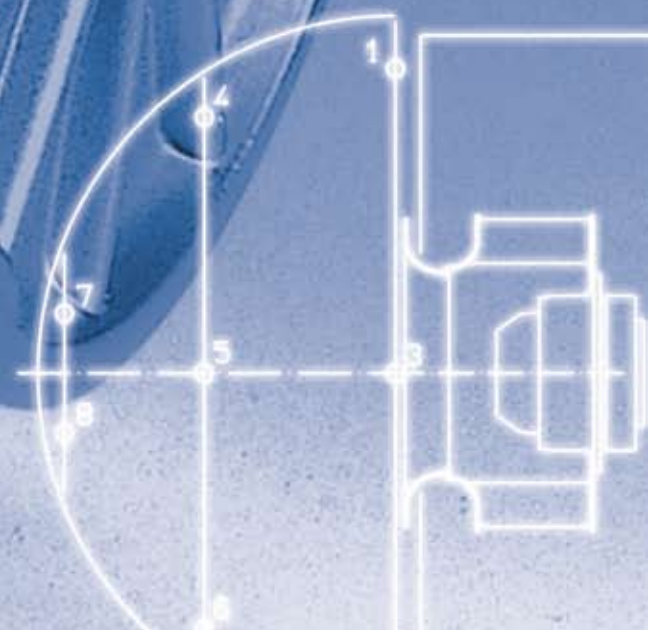


## General notes



# Short cuts, Units of Measure and Conversion Factors

## Short cuts and Units of Measure

Short cut	Unit	Description
$p_{sF}$	Pa / in. wg	Static fan pressure
$P_{d2}$	Pa / in. wg	Dynamic pressure
$q_v$	m³/h / cfm	Volume flow
$n$	min⁻¹ / rpm	Speed
$P_1$	kW	Input power consumption
$I$	A	Current
$I_A$	A	Start-up current
$\Delta I$	A	Percentage increase of current based on rated current for speed control by voltage reduction
$C_{400V}$	µF	Capacity
$t_R$	°C / °F	Max. ambient temperature
$L_{WA}$	dB	sound power level

Symbol acc. to ISO5801 resp. IEC34 and ISO 13347-1

## Conversion Factors

### pressure

SI-Unit	other units			
Pa	mbar	mmWs	in.wg	psi
= 1 N/m²		=kg/m²		=lbf./in²
1	0,01	0,10197	0,004015	0,000145

example: 100 Pa = 1 mbar  $\approx$  10,2 kg/m²  $\approx$  0,4015 in.wg  $\approx$  0,0145 psi

### air volume flow

SI-Unit	other units		
m³/s	m³/h	l/s	cfm
1	3600	1000	2119

example: 1m³/s = 3600 m³/h = 1000 l/s  $\approx$  2118,9 cfm

### temperature

$t/^{\circ}F = 1,8t/^{\circ}C + 32$

# Technical Description

## Fan drive

The Ziehl-Abegg external rotor motor design (ERM) available in three- and single phase are according to the **DIN EN 60 034-1 (VDE 0530 part 1)** which regulates the design of rotating electrical machines.

The nominal voltage for 60 Hz motors are as follows:

- 3~ 460 V  $\pm$  10% 60 Hz
- 1~ 230 V  $\pm$  10% 60 Hz
- 1~ 115 V  $\pm$  10% 60 Hz

## Motor IP class

Standard IP class is **IP54** according to **DIN VDE 0470 part 1 (EN 60529)** category 2.

Motor sizes **MK077 / 085** in **IP44**

## Temperature insulation class

All motors in Temperature insulation class **F** according to DIN VDE 0530 part 1

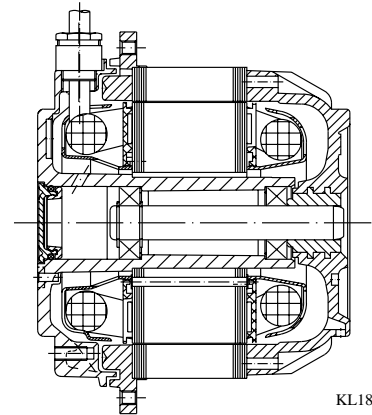
## Bearing design

Ziehl-Abegg motors normally use deep-groove ball bearings in **DIN 625** series which are closed on both sides and which come with high temperature grease for temperature insulation class F. The grease can operate down to -30°C, temporary down to -40°C ambient temperature.

**Caution:** Temperature range for the fan you can find in the scope of delivery for each fan design. Other temperatures on request.

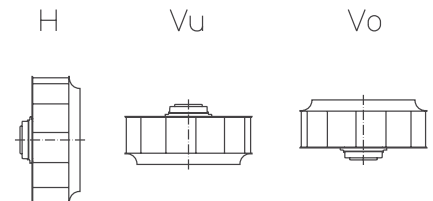
## Mounting position

Motorized impellers with MK motor can be mounted in any position. In position Vo and Vu the condensation hole is open.



Sectional drawing motor design MK

KL1848



Mounting positions H / Vu / Vo

KL1853

# Technical Description

## Electrical connection

RH..M / RH..G with motor size 4 (see type key in the folding up side)

- Supply cable adapter for radial exit with cable length 105 cm

All other RH..M / RH..G

- With cable side

RG..P

- With cable side

Exception: Fans with motor size MK106 (size 4 -> see type key) are mounted on the motor with terminal box

RD..P

- With cable side

For detailed information, please see corresponding dimensioned drawing

RG/RD..S series will be supplied with cable see dimension sheets

## Terminal boxes

Only on request. Must be ordered separately, when not included in delivery.

## Capacitors

1~ motors must be used with capacitor. Capacitor not included in delivery, but can be ordered separately.

## Supply cable

Heat resistant, non halogen rubber-sheathed supply cable 4GMH4G.J with EVA insulation and EVA jacket. The cable design is according to **VDE 0282 Part 804** and is suitable for maximum **690 V**.

The temperature range of -50 to +150 °C.

## UL- and CSA-approved Motors

Ziehl-Abegg Fans can be ordered with UL- and CSA-approved motors.

