Breeze®
We bring better air to life

The Product Catalogue

the London Fan company
Since 1928 in London

Breezax IMPELLERS
Made in United Kingdom

Technology from

About Us

In 1928, The **London Fan** and Motor Company was formed by Mr. G. H. Webber and has been owned since by the Webber family. During the early years the company began to manufacture industrial propeller fans and electric motors under the trade name **Breeza Fan** and moved from Charlotte Street in the West End of London to a larger factory in Alfred Place off Tottenham Court Road.

After the Second World War the company moved to Park Road, North Acton and then to the present premises in 1965. The post-war years saw the development of the company into a wide range of ventilating equipment and industrial fans brought about mainly by the take-over of a number of other businesses in the fan trade, one of which became Breezax Impellers Ltd. The company discontinued the manufacture of electric motors and its name changed to **The London Fan Company Ltd**.

Having built a reputation for quality fan manufacture and innovative design, the company continues to expand its manufacturing base to ensure worldwide availability of industrial fans and **Breezax** impellers under the leadership of Andrew Webber. With investment in the development of new products, the company looks to a successful future in an evolving global market.

In 1990, **The London Fan Company** established **Breeza Fan** in USA.

In 2001, **Breezax Technology Pte Ltd** established in Singapore which is representative of London Fan Company products and Breezax Impellers in United Kingdom for Asia Pacific Region.

In 2018, **Breeze Industrial Ventilation Joint Stock Company** was established in Vietnam. We are authorized from Breezax Technology Pte Ltd to import, manufacture/assemble and distribute **Breeze Fan** in Vietnam for 04 countries in Southeast Asia.

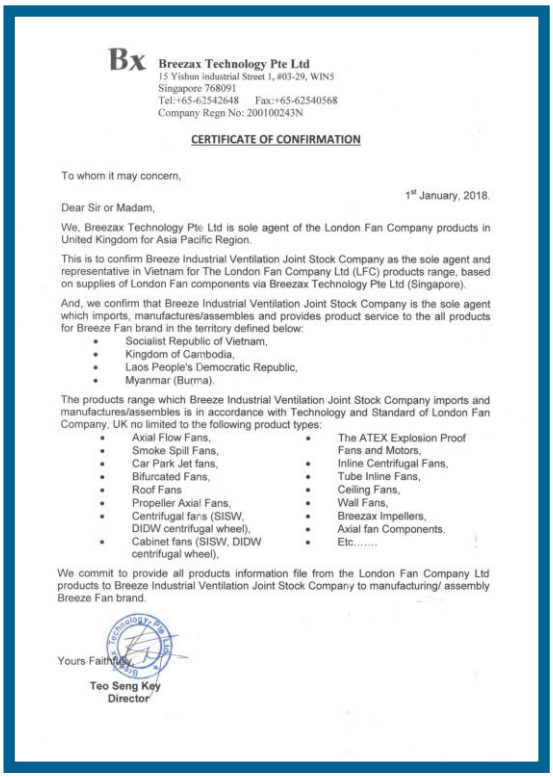
Territory:

- Socialist Republic of Vietnam,
- Kingdom of Cambodia,
- Laos People's Democratic Republic,
- Myanmar (Burma).

The products range by **Breeze Industrial Ventilation Joint Stock Company** is manufactured/assembled and imported in accordance with Standard and Technology of **London Fan** in United Kingdom to the following these types:

- Axial Flow Fan
- Smoke Extract Axial Fan
- Car Park Jet Fan
- Bifurcated Axial Fan
- Rooftop Axial Fan
- Plate Mounted Axial Fan
- Plate Mounted Wall Fan
- The ATEX Explosion Proof Fans and Motors
- Etc.
- Centrifugal Fan (SISW, DIDW)
- Cabinet Centrifugal Fan (SISW, DIDW)
- Inline Centrifugal Fan
- Silent Inline Fan
- Mixed Flow Inline Fan
- Ceiling Mounted Fan
- Wall Mounted Fan
- The Components

Our products are manufactured and followed according to technology and the worldwide accepted standard and Vietnam as ISO 9001:2015, BS 848 part 1 and part 2:1985, ISO 5801, ISO 5136, ISO 13347 part 2, EN 12101-3, ATEX and IEC60335 (QCVN 04:2009/BKHCN and TCVN 5699-2-80:2007).



Bx Breezax Technology Pte Ltd
15 Yishun industrial Street 1, #03-29, WIN5
Singapore 768091
Tel:+65-62542648 Fax:+65-62540568
Company Regn No: 200100243N

CERTIFICATE OF CONFIRMATION

To whom it may concern,

1st January, 2018.

Dear Sir or Madam,

We, Breezax Technology Pte Ltd is sole agent of the London Fan Company products in United Kingdom for Asia Pacific Region.

This is to confirm Breeze Industrial Ventilation Joint Stock Company as the sole agent and representative in Vietnam for The London Fan Company Ltd (LFC) products range, based on supplies of London Fan components via Breezax Technology Pte Ltd (Singapore).

And, we confirm that Breeze Industrial Ventilation Joint Stock Company is the sole agent which imports, manufactures/assembles and provides product service to the all products for Breeze Fan brand in the territory defined below:

- Socialist Republic of Vietnam,
- Kingdom of Cambodia,
- Laos People's Democratic Republic,
- Myanmar (Burma).

The products range which Breeze Industrial Ventilation Joint Stock Company imports and manufactures/assembles is in accordance with Technology and Standard of London Fan Company, UK no limited to the following product types:

- Axial Flow Fans,
- Smoke Spill Fans,
- Car Park Jet fans,
- Bifurcated Fans,
- Roof Fans
- Propeller Axial Fans,
- Centrifugal fans (SISW, DIDW centrifugal wheel),
- Cabinet fans (SISW, DIDW centrifugal wheel),
- The ATEX Explosion Proof Fans and Motors,
- Inline Centrifugal Fans,
- Tube Inline Fans,
- Ceiling Fans,
- Wall Fans,
- Breezax Impellers,
- Axial fan Components.
- Etc.....

We commit to provide all products information file from the London Fan Company Ltd products to Breeze Industrial Ventilation Joint Stock Company to manufacturing/ assembly Breeze Fan brand.

Yours Faithfully,

Teo Seng Key
Director

SGS

Certificate VN18/00293

The management system of

BREEZE INDUSTRIAL VENTILATION JOINT STOCK COMPANY

215D8 Nguyen Van Huong Street, Thao Dien Ward, District 2, Ho Chi Minh City, Vietnam.

has been assessed and certified as meeting the requirements of

ISO 9001:2015

For the following activities

Assembly and Trading of civil and industrial fans

This certificate is valid from 16 September 2018 until 16 September 2021 and remains valid subject to satisfactory surveillance audits. Recertification audit due a minimum of 60 days before the expiration date. Issue 1. Certified since 16 September 2018

Authorised by

SGS United Kingdom Ltd
Rossmore Business Park Ellesmere Port Cheshire CH65 3EN UK
t +44 (0)151 350-6666 f +44 (0)151 350-6600 www.sgs.com

HC SGS 9001 2015 0118

Page 1 of 1

UKAS MANAGEMENT SYSTEMS 0005

ISSQ

GIẤY CHỨNG NHẬN

Số: QC 2264-19

Chứng nhận sản phẩm:

Quạt điện
(Kiểu loại: Chi tiết phụ lục kèm theo)
Nhãn hiệu thương mại: Breeze

Được sản xuất tại:

CÔNG TY CỔ PHẦN THÔNG GIÓ CÔNG NGHIỆP BREEZE
BREEZE INDUSTRIAL VENTILATION JOINT STOCK COMPANY

Địa chỉ:
215D8 đường Nguyễn Văn Hưởng, phường Thảo Điền, quận 2, thành phố Hồ Chí Minh
Xưởng sản xuất: Số 12, đường số 570, ấp Xóm Mới, xã Trung Lập Hạ, huyện Củ Chi, thành phố Hồ Chí Minh, Việt Nam

Phù hợp với Quy chuẩn kỹ thuật quốc gia:
QCVN 4:2009/BKHCN VÀ SỬA ĐỔI 1:2016 QCVN 4:2009/BKHCN
ĐƯỢC PHÉP SỬ DỤNG DẤU HỢP QUY

ISSQ QC 2264-19

Phương thức chứng nhận: **Phương thức 5**
(theo Thông tư số 28/2012/TT - BKHCN ngày 12/12/2012)
Giấy chứng nhận có giá trị từ: Ngày 26 / 8 / 2019 đến 25 / 8 / 2022

HỘI ĐỒNG CHỨNG NHẬN
CHỦ TỊCH
PGS. TS. Hoàng Thị Thanh Nhàn

KT. VIỆN TRƯỞNG
PHÓ VIỆN TRƯỞNG
TS. Ngô Tất Thắng

VIỆN NGHIÊN CỨU PHÁT TRIỂN TIÊU CHUẨN CHẤT LƯỢNG
Văn phòng: Số 52, ngõ 46, đường Liên Mạc, phường Liên Mạc, quận Bắc Từ Liêm, thành phố Hà Nội, Việt Nam
Điện thoại: 024 2266 1111 Email: tcvn@issq.org.vn

QMS

QMS International plc

Registration Certificate

This document certifies that the quality management systems of

THE LONDON FAN COMPANY LIMITED

been assessed and approved by QMS International plc to the wing quality management systems, standards and guidelines:-

ISO 9001 : 2008

approved quality management systems apply to the following:-
MANUFACTURER OF INDUSTRIAL FANS & IMPELLORS

roval: 12 April 2001
ification: 12 April 2011
xpiry: 11 April 2021
umber: GB 8414

ISO 9001
REGISTERED FIRM

QMS International plc

IAC

remains valid while the holder maintains their quality management systems in accordance the standards and guidelines above, which will be audited by QMS International plc. is the property of QMS International plc and must be returned in the event of cancellation.

QMS

ISSQ

ÝY CHỨNG NHẬN PHÙ HỢP TIÊU CHUẨN
CERTIFICATE OF CONFORMITY

Số: SP 1059-19

ứng nhận sản phẩm/*This is to certify that:*

Quạt điện
(Kiểu loại: Chi tiết phụ lục kèm theo)
Nhãn hiệu thương mại: Breeze

ợc sản xuất bởi/*Manufactured by:*

CÔNG TY CỔ PHẦN THÔNG GIÓ CÔNG NGHIỆP BREEZE
BREEZE INDUSTRIAL VENTILATION JOINT STOCK COMPANY

chỉ/*Address:*
15D8 đường Nguyễn Văn Hưởng, phường Thảo Điền, quận 2, thành phố Hồ Chí Minh
Xưởng sản xuất: Số 12, đường số 570, ấp Xóm Mới, xã Trung Lập Hạ, huyện Củ Chi, thành phố Hồ Chí Minh, Việt Nam

ù hợp với/*Conforms to:*
TCVN 5699-2-80:2007 (IEC 60335-2-80:2005)

ương thức chứng nhận/*Certification system:*
Phương thức 5/*System 5*

Giấy chứng nhận có giá trị/*This certificate is valid from:*
Từ ngày 26 tháng 8 năm 2019 đến ngày 25 tháng 8 năm 2022

HỘI ĐỒNG CHỨNG NHẬN
CHỦ TỊCH
PGS. TS. Hoàng Thị Thanh Nhàn

KT. VIỆN TRƯỞNG
PHÓ VIỆN TRƯỞNG
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Điện thoại: 024 2266 1111 Email: tcvn@issq.org.vn

Axial Flow Fan

LC Series - Axial Flow Fan
- Range Size: 315mm - 1600mm
- Air Flow: 195.000 m^3/h
- Pressure: 1.500 Pa
- Material: Mild steel with epoxy coated or requested.
- Motor: IP55, Class F

LCS Series - Smoke Extract Axial Fan
- Range Size: 315mm - 1600mm
- Air Flow: 195.000 m^3/h
- Pressure: 1.500 Pa
- Material: Mild steel with epoxy coated or requested.
- Motor: IP55, Class H

LCF Series - Explosion Proof Axial Fan
- Range Size: 315mm - 1250mm
- Air Flow: 125.000 m^3/h
- Pressure: 1.500 Pa
- Material: Mild steel with epoxy coated or requested.
- Motor: IP55 or IP66, Class F

JFLC Series - Car Park Jet Fan
- Range Size: 315mm - 450mm
- Air Flow: 12.000 m^3/h
- Thrust Force: 84 N
- Material: Hot galvanized steel.
- Motor: IP55, Class F or H

RSC Series - Rooftop Axial Fan
- Range Size: 315mm - 1600mm
- Air Flow: 195.000 m^3/h
- Pressure: 1.500 Pa
- Material: Mild steel with epoxy coated or requested.
- Motor: IP55, Class F

BN Series - Bifurcated Axial Fan
- Range Size: 315mm - 1250mm
- Air Flow: 125.000 m^3/h
- Pressure: 1.500 Pa
- Material: Mild steel with epoxy coated or requested.
- Motor: IP55, Class F

PA Series - Plate Mounted Axial Fan
- Range Size: 315mm - 1000mm
- Air Flow: 90.000 m^3/h
- Pressure: 1.000 Pa
- Material: Mild steel with epoxy coated or requested.
- Motor: IP55, Class F

PAF Series - ATEX Plate Mounted Axia Fan
- Range Size: 315mm - 1000mm
- Air Flow: 90.000 m^3/h
- Pressure: 1.000 Pa
- Material: Mild steel with epoxy coated or requested.
- Motor: IP55 or IP66, Class F

AWF Series - Industrial Wall Fan
Belt Driven
- Range Size: 750mm - 1250mm
- Air Flow: 45.000 m^3/h
- Pressure: 50 Pa
- Motor: IP 55, Class F

Single Inlet Centrifugal Fan

FCS Series - Forward Curve (SISW)
Belt Driven
- Range Size: 280mm - 1000mm
- Air Flow: 70.000 m^3/h
- Pressure: 1.500 Pa
- Material: Hot galvanized steel or requested.
- Motor: IP55, Class F

BCS Series - Backward Curve (SISW)
Belt Driven
- Range Size: 280mm - 1400mm
- Air Flow: 100.000 m^3/h
- Pressure: 3.000 Pa
- Material: Hot galvanized steel or requested.
- Motor: IP55, Class F

PF Series - Plug Fan
- Range Size: 250mm - 1000mm
- Air Flow: 70.000 m^3/h
- Pressure: 3.000 Pa
- Material: Mild steel with epoxy coated.
- Motor: IP55, Class F

Double Inlet Centrifugal Fan | Cabinet Centrifugal Fan

FCD Series - Forward Curve (DIDW) Belt Driven

- Range Size: 200mm - 1000mm
- Air Flow: 90.000 m^3/h
- Pressure: 1.500 Pa
- Material: Hot galvanized steel.
- Motor: IP55, Class F

BCD Series - Backward Curve (DIDW) Belt Driven

- Range Size: 200mm - 1250mm
- Air Flow: 120.000 m^3/h
- Pressure: 3.000 Pa
- Material: Hot galvanized steel or requested.
- Motor: IP55, Class F

KBB/KBB-F Series - Backward Curve (DIDW) Cabinet Fan - Belt Driven

- Range Size: 200mm - 1250mm
- Air Flow: 120.000 m^3/h
- Pressure: 3.000 Pa
- Material: Hot galvanized steel or requested.
- Motor: IP55, Class F

KBF/KBF-F Series - Forward Curve (DIDW) Cabinet Fan - Belt Driven

- Range Size: 200mm - 1000mm
- Air Flow: 90.000 m^3/h
- Pressure: 1.500 Pa
- Material: Hot galvanized steel.
- Motor: IP55, Class F

KBP Series - Backward Curve (SISW) Cabinet Plug Fan - Direct Driven

- Range Size: 250mm - 1000mm
- Air Flow: 70.000 m^3/h
- Pressure: 3.000 Pa
- Material: Hot galvanized steel.
- Motor: IP55, Class F

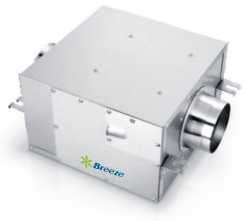
CDF/CDFS Series - Inline Centrifugal Fan Direct Driven

- Range Size: 200mm - 500mm
- Air Flow: 16.000 m^3/h
- Pressure: 850 Pa
- Material: Hot galvanized steel.
- Motor: IP 54, Class F

Domestic Fan

AWS Series - Plate Mounted Wall Fan

- Range size: 250mm - 630mm
- Air Flow: 13.000 m^3/h
- Pressure: 250 Pa
- Material: Plate steel with powder coated.
- Motor: IP 54, Class F



DVS Series - Silent Inline Fan

- Range size: 100mm - 250mm
- Air Flow: 3.000 m^3/h
- Pressure: 400 Pa
- Material: Stainless steel.
- Motor: IP 44, Class B

MFD Series - Mixed Flow Inline Fan

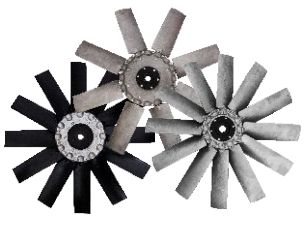
- Range size: 100mm - 250mm
- Air Flow: 1.500 m^3/h
- Pressure: 550 Pa
- Material: ABS polymer.
- Motor: IP 44, Class B

CMD/CPD Series - Ceiling Mounted Fan

- Range size: 100mm - 150mm
- Air Flow: 330 m^3/h
- Material: Full ABS plastic or Half metal + ABS.
- Motor: IP 44, Class B

AWC Series - Wall Mounted Fan

- Range size: 150mm - 300mm
- Air Flow: 1.200 m^3/h
- Material: Full ABS plastic or Half metal + ABS.
- Motor: IP 44, Class B



Breezax/Breezaxmax Impeller

- Range size: 250mm - 1600mm
- Material: ALU Blade
  GRP Blade
  GRN Blade

Fan Code

LC 500 4 10B 20°

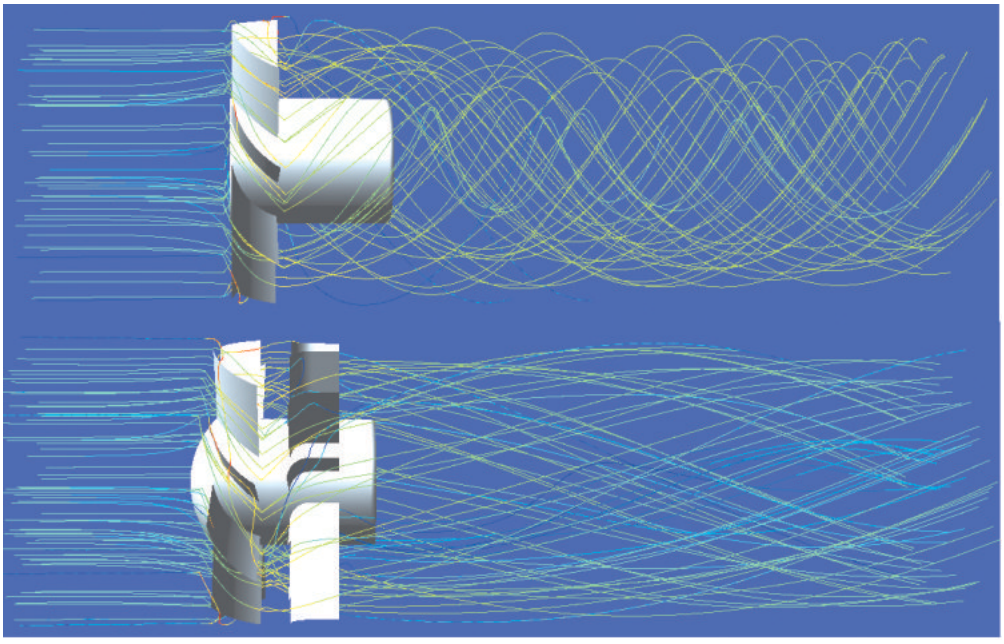
- 20° — Pitch Angle
- 10B — Number of Blades
  Blade Type:
  - B blade
  - TXA blade
  - C blade
- 4 — Motor Poles
- 500 — Diameter of Impeller
- LC — Fan Type

Description

Axial fans offer you a complete range of fan system and wide options of accessories such as impellers and hubs to meet all kinds of applications and demands. The impeller of axial fans offer high efficiency up to 80% or even higher.

Advanced Design of Straightening Stator Vanes and Ogive for Axial impellers:

With world's leading Computational Fluid Design (CFD), axial fan has developed advanced straightening stator vanes and ogives for axial impellers. As the figur shows, with straightening stator vanes and ogive, turbulence in front of impeller has been greatly reduced, airflow becomes more stable and the efficacy can be improved up to 8%.



Notes:

1. For detail, please see the fan performance curve or contact with Breeze Industrial Ventilation JSC.
2. Special or other size of air outlet direction, please negotiate with Breeze Industrial Ventilation JSC.

General Information

The performance range is from 500 m^3/h up to 195.000 m^3/h, static pressure up to 1.500 Pa. High pressure is possible on two-stage fans.

Fan type:

- SC Series: Short Cased Axial Flow Fan.
- LC Series: Long Cased Axial Flow Fan.
- LCS Series: Smoke Extract Axial Fan.
- LCF Series: Explosion Proof Axial Fan.
- CRLC Series: Two-stage Axial Fan.
- CRLCS Series: Smoke Extract Two-stage Axial Fan.

Construction Information

Axial series are mainly constructed of casing, impeller, motor and other accessories.

Casing

Fan sizes are from 315mm to 1600mm diameter.

All casings and motor mounting are made of mild steel, all steel parts are epoxy coated after manufacturing, thickness from 2.0mm to 6.0mm upon diameter.

Casing flanges are rolled, the pitch circles of holes are in accordance to BS 6339 and ISO 6580.

Material option available:

- Galvanized steel.
- Hot dip galvanized after manufacturing.
- Stainless steel: 304 or 316L
- Requested.

Casings are completed with an externally mounted terminal box which is prewired from the motor terminal box, ensuring ease of installation at site.

Two-stage Axial Flow Fan

Two-stage axial flow fans, in series, counter rotating for high pressures or for carpark application.

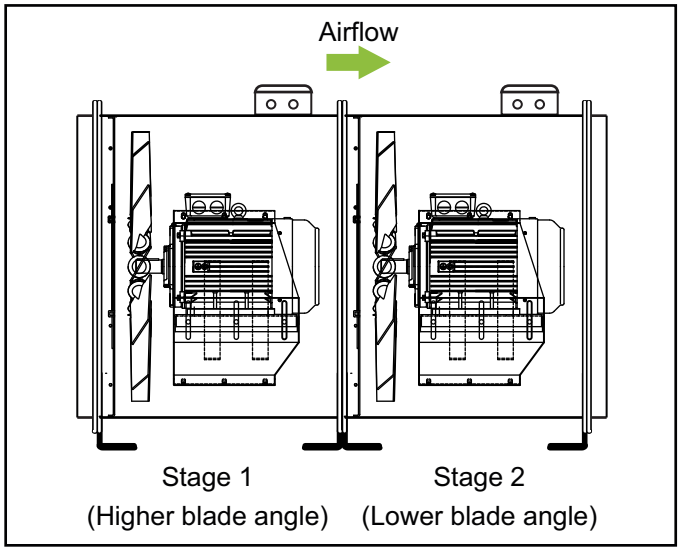
The system with just 2 counter rotating, in series axial flow fans, static pressures up to nearly 2.500 Pa can be achieved. The two-stage unit consists of 2 or more counter rotating single stage in series with left hand and right hand blades, without guide vane. The spin of the first stage is transformed into an additional static pressure by the following stage.

This way, the system produces an excellent airstream profile and 2,7 to 3 times the pressure of a single stage version.

All parts of the multi stage version can be taken from the single stage fan and therefore can be produced at a low cost. Each stage has its own seperate motor. If one stage fails or is switched off, the second stage still produces 65% of the air volume, while consuming only 40 % of the energy. This system is ideal for exhausting in carpark buildings. It works in accordance to the regulations for carpark exhaust systems in United Kingdom and other countries, which require two independent stages, so that the fan will still be operating in case of a failure of one stage. The airstream of the first stage will automatically turn the impeller of the switched off second stage in the opposite direction, so that it supports the airflow instead of disturbing it. This also saves energy compared to similar systems. Besides, the impeller is already rotating in the right direction when the second stage is switched on. As another advantage, this is an inexpensive way of adjusting the air volume.

These are designed a two-stage axial flow fan:

- Stage 1: Right hand blade
- Stage 2: Left hand blade



For example:
Fan ref LC1000/4/12TXA/ALU/17.5°/15°

- Stage 1 is 17.5°
- Stage 2 is 15°

Smoke Extract Operation

The LCS series are designed and tested to operate at standard temperatures as well as elevated temperatures of 250°C/2 hours (H250) or 300°C/2 hours (H300), according to BS EN 12101-3/ISO 9001:2015.

Certificate number 0086-CPD-493412.

Manufacturing FLC EN 12101-3/ISO 9001:2008

Explosion Proof Operation

The LCF series are driven directly by an ATEX or IECEx certified motor. Single phases and three phases, IP55 or IP66, class F insulation, can be frequency conversion motor.

For motors provided with PTC posistor sensors that should be connected to the protection system, the type of sensor should be specified by the customer/electrician.

The range covers Gases Group IIA, IIB & IIC and most dust hazards. The Gas or Dust type must be specified.

The impeller of LCF series are fitted with Anti-static Nylon (AST) or Aluminum (AL blade) material if required.

The LCF series are typically used for the purpose of industrial ventilation, cooling and exhausting etc.

This product specially applies to Oil & Gas, Offshore Platform, Chemical, Petrochemical, Refinery and Marine Industries etc.

Impeller Data

High efficiency aluminum aerofoil type. All units are fitted with Breezax Impellers with Aluminum (ALU) blades. GRP or GRN blades can be fitted if required.

Hubs are manufactured from fully die cast aluminum alloy as standard.

The blades are with adjustable pitch angle to optimize the dutypoint. The solidity varies for a wider range of performance.

Blade materials are available in:

- ALU: Standard
- GRP: Glass Reinforced Polypropylene
- GRN: Glass Reinforced Nylon
- AST: Anti-static Nylon

Operating temperature:

- ALU: -40°C + 200°C
- GRP: -40°C + 70°C
- GRN: -40°C + 150°C
- AST: -30°C + 110°C

Hub system:

Our range of axial fans has fully adjustable blades and there are 6 hub systems, as shown below:

Hub Type	Number of Blades
110	5
160	5,10
230	3,6,12
250	3,6,12
330	4,8,12,16
400	4,8,12,16

Blade Design/Type:

We have several options Blades Design as following:

Design Type	Material	Hub Series
Breezax, S	GRP/GRN	110, 160, 230
Breezax, B	ALU	110, 160, 230
Breezax, A	GRP/GRN	110, 160, 230
Breezaxmax, A	ALU/GRN	250, 330
Breezaxmax, T	ALU	250, 330
Breezaxmax, C	ALU/GRP	400

Balance:

The impellers are statically and dynamically balanced on precision machines according to ISO 1940 with G2.5mm/s quality standard.

