Axial fans

01/2009

A01 60 Hz North America

ZIEHL-ABEGG

Catalogue range

Click on “download” for catalogue information on our web site.
Printed catalogues can be sent on request.

General information

The information and data contained in this catalogue were established to our best ability and do not dispense the user from his duty to check the suitability of the products with respect to its intended application.

ZIEHL-ABEGG reserves the right to make any dimensional design changes which are part of their constant improvement programme.
Necessary corrections are constantly updated on our web-site.

The sales of the products is subject to the “Technical Conditions of Sale” for fans in accordance with German standard ISO 13348.

The customer is obligated to inform the supplier about general information concerning the intended use, the type of installation, the operating conditions and any other conditions that need to be taken into consideration if the order is not based on catalogue information.

Explanation of technical details

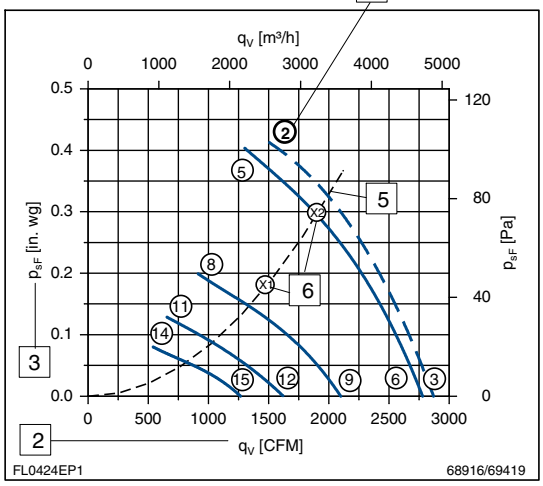
FL042-4E_.2F._5P [1]

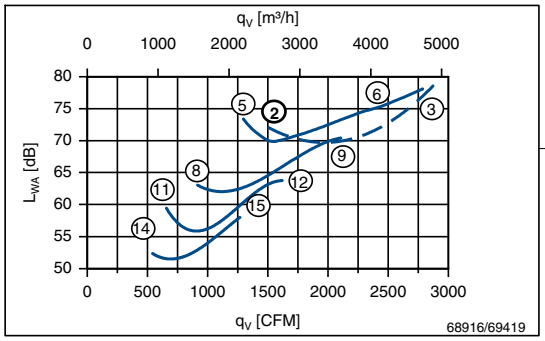
Performance data

[12] **1~ 115V 60Hz**

[13]	P_1	**0.42**	kW
[14]	I	**3.8**	A
[15]	n	**1270**	rpm
[16]	I_A	6.0	A
[17]	ΔI	0	%
[18]	C_{230V}	20	µF
[19]	t_R ②	**50/122**	**°C/°F**
	t_R ⑤	50/122	°C/°F

Characteristic data





11

4	7	8	9	10
	U	**I**	**P_1**	**n**
	V	**A**	**W**	**rpm**
②	**115**	**3.8**	**420**	**1270**
③		3.3	380	1480
⑤	115	3.8	430	1230
⑥		3.4	390	1470
⑧	85	3.1	250	860
⑨		3.0	240	1100
⑪	68	2.6	170	670
⑫		2.5	165	850
⑭	55	2.1	110	530
⑮		2.1	110	660

[20] $p_{d2} = 2.4 \cdot 10^{-6} \cdot q_V^2$

[1] Fan
[2] Airflow
[3] Fan static pressure
[4] Operating points
[5] System resistance curve (example)
[6] Working point X1 **with** controller, X2 **without** controller if the operating point X1 lies between the curves, the airflow and pressure are interpolated and the operating point can be reached by gradual adjustment of the voltage.
[7] Voltage
[8] Current
[9] Power consumption
[10] Rated speed
[11] Suction side sound power level (altern. specifications)
[12] 1. Type of current
2. Rated voltage e. g. 230 V
3. Rated frequency
[13] Rated power consumption
[14] Rated current
[15] Rated speed
[16] Starting current
[17] Percentage increase of current based on rated current for speed control by voltage reduction
[18] Capacitor C_{230V} at 1~ resp. compensating capacitor $C_{230V/Komp.}$ at 3~
[19] Maximum permissible ambient temperature
[20] Formula for calculation of the dynamic pressure