All catalog part numbers are available as Motor-Recognized Components according to

- UL1004 and CSA C22.2 No. 100-95
- Product Category "Motors PRGY2"
- UL-File E111399

Some 1~ motors in MK085/106 and 137 design can be ordered on special request in „Locked Rotor Design“ according to

- UL 1004, UL 2111 and CSA C22.2 No. 100-95 / C22.2 No. 77-95
- Product Category "Motor Protective Devices Inherent Overheating Type XEWR2"
- UL-File E123518 - „Thermally Protected L“

## Motor protection via thermal contact

Normally all Ziehl-Abegg AC-motors are equipped with thermal contacts (TB) for highest safety demand especially for the following cases:

- Fan controlled via voltage
- Fan operated with increased switching frequency
- Fan exposed to higher ambient temperature than rated
- Fan disabled from rotation, e.g. iced rotor
- Fans with modified situation



Thermal contacts

# Technical Description

## Connection diagrams

### 104XA-02

Direction of rotation: counter-clockwise

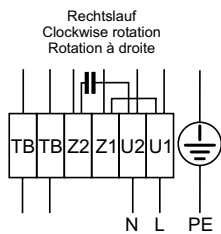
1~Motor mit Kondensator und Thermostatschalter  
(falls eingebaut).

1~Motor with capacitor and thermostatic switch  
(if built in).

Moteur monophasé avec condensateur et interrupteur  
thermostatique (si incorporé).

U1	braun	brown	brun
U2	blau	blue	bleu
Z1	schwarz	black	noir
Z2	orange	orange	orangé
TB	weiß	white	blanc

104XA-02



Anschlusschaltbild im Anschlusskasten aufbewahren.  
Keep wiring diagram in terminal box.  
Conserver le schéma de raccordement dans la boîte à bornes.

### 104XB-02

Direction of rotation: clockwise

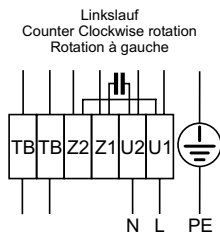
1~Motor mit Kondensator und Thermostatschalter  
(falls eingebaut).

1~Motor with capacitor and thermostatic switch  
(if built in).

Moteur monophasé avec condensateur et interrupteur  
thermostatique (si incorporé).

U1	braun	brown	brun
U2	blau	blue	bleu
Z1	schwarz	black	noir
Z2	orange	orange	orangé
TB	weiß	white	blanc

104XB-02



Anschlusschaltbild im Anschlusskasten aufbewahren.  
Keep wiring diagram in terminal box.  
Conserver le schéma de raccordement dans la boîte à bornes.

### 106XA-02

Direction of rotation: counter-clockwise

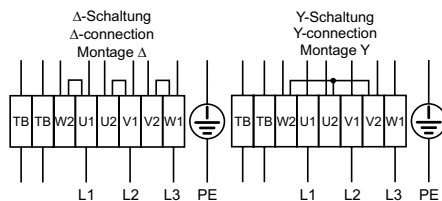
3~ Motor mit einer Drehzahl und Thermostatschalter  
(falls eingebaut).

3~ motor with one speed and thermostatic switch  
(if built in).

Moteur triphasé à une vitesse avec interrupteur  
thermostatique (si incorporé).

U1	braun	brown	brun
V1	blau	blue	bleu
W1	schwarz	black	noir
U2	rot	red	rouge
V2	grau	grey	gris
W2	orange	orange	orangé
TB	weiß	white	blanc

106XA-02



Anschlusschaltbild im Anschlusskasten aufbewahren.  
Keep wiring diagram in terminal box.  
Conserver le schéma de raccordement dans la boîte à bornes.

### 106XB-02

Direction of rotation: clockwise

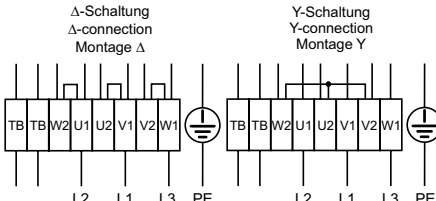
3~ Motor mit einer Drehzahl und Thermostatschalter  
(falls eingebaut).

3~ motor with one speed and thermostatic switch  
(if built in).

Moteur triphasé à une vitesse avec interrupteur  
thermostatique (si incorporé).

U1	braun	brown	brun
V1	blau	blue	bleu
W1	schwarz	black	noir
U2	rot	red	rouge
V2	grau	grey	gris
W2	orange	orange	orangé
TB	weiß	white	blanc

106XB-02



Anschlusschaltbild im Anschlusskasten aufbewahren.  
Keep wiring diagram in terminal box.  
Conserver le schéma de raccordement dans la boîte à bornes.

Rotation is reversed by changing the supply connection of any 2 phases.

Please note the arrow for direction of rotation on the fan scroll.

Speed reduction by voltage reduction is permissible

# Technical Description

## Connection diagrams

### 108XA

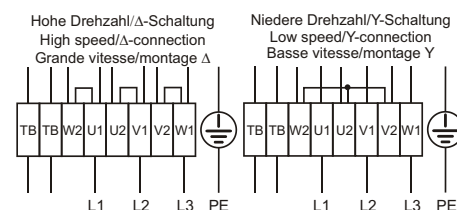
Direction of rotation: counter-clockwise  
3~ Motor mit 2 Drehzahlen( $\Delta$ /Y-Umschaltung) und Thermostatschalter (falls eingebaut). Ohne Brücke bei Verwendung von Drehzahlumschalter.

3~ motor, 2 speeds ( $\Delta$ /Y switch over) with thermostatic switch (if built in). Without bridge when using speed change-over switch.

Moteur triphasé à 2 vitesses ( $\Delta$ /Y-commutation) avec interrupteur thermostatique (si incorporé). Les pièce de connexion sont à supprimer avec l'utilisation d'un commutateur de vitesse.

U1	braun	brown	brun
V1	blau	blue	bleu
W1	schwarz	black	noir
U2	rot	red	rouge
V2	grau	grey	gris
W2	orange	orange	orangé
TB	weiß	white	blanc

108XA-02



Anschlusschaltbild im Anschlusskasten aufbewahren.  
Keep wiring diagram in terminal box.  
Conserver le schéma de raccordement dans la boîte à bornes.