Mounting and Airflow

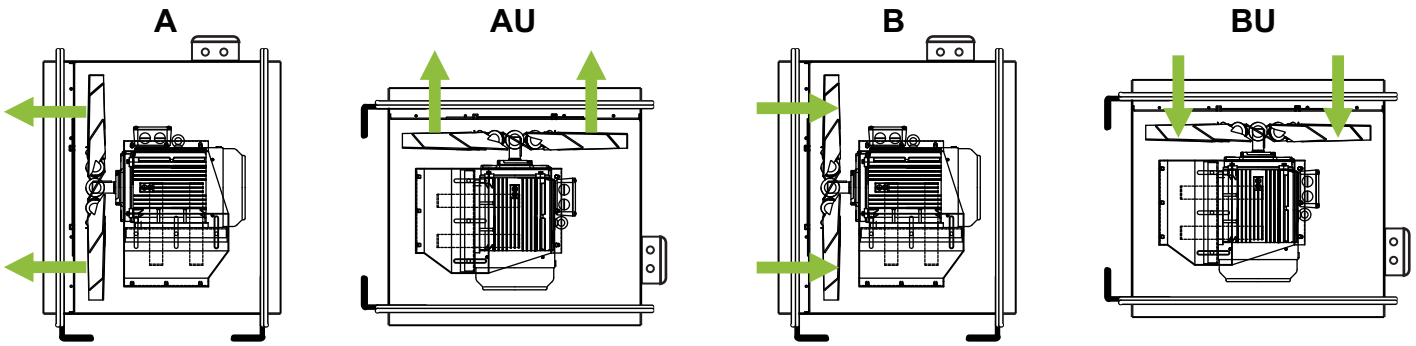
All units are suitable for internal or external operation at any installed angle.

Airflow direction:

- Plan B as standard.
- Plan A can be supplied if required.

Arrows indicating correct rotating and direction of airflow are mounted on the outside of the fan case.

These forms of running are as follows:



Performance data

The axial fans are produced by Breeze Fan base on technology of London Fan company, a world famous axial impeller manufacture which was set up in 1928. Fan performance and data of type selection program are approved by British Standard.

- Manufuactured under a certified ISO 9001:2015.
- The performance is tested international standards by BS 848-1:1985 and ISO 5801.
- Installation position D, i.e. ducted inlet and ducted outlet configuration.
- All curves to a density of ρ = 1,2 kg/m^3, at 20°C.

Selection Program

Full details are available on our selection program: Breeze Fan or London Fan.

The selection program is convenient, simple, intelligent. It is easy to choose suitable fans, provide and print out all data to confirm the result of choice. You can transfer these data to consultants and designers.

Please contact our sale department or login http://www.breeze.com.vn for selection program.

Sound levels

All measurements of the sound that the fans generate have been taken strictly in accordance with BS 848-2, test method 1 and ISO 13347-2 for acoustic performance.

Sound data are determined according to BS EN ISO 5136 – In-duct method.

Published sound power level spectra figures are dBW with a reference of 10^{-12} Watt (1 Pico watt).

The sound power levels shown on the fan curves are for inlet LwiA scale for installation type D: ducted inlet, ducted outlet. Ratings include the effects of ducted end correction.

The sound pressure level at the inlet at 1m distance in low reflection can be obtained by deducting 11dB from the sound power level at the inlet side. The sound pressure difference from 1m to distance d is obtained as follows:

$$LpiA = 10 * \log (1/d)$$

Where: d = distance from fan in meters.

Please note that reflections and room characteristics as well as natural frequencies influence the size of the sound pressure level differently

Motor Data

Motors incorporated are TEFC (Total Enclosed Fan Cooled) and airstream rated to IEC 34-1.

Standard motors are protected to IP55 with Class F insulation. Operating temperature is from -20°C to +50°C as standard, fans for operation beyond these limits are also available.

Motors are suitable for speed control by frequency inverter, subject to fan selection.

Available specific for your project requirements such as:

- 220-240V / 380-415V-50Hz.
- 60Hz: specific to your voltage requirements.
- IE1, IE2, IE3 and IE4 Efficiency Classes.
- 2-speed (Full/Half and Full/Two Thirds).
- High temperature motor and double speeds motor (Class H): 250°C/2hrs or 300°C/2hrs or requested.

Fan Laws

Speed Change - Constant Size - Constant Density

- Air Volume ≈ Rotation Speed

$$\frac{V_2}{V_1} = \frac{n_2}{n_1}$$

- Pressure ≈ (Rotation Speed)^2

$$\frac{\Delta p_1}{\Delta p_2} = \left(\frac{n_1}{n_2}\right)^2 = \left(\frac{V_1}{V_2}\right)^2$$

- Abs. Power ≈ (Rotation Speed)^3

$$\frac{P_1}{P_2} = \left(\frac{n_1}{n_2}\right)^3 = \left(\frac{V_1}{V_2}\right)^3$$

Size Change - Constant Speed - Constant Density

- Air Volume ≈ (IMP. Diameter)^3

$$\frac{V_2}{V_1} = \left(\frac{D_2}{D_1}\right)^3$$

- Pressure ≈ (IMP. Diameter)^2

$$\frac{\Delta p_1}{\Delta p_2} = \left(\frac{D_1}{D_2}\right)^2$$

- Abs. Power ≈ (IMP. Diameter)^5

$$\frac{P_1}{P_2} = \left(\frac{D_1}{D_2}\right)^5$$

Density Change - Constant Speed - Constant Size

- Air Volume = No change

$$V = \text{Constant}$$

- Pressure ≈ Density

$$\frac{\Delta p_1}{\Delta p_2} = \frac{\rho_1}{\rho_2} = \frac{T_2}{T_1}$$

- Abs. Power ≈ Density

$$\frac{P_1}{P_2} = \frac{\rho_1}{\rho_2} = \frac{T_2}{T_1}$$

Noise:

$$N_2 - N_1 = 50 \log 10 * \frac{D_2}{D_1} + 50 \log 10 * \frac{n_2}{n_1}$$

Pressure

- Dynamic Pressure (Pa)

$$p_d = \frac{\rho}{2} * v^2$$

- Total Pressure (Pa)

$$p_t = p_{st} + p_d$$

- Air Velocity (m/s)

$$v = \frac{V * 4}{\pi D^2}$$

Absorbed Power

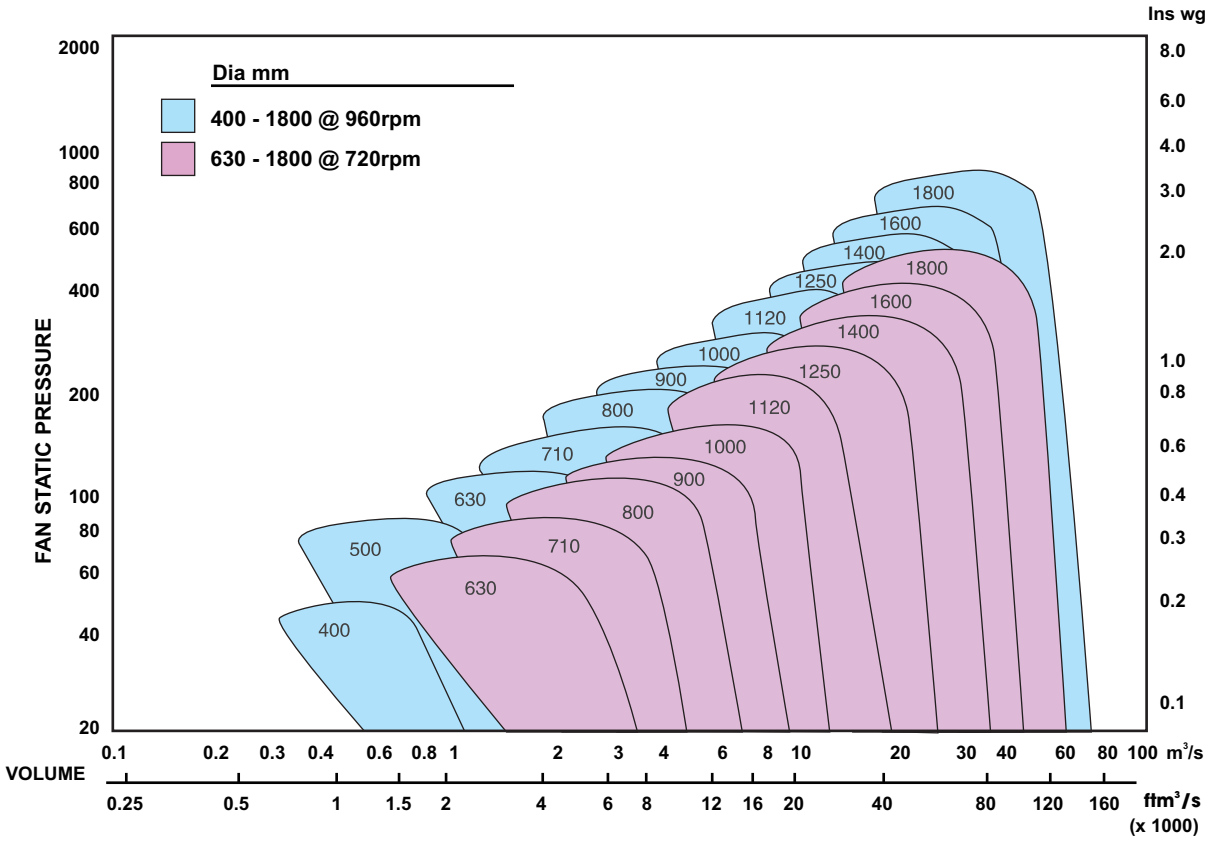
$$P = \left(\frac{V\ (m^3/s) *\ p_t\ (Pa)}{\eta\% * 10}\right) kW$$

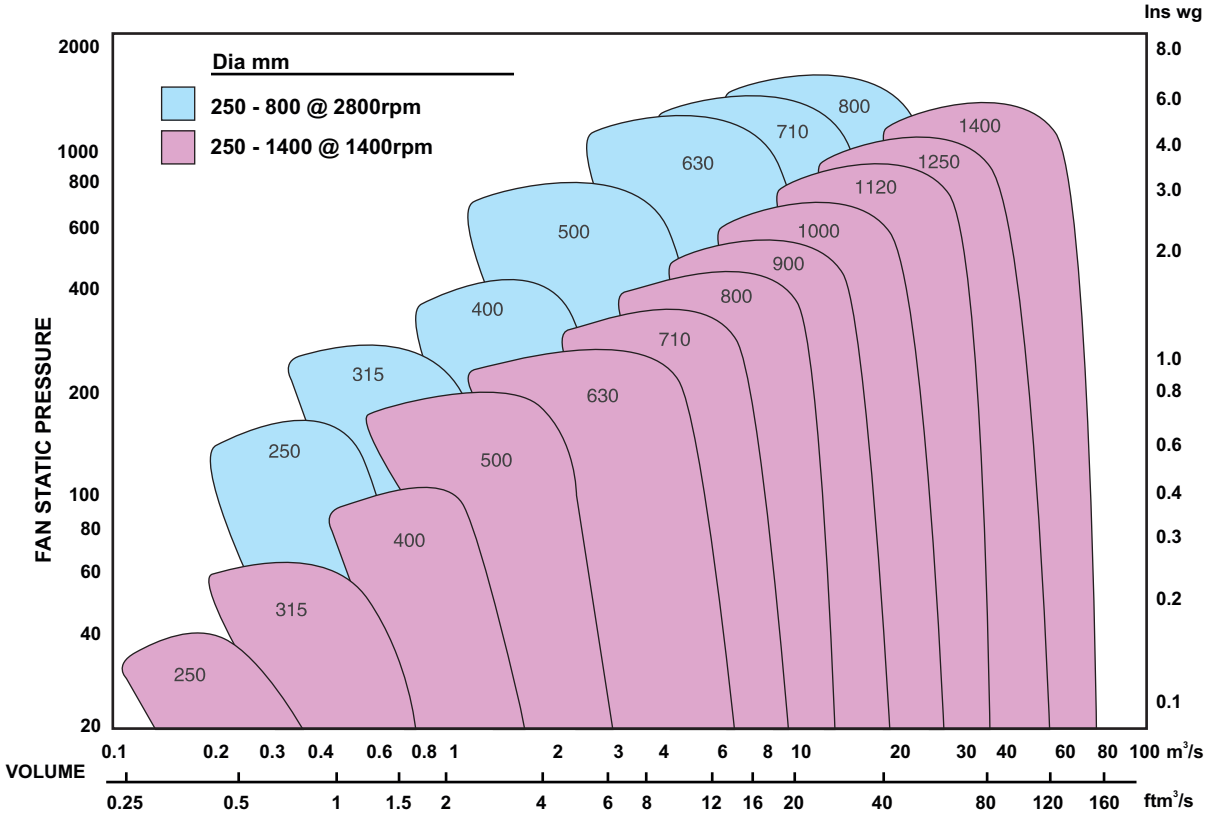
Whereby:

- V = Air Volume (m^3/s)
- D = Impeller diameter (mm)
- P = Absorbed power (kW)
- N = Noise
- n = Rotation speed (rpm)
- p_t = Total pressure (Pa)
- p_{st} = Static pressure (Pa)
- p_d = Dynamic pressure (Pa)
- ρ = Air density (kg/m^3), standard is $1.2kg/m^3$
- v = Air velocity (m/s)
- η = Efficiency (%)
- π = 3.14

PERFORMANCE CURVES

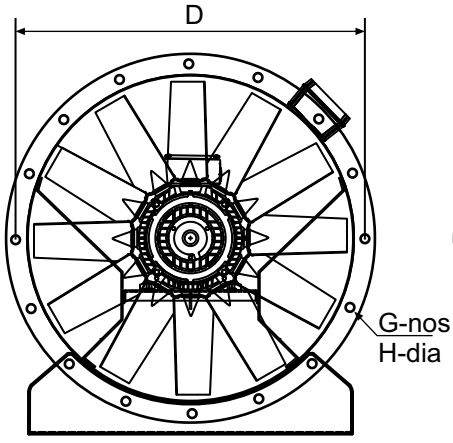
MORE DETAILED CURVES AVAILABLE ON REQUEST

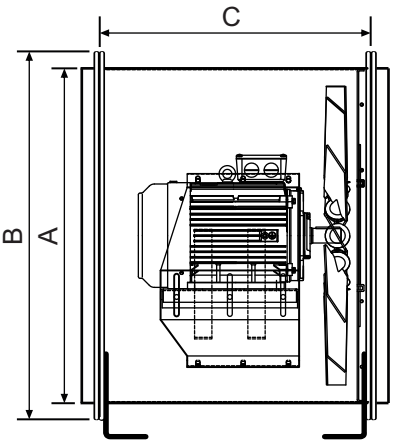




Fan tested in accordance with BS848:Part1:1985 and ISO 5801. There is a policy of continous product improvement, and the right is reserved to revise product information without prior notice.

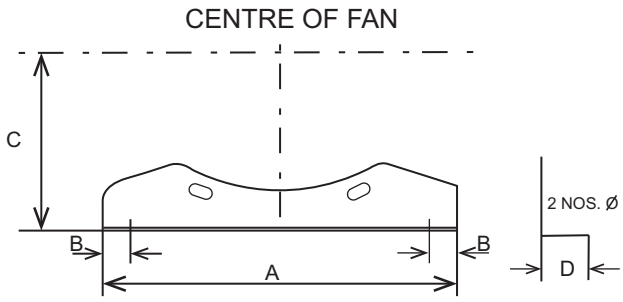
Dimension Information





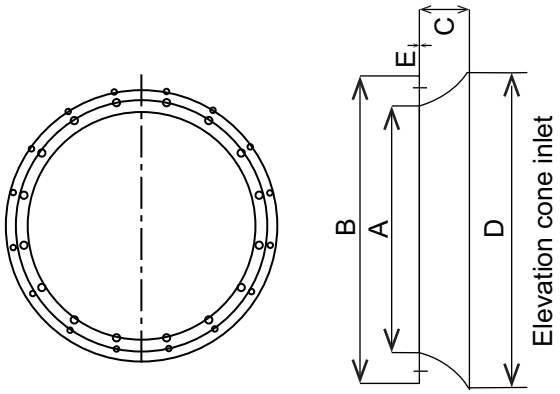
Model	Motor Frame	A	B	C	D	G-nos	H-Dia	Weight (kg)
LC 315	D71-90	315	395	400	366	8	10	45
LC 355	D71-90	355	435	400	405	8	12	50
LC 400	D71-100	400	485	400	450	8	12	55
LC 450	D71-112	450	530	400	497	8	12	80
LC 500	D71-112	500	585	500	550	12	12	90
LC 560	D71-112	560	660	500	629	12	12	100
LC 630	D71-112	630	730	600	698	12	12	120
LC 710	D100-112	710	810	600	775	16	12	150
	D132							190
LC 800	D100-112	800	900	700	861	16	14	180
	D132							220
LC 900	D100-112	900	1000	700	960	16	14	200
	D132-160							250-310
LC 1000	D132	1000	1100	850	1060	16	14	350
	D160-180							420-500
LC 1120	D160-180	1120	1220	1000	1192	20	18	560-670
	D200							750
LC 1250	D160-180	1250	1350	1000	1337	20	18	610-720
	D200							800
LC 1400	D160-200	1400	1500	1000	1474	20	18	750-950
	D225-250			1200				1250-1450
LC 1600	D160-200	1600	1700	1000	1675	24	18	900-1100
	D225-250			1200				1350-1550

Accessories



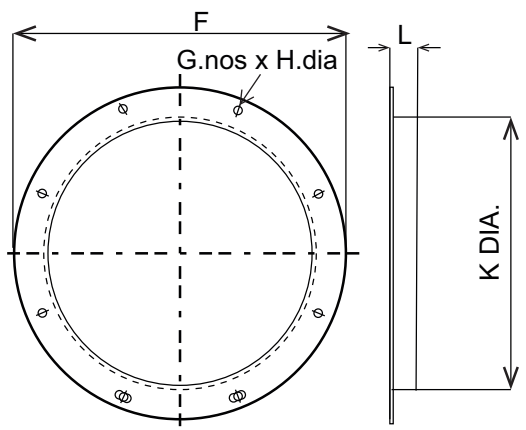
Size	A	B	C	D	Ø	Wt (kg)
315	365	25	220	50	12	0.5
355	405	25	240	50	12	0.8
400	450	25	260	50	12	1.0
450	500	25	280	50	12	1.2
500	550	25	315	60	12	1.5
560	610	25	345	60	14	2.0
630	680	30	400	75	14	2.5
710	785	30	450	75	14	3.0
800	875	30	500	75	14	5.5
900	975	30	580	75	18	8.0
1000	1075	30	630	75	18	10.0
1120	1220	30	690	75	18	12.0
1250	1350	50	737	95	20	14.0

All dimensions in mm.



Size	A	B	C	D	E	Wt (kg)
315	315	395	125	420	2.0	3.0
355	355	435	125	470	2.0	3.5
400	400	485	135	520	2.0	4.0
450	450	530	135	570	2.0	4.5
500	500	585	150	630	2.0	5.0
560	560	660	150	710	2.0	6.0
630	630	730	150	780	3.0	8.0
710	710	810	200	860	3.0	10.0
800	800	900	200	980	3.0	12.0
900	900	1000	250	1080	3.0	18.0
1000	1000	1100	250	1200	3.0	25.0
1120	1120	1220	300	1320	3.0	30.0
1250	1250	1350	300	1450	3.0	35.0

All dimensions in mm.

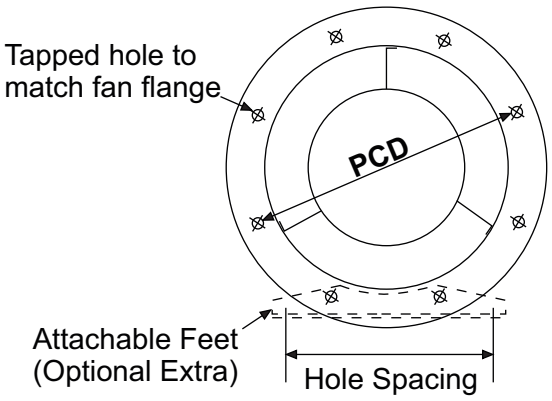


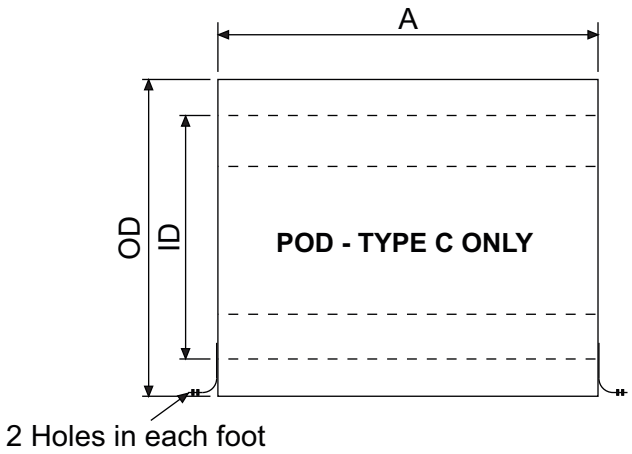
Size	G.nos	H.Dia	J	F	K	L	Wt (kg)
315	8	10	355	395	315	50	2.0
355	8	12	395	435	355	50	2.5
400	8	12	450	485	400	50	3.0
450	8	12	500	530	450	50	3.5
500	12	12	560	585	500	60	4.0
560	12	12	620	660	560	60	4.5
630	12	12	690	730	630	60	5.0
710	16	12	770	810	710	60	6.0
800	16	14	860	900	800	70	7.0
900	16	14	970	1000	900	70	8.0
1000	16	14	1070	1100	1000	70	9.0
1120	20	18	1190	1220	1120	70	10.0
1250	20	18	1320	1350	1250	70	12.0

All dimensions in mm.

* Dimensions shown are approximate only. The details please contact local sales office for more information.

Type B & C Silencers





The above silencers give the approximate dB(A) reductions:

B Type diameter length -7 to 10 dB(A)

C Type 1 diameter length -12 to 15 dB(A)

For full acoustic details contact with London Fan or Breeze Industrial Ventilation Joint Stock Company.

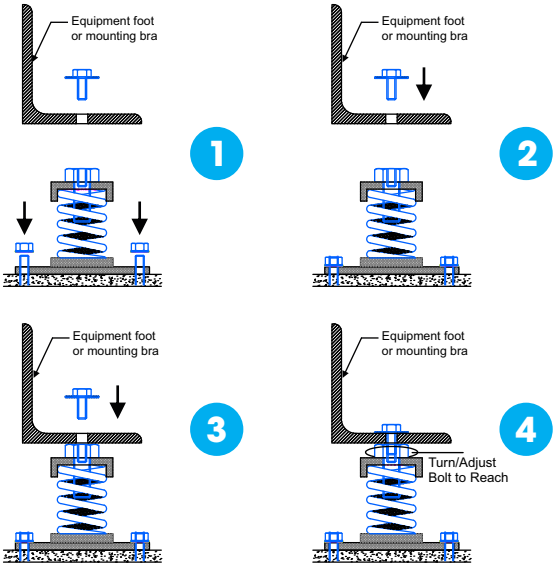
Dimensions and Weights

mm	Dimension (mm)								Weight (kg)			
Size (D)	OD	No of Holes	PCD	Thread	Mounting Foot Holes		A Length		B		C	
					Dia	Spacing	1D	2D	1D	2D	1D	2D
280	385	4	320	M8	10	230	280	560	9	14	-	-
315	415	8	355	M8	10	265	315	630	10	17	13	19
355	455	8	395	M8	10	305	355	710	12	20	15	24
400	500	8	450	M10	10	350	400	800	15	25	18	30
450	600	8	500	M10	10	400	450	900	20	33	24	39
500	650	12	560	M10	10	450	500	1000	25	41	29	48
560	710	12	620	M10	10	510	560	1120	30	50	35	58
630	780	12	690	M10	12	580	630	1260	35	61	42	72
710	860	16	770	M10	10	660	710	1420	44	76	53	90
800	1000	16	860	M10	12	750	800	1600	55	96	66	116
900	1100	16	970	M12	12	850	900	1800	70	129	84	150
1000	1200	16	1070	M12	12	950	1000	2000	82	157	100	182
1120	1320	20	1190	M12	16	1070	1120	2342	100	211	118	247
1250	1450	20	1320	M12	16	1150	1250	2602	127	266	147	306
1400	1600	20	1470	M12	16	1300	1400	2902	199	399	220	453
1600	1800	24	1680	M16	16	1500	1600	3302	311	637	362	739

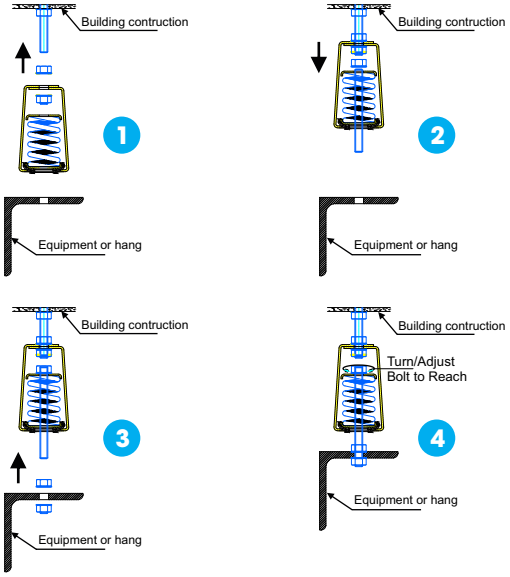
All dimensions in mm.

* Dimensions shown are approximate only. The details please contact local sales office for more information.