Complete Range

Air with IQ!
Air is inert by nature. Influences in nature such as temperature gradients cause it to move – unfortunately, in a rather uncontrolled way, and not always to people's advantage. To make air movement useful, we recommend our intelligent ventilation and control engineering solutions. These are effective, reliable, and in addition, are aimed at a multitude of specific requirements. As the worldwide leading system supplier of fans with matching control engineering, you will certainly be able to find fans for your sector and application in our range. Educated minds don't leave anything to chance. Rather, they trust Ziehl-Abegg's extensive expertise.

Our complete range includes:
Axial fans
Centrifugal fans
External rotor motors
Control technology

Contents

Ziehl-Abegg, a progressive company with tradition

Those who want the best trust in Ziehl-Abegg. Wherever a lift is moving, or buildings or facilities are air conditioned, it's often Ziehl-Abegg's latest technology which is to be found playing its part

In 1910, Mr. Emil Ziehl established the foundations which enable Ziehl-Abegg's present market leading position in the elevator drive motor market sector, as well as the ventilation and air conditioning market sector.
In 1949 after World War II, Ziehl-Abegg OHG was newly founded in Kuenzelsau by the brothers Heinz and Guenter Ziehl.

Ziehl-Abegg has always possessed the critical expertise and knowledge required to enable the transfer of technology from one market sector to another, and to understand and respond to customers' needs and requirements. This has resulted in Ziehl-Abegg having a head-start in the market, which continues to this day.

More than 2500 employees are working for Ziehl-Abegg worldwide, 1600 working in the Kuenzelsau region.
Today, nearly a century after Emil Ziehl's pioneering work, the company continues delivering advanced technology in the fields of air movement, motors and motor drives, and electrical controls, from Kuenzelsau to the whole world. In most countries throughout the world, we are represented locally.

With a wide range of top quality products, we offer tailored system solutions to our customers, all from one source.
From the beginning to the end, Ziehl-Abegg customers are offered guidance and support in all phases of their projects.


Ziehl-Abegg headquarters in Kuenzelsau / Germany


Bieringen, axial fan production in Bieringen / Germany


Waldenburg, centrifugal fan production in Waldenburg / Germany

The Ziehl-Abegg drive principle

Ziehl-Abegg axial fans are constructed in such a way that the motor, which is external rotor type, and the fan hub, are integrated. This type of construction results in highly effective cooling of the motor by the airflow passing over it.

Fan drive motor options available comprise:
- Permanent magnet excited, electronically commutated, direct current motors (EC motors)
- Asynchronous motors (AC motors)
- Both EC and AC motors have electronic type drives available.

For speed control, we offer the following solutions:
- Transformer-based voltage control
- Electronic-based voltage control
- Frequency inverter
- EC-technology

EC fan

Transformer based controllers

Electronic controllers

Frequency inverter

Ziehl-Abegg axial fans
are advantageous wherever compact dimensions, economical operation and reliability are crucial.

FREvent / ETAvent
fans, selectively available with integrated frequency inverter or EC technology

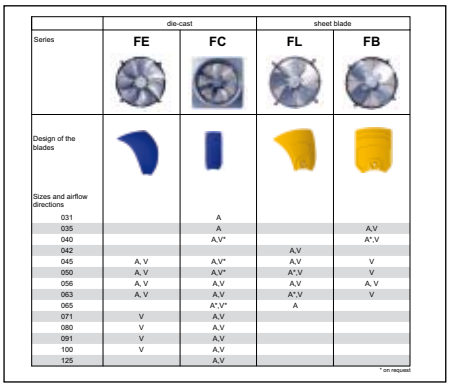
Selection of fans

Find the right solution

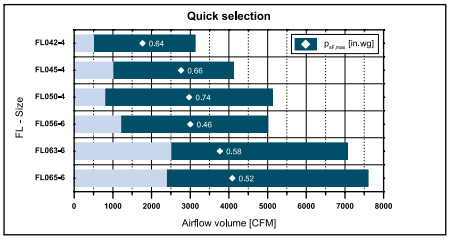
There's always something more waiting for you at Ziehl-Abegg!