### 108XB

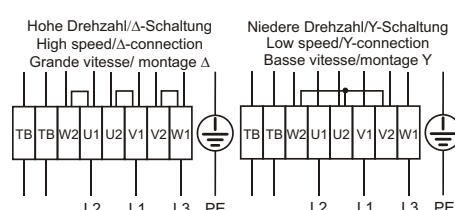
Direction of rotation: clockwise  
3~ Motor mit 2 Drehzahlen ( $\Delta$ /Y-Umschaltung) und Thermostatschalter (falls eingebaut). Ohne Brücke bei Verwendung von Drehzahlumschalter.

3~ motor, 2 speeds ( $\Delta$ /Y switch over) with thermostatic switch (if built in). Without bridge when using speed change-over switch.

Moteur triphasé à 2 vitesses ( $\Delta$ /Y-commutation) avec interrupteur thermostatique (si incorporé). Les pièce de connexion sont à supprimer avec l'utilisation d'un commutateur de vitesse.

U1	braun	brown	brun
V1	blau	blue	bleu
W1	schwarz	black	noir
U2	rot	red	rouge
V2	grau	grey	gris
W2	orange	orange	orangé
TB	weiß	white	blanc

108XB-02



Anschlusschaltbild im Anschlusskasten aufbewahren.  
Keep wiring diagram in terminal box.  
Conserver le schéma de raccordement dans la boîte à bornes.

### 117XA

Direction of rotation: counter-clockwise

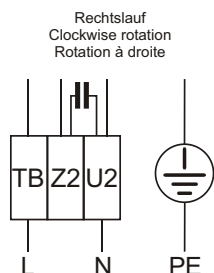
1~Motor mit Kondensator und Thermostatschalter.

1~Motor with capacitor and thermostatic switch.

Moteur monophasé avec condensateur et interrupteur thermostatique.

U2	blau oder grau	blue or grey	bleu ou gris
Z2	schwarz	black	noir
TB	braun	brown	brun

117XA-04



Anschlusschaltbild im Anschlusskasten aufbewahren.  
Keep wiring diagram in terminal box.  
Conserver le schéma de raccordement dans la boîte à bornes.

### 118XB

Direction of rotation: counter-clockwise

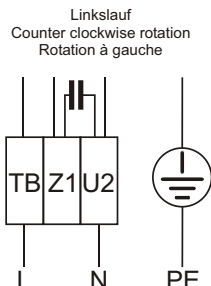
1~Motor mit Kondensator und Thermostatschalter.

1~Motor with capacitor and thermostatic switch.

Moteur monophasé avec condensateur et interrupteur thermostatique.

U2	blau oder grau	blue or grey	bleu ou gris
Z1	schwarz	black	noir
TB	braun	brown	brun

118XB-01



Anschlusschaltbild im Anschlusskasten aufbewahren.  
Keep wiring diagram in terminal box.  
Conserver le schéma de raccordement dans la boîte à bornes.

Rotation is reversed by changing the supply connection of any 2 phases.

Please note the arrow for direction of rotation on the fan scroll.

Speed reduction by voltage reduction is permissible



# Technical Description

## Connection diagrams

### 126XA

Direction of rotation: counter-clockwise

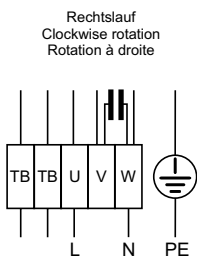
1~Motor mit Kondensator und Thermostatschalter  
(falls eingebaut).

1~Motor with capacitor and thermostatic switch  
(if built in).

Moteur monophasé avec condensateur et interrupteur  
thermostatique (si incorporé).

U	braun	brown	brun
V	blau oder grau	blue or grey	bleu ou gris
W	schwarz	black	noir
TB	weiß	white	blanc

126XA-02



Anschlusschaltbild im Anschlusskasten aufbewahren.  
Keep wiring diagram in terminal box.  
Conserver le schéma de raccordement dans la boîte à bornes.

### 126XB

Direction of rotation: clockwise

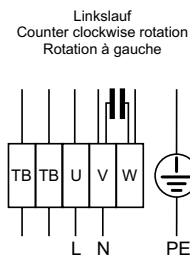
1~Motor mit Kondensator und Thermostatschalter  
(falls eingebaut).

1~Motor with capacitor and thermostatic switch  
(if built in).

Moteur monophasé avec condensateur et interrupteur  
thermostatique (si incorporé).

U	braun	brown	brun
V	blau oder grau	blue or grey	bleu ou gris
W	schwarz	black	noir
TB	weiß	white	blanc

126XB-02



Anschlusschaltbild im Anschlusskasten aufbewahren.  
Keep wiring diagram in terminal box.  
Conserver le schéma de raccordement dans la boîte à bornes.

### 127XA

Direction of rotation: counter-clockwise

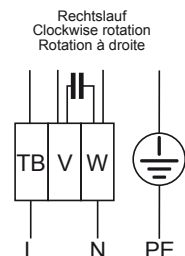
1~Motor mit Kondensator und Thermostatschalter.

1~Motor with capacitor and thermostatic switch.

Moteur monophasé avec condensateur et interrupteur  
thermostatique.

V	blau or grau	blue or grey	bleu ou gris
W	schwarz	black	noir
TB	braun	brown	brun

127XA-01



Anschlusschaltbild im Anschlusskasten aufbewahren.  
Keep wiring diagram in terminal box.  
Conserver le schéma de raccordement dans la boîte à bornes.

### 127XB

Direction of rotation: clockwise

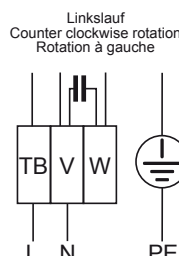
1~Motor mit Kondensator und Thermostatschalter.

1~Motor with capacitor and thermostatic switch.

Moteur monophasé avec condensateur et interrupteur  
thermostatique.

