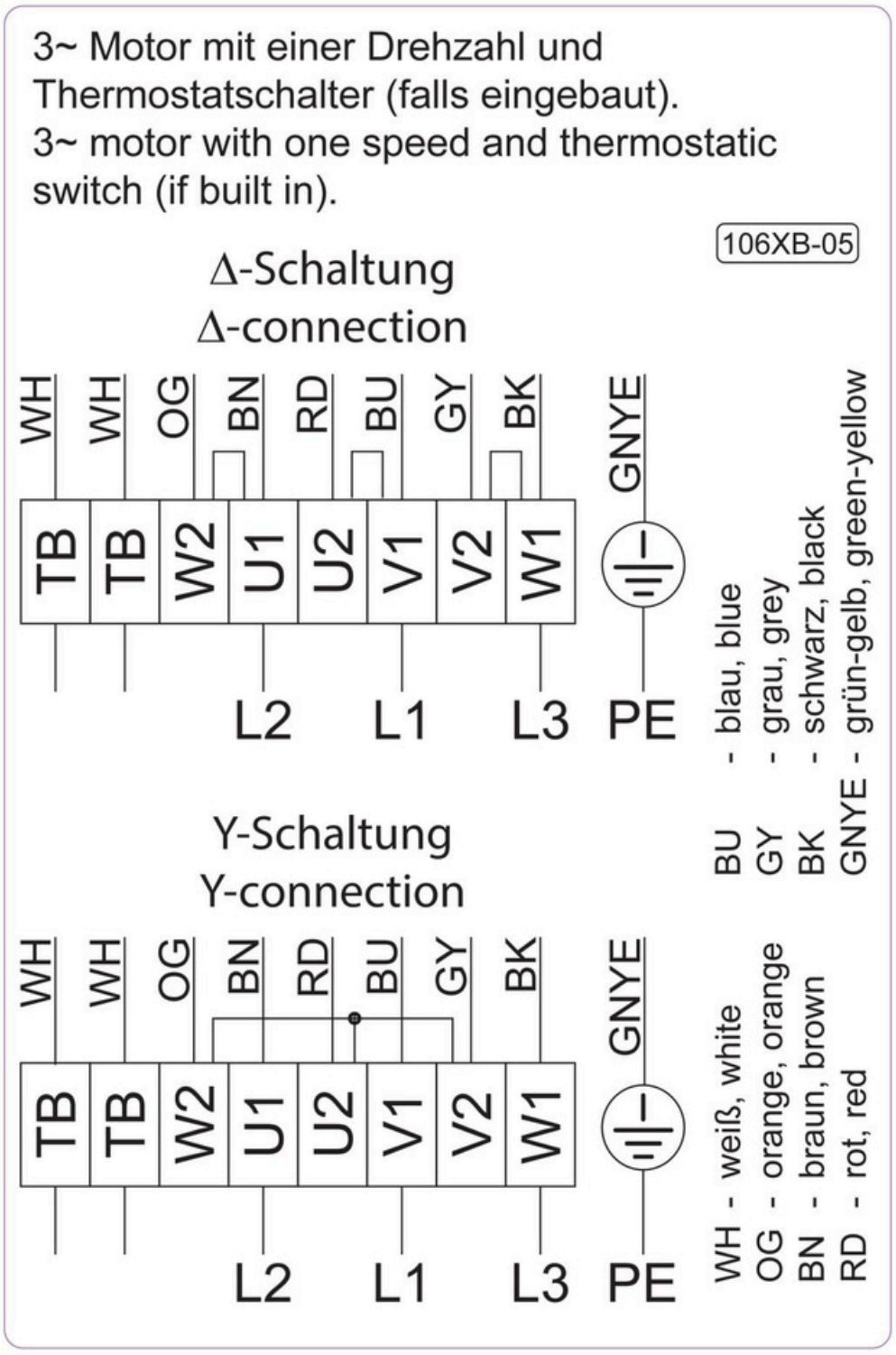
*In doubt please ask your responsible ZIEHL-ABEGG sales contact.

4. Plano



Dimensiones en mm
El esquema adjunto es sólo a efectos de dimensiones.

5. Diagrama de conexiones



6. Deviation list

No customer specification was available. Please note that ZIEHL-ABEGG does not confirm technical requirements beyond this specification if they are not listed in a list of deviations.
In case of special requests/application notes/application notes in the customer order, edit or delete if necessary:
The suitability of the product for sea atmosphere/dishwasher/offshore is beyond the influence of ZIEHL-ABEGG.
ZIEHL-ABEGG can therefore neither guarantee nor prove the suitability of this product for this specific application or the customer's intended use. The customer is responsible for testing and approving the product for its intended use.

Intelligent control technology for any application

ZIEHL-ABEGG system capabilities:
Everything from a single source – perfectly matched for optimal performance

Please contact us. We would be pleased to design an individual solution for your requirements.

We would like to welcome you on our worldwide exhibitions. Please find our next exhibitions here.