More service, more competence, more experience, more dedication. As a trendsetter in the fan sector and as one of the leading system suppliers of drive technology, we offer innovative complete solutions from one source. We advise you and support you right from the start and through all phases of your project. Our wide product range provides solutions for the most varied application fields: fans for heating and refrigeration engineering, agricultural and railroad engineering and much more. Companies around the world have relied on Ziehl-Abegg's service and quality for years, and profit from the direct personal customer support at the same time.

Convince yourself!



Overview



Quick selection

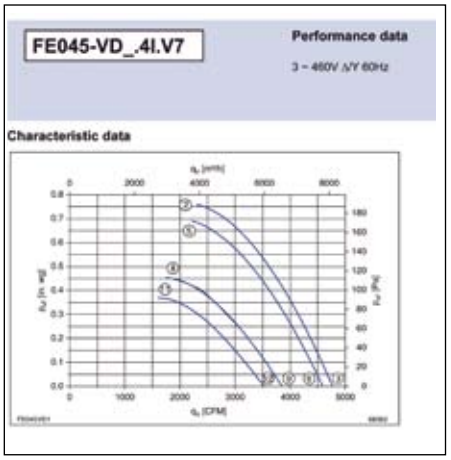
Step by step

1. Fan type
Choose the right type by using the overview and the type description.

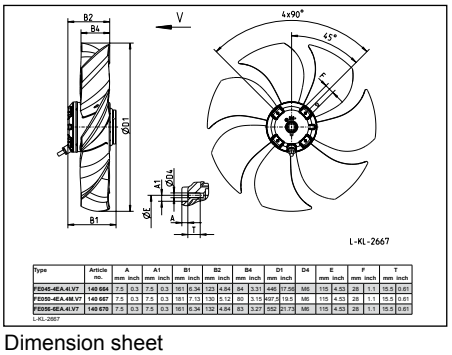
2. Aerodynamics
See the quick selection table in each chapter of fan type.
Select the right fan by using the operating point and the technical data.

3. Fan design
The available fan designs are shown in the table under the curves. Got to the dimension sheet and check the construction.

If you don't find the right fan in this catalogue for standard fans, please contact us.



Performance curve



Dimension sheet

Overview

	die-cast		sheet blade	
Series	**FE**	**FC**	**FL**	**FB**
				
Design of the blades				
Sizes and airflow directions				
031		A		
035		A		A,V
040		A,V*		A*,V
042			A,V	
045	A, V	A,V*	A,V	V
050	A, V	A,V*	A*,V	V
056	A, V	A,V	A,V	A, V
063	A, V	A,V	A*,V	V
065		A*,V*	A	
071	V	A,V		
080	V	A,V		
091	V	A,V		
100	V	A,V		
125		A,V		

* on request

⇨ **A** sucking over stator

⇦ **V** blowing over stator

Technical description
Fan designs

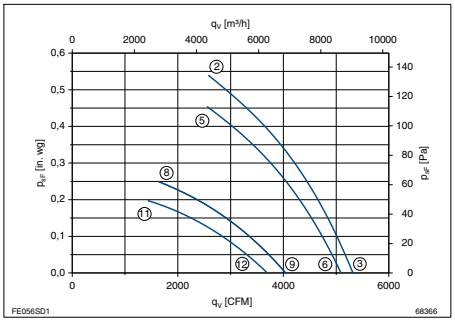
FE - Series
sickle bladed die-cast aluminium impeller
∅ 315.....1000 mm
optimized for full bell mouth
exellent noise spectrum
100 % speed controllable

Application:
refrigeration technology / ventilation technology, heating technology on request


Axial fan FE - Series

The sickle-shaped design of the profiled die-cast aluminium blade reduces the blade passing noise considerably. Optimal sound behavior, however, can only be achieved in an air guiding system that is well designed in terms of flow technology and with a full bell mouth inlet (see the section on installation notes).

The characteristic curve in Fig. 1 shows fan type FE056-SD_.4F.V7 in a two speed 3 phase design without guard grille.
Characteristic curve ② to ③ = high speed
Characteristic curve ⑤ to ⑥ = low speed by ∆/Y switching.