V	blau or grau	blue or grey	bleu ou gris
W	schwarz	black	noir
TB	braun	brown	brun

127XB-01



Anschlusschaltbild im Anschlusskasten aufbewahren.  
Keep wiring diagram in terminal box.  
Conserver le schéma de raccordement dans la boîte à bornes.

Rotation is reversed by changing the supply connection of any 2 phases.

Please note the arrow for direction of rotation on the fan scroll.

Speed reduction by voltage reduction is permissible

# Technical Description

## Connection diagrams

### 159XA-03

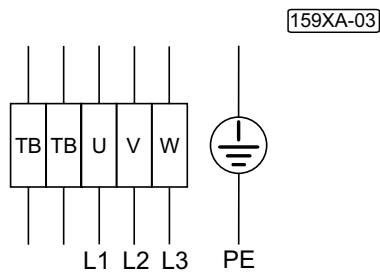
Direction of rotation: counter-clockwise

3~ Motor mit 1 Drehzahl und Thermostatschalter (falls eingebaut).

3~ motor, 1 speed with thermostatic switch (if built in).

Moteur triphasé à 1 vitesses avec interrupteur thermostatique (si incorporé).

U	braun	brown	brun
V	blau oder grau	blue or grey	bleu or gris
W	schwarz	black	noir
TB	weiß	white	blanc



Anschlusschaltbild im Anschlusskasten aufbewahren.  
Keep wiring diagram in terminal box.  
Conserver le schéma de raccordement dans la boîte à bornes.

### 159XB-03

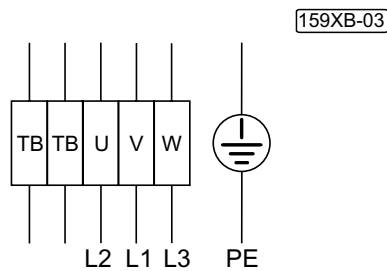
Direction of rotation: clockwise

3~ Motor mit 1 Drehzahl und Thermostatschalter (falls eingebaut).

3~ motor, 1 speed with thermostatic switch (if built in).

Moteur triphasé à 1 vitesses avec interrupteur thermostatique (si incorporé).

U	braun	brown	brun
V	blau oder grau	blue or grey	bleu or gris
W	schwarz	black	noir
TB	weiß	white	blanc



Anschlusschaltbild im Anschlusskasten aufbewahren.  
Keep wiring diagram in terminal box.  
Conserver le schéma de raccordement dans la boîte à bornes.

Rotation is reversed by changing the supply connection of any 2 phases.  
Please note the arrow for direction of rotation on the fan scroll.  
Speed reduction by voltage reduction is permissible



# Technical Description

## Fan characteristic curves

The fan characteristic curve shows the pressure drop  $p_{sF}$  in in.wg as function of the air volume in cfm.

## Explanation

Explanations to the characteristic curves see foldout page.

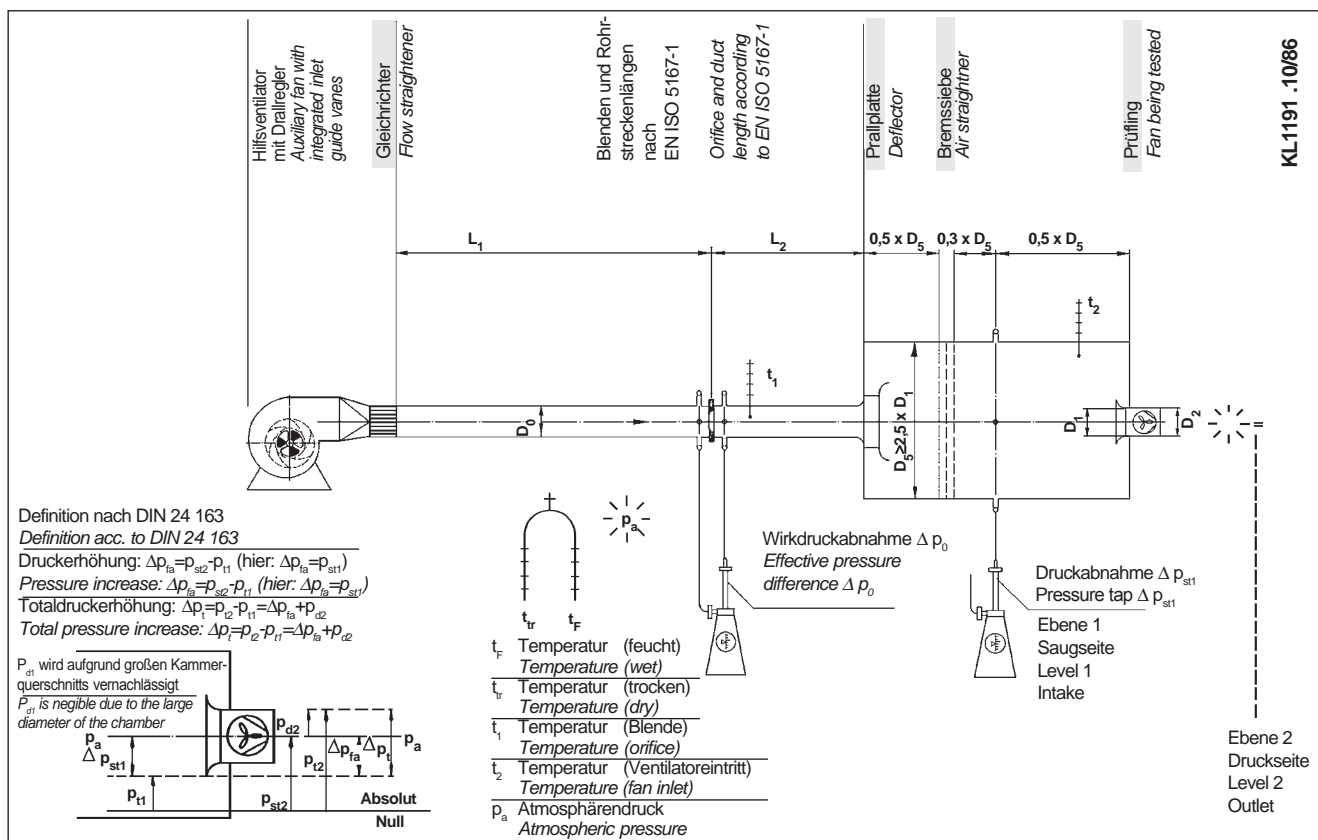
## Technical delivery conditions

The performance data as indicated is according to Precision Class 3 as defined by **DIN 24 166** and are valid for nominal data and characteristic curves by nominal voltage.