Installation Guide



Mounting Isolators



Hanger Isolators

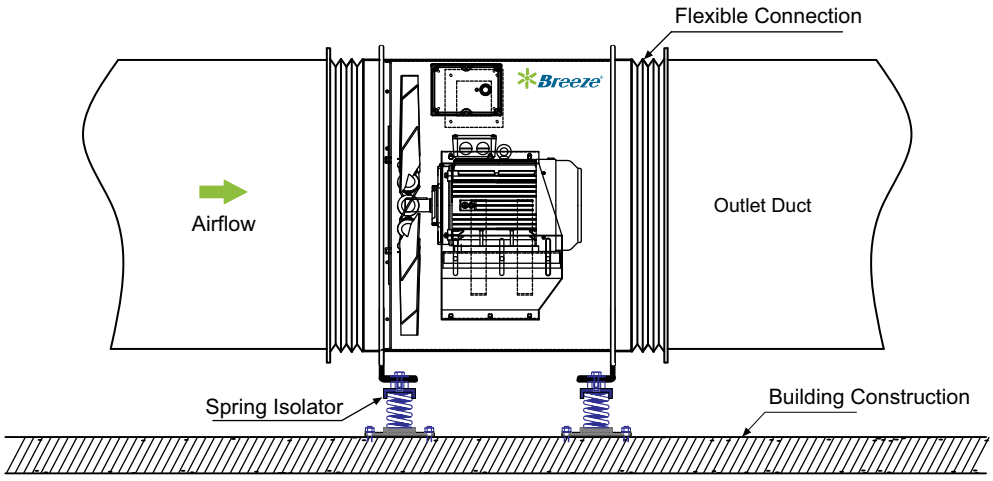


Fig 01. Mounting type

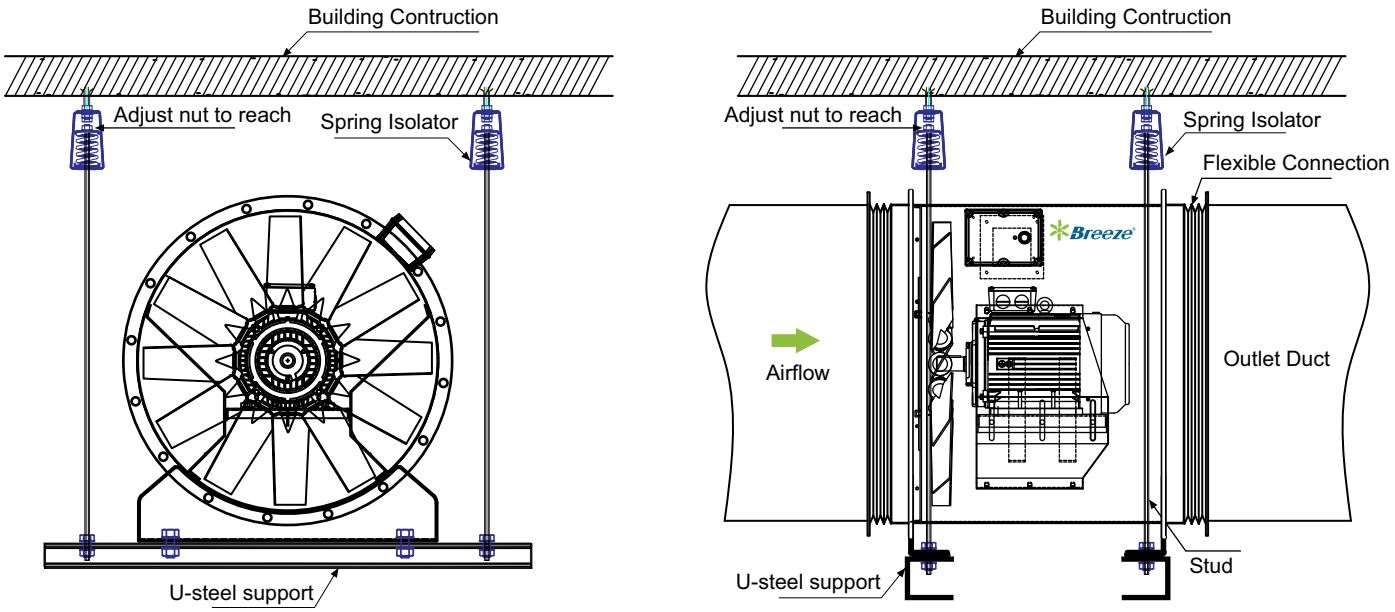


Fig 02. Hanging type

Fan Code

BN 500 4 10B 20°

- 20° — Pitch Angle
- 10B — Number of Blades and Blade Type
- 4 — Motor Poles
- 500 — Diameter of Impeller
- BN — Bifurcated Axial Fan

General Information

This range of fans is designed specifically for extracting contaminated air, operating in corrosive, hot, dusty, or hazardous conditions. The impeller is directly coupled to the motor which is enclosed within its own compartment outside of the airstream.

Construction Information

Bifurcated Axial series are mainly constructed of casing, impeller, motor and other accessories.

Casing

Fan sizes are from 315mm to 1600mm diameter.

The performance range is from 500 m^3/h up to 195.000 m^3/h, pressure up to 1.500 Pa.

The casings and motor mounting are made of mild steel, all steel parts are epoxy coated after manufacturing, thickness from 2.0mm to 6.0mm upon diameter.

Material option available:

- Hot dip galvanized after manufacturing.
- Requested.

Temperature Range

Standard temperature units up to 100°C continuous operation. High temperature up to 200°C continuous operation.

Heat insulating material and an additional cooling fan are fitted inside the motor compartment. Emergency Fume and Smoke Extract up to 300°C short duration.

Please consult The Breeze Fan for higher temperature applications.

Impeller Data

High efficiency aluminum aerofoil type. All units are fitted with Breezax Impellers with Aluminum (ALU) blades.

Hubs are manufactured from fully die cast aluminum alloy as standard.

The blades are with adjustable pitch angle to optimize the dutypoint. The solidity varies for a wider range of performance.

Balance:

The impellers are statically and dynamically balanced on precision machines according to ISO 1940 with G2.5mm/s quality standard.

Motor Data

Standard three of single phase totally enclosed fan ventilated design. All comply with BS 5000 part 10 and part 99 and relevant parts of BS 4999. Suitable for mounting in vertical of horizontal plane. Flameproof, dual speed, dust or weather protected options are available in all sizes.

Performance Data

Full details are available on our selection program: Breeze Fan or London Fan.

- Manufuactured under a certified ISO 9001:2015.
- The performance is tested international standards by BS 848-1:1985 and ISO 5801.

Please contact our sale department or login http://www.breeze.com.vn for selection program.

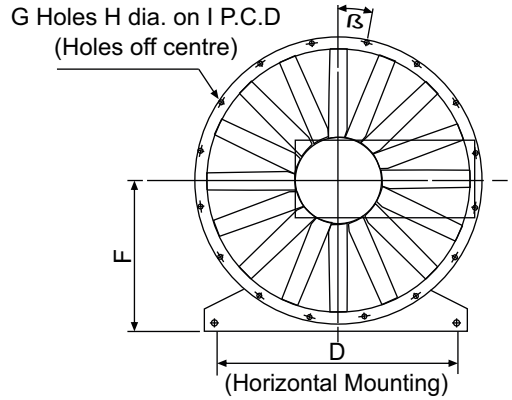
Sound levels

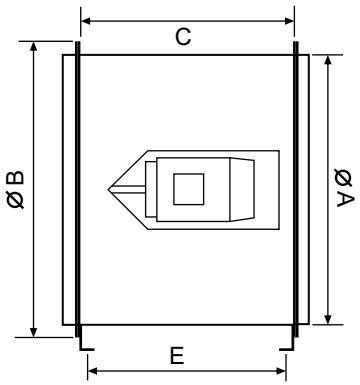
All measurements of the sound that the fans generate have been taken strictly in accordance with BS 848-2, test method 1 and ISO 13347-2 for acoustic performance.

Ancillaries

The standard range of ancillary items include: matching flanges, flexible connectors, mounting feet and AV mounts. Anti back draught dampers, inlet cones and silencers are also available.

Dimension Information





All dimensions in mm.

Model	Motor Frame	A	B	C	D	E	F	G-nos H dia	ß	Weight (kg)
BN 315	D71-90	315	395	400	265	340	205	8 x 10	22.5	50
BN 355	D71-90	355	435	400	305	340	225	8 x 12	22.5	55
BN 400	D71-100	400	485	400	350	340	252	8 x 12	22.5	65
BN 450	D71-112	450	530	400	400	340	280	8 x 12	15	90
BN 500	D71-112	500	585	600	440	530	315	12 x 12	15	110
BN 560	D71-112	560	660	600	500	530	345	12 x 12	15	120
BN 630	D71-112	630	730	600	570	530	400	12 x 12	15	150
BN 710	D100-112	710	810	700	650	630	450	16 x 12	11.25	180
	D132									220
BN 800	D100-112	800	900	850	740	770	500	16 x 14	11.25	230
	D132									270
BN 900	D100-112	900	1000	850	830	770	580	16 x 14	11.25	250
	D132-160									300-360
BN 1000	D132	1000	1100	850	930	900	630	16 x 14	11.25	420
	D160-180									490-570
BN 1120	D160-180	1120	1220	1200	1050	1100	690	20 x 18	9	650-760
	D200									850
BN 1250	D160-180	1250	1350	1200	1180	1100	750	20 x 18	9	710-820
	D200									900

Fan Code

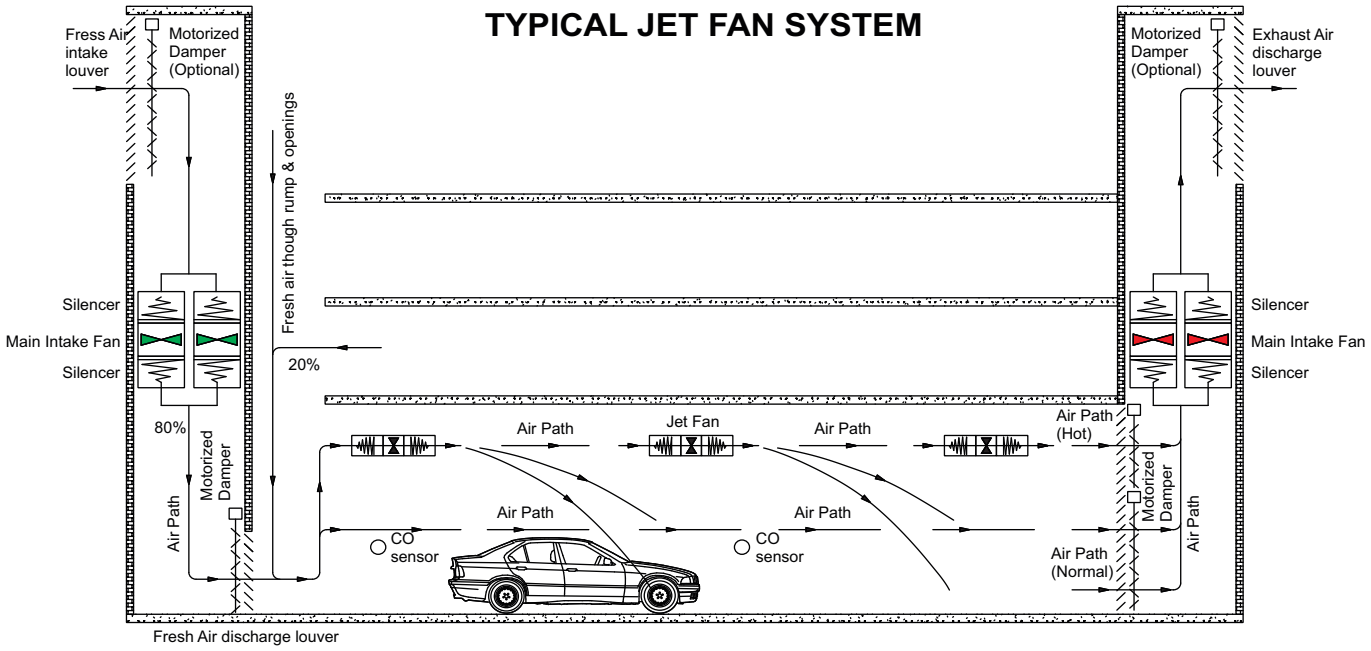
JFLC 355 40°C

- **Working Temperature 250°C/2hrs or 300°C/2hrs**
- **Diameter of Impeller**
- **Car Park Jet Fan**

General Information

Over the years, conventional ducted ventilation system has established its standards and functionally. Firstly, it has to effectively remove or dilute toxic gases from emission of vehicles and make sure that there are no packets of stagnant air. Secondly, in the event of a fire, it has to clear heat and smoke generated by fire as soon as possible for fire fighting to be carried out after that. Other criteria that are desirable, though harder to be attained, are to create a smoke free clear path for Fire Service personnel to enter for fighting the fire as well as protection for the public to escape. To achieve better result, conventional ducted system always demands a larger space for ducting installation but this is difficult under constraint of a normally limited space in car park.

Therefore, in previous years, Jet Fan (or impulse/induction) ventilation system has emerged as the most significant new solution available for car park design of the building industry. The benefits of the system can be reaped not only by the car park owners, but also the users and designers. Jet Fan system has evolved from the longitudinal tunnel ventilation system that is mostly used in road tunnel system and has long been proven in safeguarding vehicular movement in confined spaces. Designed for effective environmental and smoke control, the Jet Fan system has been tried and tested in many car parks throughout Europe and Middle East. A sketch of Jet Fan system is as follow:



Casing

Fan sizes are from 315mm to 450mm diameter.

The casings are made from mild steel with epoxy coated or galvanized steel and hot dip galvanized can be provided upon request. Solid steel terminal box with a rating at IP55 is fitted on the external part of the fan case.

Impeller Data

High efficiency aluminum aerofoil type. All units are fitted with Breezax Impellers with Aluminum (ALU) blades.

The performance is tested international standards by BS 848-1:1985 and ISO 5801.

All curves to a density of $\rho = 1{,}2\ kg/m^3$, at 20°C.

Balance:

The impellers are statically and dynamically balanced on precision machines according to ISO 1940 with G2.5mm/s quality standard.

What is Jet Fan Ventilation System?

A Jet Fan or impulse ventilation system is an alternative to the conventional ducted system and overcomes the shortcomings of ducted system. A Jet Fan comprises a ahigh velocity axial fan with both inlet and outlet attenuator as well as the flow distribution control device. The velocity and volume of the impulse Jet Fan airflow are the decisive parameters which are represented by its thrust at discharge. The thrust of the Jet Fan is also a determining criteria to the number of impulse Jet Fans required in this ventilation system.

Motor Data

The motors fitted two-speed dahlander motor (full and half speed) with protection class of IP55 and Class H insulation which are capable of with standing up to 250°C/ 2 hours or 300°C/ 2 hours upon request in accordance to BS EN 12101-3. The motors are manufactured in accordance to specific standards that include:

- Good internal clearance in bearings lubricated with extra high temperature grease.
- Double insulated terminal leads;
- Double varnish system for winding crown etc.

Motors are suitable for speed control by frequency inverter, subject to fan selection.

Silencer (Sound Attenuator)

The inlet & outlet silencer are designed with an aerodynamically shaped inlet cone (bell mouth) which is welded to the outer case of the silencer. Perforated galvanized steel is fitted in the inner side of casing and non-flammable rock wool or fiberglass is inserted beneath for sound attenuation purpose. Theoretically, any desirable sound level can be achieved with the proper length of the silencer but site constraints may limit the choice. The option to include a deflector louver at the outlet of fan silencer can be necessary to divert the air stream from Jet Fan should the obstruction to airflow by beams or other M&E services is considered significant.

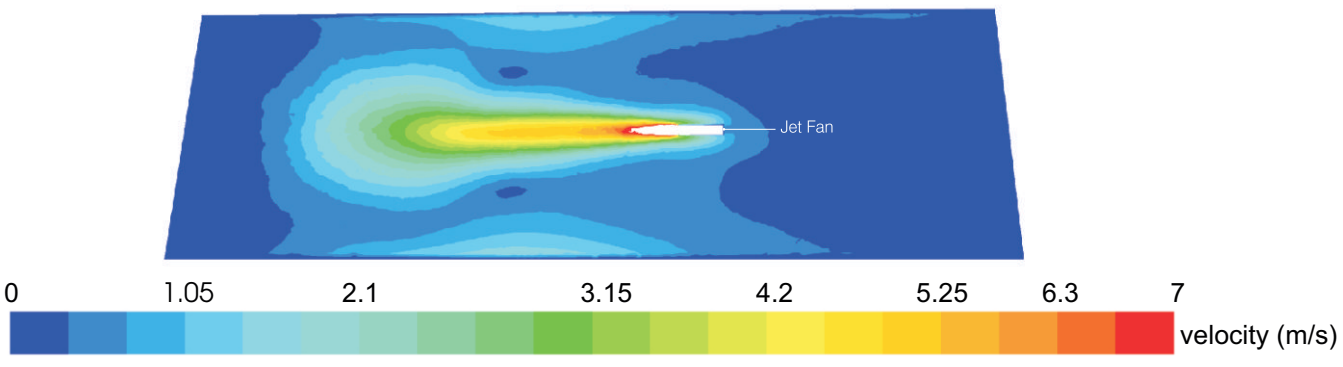


Figure A: Top view of velocity profile of jet fan

As we cam see the amount of air movement induced by the thrust of the Jet Fan is many times the airflow through the Jet Fan. This property enables the Jet Fan to replace conventional ducting in car park ventilation though the main exhaust/fresh air fans remain.

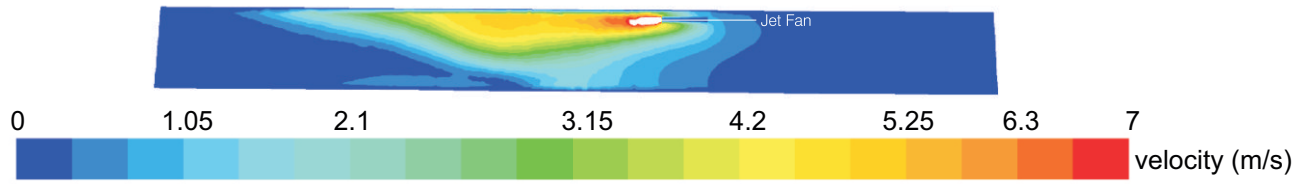
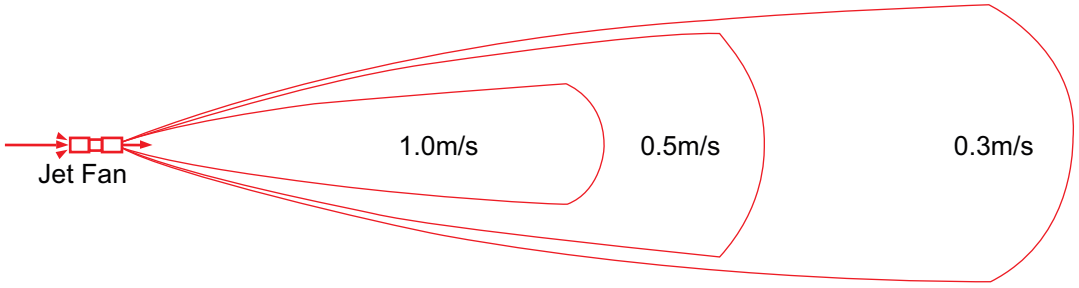


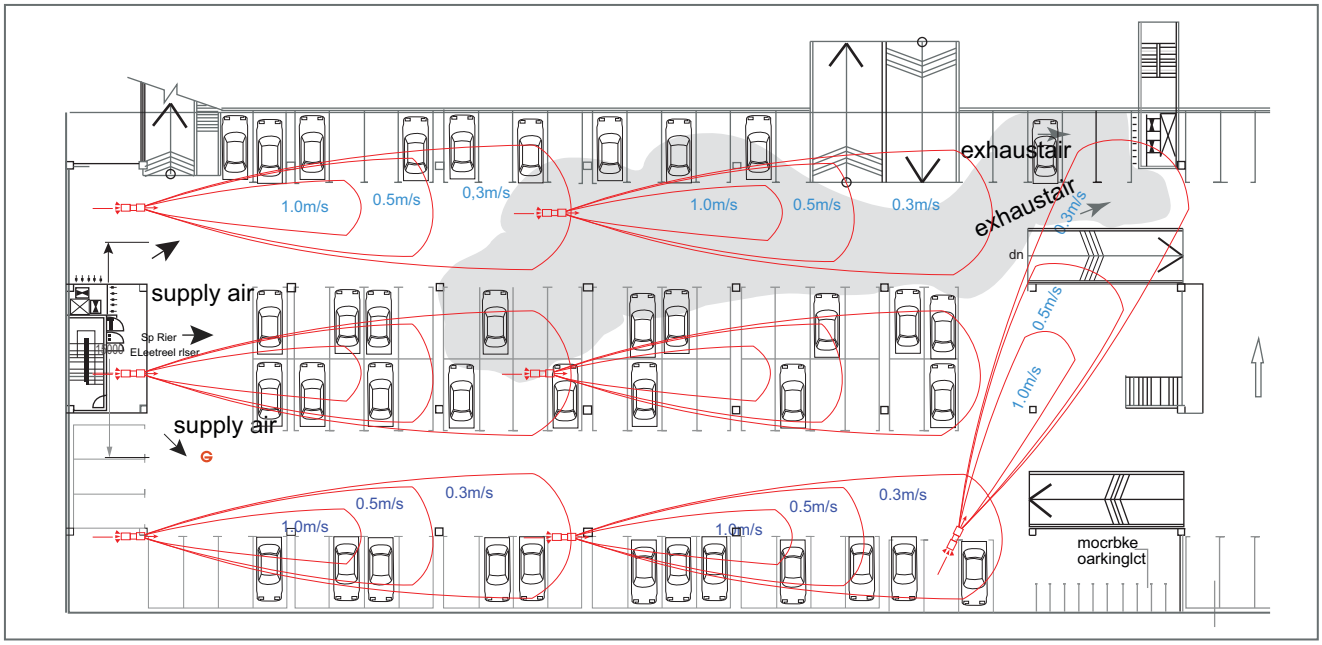
Figure B: Side view of velocity profile of jet fan

The velocity profile of a Jet Fan can be numerically determined through Computational Fluid Dynamic (CFD) analysis with the boundary conditions (proximity to floor slab, beam obstruction, etc) as stated. The velocity profile of the most common 450mm diameter axial type of Jet Fan, operating at high speed under a ceiling slab is as follow:



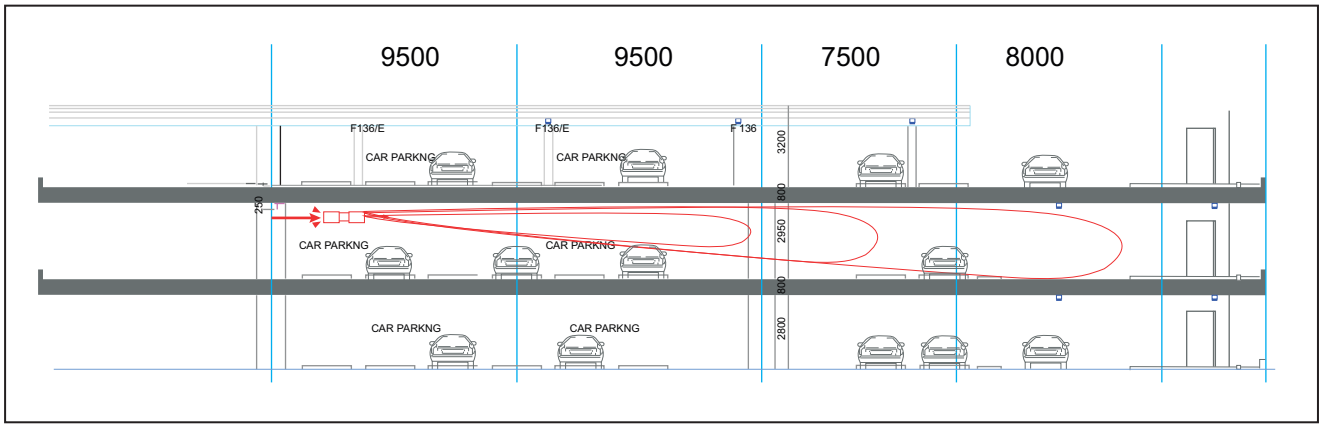
This Jet Fan typically produces a thrust force of 84N (Newtons) at high speed. Some modification to impeller blade or its pitch angle can result in higher thrust force but at the expense of higher noise level and power consumption. The higher the thrust force, the further and wider the air throw of Jet Fan can reach and thus covering a larger floor area. Larger fan has higher thrust but designer of car park ventilation system has to consider the size of fan as well as the head room requirement by relevant authorities. It is also favorable to keep minimum number of fans in a system as life safety feature in emergency mode.

The figure below shows a car park space of around 2,600m2 that is ventilated by Jet Fan system. It illustrates only the fire mode operation of the system:



The Jet Fan are operating at high speed (fire mode) and a car in the middle in on fire. The main exhaust fans are at the top right hand corner while the main supply air fans are at the left hand side. The bulk airflow created by the main fans as well as the airflow induced by the Jet Fans will direct the smoke towards the exhaust point of the system. The induced airflow also effectively helps to dilute the smoke & heat produced by the fire to keep toxicity and temperature from reaching dangerous level.

The cross sectional view of Jet Fan installation shows its great range of air throw at fire mode if no or minimal obstruction to airflow by beam or other M&E services exists:

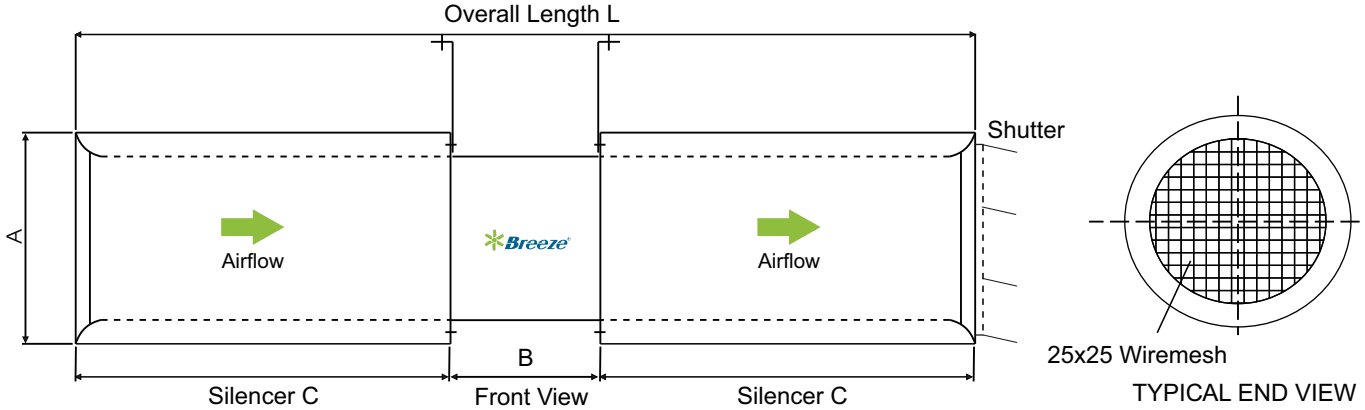


Performance Parameters

Model	Flow Rate m^3/h	Out. Velocity (m/s)	Thrust Force (N)	Motor Power (kW)	RPM Fan	A	B	C	L_{max}	Noise at 3m
JFLC 315	5000/2500	16.72/8.36	24/6	1.1/0.28	2880/1440	415	335	670	1675	58/41
	5000	16.72	24	1.1	2880					58
JFLC 355	7200/3600	20.08/10.12	40/10	1.7/0.34	2880/1440	455	375	750	1875	62/46
	7200	20.08	40	2.2	2880					62
JFLC 400	9000/4500	19.7/9.79	60/15	2.2/0.37	2880/1440	500	420	840	2100	63/49
	9000	19.7	60	2.2	2880					63
JFLC 450	12000/6000	21.05/10.64	84/21	3.3/0.66	2880/1440	550	470	940	2350	68/51
	12000	21.05	84	4.0	2880					68

All dimensions in mm.

Dimension Information



Fan Code

RSC 500 4 10B 20°

- RSC — Rooftop Axial Fan
- 500 — Diameter of Impeller
- 4 — Motor Poles
- 10B — Number of Blades and Blade Type
- 20° — Pitch Angle

Casing

Fan sizes are from 315mm to 1600mm diameter.

The performance range is from 500 m^3/h up to 195.000 m^3/h, pressure up to 1.500 Pa.