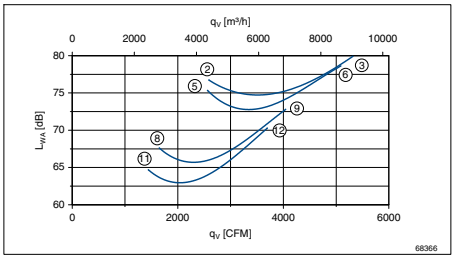


Fig. 1 FE056-SD_.4F.V7

Technical description
Fan designs

FC - Series
profiled die-cast aluminium impeller
∅ 315 .....1250 mm
optimized for full bell mouth
100 % speed controllable

Application:
ventilation and refrigeration technology, agriculture, transformer and cooling of rolling stock, timber drying, industrial, mechanical engineering


Axial fan FC - Series

Fans in the FC series have profiled die-cast aluminium blades, featuring especially high efficiencies, and should therefore only be operated in air guiding systems that have optimum aerodynamic conditions (see section on installation notes).
The characteristic curve in Fig. 2 shows fan type FC056-6D_.4F.A7 in a one speed 3 phase design without guard grille.
Characteristic curve ② to ③ = high speed
Characteristic curve ⑤ to ⑥ = low speed by ∆/Y switching.

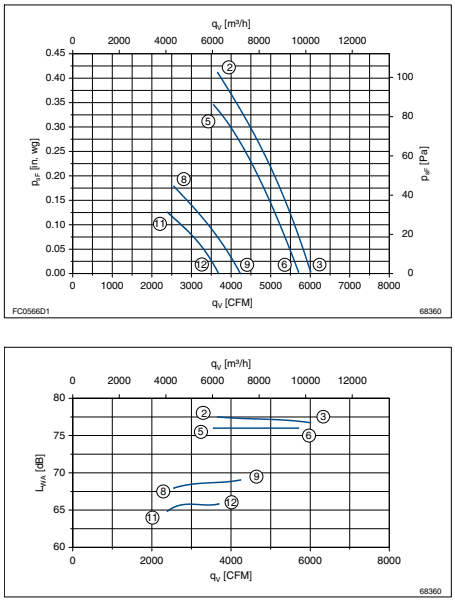


Fig. 2 FC056-6D_.4F.A7

Technical description
Fan designs

FL - Series
sickle bladed aluminium impeller
∅ 350 .....650 mm
optimized for short bell mouth
two airflow directions
three alternative blade angle settings
100 % speed controllable

Application:
mainly refrigeration technology / heating technology, in short bell mouth

Axial fan FL - Series

It is preferable to use FL fans in devices with short bell mouth. See the installation examples. The characteristic curve in Fig. 3 shows fan type FL042-4E_.2F._5P in a two speed 3 phase design.
The solid characteristic curves correspond to the use in a short bell mouth with a guard grille.
Characteristic curve ⑤ to ⑥ = high speed.
Characteristic curve ⑧ to ⑨ = low speed by ∆/Y switching.

Characteristic curve ② to ③ corresponds to the measurement in a full bell mouth without a guard grille (see the section on installation notes).

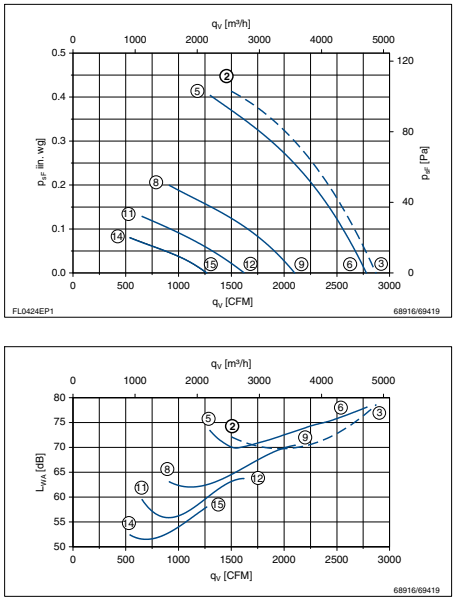


Fig. 3 FL042-4E_.2F._5P

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Technical description
Fan designs

FB - Series
aluminium impeller
∅ 350 .....650 mm
optimized for short bell mouth
two airflow directions
three alternative blade angle settings
100 % speed controllable

Application:
mainly refrigeration technology / heating technology, in short bell mouth


Axial fan FB - Series

It is preferable to use FB fans in devices with short bell mouth. See the installation examples.
The characteristic curve in Fig. 4 shows fan type FB056-4D_.4I._4P in a one speed 3 phase design.
The solid characteristic curves correspond to the use in a short bell mouth with a guard grille.
Characteristic curve ⑤ to ⑥ = high speed
Characteristic curve ⑧ to ⑨ = low speed by Δ/Y switching.