## Fan test rig

The fan characteristic curves were measured on a so called suction side test chamber according to **DIN 24 163** Part 2 resp. **ISO 5801**.

The diagram below shows the test configuration. The fan is installed as free sucking and free outblowing on the test chamber. The test assembly is the „in-stallation type A“ according to **DIN 24 163 Part 1**.



# Technical Description

## Noise level data

The suction side A-weighted sound power levels  $L_{WA}$  are indicated throughout in the catalog. Simple relations can be used to calculate the pressure side or the overall sound power level in addition from the values indicated.

The sound measurements are based on the enveloping measurement surface procedure as described in DIN 45 635 and/or ISO 3744, Part 1 (Precision Class 2). In addition to this, the sound pressure level  $L_p$  of the individual third octave bands are measured at 8 points on the surface of the enveloping measurement (Fig. 1a + Fig. 1b). First the sound power levels of the third octave bands, and then the suction-side sound power level  $L_W$  is calculated from the measured sound pressure levels of the third octave bands. The fans are installed to the acoustic chamber in a free inlet / free outlet situation. The measurements take place without any additional accessories such as guard grilles. The measurement devices that are used comply with DIN 60 651 Class 1.

The A-weighting generally takes the frequency dependent sensitivity of the human ear into account by applying different weighting factors to the individual sound power third octave bands. The A-weighted sound power level  $L_{WA}$  is the common property for evaluating the noise behavior of technical devices.

### Calculating the pressure-side sound power level and the overall sound power level.

As a rule, the A-weighted pressure side sound power level  $L_{W,DS}$  for centrifugal fans is about 5 dB higher than for the suction side. The overall sound power level  $L_{W,ges}$  is therefor about 6.5 dB higher than the suction side sound power level. (see notes on the following page).

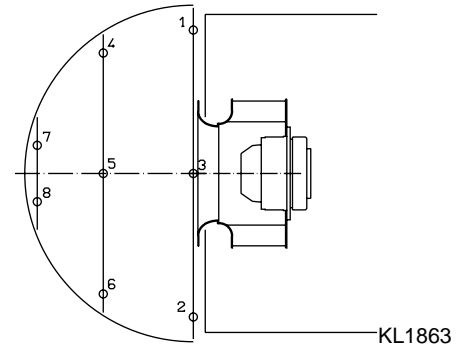


Fig 1a: Position of microphones

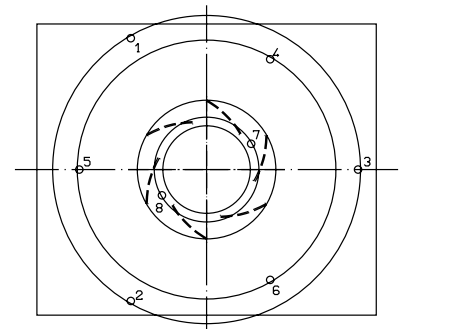


Fig 1b: Position of microphones

# Technical Description

## Noise level data

### Determining the overall sound power level when several sound sources are in parallel usage.

Just as the overall sound power level was calculated as a result of the pressure and suction side sound power levels (illustrated), the overall sound power level of several individual sound sources super-imposed is determined by adding the individual sound power levels as defined by DIN 45635 Part 1 Appendix F. This relationship forms the basis for the diagrams in Figures II and III.

To add several sound sources of the same level, the overall level can be taken directly from the diagram in Fig. II. The combined effect of 6 identical sound sources, for example, results in an overall sound level that is about 8 dB higher.

The overall sound power level of two sound sources with different levels can be taken from the diagram in Fig. III. Two sound sources whose sound power levels differ by 4 dB, for example, result in an overall sound power level that is about 1.5 dB higher than the larger one of the two sound sources.

### Determining the sound pressure level

Based on rooms with an average sound absorption capability, the A-weighted sound pressure level  $L_{pA}$  at a distance of 1 m from the axis of the fan is calculated by subtracting 7 dB from the A sound power level LWA. This assumption is applicable in most situations with sufficient accuracy. The noise behavior can, however, be sharply influenced by individual installation situations.

The decline in the sound pressure level as a function of distance in a partially reflecting environment is illustrated in Figure IV.