All casings and motor mounting are made of mild steel, all steel parts are epoxy coated after manufacturing, thickness from 2.0mm to 6.0mm upon diameter.

Roof cowl is made of aluminum or mild steel with epoxy coated or stainless steel upon requested.

Roof base support and protection guard are epoxy coated.

Applications:

Designed for roof installation, and suitable for:

General ventilation in factory and warehouse, buildings, shops and industry.

- Roof ventilation (Aluminum roof).
- Smoke extraction vertical discharge.

Temperature time classification according EN 12101-3 class H250 or H300/ 2hours.

Impeller Data

High efficiency aluminum aerofoil type. All units are fitted with Breezax Impellers with Aluminum (ALU) blades. GRP or GRN blades can be fitted if required.

Hubs are manufactured from fully die cast aluminum alloy as standard.

The blades are with adjustable pitch angle to optimize the dutypoint. The solidity varies for a wider range of performance.

Operating temperature:

- ALU: -40°C + 200°C
- GRP: -40°C + 70°C
- GRN: -40°C + 150°C
- AST: -30°C + 110°C

Balance:

The impellers are statically and dynamically balanced on precision machines according to ISO 1940 with G2.5mm/s quality standard.

Motor Data

Motors incorporated are TEFC (Total Enclosed Fan Cooled) and airstream rated to IEC 34-1.

Standard motors are protected to IP55 with Class F insulation. Operating temperature is from -20°C to +50°C as standard, fans for operation beyond these limits are also available.

Motors are suitable for speed control by frequency inverter, subject to fan selection.

Available specific for your project requirements such as:

- 220-240V / 380-415V-50Hz.
- 60Hz: specific to your voltage requirements.
- 2-speed (Full/Half and Full/Two Thirds).
- High temperature motor and double speeds motor (Class H): 250°C/2hrs or 300°C/2hrs or requested.
- Comply with ATEX or IECEx certified motor. Enclosure IP55 or IP66, class F insulation. Fitted with sealed for life ball bearings.

Performance Data

Full details are available on our selection program: Breeze Fan or London Fan.

- Manufuactured under a certified ISO 9001:2015.
- The performance is tested international standards by BS 848-1:1985 and ISO 5801.

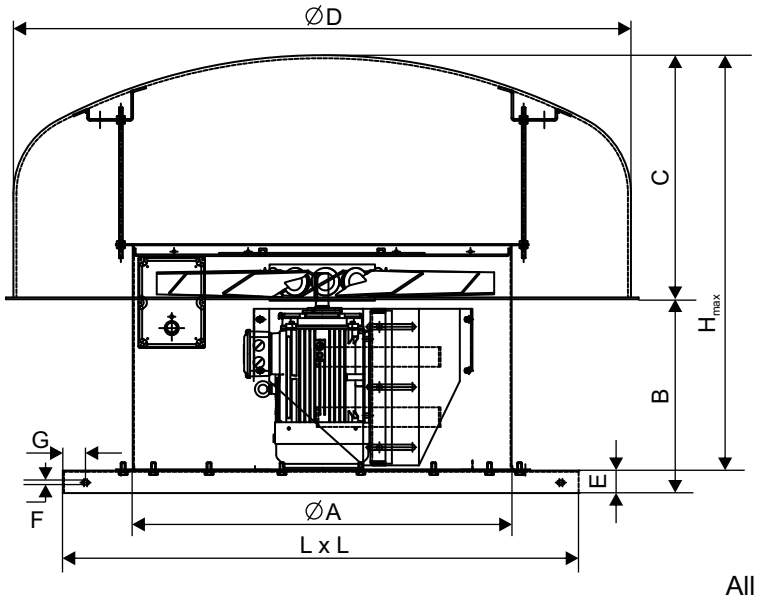
Please contact our sale department or login http://www.breeze.com.vn for selection program.

Sound levels

All measurements of the sound that the fans generate have been taken strictly in accordance with BS 848-2, test method 1 and ISO 13347-2 for acoustic performance.

Sound data are determined according to BS EN ISO 5136 – In-duct method.

Dimension Information



All dimensions in mm.

Model	ØA	B	C	ØD	E	F	G	LxL	H_{max}
RSC 315	315	200	240	750	35	8	50	500x500	550
RSC 355	355	200	240	750	35	8	50	550x550	550
RSC 400	400	200	300	850	40	8	50	600x600	650
RSC 450	450	200	300	850	40	8	50	660x660	720
RSC 500	500	236	300	850	40	12	50	730x730	760
RSC 560	560	236	400	950	50	12	60	810x810	760
RSC 630	630	236	400	1000	50	12	60	900x900	810
RSC 710	710	300	400	1200	50	12	60	990x990	1000
RSC 800	800	315	450	1400	60	12	70	1100x1100	1100
RSC 900	900	355	450	1600	60	14	70	1200x1200	1200
RSC 1000	1000	400	645	1600	60	14	70	1300x1300	1300
RSC 1120	1120	600	645	1800	75	14	70	1500x1500	1500
RSC 1250	1250	600	850	2000	75	14	75	1710x1710	1600
RSC 1400	1400	600	850	2400	75	14	75	1900x1900	1750
RSC 1600	1600	650	1000	3000	100	20	80	2160x2160	1850

Dimensions shown are approximate only. The details please contact local sales office for more information.

Fan Code

PA 500 4 10B 20°

- 20° — Pitch Angle
- 10B — Number of Blades and Blade Type
- 4 — Motor Poles
- 500 — Diameter of Impeller
- PA — Fan Type

Casing

Fan sizes are from 315mm to 1000mm diameter with air inlet bellmouth.

Fan type:

- PA series: Plate Mounted Axial Fan
- PAF series: Explosion Proof Plate Mounted Axial Fan
- FLP series: Explosion Proof Propeller Fan

The plates are made of mild steel with epoxy coated after manufacturing, thickness from 2.0mm to 4.0mm upon diameter.

Airflow direction:

- Plan B: standard.
- Plan A can be supplied if required.

Impeller Data

High efficiency aluminum aerofoil type. All units are fitted with Breezax Impellers with Aluminum (ALU) blades. GRP or GRN blades can be fitted if required.

Hubs are manufactured from fully die cast aluminum alloy as standard.

The impeller of PAF and FLP series are fitted with Anti-Static Nylon (AST) or upon requested.

The blades are with adjustable pitch angle to optimize the dutypoint. The solidity varies for a wider range of performance.

Balance:

The impellers are statically and dynamically balanced on precision machines according to ISO 1940 with G2.5mm/s quality standard.

Motor Data

Motors incorporated are TEFC (Total Enclosed Fan Cooled) and airstream rated to IEC 34-1.

Standard motors are protected to IP55 with Class F insulation, fitted with sealed for life ball bearings. Operating temperature is from -20°C to +50°C as standard.

Available specific for your project requirements such as:

- 220-240V / 380-415V-50Hz.
- High temperature motor and double speeds motor (Class H): 250°C/2hrs or 300°C/2hrs or requested

Hazardous Area:

Comply with ATEX Directive 2014/34/EU, EN 60079-0, EN 60079-1 and EN 61241-0.

Performance Data

Full details are available on our selection program: Breeze Fan or London Fan.

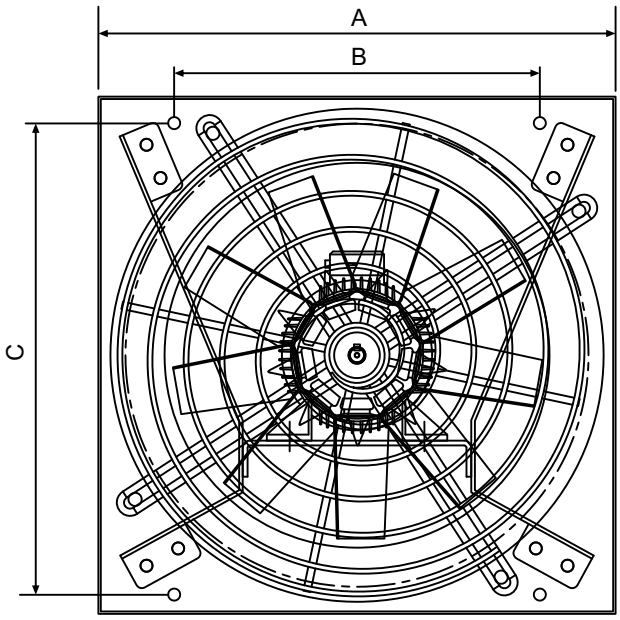
- Manufuactured under a certified ISO 9001:2015.
- The performance is tested international standards by BS 848-1:1985 and ISO 5801.

Please contact our sale department or login http://www.breeze.com.vn for selection program.

Sound levels

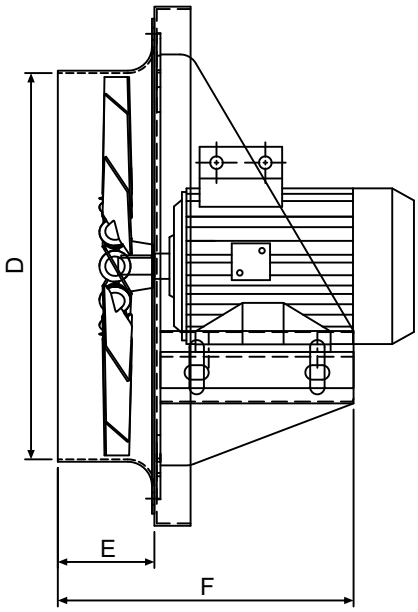
All measurements of the sound that the fans generate have been taken strictly in accordance with BS 848-2, test method 1 and ISO 13347-2 for acoustic performance.

Dimension Information



Plan B

Airflow



Model	Motor Frame	A	B	C	D	E	F	Weight (kg)
PA 315	D71-90	430	304	392	315	80	245	30
PA 355	D71-90	485	355	453	355	85	260	35
PA 400	D71-100	540	496	496	400	100	320	45
PA 450	D71-112	575	385	531	450	100	340	60
PA 500	D71-112	655	465	611	500	120	350	75
PA 560	D71-112	725	535	681	560	120	370	90
PA 630	D71-112	805	615	761	630	150	390	100
PA 710	D100-112	850	670	810	710	170	410	125
	D132							145
PA 800	D100-112	970	736	910	800	200	510	140
	D132							160
PA 900	D100-112	1070	838	1006	900	220	570	150
	D132-160							170-210
PA 1000	D132	1170	936	1106	1000	220	620	200
	D160-180							240-300

All dimensions in mm.

* Dimensions shown are approximate only. The details please contact local sales office for more information.

Fan Code

BCS 280 R

Construction Type:
- R: Basic Model
- E: Heavy Duty Model
- C: Overhang Model

Diameter of Impeller

Fan Type

General Information

The **FCS/FCD** and **BCS/BCD** series of centrifugal fans with forward/ backward impellers were developed with advanced technologies. They are designed to bear the BS and ISO standard for air performance, sound, and efficiency which are equivalent to AMCA and DIN standard.

The centrifugal fan include 15 models as described in this catalogue. Some of the features and characteristics of these fans are: forward impeller blades, a wide range of applications, compact design, high efficiency, economic exercise, high quality execution, low noise and quiet running, and low power consumption. These fans are ideal for use in central air conditioning systems, in purifiers. The efficiency of all the fans is guaranteed through specific volume figures at maximum pressure differentials. Excellent performance and minimal noise levels are the features of this new fan range. They are also suitable for use in a variety of other ventilation.

Fan type:
- FCS series: Forward curve centrifugal fan with single inlet single width.
- BCS series: High efficiency, backward curve centrifugal fan with single inlet single width.
- FCD series: Forward curve centrifugal fan with double inlet double width.
- BCD series: High efficiency, backward curve centrifugal fan with double inlet double width.

Fan size:
- FCS series: 280mm - 1000mm
- FCD series: 200mm - 1000mm
- BCS series: 280mm - 1400mm
- BCD series: 200mm - 1250mm

These fans can cover the following performance range:

FCS/FCD series: Air volume rate from 700m3/h - 90.000m3/h, static pressure up 1.500Pa.

BCS/BCD series: Air volume rate from 1.000m3/h - 120.000m3/h, static pressure up 3.000Pa.

These fans have been designed for treating clean air within the temperature limits:
- R model: -20°C - 85°C.
- E model: -20°C - 85°C.
- C model: -30°C - 185°C.

(For special execution up to 400°C)

Important: when making a choice of a blowers consider the limit.
- Air volume
- Static pressure
- Output speed of the air
- Impeller diameter
- Absorbed power at the fan shalf
- Efficiency and noise levels.

Construction Information

FCS/FCD and **BCS/BCD** series are mainly constructed of casing, impeller, frame, bearing, shaft, motor and inlet/outlet flange.

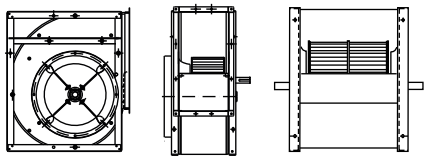
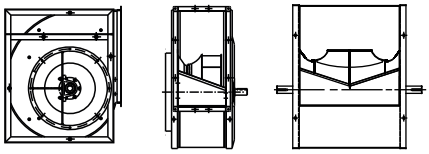
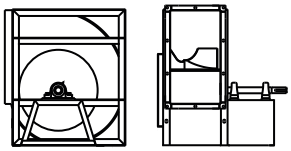
Casing

Size ranges are from 200mm to 1400mm diameter.

- Range sizes from 200mm to 1000mm is made of hot galvanized steel with EN 10142. The side plates include inlets cones that are designed with the best aerodynamics for inlet condition. The scroll is fixed to the side plates by spot welding of "Pittsburgh seam locking."
- For sizes 1120mm to 1400mm are made of mild steel with epoxy painting. The inlet cones are also manufactured in black steel and epoxy painted.

They have thickness from 1.2mm to 5.0mm upon diameter.

Stainless steel of casing is provided on request.

Fan Type	Fan Size	Fan Diagram	Description	Bearing Type
R Model	FCS 280-710 FCD 200-710 BCS 280-710 BCD 200-710		Forward curve and backward curve with belt driven. Standard inlet, outlet flanges. Welded rectangular frame. Ball bearings on both sides on separate frame - fan and motor on common baseframe.	
E Model	FCS 280-1000 FCD 200-1000 BCS 280-1400 BCD 200-1250			
C Model	FCS 280-1000 BCS 280-1400		Forward curve and backward curve with impeller overhang on the fan shaft, standard inlet and outlet flanges.	

Impeller Data

The impellers are constructed of high grade cold-roll steel, according to the three dimensional flow theory, the impellers are fixed on the center plate and on the end ring with welding by high precision laser cutting machine.

All the impellers are designed highest peripheral speed and high efficiency.

The forward curve impeller of **FCS/FCD** is made of hot galvanized steel.

The backward curve impeller of **BCS/BCD** is made of mild steel, they are welded and epoxy painting. Stainless steel of impeller can be provided on request.

All the impellers are statically and dynamically balanced to ISO 1940 with G2.5mm/s quality standard.

The impellers are secured to the shaft through a steel hub.

Hub bore is precision machined and incorporates as keyway and locking screw.

Shaft

The shafts are made of 45 Cr carbon steel bars. They are coated after assembly to provide corrosion resistance. Shaft size should be designed to meet the first critical speed of at least fan maximum running speed 1.4 times.

Shaft are provided with keyways for the impeller hub and for belt pulleys that can be fitted on either shaft ends.

Stainless steel of shaft can be provided on request.

Frame

The construction frame of R model is made of galvanized steel angle iron bars. The cutting and bending of the frame parts, as well as the TOX connections, are formed with the use of tools to ensure the high accuracy and the rigidity of the frame.

The heavy duty frames of E and C models are made with hot rolled steel and welded by angle steel and flat steel with epoxy painting in order to ensure sufficient rigidity and strength.

All frames can be protected with hot dip galvanized or stainless steel as an option.

Bearing

Ball bearings are used in all of all the centrifugal fans. These are high quality bearings and selected to minimize the fan noise levels. The bearings are pre-lubricated, sealed and self centering.

For construction of R model, the bearings are supplied with lubricated fittings. R model is used single row, deep groove, self-aligning ball bearings. Sealed and lubricated for life, they are locked on the shaft with an eccentric ring clamp and supported, inside electrically conductive rubber shock absorbers, on spider shaped holders bolted on the inlet to the closed side plate.

For construction of E and C models, the bearings are supplied with redial bearing. E and C models are used sealed, single row, self-aligning ball bearings, with eccentric clamp, mounted inside cast iron pillow blocks, with grease nipples, bolted to the side-frames or pedestal.

The bearing service life (L10) are over 100,000 hours (L10 >= 100,000 hours). Limiting values for speed and power are indicated in the characteristic curve and should not be exceeded. Long term quality is safeguarded when general assembly and service guidelines for V-belt drives.

The grooved ball bearings in the rushed cast iron casing are completely sealed and maintenance free. Unavoidable alignment errors are compensated by the spherical outer ring.

The one piece bearing housing conforms to ISO 3228 and allows full utilization of the carrying capacity of the mounted regulating bearing. All casing are equipped with lubricating bore holes for the possibility of secondary lubrication. As protection the lubricating bore holes are closed with a synthetic stopper.

The bearing is attached to the shaft by means of an eccentric tension ring. In order to guarantee the bearing fit is free from play and to avoid corrosion of the tension ring sealed with a liquid synthetic.

Motor Data

Motors incorporated are TEFC (Total Enclosed Fan Cooled), and airstream rated to IEC 34-1.

Protected to IP55 with Class F insulation standard.

Motors are suitable for speed control by frequency inverter, subject to fan selection.

Available specific for your project requirements such as:

- 220-240V / 380-415V-50Hz
- IE1, IE2, IE3 and IE4 Efficiency Classes.
- 2-speed (Full/Half and Full/Two Thirds)
- High temperature motor and double speeds motor (Class H): 250°C/2hrs or 300°C/2hrs.
- Explosion proof motor: Class F and IP55 or IP66 with completed ATEX 2014/34/EU and EN 50014, EN 50018 and EN50281-1-1.

Motor Power:

The power (P_w) on the performance chart refers to the shaft power of the fan.

The rated power of the drive motor equals the total required shaft input multiplied by the safety factor:

$$P_s = P_w \ : \ \eta_m$$

Where: P_s = total required shaft input power

η_m = mechanical efficiency

The mechanical efficiency is provided as follow:

Way of ventilator driving	η_m
Electric motor directly driven	1
Coupling directly driven	0.98
V-belt driven	0.95

Outlet/Inlet flange

The inlet flange is made of high grade cold rolling sheet with epoxy coating. The outlet flange is made of galvanized steel. The connections of the flange components to the scroll are made using a TOX non-welding process. This maintains a good flange appearance while also providing sufficient strength and rigidity.

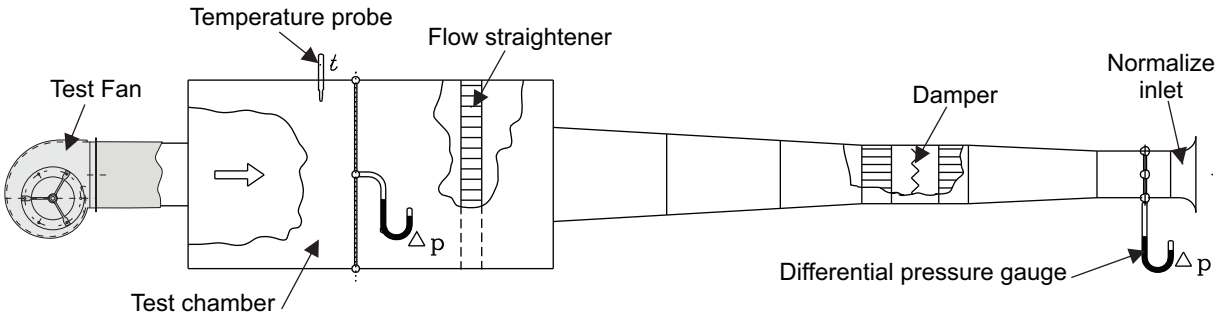
Perfomance Data

Full details are available on our selection program: Breeze Fan.

- Manufuactured under a certified ISO 9001:2015.
- The performance is tested international standards by BS 848-1:1985 and ISO 5801.
- Installation position B, i.e. free inlet and ducted outlet configuration.
- All curves to a density of ρ = 1,2 kg/m^3, at 20°C.

Please contact our sale department or login http://www.breeze.com.vn for selection program.

The performance curves are provided in this catalogue were measured according to BS 848-1:1985 and ISO 5801 in the test chamber.



BS 848 part 1 / ISO 5801

Sound Level

All measurements of the sound that the fans generate have been taken strictly in accordance with BS 848-2, test method 1 and ISO 13347-2 for acoustic performance.

Sound data are determined according to BS EN ISO 5136 – In-duct method.

Published sound power level spectra figures are dBW with a reference of 10^{-12} Watt (1 Pico watt).

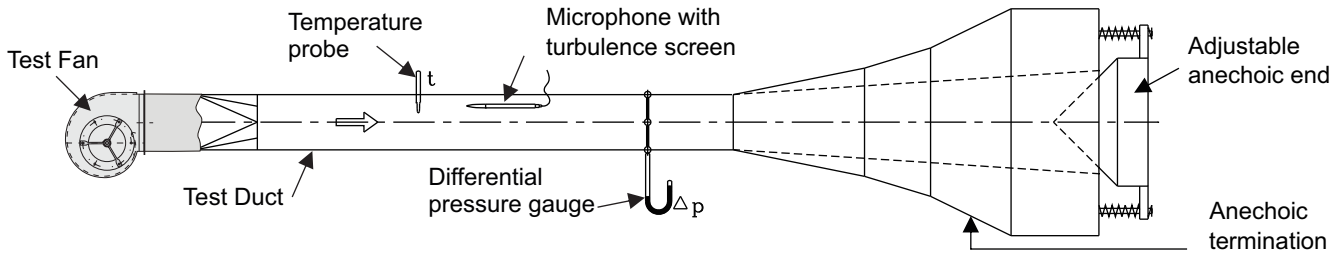
The sound power levels shown on the fan curves are for inlet LwiA scale for installation type D: ducted inlet, ducted outlet. Ratings include the effects of ducted end correction.

The sound pressure level at the inlet at 1m distance in low reflection can be obtained by deducting 11dB from the sound power level at the inlet side. The sound pressure difference from 1m to distance d is obtained as follows:

$$LpiA = 10 * \log (1/d)$$

Where: d = distance from fan in meters.

Sound measurement test rig scheme according to BS 848 part 2:1985 and ISO 5136 in the test duct.



BS 848 part 2 / ISO 5136

Installation and Maintenance

V-belt Drive Installation

1. Remove the protective coating from the ends of the fan shaft and ensure that the shaft ends are free of nick and burrs.

2. Check fan and motor shafts for alignment.

3. The center distance must be controlled as 0.7 (d1 + d2) < a < 2 (d1 + d2). The belt speed of forward curve fan should be more than 10m/s, but less than 15m/s, (10 < v < 15m/s). The belt speed of backward curve fan should be more than 25m/s, but less than 35m/s (25 < v < 35m/s).

4. Slide sheaves on to the shafts, do not hammer the sheaves on to the shafts with force as this may result in bearing damage.

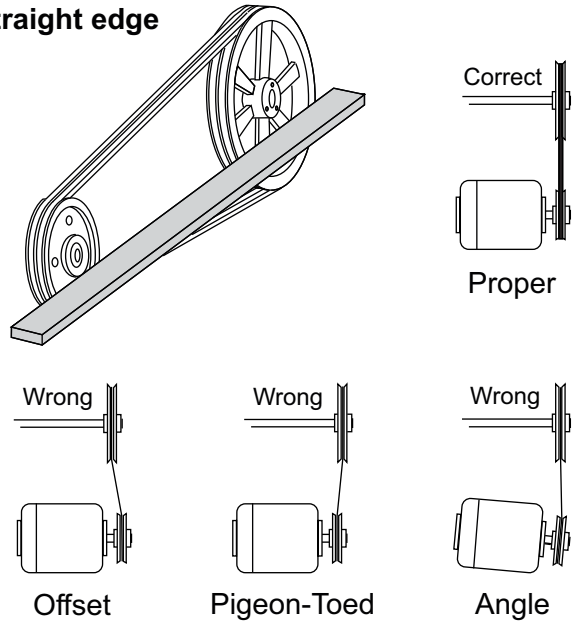
5. Align fan and motor sheaves with a straight edge, and tighten the sheaves.

6. Place belts over the sheaves with care. Do not bend or squeeze the belts or it might get damaged.

7. Adjust the belt tension until the belts appear snug. Run the unit for a few minutes and allow the belts to set properly.

8. Switch off the fan, adjust the belt tension by moving the motor base. When in operation, the tight side of the belts should be in a straight line from sheave to sheave and there should be a slight bow on the slack side.

Aligning sheaves with a straight edge



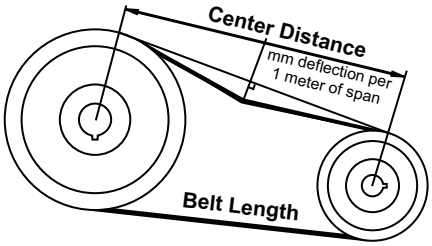
Belt Tension

Before tensioning the belts installed on the pulleys, mark two thin transverse lines on the back of a belt in the middle of the group of belts, these marks shall be as far apart as possible while remaining together on the straight part of the belt strand.

Tighten the belts progressively after turning them for about one minute, several times, after each adjustment, tighten the pulleys so that the length between the two marks is increased by the percentage given in the following table.

This simplified belt tensioning method will facilitate the work done by fitters for maintenance of trapezoidal belt transmissions when important technical data are not available. This avoids the need to calculate the optimum tension.

Belt tension indicator applied to mid center distance.



Belt Section	Force require to deflect A belt 16mm per meter of span		
	Small Pulley/ Diameter (mm)	Newtonian (N)	Kilogram force (Kgf)
SPZ	13-20	56-95	1.3-2.0
	20-25	100-140	2.0-2.5
SPA	25-35	80-132	2.5-3.6
	35-45	140-200	3.6-4.6
SPB	45-65	112-224	4.6-6.6
	65-85	236-315	6.6-8.7
SPC	85-150	224-335	8.7-11.7
	115-150	375-560	11.7-15.3
A	10-15	80-140	1.1-1.5
B	20-30	125-200	2.0-3.1

Bearing Installation

1. Before installing, read bearing manufacturers' procedures. Before putting the new bearings on the shaft, you may need to break what is called swivel torque on the bearings (depending on type of bearing). This is done by holding the bearing housing securely and being able to move the inner bearing race around freely.

2. Apply light film of oil on shaft, then gently slide the new bearing onto the shaft.

Do not hammer bearing onto the shaft!

3. Align bearings on shaft with the previous scribe marks that are on the shaft and lock bearing to shaft.

4. Put bolts into mounting surface and bearings. Do not tighten.

5. Remove block if shaft is supported.

6. Set bearings on support with the scribed marks locating the bearings. Make sure bearings are square and level with the shaft.