Characteristic curve ② to ③ corresponds to the measurement in a full bell mouth without a guard grille (see the section on installation notes).

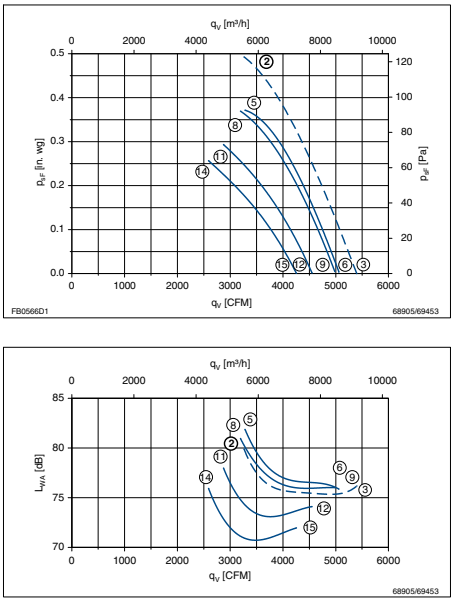
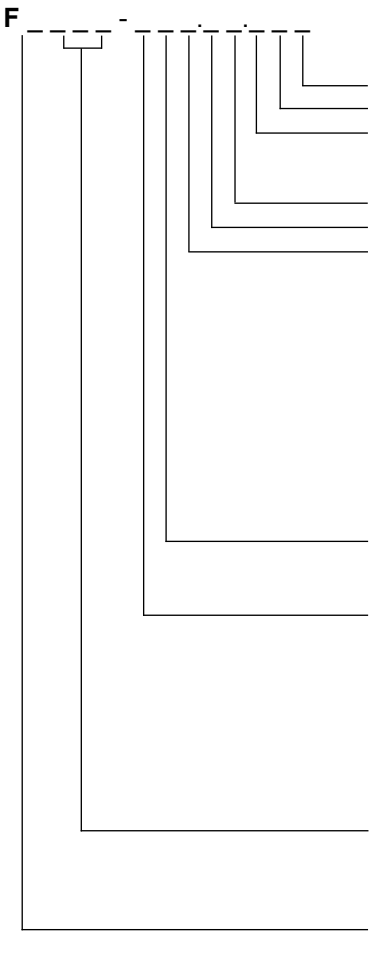


Fig. 4 FB056-4D_.6I._4P

Technical description
Type key



Blade angle

Number of blades

Airflow direction

A = sucking over stator
V = blowing over stator

Motor length

Motor size

Fan design

A = without mounting parts
Q = square, full bell mouth
L = round, full bell mouth
F = short case
D = axial screwed mounting for full bell mouth Q or L and conveying direction A
W= axial screwed mounting for short bell mouth E and conveying direction A
K = axial screwed mounting for short bell mouth E and conveying direction V

Current type

D = three phase alternating current
E = single phase alternating current

Pole number

2 =	2-pole	P =	2-2 pole
4 =	4-pole	V =	4-4 pole
		G =	4-4-8 pole
6 =	6-pole	S =	6-6 pole
		H =	6-6-12 pole
8 =	8-pole	A =	8-8 pole
		M =	10-10 pole
		N =	12-12 pole

Fan size

Impeller diameter
045 = 450 mm
056 = 560 mm etc.

Fan series

E -, C -, L -, B- Series

Example:

FE050-VDQ.4I.A7 Standard fan

Fan series	FE
Fan size	500 mm
Pole number	4-4 - pole
Current type	three phase alternating current
Fan design	square, full bell mouth
Motor	4I
Airflow direction	A
Number of blades	7

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