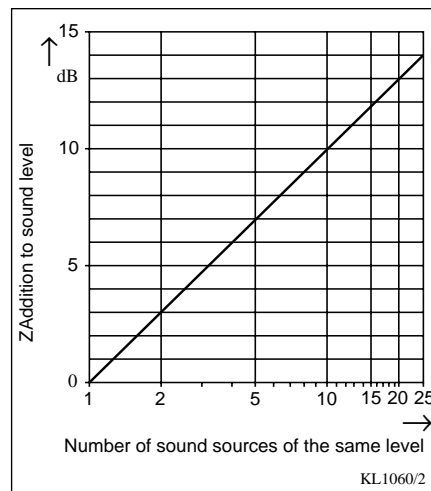


Fig. II: Addition of several sound sources

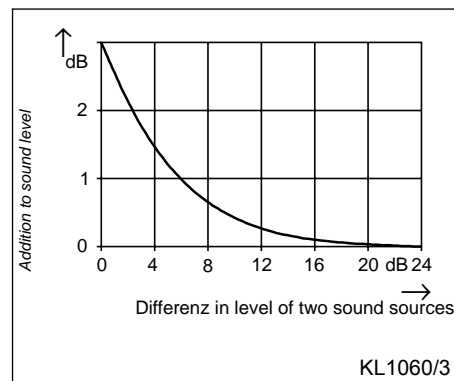


Fig. III: Pegels Sound sources of different level

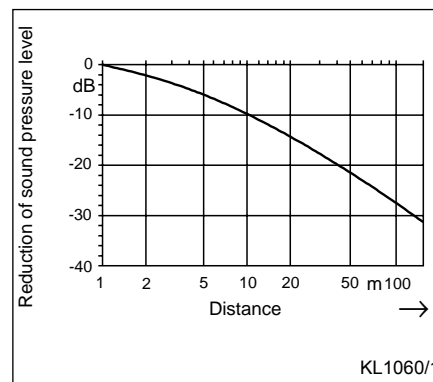


Fig IV: Reduction of sound pressure level with distance

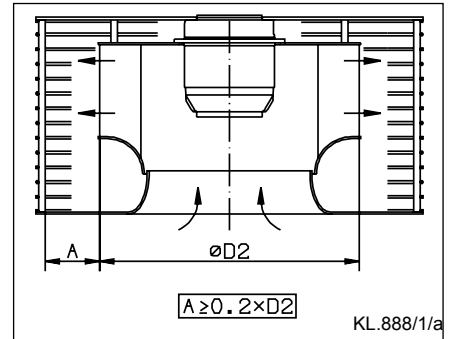
# Technical Description

## Installation and safety instructions

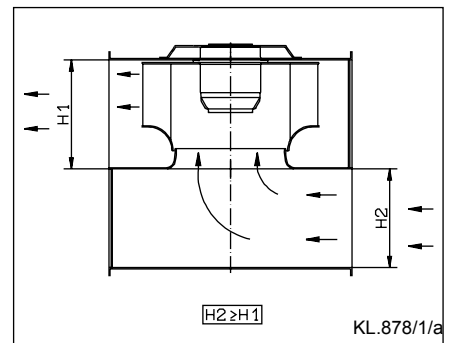
The fans in this catalog are normally used as components and should be only used when installed in a unit and the safety is guaranteed by the manufacturer of this unit according to DIN EN 12100

### Examples for mounting systems

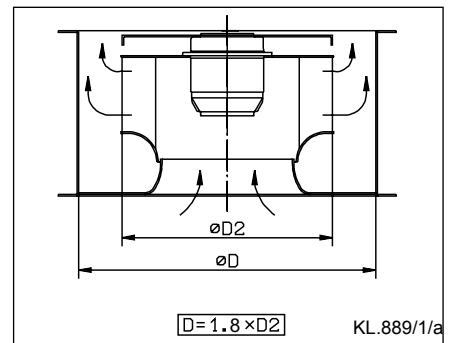
Motorized impeller RH...M / RH...G



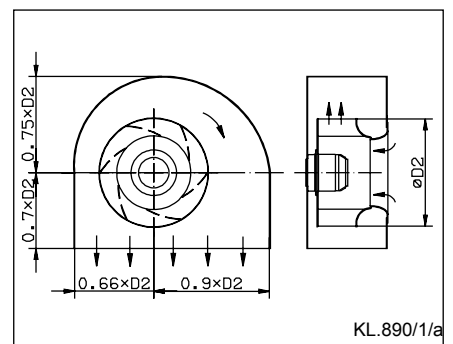
Control cabinet ventilation



Duct fan



Tube fan



Centrifugal fan with semi-spiral housing

# Technical Description

## Fan types

Centrifugal fans of design RG/RD..P and RG/RD..S are designed with scroll housing.

The P/S-series is designed with forward curved blades,

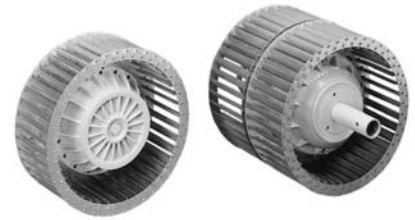
Impellers with forward curved blades - also known as squirrel cage blowers - are characterised by their high power density. This means that, compared with impellers where the blades are backward curved, considerably more air can be drawn and higher pressures achieved using the same construction size and speed.

Due to the high number of blades used for forward curved blades, the noise behaviour of these fans is very pleasing, because of no disturbing noise coming from the turning blades.

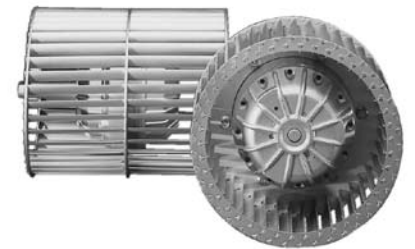
Impellers with backward curved blades have a better efficiency to forward curved impellers.

Motorized impellers of design RH..M with backward curved blades have a high degree of reaction and can therefore be operated without any scroll. If installed in a scroll there is an increase in the static pressure  $\Delta p_{fa}$  to the left of the maximum economical rating (point 2 on the fan characteristic curve), and to the right of the maximum economical rating there is a slight reduction in volume flow owing to the reduction in cross section due to the housing.

Motorized impellers of design RH..G with backward curved blades are low-tonal operating-noise impellers made out of aluminium for use without scroll.



Motorized impellers design RE ..P/RZ..



Motorized impellers design RE..P/RZ..P



Motorized impeller design RH..M



Motorized impellers design RH..G

# Technical Description

## Centrifugal fans Design RG../RD..

The scroll of the **P-design** is made out of hot galvanized sheet metal in trimmed version with outlet flange.  
The fastening angles can be mounted in 3 positions 0°, 90° and 180°.

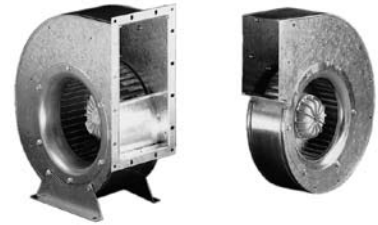
The **S-Design** is supplied in series without an outlet flange and without fastening angles. Various double inlet scroll types of sizes 200, 250 and 280 (see dimension sheets) are equipped with die casted side parts (spiral made of AL steel metal) with integrated inlet ring and motor suspension. Furthermore, all double inlet fans with a built-in motor of design 106 have isolation mounts at the motor shaft.

## Impellers

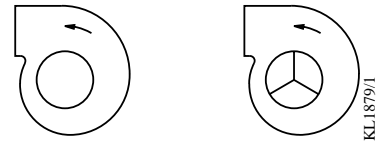
The forward curved impellers, **design P** and **S** are made out of hot galvanized sheet metal in rolled design.