7. Tighten bolts and torque bearing bolts, bearing set screws/locking collars as per bearing manufacturers' procedures.

8. Rotate shaft by hand to help allow the bearings to help set in. Also at this time, listen for any unusual noises such as wheel rubbing on cone and any bearing noise.

9. Connect extended lube lines in new bearings if needed.

10. Reinstall the drive sheaves and belts. Check the belt alignment.

11. Make sure to reinstall all guards and follow proper safety measures before starting up the fan.

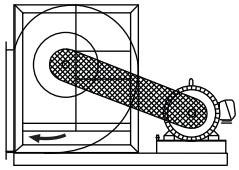
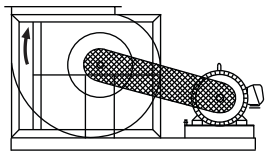
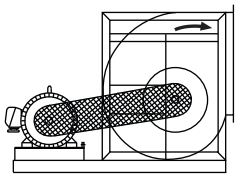
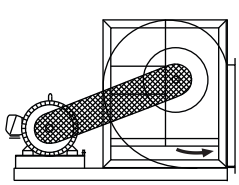
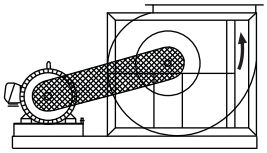
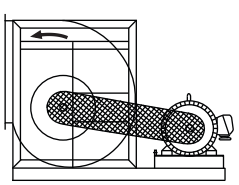
Fan Rotation

Standard fans are supplied with both shaft ends prepared to fit a pulley. They can be indifferently used with either RD or LG rotation. All the versions with side frames can be easily turned to install them in one of the four orientation 0°, 90° and 180°. There is no need to specify fan orientation when ordering standard fans. Fan orientation must be specified instead when ordering fans fitted with accessories which must be located according to the scroll orientation, like drain plugs.

Other accessories may be installed in coded standard positions, identified by letters or numbers. Please, check the details concerning each particular accessory. When requested, fan orientation is identified, according to ISO 13349.

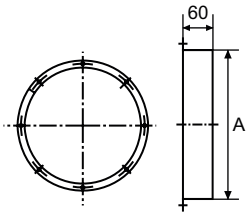
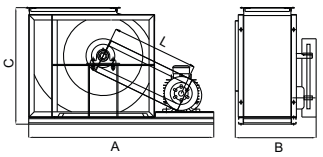
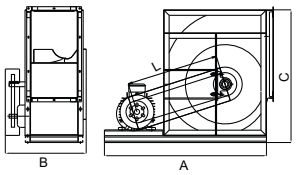
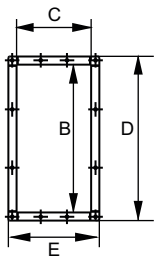
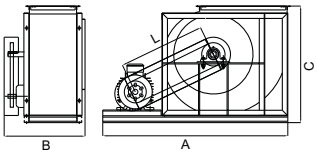
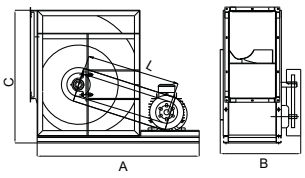
When looking at the fan from the drive side, RD means right (clockwise) rotation, while LG means left (counterclockwise) rotation.

The achievable orientation are shown in the drawing below.

Rotation	0°	90°	180°
RD Right Hand (Clockwise)			
LG Left Hand (Counterclockwise)			

Dimension Information

FCS/BCS-R: Basic Model

Rotation	Flanges	90°	180°
RD **Right Hand**	Inlet Flange 		
LG **Left Hand**	Outlet Flange 		

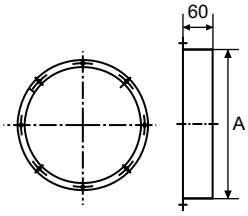
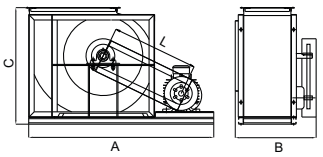
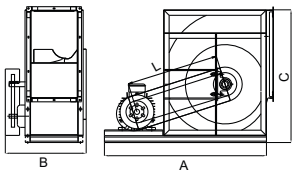
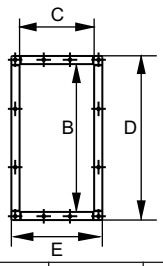
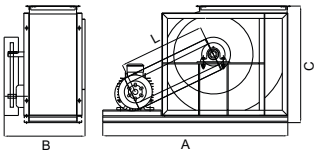
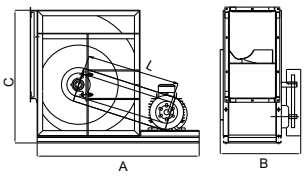
Size	Frame	A	B	C	D	E	A_{max}	B	C	A_{max}	B	C
280	71-112	292	361	197	417	253	1130	400	516	1050	400	568
315	71-112	322	404	223	460	279	1200	435	568	1100	435	628
355	71-112	362	453	238	509	294	1280	465	628	1160	465	705
400	71-112	404	507	258	563	314	1360	495	701	1230	495	786
	132	404	507	258	563	314	1380	495	701	1250	495	786
450	80-112	448	569	288	625	344	1420	550	776	1300	550	877
	132	448	569	288	625	344	1470	550	776	1380	550	877
500	80-112	510	638	324	684	380	1530	590	850	1380	590	968
	132	510	638	324	684	380	1550	590	850	1400	590	968
560	90-112	570	715	368	771	424	1620	635	956	1460	635	1093
	132-160	570	715	368	771	424	1740	635	956	1560	635	1093
630	90-112	635	801	412	857	468	1780	685	1062	1560	685	1220
	132-160	635	801	412	857	468	1880	685	1062	1650	685	1220
710	90-112	722	898	468	954	524	1920	740	1184	1680	740	1366
	132-160	722	898	468	954	524	2000	740	1184	1770	740	1366

All dimensions in mm.

* Dimensions shown are approximate only. The details please contact local sales office for more information.

Dimension Information

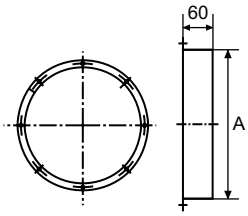
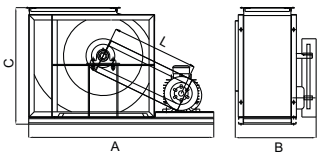
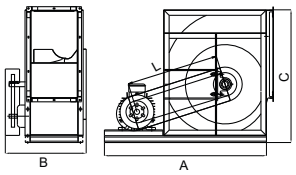
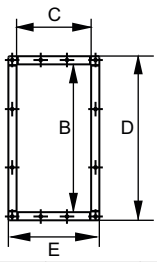
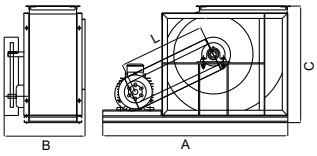
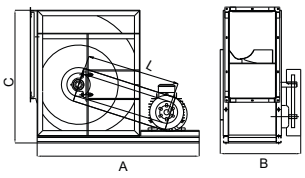
FCS/BCS-E: Heavy Duty Model

Rotation	Flanges	90°	180°
RD **Right Hand**	Inlet Flange 		
LG **Left Hand**	Outlet Flange 		

Size	Frame	A	B	C	D	E	A_{max}	B	C	A_{max}	B	C
280	80-112	292	361	197	417	253	1130	430	516	1050	430	568
315	80-112	322	404	223	460	279	1200	465	568	1100	465	628
355	80-112	362	453	238	509	294	1280	495	628	1160	495	705
400	90-112	404	507	258	563	314	1360	525	701	1230	525	786
	132	404	507	258	563	314	1380	525	701	1250	525	786
450	90-112	448	569	288	625	344	1420	580	776	1300	580	877
	132	448	569	288	625	344	1470	580	776	1320	580	877
500	90-112	510	638	324	684	380	1530	620	850	1380	620	968
	132-160	510	638	324	684	380	1640	620	850	1480	620	968
560	100-112	570	715	368	771	424	1620	665	956	1460	665	1093
	132-160	570	715	368	771	424	1740	665	956	1560	665	1093
630	100-112	635	801	412	857	468	1780	715	1062	1560	715	1220
	132-160	635	801	412	857	468	1880	715	1062	1650	715	1220
710	100-132	722	898	468	954	524	1940	770	1184	700	770	1366
	160-200	722	898	468	954	524	2100	770	1184	1870	770	1366
800	112-160	808	1007	520	1063	576	2150	825	1330	1850	825	1548

Dimension Information

FCS/BCS-E: Heavy Duty Model

Rotation	Flanges	90°	180°
RD **Right Hand**	Inlet Flange 		
LG **Left Hand**	Outlet Flange 		

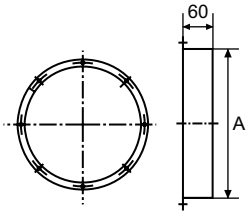
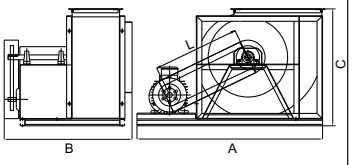
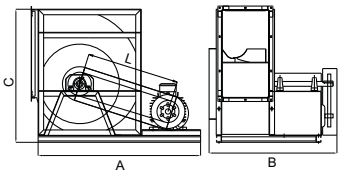
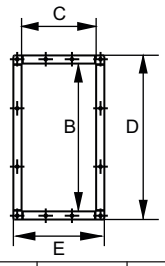
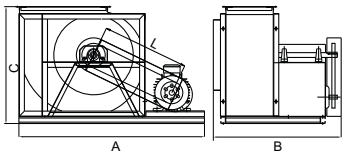
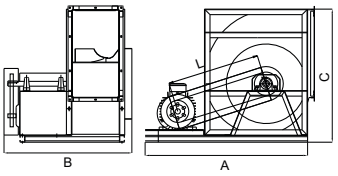
Size	Frame	A	B	C	D	E	A_{max}	B	C	A_{max}	B	C
800	180-225	808	1007	520	1063	576	2320	825	1330	2020	825	1548
900	112-132	896	1130	580	1186	638	2280	905	1488	1950	905	1728
	160-180	896	1130	580	1186	638	2420	905	1488	2080	905	1728
	200-225	896	1130	580	1186	638	2520	905	1488	2180	905	1728
1000	132-180	996	1267	663	1323	719	2580	975	1621	2230	975	1890
	200-250	996	1267	663	1323	719	2750	975	1621	2400	975	1890
1120	160-180	1018	1468	725	1526	825	2810	1200	1900	2410	1200	2050
	200-225	1018	1468	725	1526	825	2960	1200	1900	2560	1200	2050
	250-280	1018	1468	725	1526	825	3050	1200	1900	2650	1200	2050
1250	160-180	1310	1588	800	1688	900	3060	1300	2100	2610	1300	2400
	200-225	1310	1588	800	1688	900	3210	1300	2100	2760	1300	2400
	250-280	1310	1588	800	1688	900	3300	1300	2100	2850	1300	2400
1400	160-180	1450	1776	902	1876	1002	3310	1450	2300	2810	1450	2700
	200-225	1450	1776	902	1876	1002	3460	1450	2300	2960	1450	2700
	250-280	1450	1776	902	1876	1002	3550	1450	2300	3050	1450	2700

All dimensions in mm.

* Dimensions shown are approximate only. The details please contact local sales office for more information.

Dimension Information

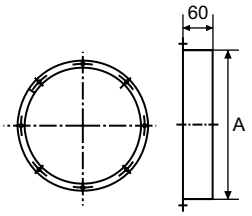
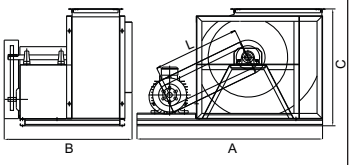
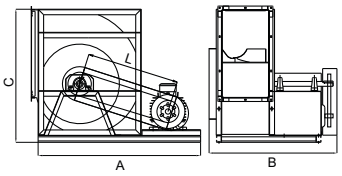
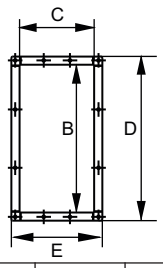
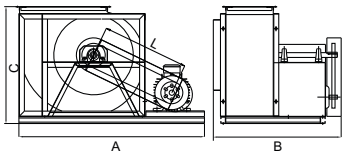
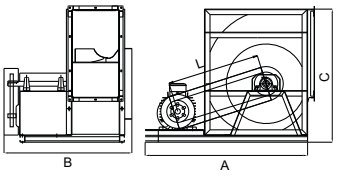
FCS/BCS-C: Overhang Model

Rotation	Flanges	90°	180°
RD **Right Hand**	Inlet Flange 		
LG **Left Hand**	Outlet Flange 		

Size	Frame	A	B	C	D	E	A_{max}	B	C	A_{max}	B	C
280	80-112	292	361	197	417	253	1130	675	516	1050	675	568
315	80-112	322	404	223	460	279	1200	700	568	1100	700	628
355	80-112	362	453	238	509	294	1280	775	628	1160	775	705
400	90-112	404	507	258	563	314	1360	800	701	1230	800	786
	132	404	507	258	563	314	1380	800	701	1250	800	786
450	90-112	448	569	288	625	344	1420	894	776	1300	894	877
	132	448	569	288	625	344	1470	894	776	1320	894	877
500	90-112	510	638	324	684	380	1530	930	850	1380	930	968
	132-160	510	638	324	684	380	1640	930	850	1480	930	968
560	100-112	570	715	368	771	424	1620	1020	956	1460	1020	1093
	132-160	570	715	368	771	424	1740	1020	956	1560	1020	1093
630	100-112	635	801	412	857	468	1780	1065	1062	1560	1065	1220
	132-160	635	801	412	857	468	1880	1065	1062	1650	1065	1220
710	100-132	722	898	468	954	524	1940	1185	1184	1700	1185	1366
	160-200	722	898	468	954	524	2100	1185	1184	1870	1185	1366
800	112-160	808	1007	520	1063	576	2150	1245	1330	1850	1245	1548

Dimension Information

FCS/BCS-C: Overhang Model

Rotation	Flanges	90°	180°
RD **Right Hand**	Inlet Flange 		
LG **Left Hand**	Outlet Flange 		

Size	Frame	A	B	C	D	E	A_{max}	B	C	A_{max}	B	C
	180-225	808	1007	520	1063	576	2320	1245	1330	2020	1245	1548
900	112-132	896	1130	580	1186	638	2280	1375	1488	1950	1375	1728
	160-180	896	1130	580	1186	638	2420	1375	1488	2080	1375	1728
	200-225	896	1130	580	1186	638	2520	1375	1488	2180	1375	1728
1000	132-180	996	1267	663	1323	719	2580	1450	1621	2230	1450	1890
	200-250	996	1267	663	1323	719	2750	1450	1621	2400	1450	1890
1120	160-180	1018	1468	725	1526	825	2810	1600	1900	2410	1600	2050
	200-225	1018	1468	725	1526	825	2960	1600	1900	2560	1600	2050
	250-280	1018	1468	725	1526	825	3050	1600	1900	2650	1600	2050
1250	160-180	1310	1588	800	1688	900	3060	1750	2100	2610	1750	2400
	200-225	1310	1588	800	1688	900	3210	1750	2100	2760	1750	2400
	250-280	1310	1588	800	1688	900	3300	1750	2100	2850	1750	2400
1400	160-180	1450	1776	902	1876	1002	3310	1950	2300	2810	1950	2700
	200-225	1450	1776	902	1876	1002	3460	1950	2300	2960	1950	2700
	250-280	1450	1776	902	1876	1002	3550	1950	2300	3050	1950	2700

All dimensions in mm.

* Dimensions shown are approximate only. The details please contact local sales office for more information.

Installation Guide

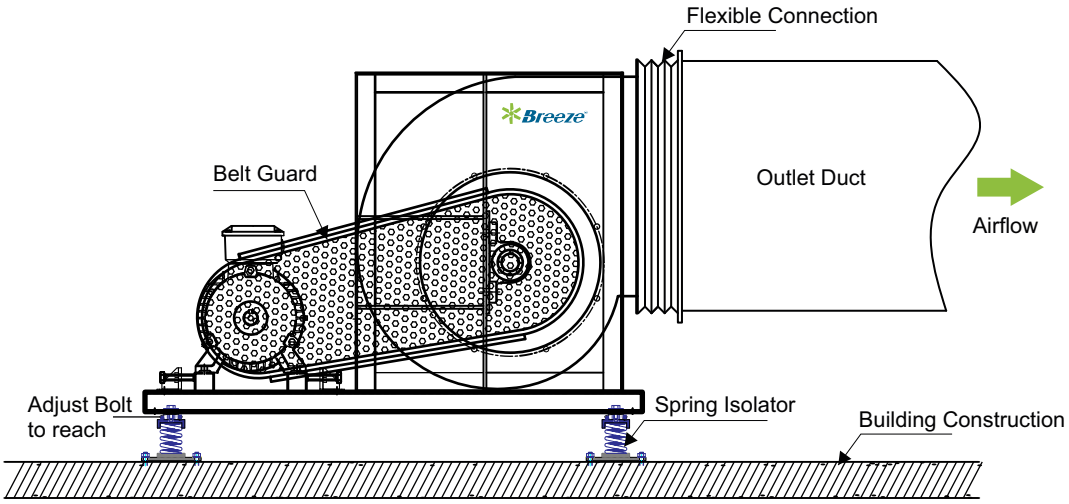


Fig 01. Mounting type

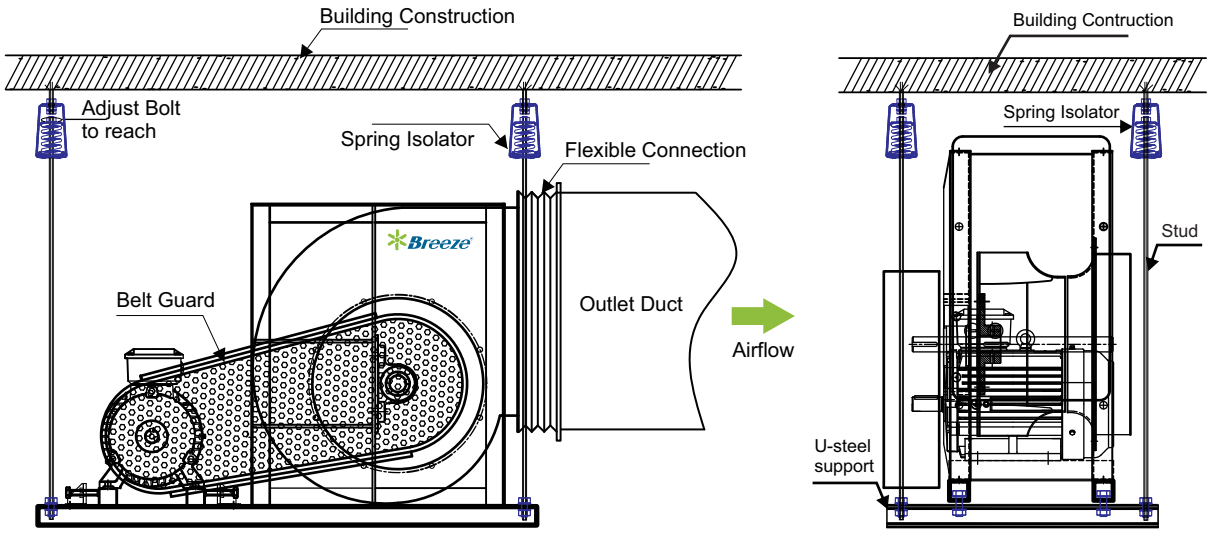


Fig 02. Hanging type

In case: Installation position B, i.e. free inlet and ducted outlet configuration.

Obstruction at fan inlet:

Allow a gap of at least one fan diameter between fan inlet and obstruction and fit a diffuser on the discharge.

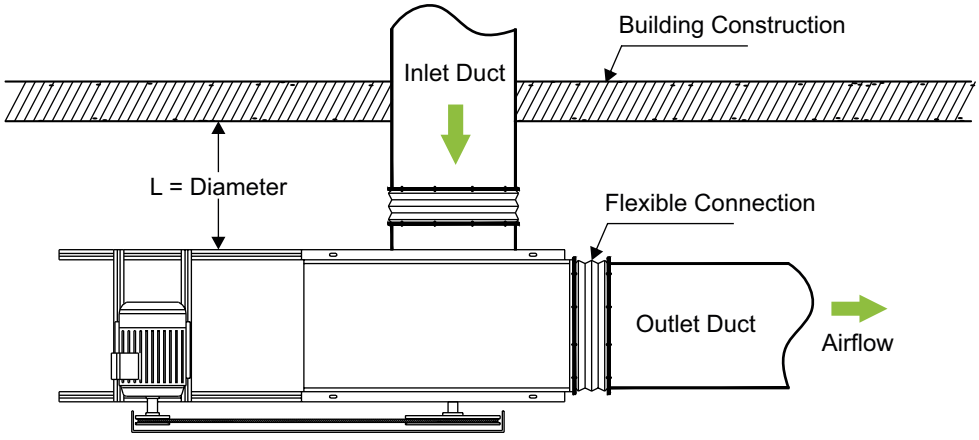


Fig 03. Top view

Fan Code

PF 500 R

- **R** — **Construction Type:**
  - R: Basic Model
  - E: Heavy Duty Model
- **500** — **Diameter of Impeller**
- **PF** — **Plug Fan**

General Information

Plug fan is a complete fan assembly to be used in Air Handling units. The fan is available in 13 sizes and covers airflow up to 70.000 m^3/h and pressure rises up to 3.000 Pa.

The fan is installed on the floor inside the AHU using anti vibration mountings.

The impeller is designed backward curve to work inside the Air Handling Unit to give best performance for:

- High overall efficiency.
- Low sound levels at inlet and outlet
- Easy installation
- Lowest possible vibration levels.

Construction Information

PF series are mainly constructed of base frame, backward curve impeller, motor and front plate, inlet cone and wrap part.

Mounting Bracket

Base frame, motor bracket and front plate are made of mild steel with powder coated finishing.

Base frame is fitted together with impeller, inlet cone and motor.

Impeller

The plug fan impeller is made of powder coated steel with backward curve blades. The impeller is aerodynamically designed for high efficiency and low power consumption. They are balanced according to ISO 1940:G2.5mm/s quality standard. The impeller has a GG-hub with taper lock bush.

Motor Data

Motors incorporated are TEFC (Total Enclosed Fan Cooled) and airstream rated to IEC 34-1.

Protected to IP55 with Class F insulation standard.

Motors are suitable for speed control by frequency inverter, subject to fan selection.

Available specific for your project requirements such as:

- 220-240V / 380-415V-50Hz
- IE1, IE2, IE3 and IE4 Efficiency Classes.
- High temperature motor and double speeds motor (Class H): 250°C/2hrs or 300°C/2hrs.

Inlet Cone

The design of the fan inlet is designed to optimize the flow into the impeller. The inlet is in one piece and made of hot galvanized steel or stainless steel upon requested.

Performance Data

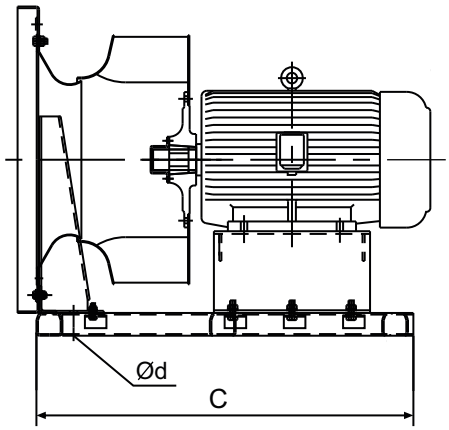
Full details are available on our selection program: Breeze Fan.

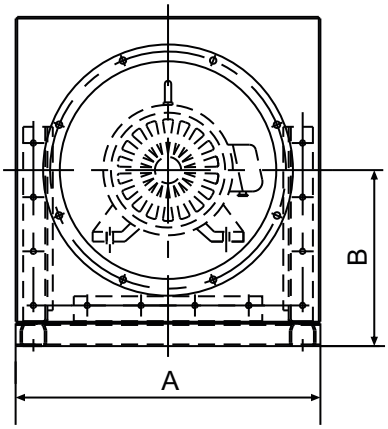
- Manufuactured under a certified ISO 9001:2015.
- The performance is tested international standards by BS 848-1:1985 and ISO 5801.
- All curves to a density of $\rho = 1{,}2\ kg/m^3$, at 20°C.

Sound Level

All measurements of the sound that the fans generate have been taken strictly in accordance with BS 848-2, test method 1 and ISO 13347-2 for acoustic performance.

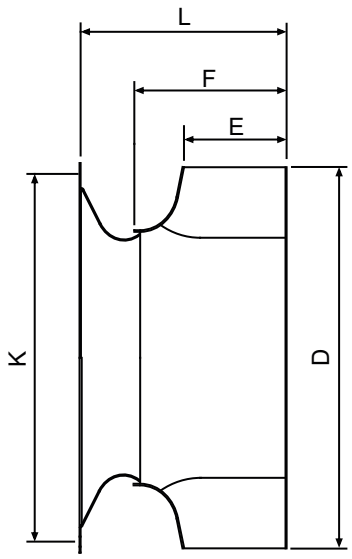
Dimension Information





Model	A	B	C	Ød
PF 250	376	226	475	14
PF 280	400	238	475	14
PF 315	430	253	520	14
PF 355	462	269	533	14
PF 400	502	289	586	14
PF 500	612	348	760	14
PF 560	688	400	870	18
PF 630	769	440	920	18
PF 710	850	510	1000	18
PF 800	940	550	1100	20
PF 900	1044	632	1200	20
PF 1000	1140	680	1320	20

All dimensions in mm.



Fan Size	D	E	F	K	L	n_{max}
250	257	80	118	259	158	4500
280	289	89	133	286	180	4300
315	324	100	146	320	201	4000
355	365	112	162	356	224	3500
400	410	126	185	395	253	2900
450	460	142	210	438	282	2900
500	517	159	235	487	317	2500
560	578	178	262	541	357	2200
630	648	199	293	605	402	1900
710	728	224	328	674	450	1600
800	818	252	368	751	507	1400
900	917	282	413	837	564	1250
1000	1012	316	462	934	629	960

All dimensions in mm.

Dimensions shown are approximate only. The details please contact to local sales office for more information.

Fan Code

KB 280 R

- **R**: **Construction Type:**
  - R: Basic Model
  - E: Heavy Duty Model
  - F: Smoke Spill Model
- **280**: **Diameter of Impeller**
- **KB**: **Fan Type**

General Information

Size range from 200mm to 1250mm diameter.

KBF/KBB/KBP series are designed and developed on the basis of advanced technology from United Kingdom. It has the features of high efficiency, low noise, excellent performance, compact structure, easy installation and so on.

KBF-F/KBB-F series are dual purpose fans (standard and smoke spill) they can continuous operate over 0.5 hours when the flue gas temperature reaches 280°C, these fans have been tested by the "National Fire Equipment Quality Supervision and Test Center". They are new types for high rise buildings for the dual purpose ventilation.

Fan type:

- KBF series: Forward curve double inlet cabinet centrifugal fan.
- KBB series: High efficiency, backward curve double inlet cabinet centrifugal fan.
- KBP series: High efficiency, backward curve single inlet cabinet plug fan.