## Balancing quality

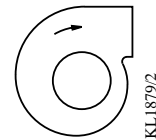
G 6.3 according to **DIN ISO 1940 part 1**.



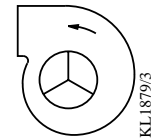
Centrifugal fans single inlet with and without flange



Design RG..S      RD..S  
Direction of rotation:  
RG..S left on suction side  
RD..S left on Electrical connection side



Design RG..P  
Direction of rotation:  
right on suction side



Design RD..P  
Direction of rotation:  
left on Electrical connection side

# Technical Description

## Motorized Impellers

### Design RH..M

Motorized impellers of design RH..M with backward curved blades have a high degree of reaction and can therefore be operated without any scroll. Impellers made out of Al Mg 3 in riveted / welded design.

### Direction of rotation

Clockwise rotation when looking at the inlet of the impeller. In the opposite direction, i.e. impellers with forward curved blades, there is the danger that the motor will overload. It is therefore absolutely necessary to check the direction of rotation before putting the fan into operation.

### Inlet rings

The gap „s“ between the inlet ring and the impeller as well as the overlap ratio „h“ should be about 1% from the outer diameter of the impeller.

## Ventilation unit GR..M

### Design

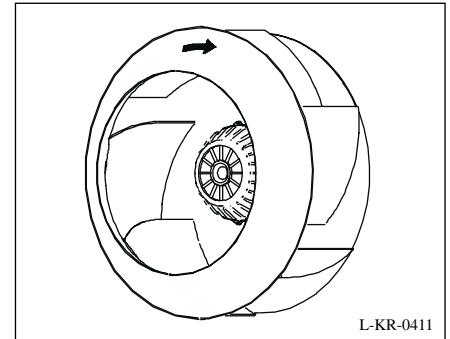
The ventilation unit is based on the motorized impeller design RH..M plus a motor mounting plate made out of hot galvanized steel metal which is screwed onto a plate with integrated inlet ring made out of hot galvanized sheet metal bars made out of aluminium casts.

### Mounting position H

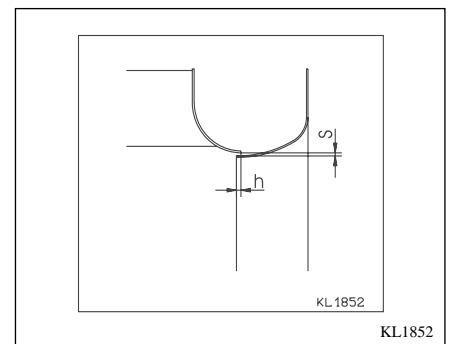
The horizontal mounting position is possible for design up to GR45M. In that design the motor is fixed to the motor plate without any vibration elements.

### Mounting position Vu/Vo

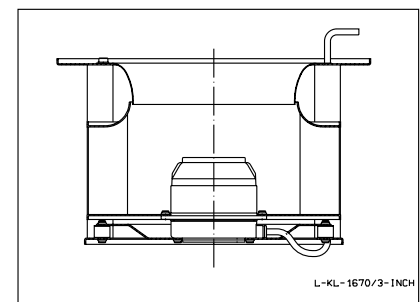
For the vertical shaft mounting position the ventilation units are fixed to the motor plate with anti vibration elements. The elements are installed in that way that they always be pressured loaded.



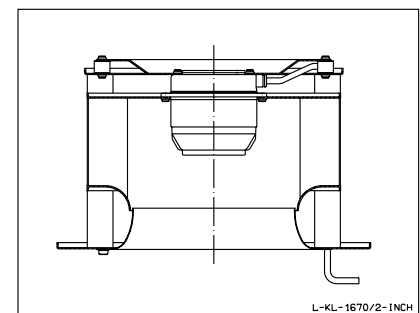
Direction of rotation



Position of the inlet ring



Design GR..M mounting position Vo



Design GR..M mounting position Vu



# Technical Description

## Motorized Impellers Design RH..G

With the G-impeller series with backward curved blades a new energy-saving alternative for noise-sensitive applications compared to centrifugal fans with the classic forward curved blades is available.

In quite a few applications, fans with forward curved blades require a relatively high power consumption. Because of the higher efficiency level, centrifugal fans with backward curved blades show an energy saving alternative. In the past, the use of backward curved impellers, was accompanied with a well-known tonal noise in the low frequency range, caused by the blade passing of the low number of impeller blades. Despite of the low overall noise level of these impellers, the low frequency blade passing noise is generally felt disturbing in practice.

Especially for noise-critical applications Ziehl-Abegg offers the RH-G impeller series with backward curved blades, which does not radiate tonal noise at blade passing frequencies. It combines the advantages in energy consumption and low overall sound power level of the backward curved impellers with a broad band sound spectrum, typical for the forward curved impellers.

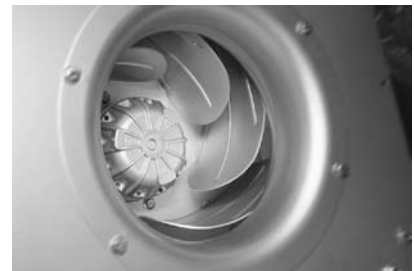
This impeller with its unique acoustic advantages was designed especially for the use in air conditioning cabinets, cooling of sales and office rooms as well as computer centres, the use in the market sector of domestic cooling and heating pumps, as well as the use in fan filter units for clean room production facilities.

### Technical characteristics:

- corrosion – resistant impeller blades made of aluminium
- high efficiency level over a wide operating range
- use as plug fan
- sound radiation free of tonal noise at impeller suctionside as well as at impeller pressure-side



4362\_19



4362\_20

# Technical Description

## Motorized Impellers Design RH..G

### Design

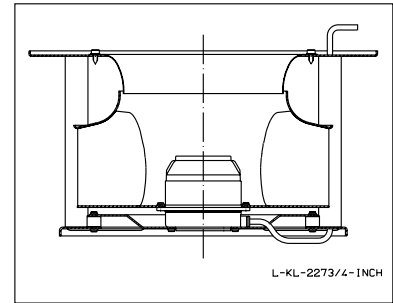
The ventilation unit is based on the motorized impeller design RH..G plus a motor mounting plate made out of hot galvanized steel metal which is screwed onto a plate with integrated inlet ring made out of hot galvanized sheet metal bars made out of aluminium casts.

### Mounting position H

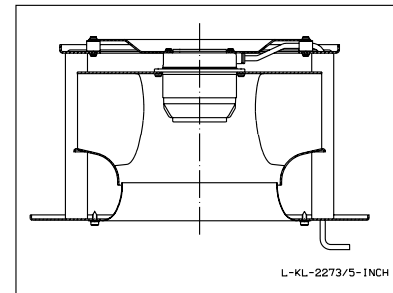
The horizontal mounting position is possible for design up to GR45G. In that design the motor is fixed to the motor plate without any vibration elements.

### Mounting position Vu/Vo

For the vertical shaft mounting position the ventilation units are fixed to the motor plate with anti vibration elements. The elements are installed in that way that they always be pressured loaded.



Design GR..G mounting position Vo

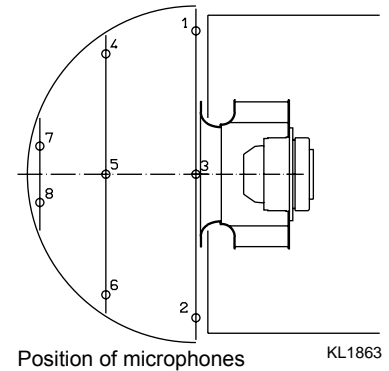
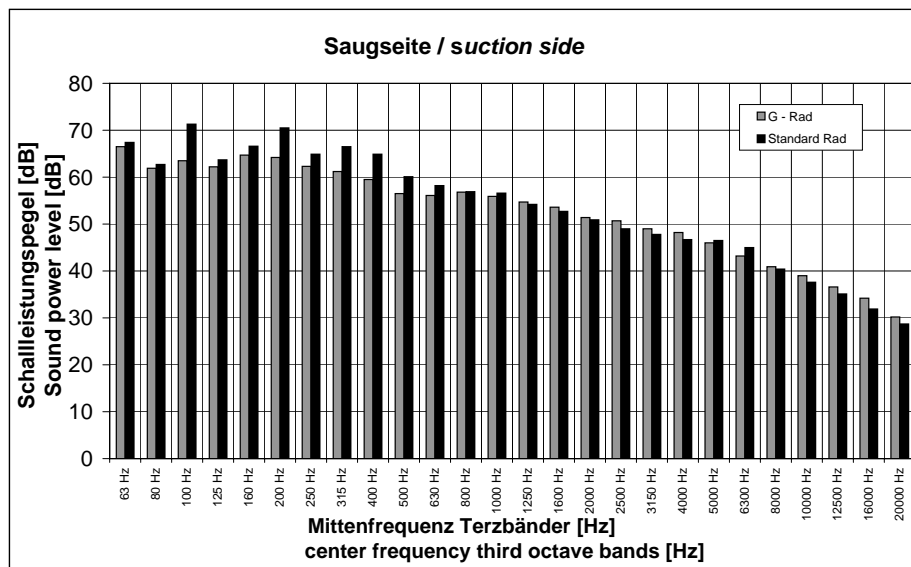


Design GR..G mounting position Vu

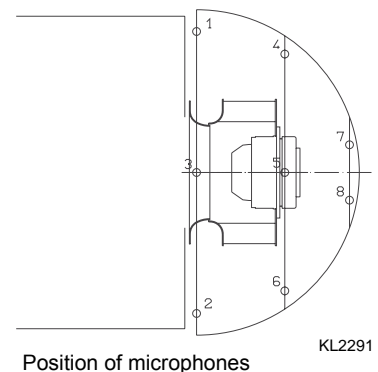
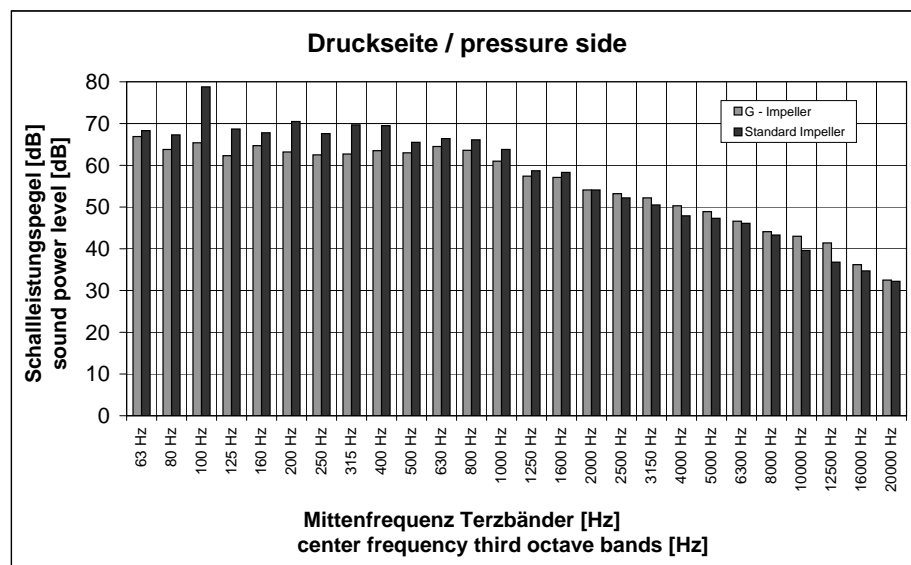
# Technical Description

## Comparison of sound power spectra, Design RH..G

In the following diagrams the sound power spectra determined at suction-side and pressure-side of the new G-impeller are compared to the corresponding sound power spectra of an impeller with conventionally backward curved blades (same number of blades). Both impellers have an outer diameter of 450 mm, working at the same operating point at free inlet/free outlet conditions.



Comparison of sound power spectra determined of fan suction side



Comparison of sound power spectra determined of fan pressure side

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