Fan size:

- KBF Series: 200mm to 1000mm
- KBB Series: 200mm to 1250mm
- KBP Series: 250mm to 1000mm

Construction Information

KBF/KBB/KBP series are mainly constructed of aluminum cabinet frame, fan casing, impeller, frame, bearing, shaft, motor and inlet/outlet flange.

Frame Structure

Channel steel base, not easy to be deformed. Aluminum frame, easy to be installed, strong structure and low weight high quality painted steel plate and cold rolled steel painted with static electronic process can prolong fan life. Fine seam disposition. Low air leakage. The box board is made of foaming technology and sound insulation cotton.

Scientific cabinet design

Save every possible space. Confirm strict tolerance of the parts to meet the precision.

Save every possible space to broaden inlet size which introduces the airstream smoothly.

Motor position and belt length have been arranged without any redundancy.

High quality parts with high reliability.

Human oriented design concept benefits the maintenance work.

Access door designed in both sides and can be opened tool free.

Impeller Data

All the impellers are designed highest peripheral speed and high efficiency.

The forward curve impeller of **KBF** is made of hot galvanized steel.

The backward curve impeller of **KBB/KBP** is made of mild steel, they are welded and epoxy painting.

Stainless steel of impeller can be provided on request.

All the impellers are statically and dynamically balanced to ISO 1940 with G2.5mm/s quality standard.

Motor Data

Motors incorporated are TEFC (Total Enclosed Fan Cooled) and airstream rated to IEC 34-1.

Protected to IP55 with Class F insulation standard.

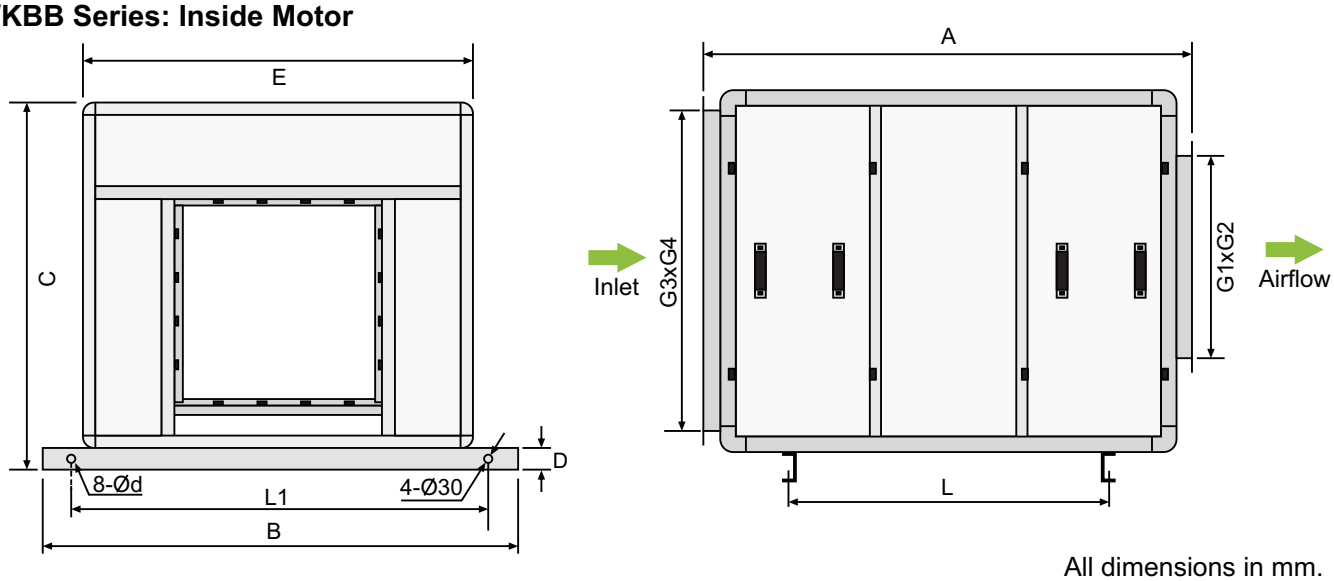
Motors are suitable for speed control by frequency inverter, subject to fan selection.

Available specific for your project requirements such as:

- 220-240V / 380-415V-50Hz
- IE1, IE2, IE3 and IE4 Efficiency Classes.
- 2-speed (Full/Half and Full/Two Thirds)
- High temperature motor and double speeds motor (Class H): 250°C/2hrs or 300°C/2hrs.
- Explosion proof motor: Class F and IP55 or IP66 with completed ATEX 2014/34/EU and EN 50014, EN 50018 and EN50281-1-1.

Dimension Information

KBF/KBB Series: Inside Motor



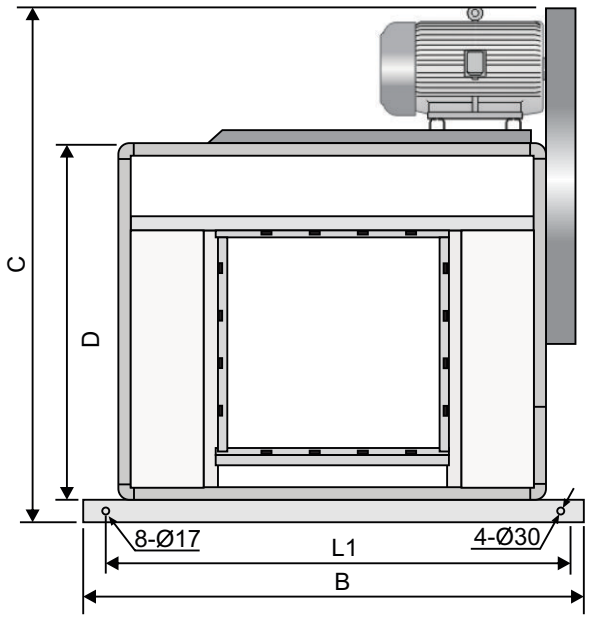
All dimensions in mm.

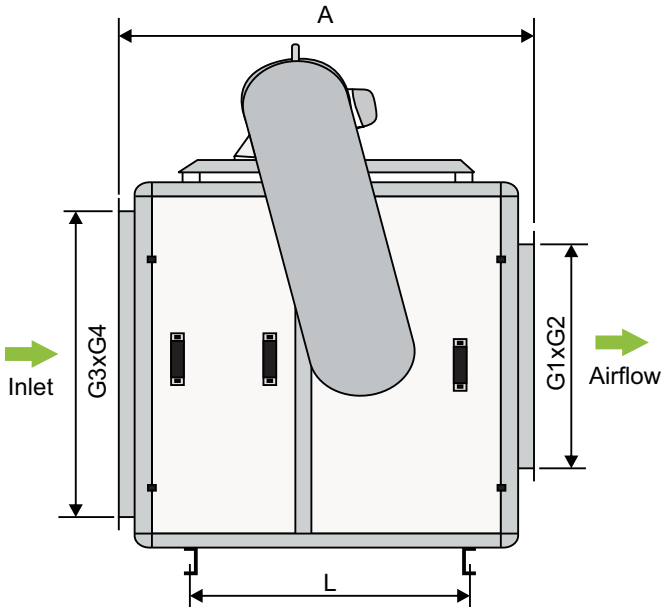
Model	A	B	C	D	E	G1	G2	G3	G4	L	L1	Ød
KB 200	960	990	625	50	690	256	256	453	568	600	850	15
KB 225	1000	1020	670	50	720	288	288	498	598	650	880	15
KB 250	1050	1050	710	50	750	322	322	538	628	680	910	15
KB 280	1120	1100	813	63	800	361	361	628	678	720	960	15
KB 315	1250	1270	878	63	970	404	404	673	828	850	1130	15
KB 355	1300	1350	953	63	1050	453	453	748	908	930	1210	15
KB 400	1480	1560	1130	80	1260	507	507	908	1118	1060	1420	15
KB 450	1550	1630	1220	80	1330	569	569	998	1188	1100	1470	15
KB 500	1600	1800	1310	80	1400	638	638	1258	1088	1160	1600	15
KB 560	1750	1850	1460	100	1450	715	715	1308	1218	1300	1650	18
KB 630	1880	2000	1590	100	1600	801	801	1458	1348	1320	1794	18
KB 710	2100	2200	1685	100	1800	898	898	1420	1635	1400	2000	18
KB 800	2280	2400	1855	100	2010	1007	1007	1848	1593	1600	2200	18
KB 900	2500	2600	2180	100	2210	1130	1130	2048	1793	1700	2400	18
KB 1000	2650	2750	2210	100	2360	1267	1267	2198	1948	1900	2550	18

* Dimensions shown are approximate only. The details please contact local sales office for more information.

Dimension Information

KBF-F/KBB-F Series: External Motor





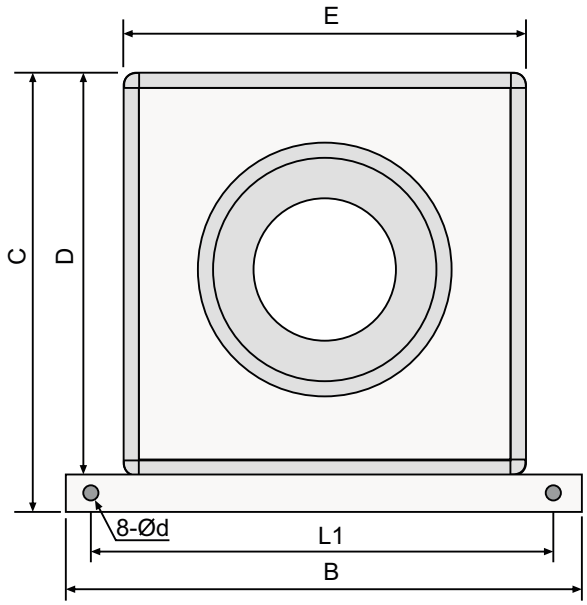
Model	A	B	C									D	L	L1	G1xG2	G3xG4
			Y80	Y90	Y100	Y112	Y132	Y160	Y180	Y200	Y225					
KB 200	610	790	860									540	498	690	256	428x328
KB 225	660	850	900	925								580	543	750	288	465x405
KB 250	710	910	940	960								630	593	810	322	525x455
KB 280	780	980	1020	1040	1070							703	663	880	361	595x515
KB 315	670	1060	1080	1100	1130	1160	1200	1295				763	420	960	404	655x555
KB 355	740	1160	1160	1180	1220	1250	1280	1380	1420			843	488	1060	453	755x635
KB 400	810	1260		1280	1300	1330	1380	1470	1520			930	513	1160	507	855x708
KB 450	890	1400		1360	1400	1430	1480	1570	1610	1660		1030	581	1300	569	978x808
KB 500	960	1520		1460	1500	1520	1570	1650	1700	1750		1120	650	1420	639	1095x895
KB 560	1060	1680		1600	1640	1660	1710	1800	1850	1900		1265	745	1580	715	1235x1020
KB 630	1160	1830			1760	1790	1830	1930	1970	2030		1390	846	1730	801	1385x1145
KB 710	1300	2020				1930	1970	2060	2110	2160	2210	1530	902	1920	898	1555x1265
KB 800	1430	2220					2140	2230	2270	2330	2380	1700	1030	2120	1007	1955x1435
KB 900	1610	2450					2290	2380	2425	2480	2535	1850	1166	2350	1130	1985x1585
KB 1000	1740	2700					2450	2540	2590	2640	2690	2010	1302	2600	1267	2235x1745

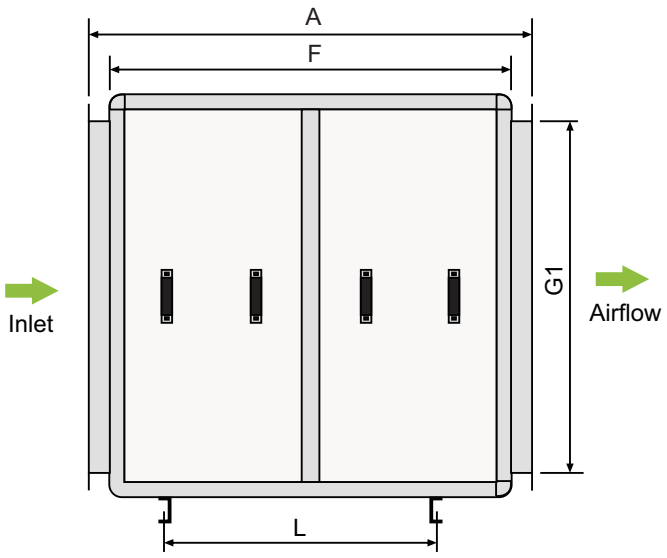
All dimensions in mm.

* Dimensions shown are approximate only. The details please contact local sales office for more information.

Dimension Information

KBP Series





Model	A	B	C	D	E	F	G1	H	L	L1	Ød
KBP 250	582	790	563	500	500	500	380	135	360	660	14
KBP 280	612	820	593	530	530	530	408	135	370	690	14
KBP 315	682	890	663	600	600	600	478	135	440	760	14
KBP 355	702	910	683	630	630	630	790	135	460	780	14
KBP 400	755	970	743	680	680	680	538	138	505	840	14
KBP 450	855	1080	860	780	780	780	638	155	590	940	14
KBP 500	975	1200	980	900	900	900	758	155	710	1060	14
KBP 560	1035	1260	1040	960	960	960	810	160	770	1120	14
KBP 630	1085	1310	1090	1010	1010	1010	868	160	810	1170	14
KBP 710	1205	1430	1230	1130	1130	1130	968	190	850	1290	14
KBP 800	1325	1550	1350	1250	1250	1250	1088	190	930	1410	14
KBP 900	1472	1700	1500	1400	1400	1400	1238	190	1060	1560	18
KBP 1000	1625	1850	1650	1550	1550	1550	1388	190	1150	1710	18

All dimensions in mm.

* Dimensions shown are approximate only. The details please contact local sales office for more information.

Installation Guide

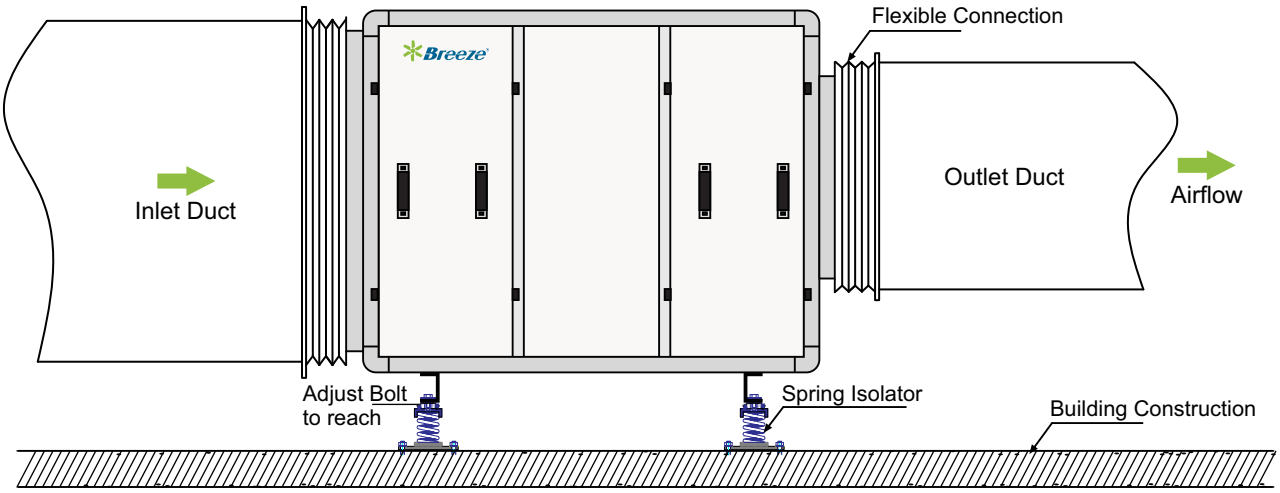


Fig 01. Mounting type

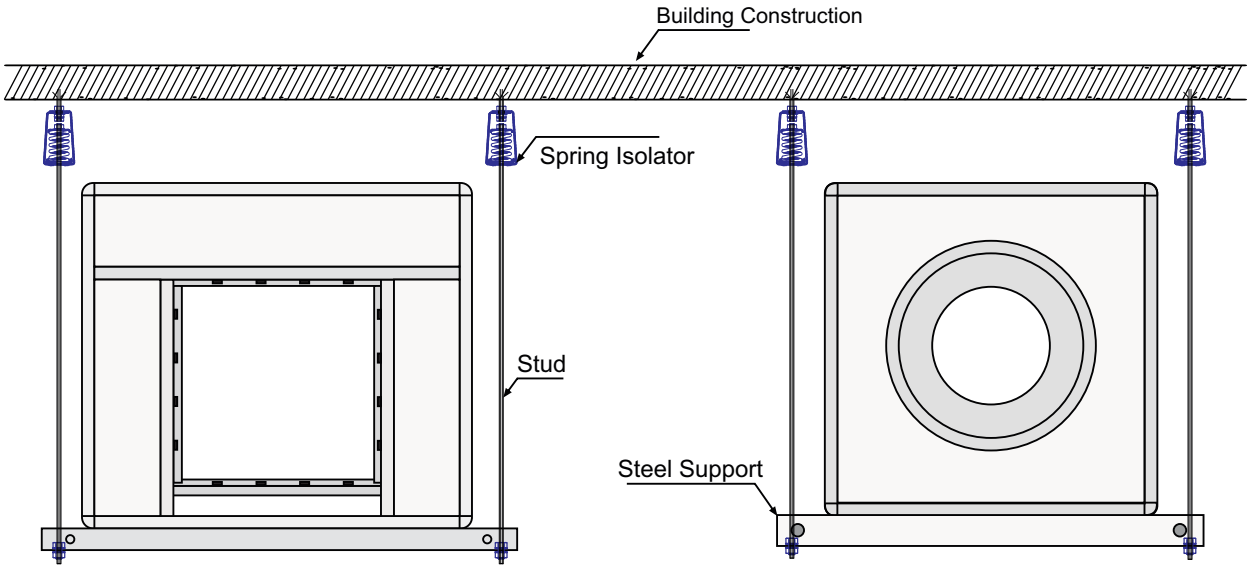


Fig 02. Hanging type

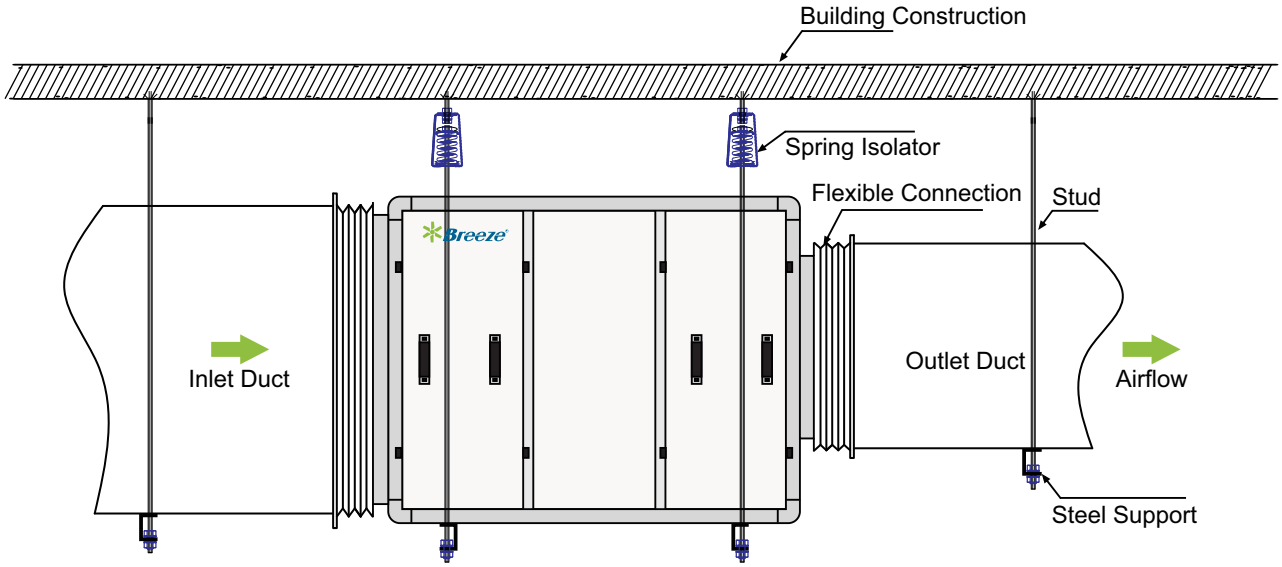


Fig 03. Hanging type

General Information

The CDF/CDFS series are built-in double inlet forward curve centrifugal fan.

- CDF series: Standard fan.
- CDFS series: Silencer box to meet the requirements of low noise.

The special motors can be configured through the 3-phase voltage regulator, SCR voltage regulator, inverter and other means of speed, changing to meet system load requirements.

Construction Information

CDF/CDFS series consist of box casing, fan casing, impeller, motor, inlet and outlet flanges and electrical connection.

Casing

CDF/CDFS series are made of hot galvanized steel square pipe type. The pipe and the air inlet side have a 20mm standard flange.

CDFS series' aluminum tenon joint structure design together with three high-quality silencer cotton board, effective at 15dB acoustic noise around.

Impeller

Double forward curved impellers are made of hot galvanized steel. The impeller is constructed with maximum strength that endures the continuous operation with maximum power. Balanced by ISO 1940 with G2.5mm/s quality standard.

Motor

The motor is designed for double blower fan with outer rotor structure. The characteristic is compact structure, short axial size low noise. It can adjust speed as well as change voltage. It is ideal motors for fan, dust cleaner. Standard motors are protected to IP54, class F insulation.

Electrical connection

CDF/CDFS series motor with a cable, and protection to IP55 junction box connection to external, removable terminal block.

Performance data

Manufuactured under a certified ISO 9001:2015.

The performance is tested international standards by BS 848-1:1985 and ISO 5801.

Installation position D, i.e. ducted inlet and ducted outlet configuration.

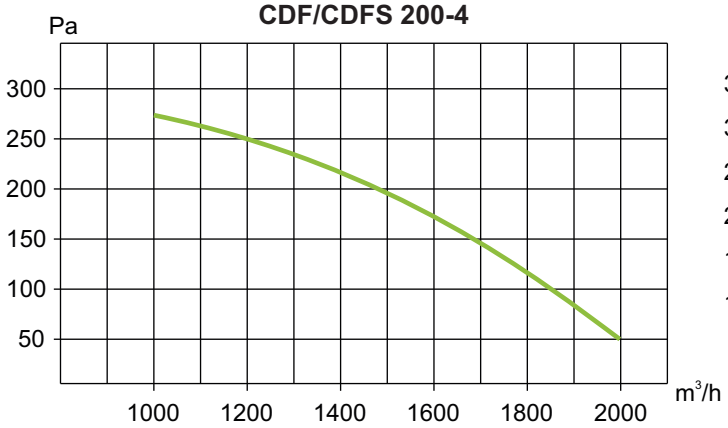
All curves to a density of $\rho = 1{,}2\ kg/m^3$, at 20°C.

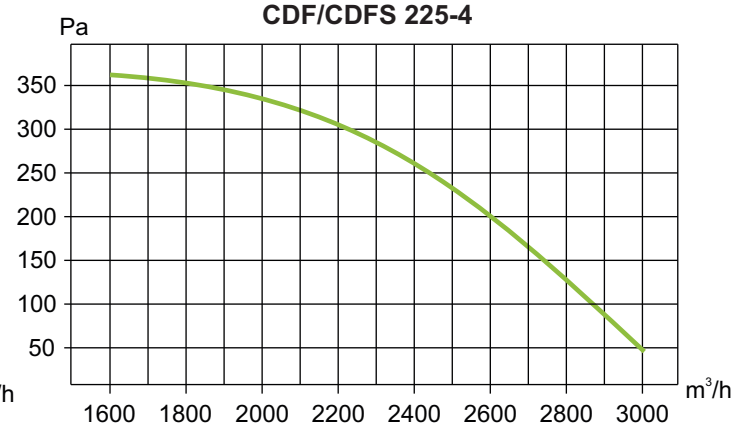
Sound levels

All measurements of the sound that the fans generate have been taken strictly in accordance with BS 848-2, test method 1 and ISO 13347-2 for acoustic performance.

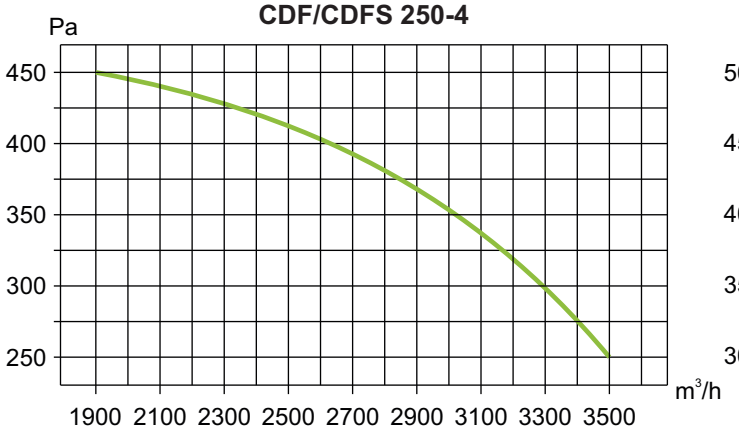
Sound data are determined according to BS EN ISO 5136 – In-duct method.

Performance Curve

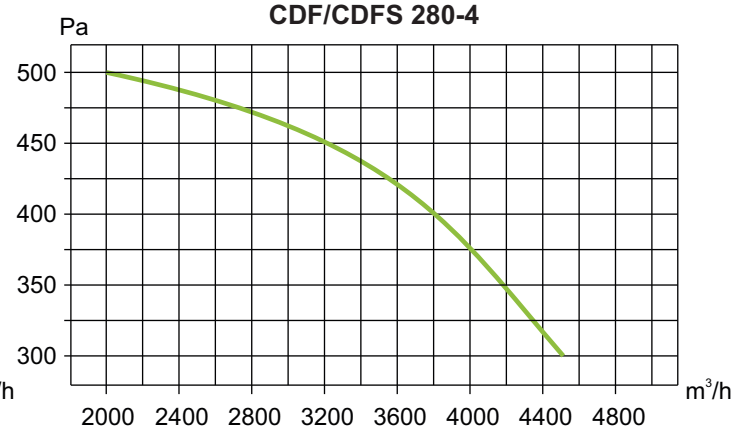




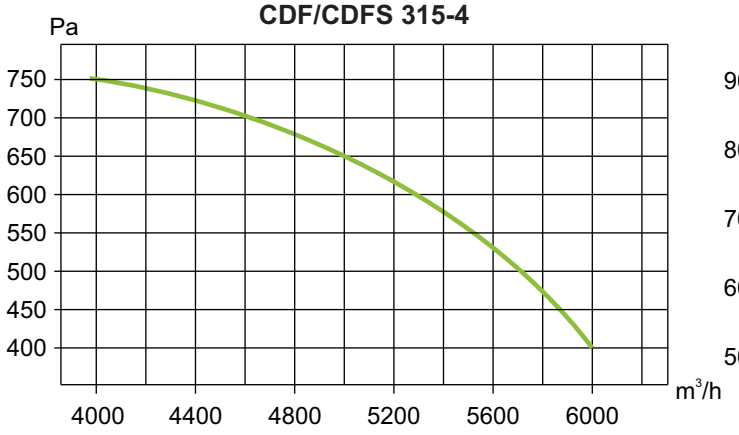
CDF/CDFS 250-4



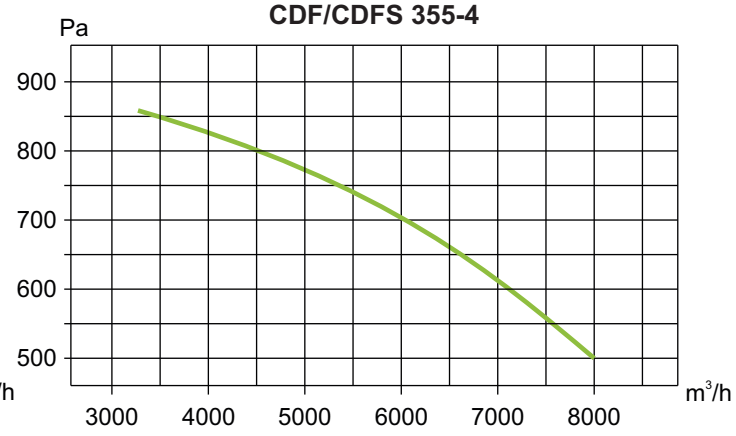
CDF/CDFS 280-4



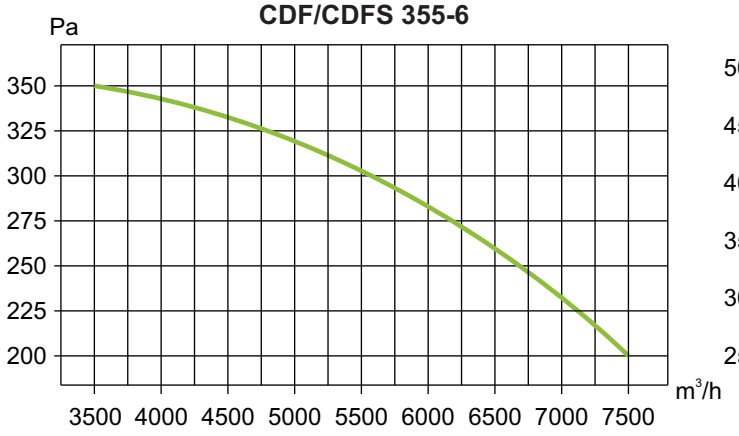
CDF/CDFS 315-4



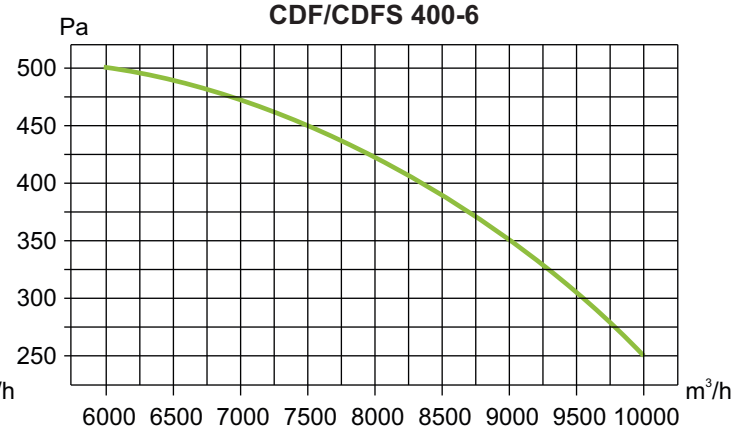
CDF/CDFS 355-4



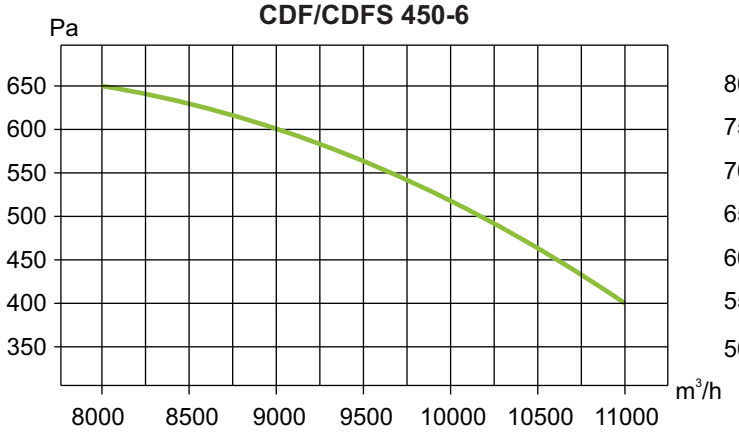
CDF/CDFS 355-6



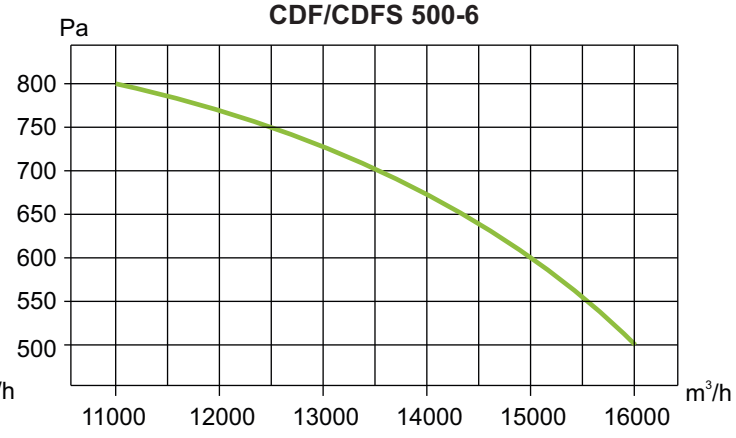
CDF/CDFS 400-6



CDF/CDFS 450-6



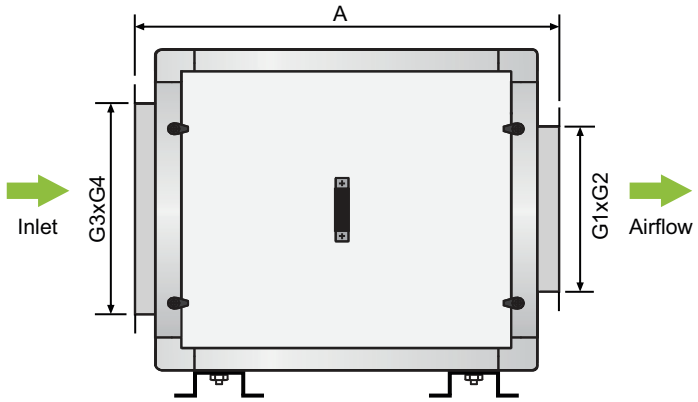
CDF/CDFS 500-6

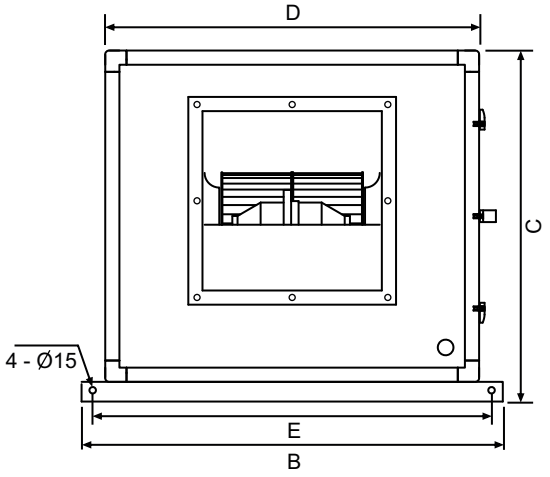


Performance Parameters

Model	Max. Air Volume (m^3/h)	Max. Pressure (Pa)	Power (kW)	Current (A)	Speed (rpm/min)	Voltage (V/P/Hz)	Noise dBA (@ 3m)
CDF/CDFS 200-4	2000	250	0.25	0.88	1440	380/3/50	53/46
CDF/CDFS 225-4	3000	350	0.45	1.39	1440	380/3/50	55/48
CDF/CDFS 250-4	3500	450	0.8	2.31	1440	380/3/50	56/49
CDF/CDFS 280-4	4500	500	0.8	2.31	1440	380/3/50	57/50
CDF/CDFS 315-4	6500	750	1.8	4.47	1440	380/3/50	59/52
CDF/CDFS 355-4	8000	850	3.0	6.95	1440	380/3/50	65/58
CDF/CDFS 355-6	7500	350	1.8	4.8	960	380/3/50	60/53
CDF/CDFS 400-6	10000	500	3.0	7.5	960	380/3/50	64/57
CDF/CDFS 450-6	11000	650	4.0	9.9	960	380/3/50	67/60
CDF/CDFS 500-6	16000	800	7.5	17.7	960	380/3/50	69/62

Dimension Information



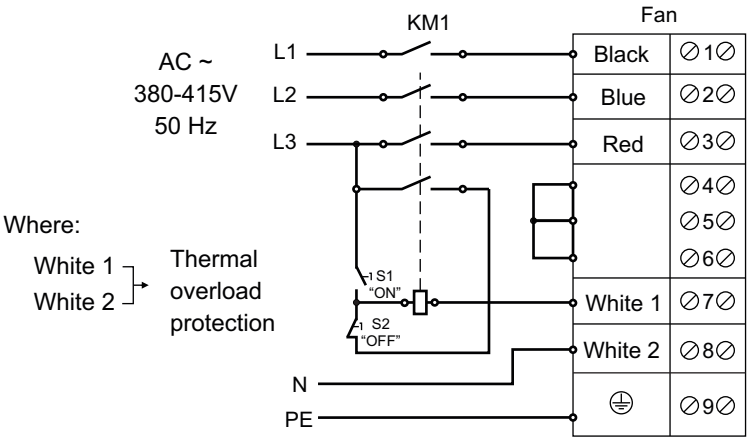


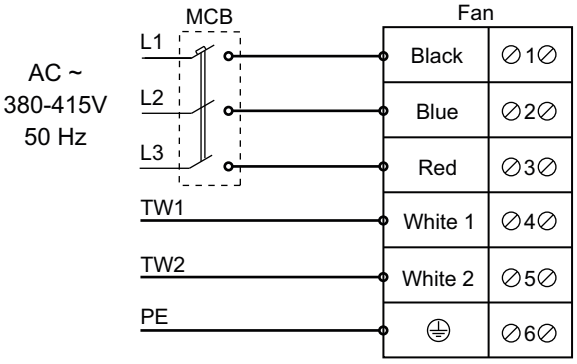
All dimensions in mm.

Model	A	B	C	D	E	G1 x G2	G3 x G4	Weight (Kg)
CDF/CDFS 200-4	529	600	460	500	550	223 x 229	318 x 378	22
CDF/CDFS 225-4	569	630	500	530	580	251 x 262	358 x 408	42
CDF/CDFS 250-4	589	650	520	550	600	277 x 285	378 x 428	44
CDF/CDFS 280-4	639	740	570	640	690	309 x 304	428 x 518	50
CDF/CDFS 315-4	749	815	680	715	765	342 x 342	538 x 593	70
CDF/CDFS 355-4/6	789	890	720	790	840	379 x 379	578 x 668	90
CDF/CDFS 400-6	859	960	790	860	910	423 x 423	648 x 738	110
CDF/CDFS 450-6	939	1080	870	980	1030	473 x 473	728 x 858	125
CDF/CDFS 500-6	1019	1200	950	1100	1150	510 x 510	808 x 978	190

Wiring Diagram

- Check that supply is according to data on nameplate.
- Insert cable according to the instructions in the junction box and seal it.
- The equipment connected ground for motor protection according to the instructions - Unless the guarantee isn't accepted.
- Connect electric supply.





Installation Guide

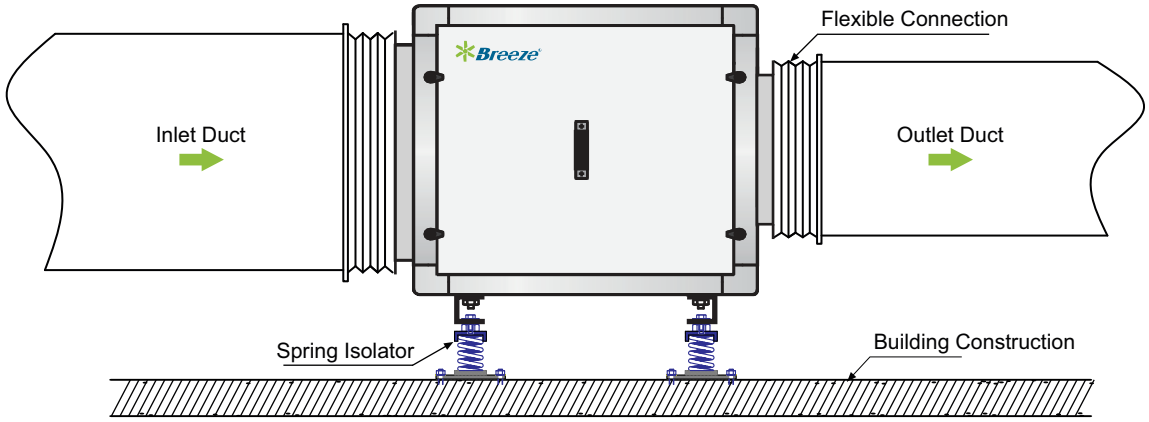


Fig 01. Mounting type

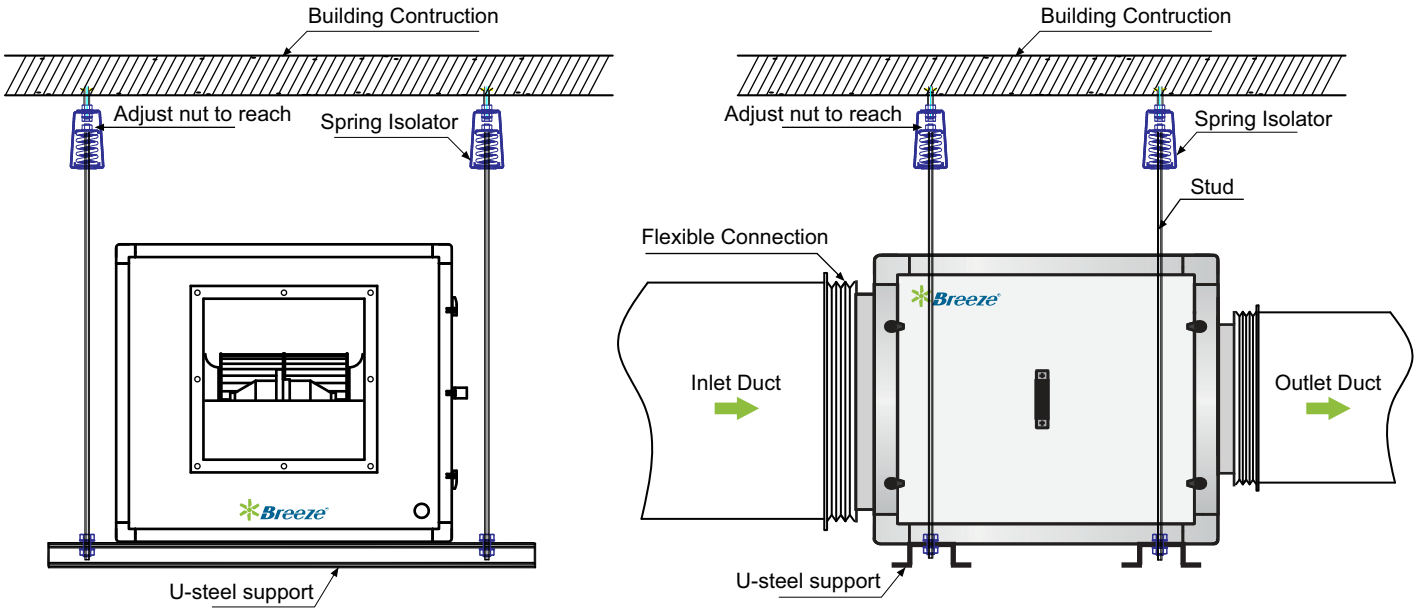
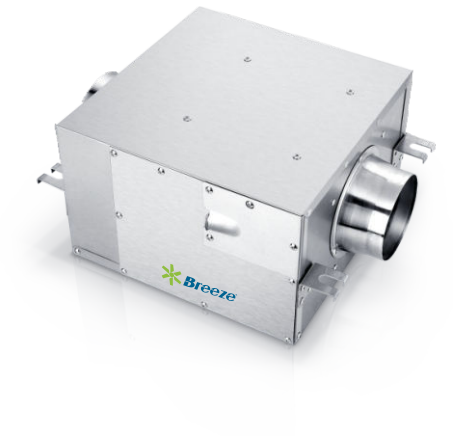


Fig 02. Hanging type



Feature

- Super low noise.
- Energy saving.
- Easy installation, service and clean.
- Compact design.
- Be able to speed controllable.
- Strong and durable.
- Light weight.
- Innovative U-shaped link for easy installation in any position.
- Can be installed directly on the wall.
- Standard motor range is protected to IP 44, class B insulation.

General Information

DVS series use a silent inline fan with high quality material and exceptionally super low noise level design. The idea solution for medium demand ventilation in commercial and residential systems. Application suitable for bathroom, bedroom, office, living room, store, toilets, hotels with low noise requirements and supply or exhaust ventilation.

Construction Information

The casings are used stainless plate steel with characteristic of fire prevention and anti-corrosion.

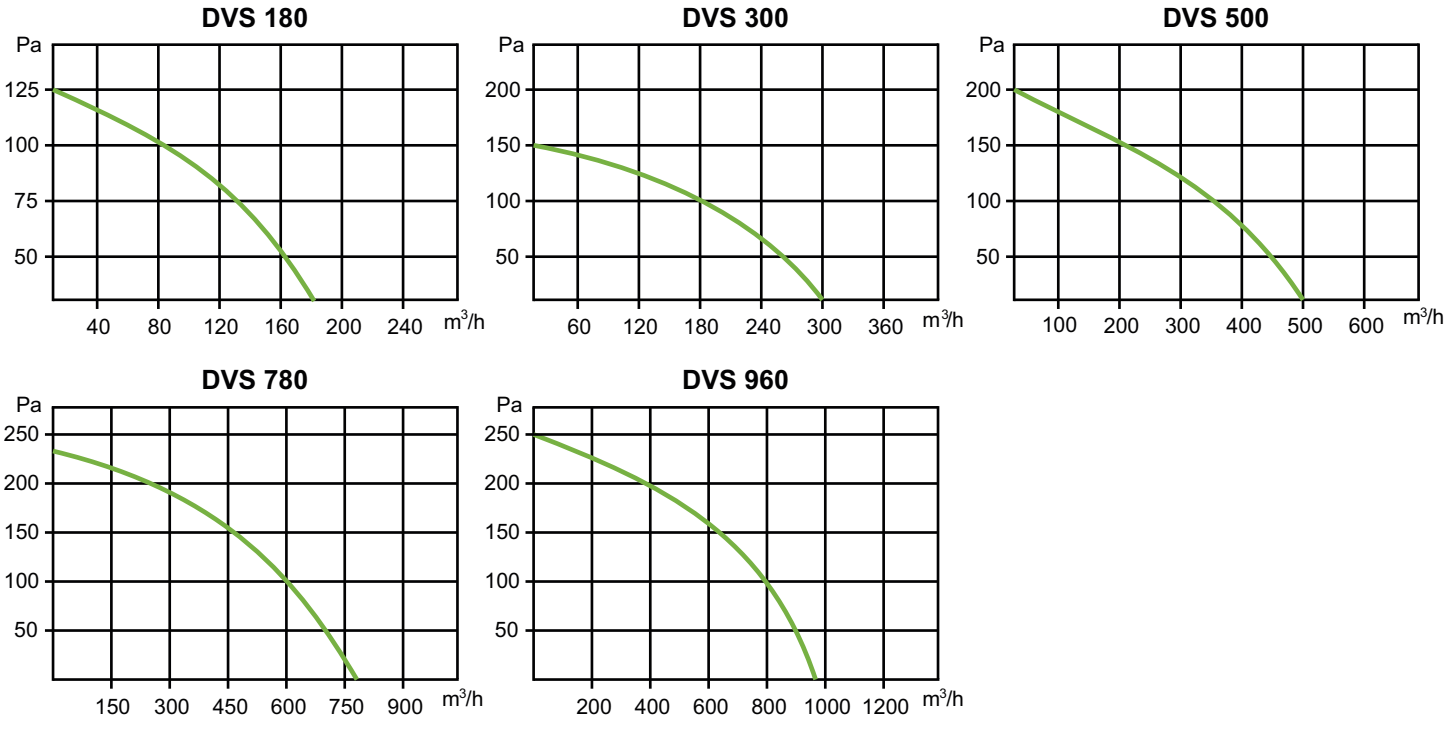
The impeller is made in stainless steel with high energy efficiency of forward curve centrifugal impeller in favor of drastically reducing noise.

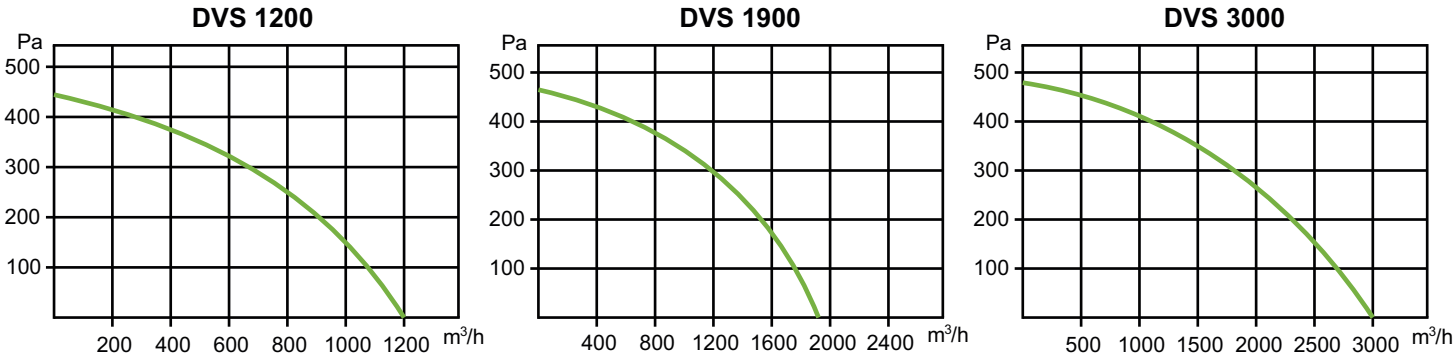
The motor is made of 100% copper coil and fitted with high quality Japan ball bearing, high efficiency, low noise, maintenance free and long service life. Equipped with thermal overload protection.

Testing

The performance has been tested in accordance with ISO 5801. The sound data has been determined by testing to ISO 13347-2. The fans have passed QCVN 04:2009/BKHCN and TCVN 5699-2-80:2007 (IEC 60335) standard for electric safety.

Performance Curve

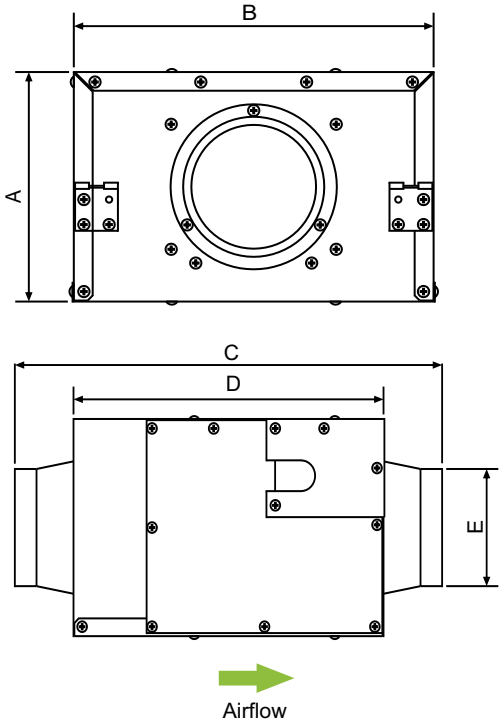




Performance Parameters

Model	Max. Air Volume (m^3/h)	Max. Pressure (Pa)	Power (W)	Current (A)	Speed (rpm/min)	Voltage (V/P/Hz)	Noise dBA (at 3m)
DVS 180	180	110	25	0.11	1180	220/1/50	21
DVS 300	300	115	47	0.23	1140	220/1/50	25
DVS 500	500	190	98	0.45	1360	220/1/50	28
DVS 780	780	230	155	0.72	1180	220/1/50	35
DVS 960	960	245	163	0.75	1280	220/1/50	37
DVS 1200	1200	230	185	0.84	820	220/1/50	40
DVS 1900	1900	380	385	1.75	1060	220/1/50	46
DVS 3000	3000	400	420	1.9	1280	220/1/50	49

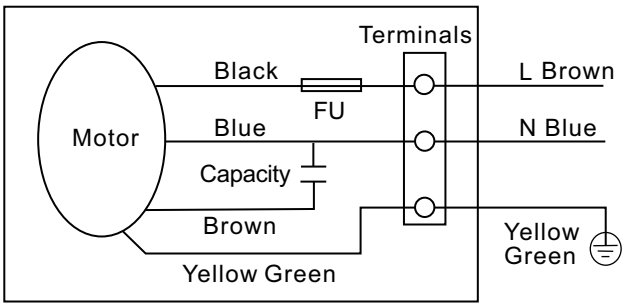
Dimension Information

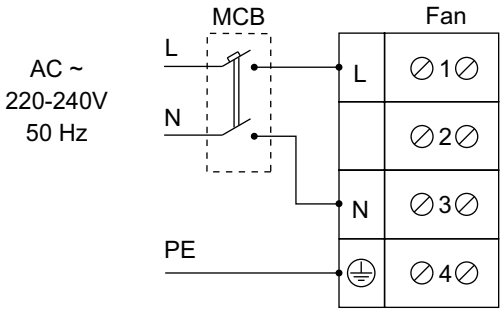


Model	A	B	C	D	E	Weight (Kg)
DVS 180	184	286	395	288	100	4.4
DVS 300	206	288	407	299	150	4.5
DVS 500	206	288	407	299	150	4.5
DVS 780	270	390	548	420	200	11
DVS 960	270	390	548	420	200	11
DVS 1200	330	470	650	490	250	18
DVS 1900	330	470	650	490	250	35
DVS 3000	330	470	650	490	250	38

All dimensions in mm.

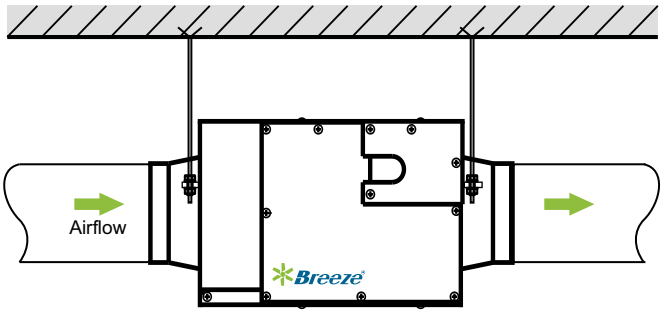
Wiring Diagram

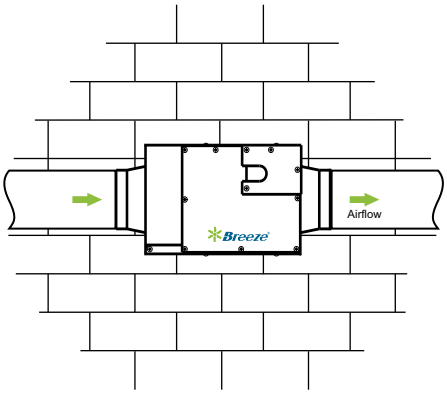


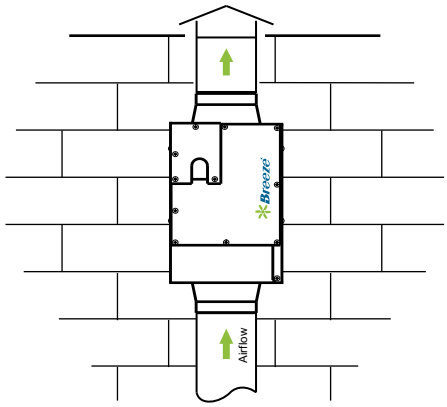


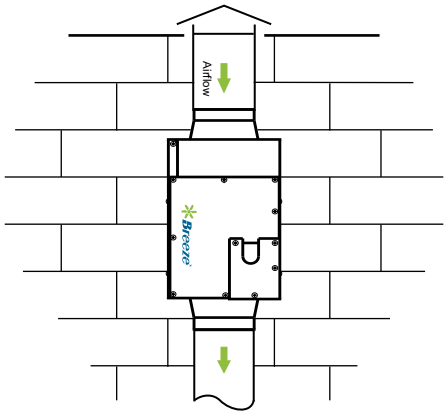
Installation Method

- The fan is designed direct connection to air duct.
- Take care of direction of air flow shown by arrow stickers.
- Apply the markings for mounting of the fixing brackets onto the mounting surface.
- Drill the holes and fasten the fan on the brackets by using appropriate fasteners.
- Install the fan with bolts and nut to the building construction (refer to the right picture).

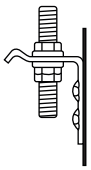




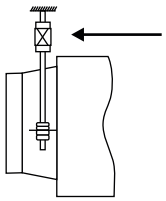




Install the boom, flat washers, nuts (customer need purchase by yourself, you must use the M8-M10 specifications).

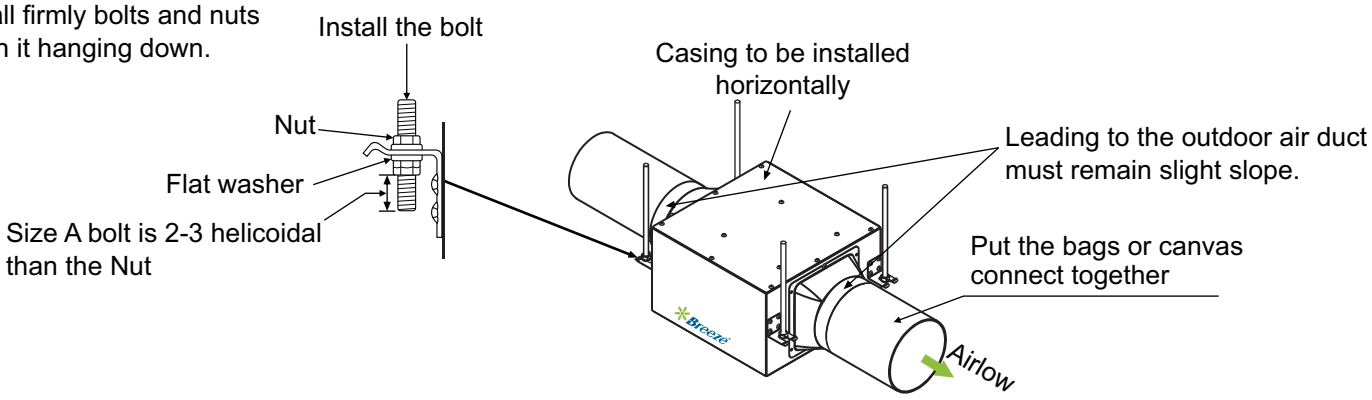


If you need prevent vibration, please use the shockproof rubber (customer need purchase by yourself), its strength must be able to carry this product's weight.



The product of hanging ceiling structure and suspension components must be able to carry more than five times intensity.

Install firmly bolts and nuts when it hanging down.



General Information

MFD series use a mixed flow inline fan with two speeds motor as standard and exceptionally low noise level design. The idea solution for medium demand ventilation in commercial and residential systems. Application suitable for bathroom, bedroom, office, living room, store, toilets, hotels, etc. Suitable for room to room air transfer and supply or exhaust ventilation.

Construction Information

The casings are made from injection moulded ABS polymer.

The range is fitted with mixed flow impeller driven by long life motor sealed for life bearing.

The motor is made of 100% copper coil and fitted with high quality ball bearing, high efficiency, low noise, maintenance free and long service life. Equipped with thermal overload protection.

Feature

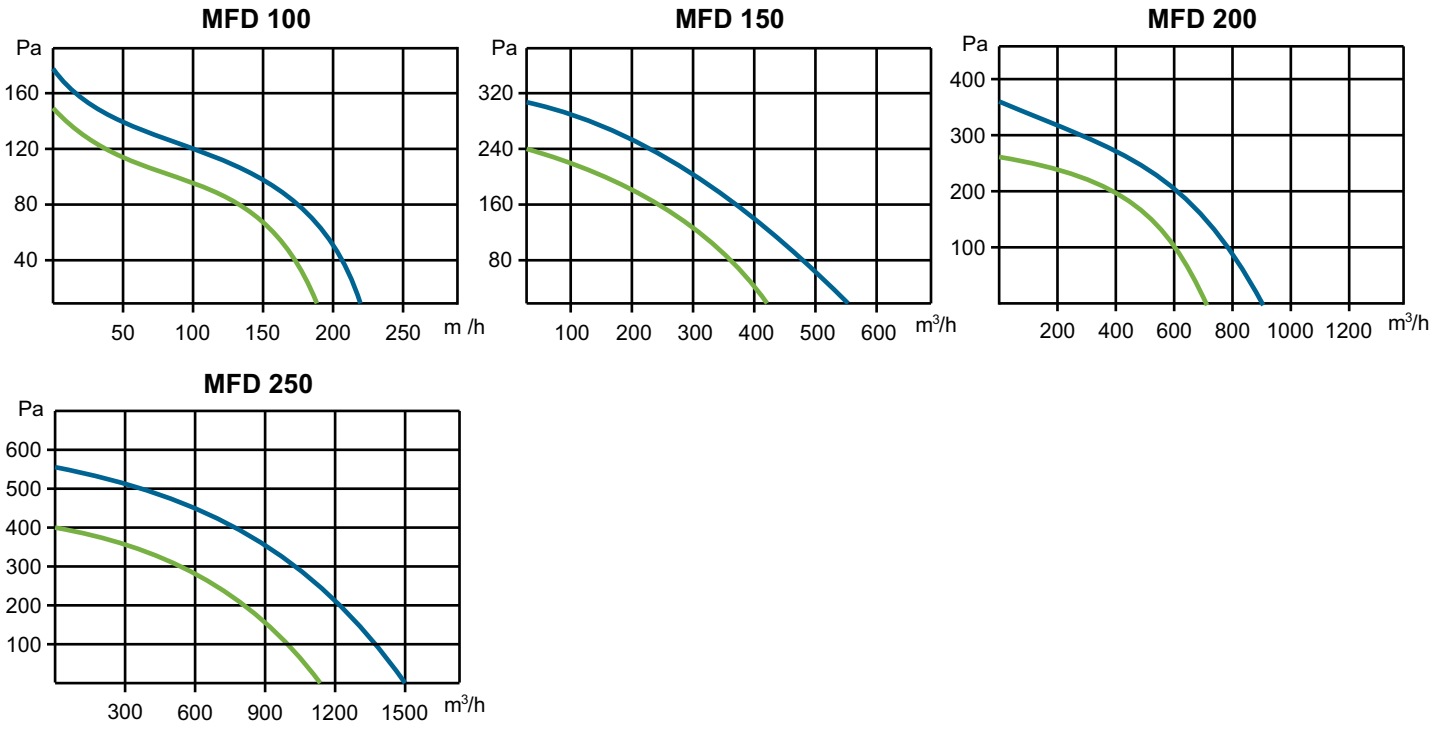
- High or low speed operation.
- High efficiency.
- Low noise.
- Easy installation, service and clean.
- Compact design.
- Speed controllable with VA controller.
- Fitted with terminal box on the casing.
- Strong and durable.
- Light weight.
- Can be installed directly on the wall.
- Standard motor range is protected to IP 44, class B insulation.

Testing

The performance has been tested in accordance with ISO 5801. The sound data has been determined by testing to ISO 13347-2. The fans have passed QCVN 04:2009/BKHCN and TCVN 5699-2-80:2007 (IEC 60335) standard for electric safety.

Performance Curve

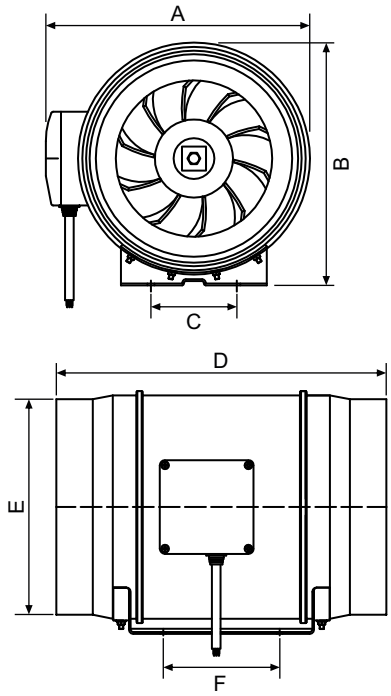
H: L:



Performance Parameters

Model	Max. Air Volume (m^3/h)	Max. Pressure (Pa)	Power (W)	Current (A)	Speed (rpm/min)	Voltage (V/P/Hz)	Noise dBA (at 3m)
MFD 100	H: 220 L: 185	180 150	28 25	0.12 0.11	2500 2127	220/1/50	48 40
MFD 150	H: 550 L: 410	300 240	50 40	0.21 0.18	2500 2000	220/1/50	52 44
MFD 200	H: 900 L: 700	350 250	70 60	0.30 0.25	2500 2100	220/1/50	57 49
MFD 250	H: 1500 L: 1100	550 400	170 130	0.75 0.58	2500 1850	220/1/50	63 55

Dimension Information

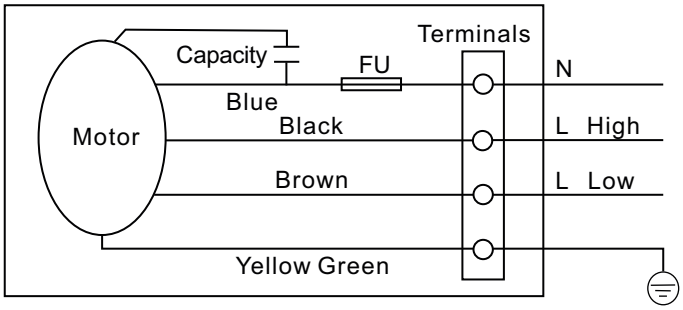


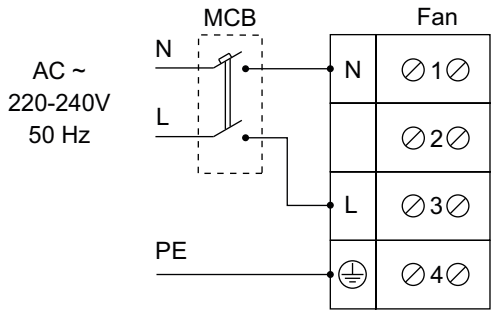
Model	A	B	C	D	E	F	Weight (Kg)
MFD 100	215	184	60	300	100	62	2.0
MFD 150	240	212	70	295	150	72	2.5
MFD 200	260	230	85	305	200	78	3.5
MFD 250	300	290	92	385	250	119	7.5

All dimensions in mm.

Wiring Diagram

- Check that supply is according to data on nameplate.
- Insert cable according to the instructions in the junction box and seal it.
- The equipment connected ground for motor protection according to the instructions - Unless the guarantee isn't accepted.
- Connect electric supply.





Installation Method

- The fan is suitable both for horizontal or vertical mounting on the wall or on the ceiling (Fig. 01- 03) as one unit or included into connected in parallel or in series sets (Fig. 04, 05).
- In case of the horizontal fan mounting install a straight air ducts segment on side of the intake vent not less than 1m.

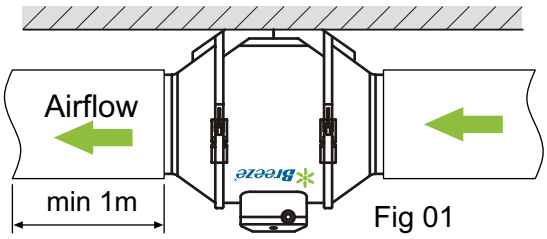


Fig 01

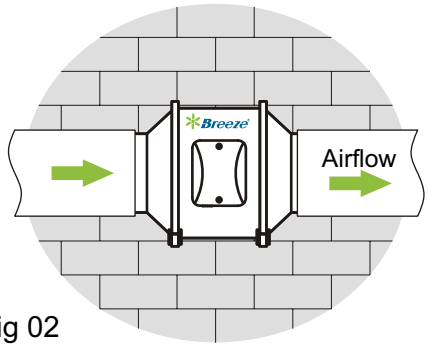


Fig 02

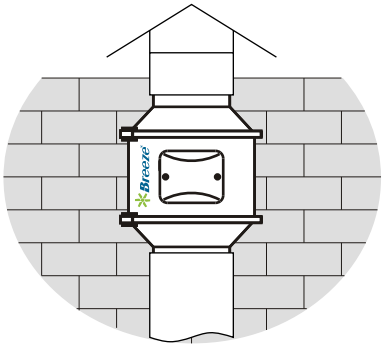


Fig 03

- In case of the vertical fan mounting install an outer hood to prevent water ingress inside the fan.
- The exhaust spigot must be connected to the air duct.
- The fan mounting sequence is shown in Fig. 06 - 12.

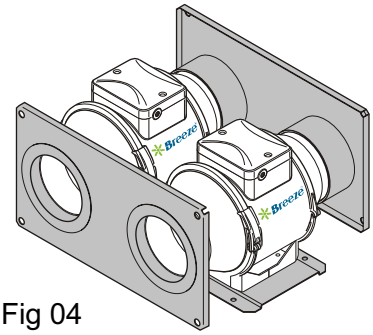


Fig 04

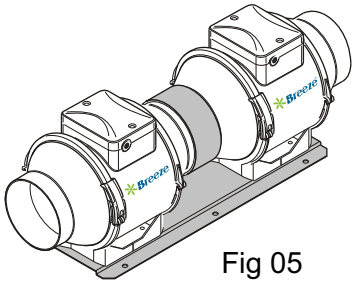


Fig 05

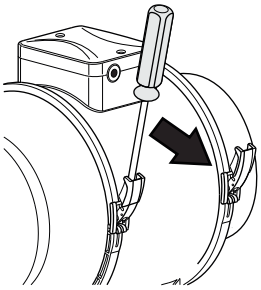


Fig 06

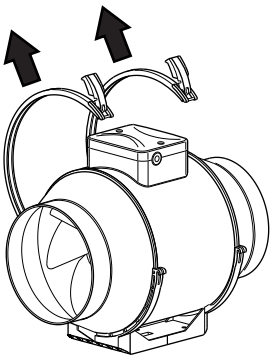


Fig 07

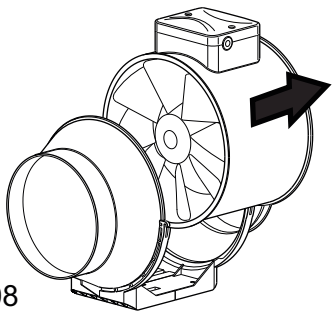


Fig 08

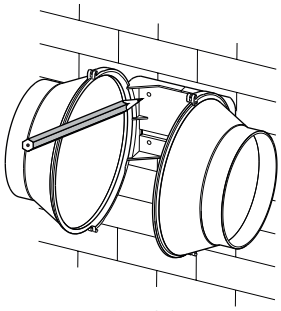


Fig 09

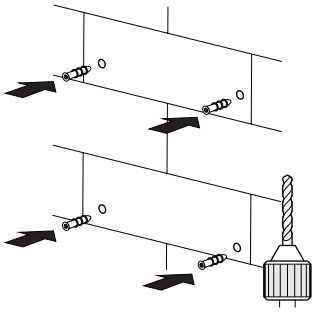


Fig 10

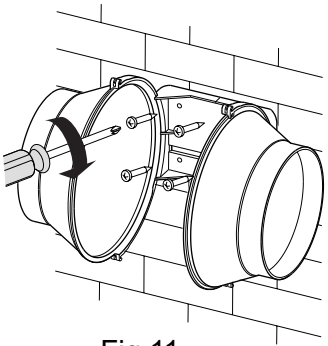


Fig 11

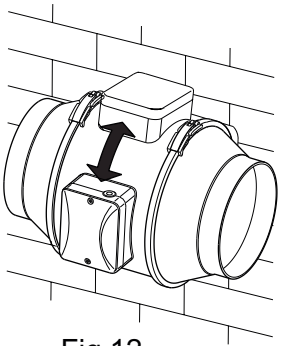


Fig 12

Half Metal - Ceiling Mounted Fan
CMD Series

General Information

The CMD series is designed luxury half metal of ceiling exhaust fan which use as ducted and unducted ceiling mounted extractions. This style of fan is commonly used in bathroom, bedroom, office, living room, store, toilets, hotels and general exhaust applications.

The CMD series are offered with motor types:

- CMD-A series: AC motor.
- CMD-D series: DC motor.

Construction Information

The casing is made from half metal and powder coated.

The fans are fitted with high efficiency forward curve centrifugal impeller driven with sealed for by long life bearing.

The motor is made of 100% copper coil and fitted with high quality ball bearing, high efficiency, low noise, maintenance free and long service life. Equipped with thermal overload protection.

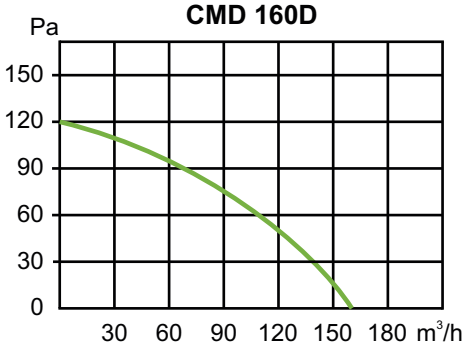
Feature

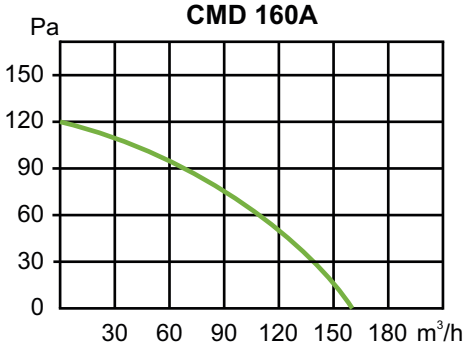
- High efficiency.
- Energy saving.
- Low noise levels.
- Easy installation, service and clean.
- Waterproof motor.
- Valve one-way.
- Be able to speed controllable.
- Compact design.
- Excellent for use with short run ducting.
- Fits into tight space.
- Standard motor range is protected to IP 44, class B insulation.

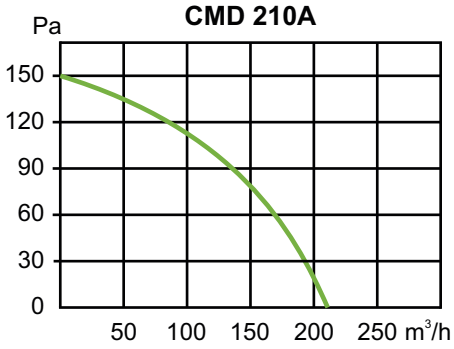
Testing

The performance has been tested in accordance with ISO 5801. The sound data has been determined by testing to ISO 13347-2. The fans have passed QCVN 04:2009/BKHCN (IEC 60335) standard for electric safety.

Performance Curve



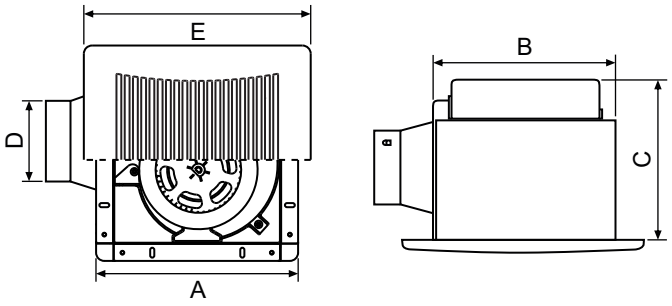




Performance Parameters

Model	Max. Air Volume (m^3/h)	Max. Pressure (Pa)	Power (W)	Speed (rpm/min)	Voltage (V/P/Hz)	Noise dBA (at 3m)	Installation (mm)	Weight (Kg)
CMD 160D	160	120	6	900	220/1/50	28	240x240	4.0
CMD 160A	160	120	22	1020	220/1/50	29	210X210	3.0
CMD 210A	210	150	30	1020	220/1/50	33	240X240	3.5

Dimension Information

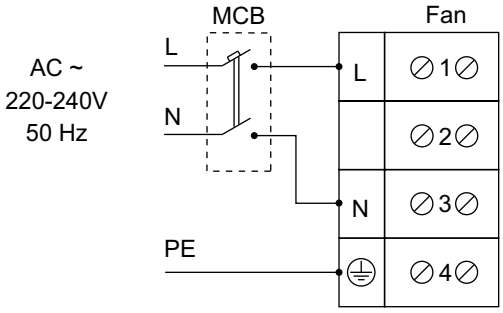


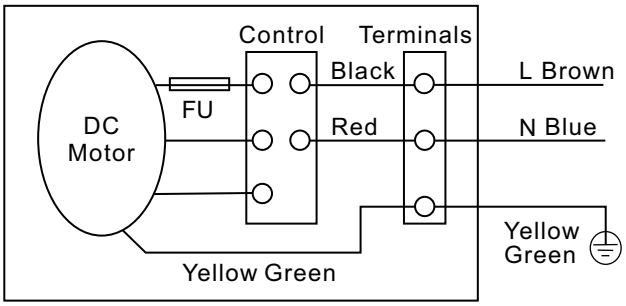
Model	A	B	C	D	E
CMD 160D	270	230	185	100	300
CMD 160A	245	205	185	100	275
CMD 210A	270	230	185	100	300

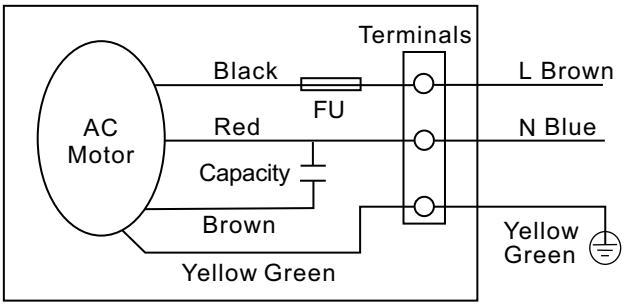
All dimensions in mm.

Wiring Diagram

- Check that supply is according to data on nameplate.
- Insert electric wire according to the instructions in the terminal box.
- The equipment connected ground for motor protection according to the instructions.
- Connect electric supply.







Installation Method

- Make a wooden frame and fix it on to the ceiling as picture reference.
- Install and enclose the fan casing in the wooden frame, and then fix it up firmly with 04 self-tapping screws.
- Connect the pipeline with the main part, and make it well-sealed with the self-adhesive tape (bandage). (Fix the ventilating pipeline onto the ceiling, keeping the ventilating pipeline straight, without burden on the main part) no burden on the pipeline.
- After connecting the power supply, turn on the switch, check whether there is abnormal condition, and then place spring in the slot hole to fix the panel.
- We must prevent the gas from the open airway or other firing equipment from back flowing into the room.

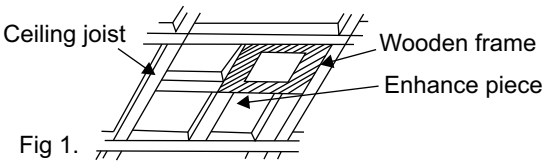


Fig 1.

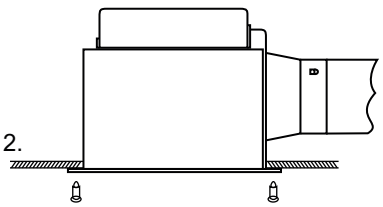


Fig 2.

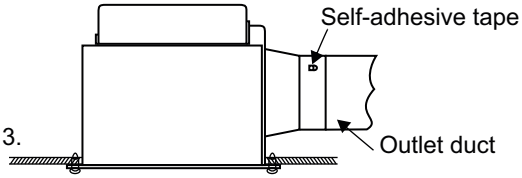


Fig 3.

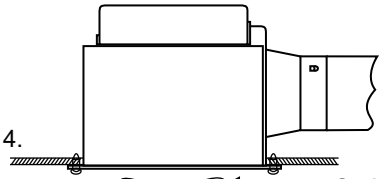


Fig 4.

Full ABS - Ceiling Mounted Fan
CPD Series

General Information

The CPD series is a range of ceiling exhaust fan designed for use as ducted and unducted ceiling mounted extractions. This style of fan is commonly used in bathroom, bedroom, office, living room, store, toilets, hotels and general exhaust applications.

Construction Information

The casing and louver are made from injection moulded by ABS polymer.

The fans are fitted with high efficiency forward curve centrifugal impeller driven with sealed for by long life bearing.

The motor is made of 100% copper coil and fitted with high quality ball bearing, high efficiency, low noise, maintenance free and long service life. Equipped with thermal overload protection.

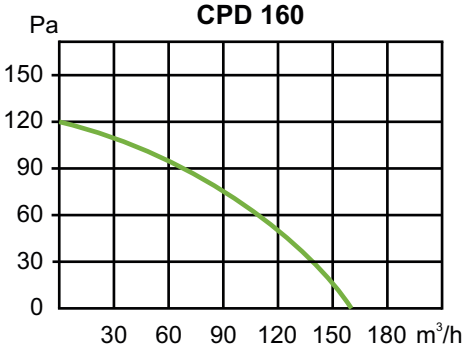
Feature

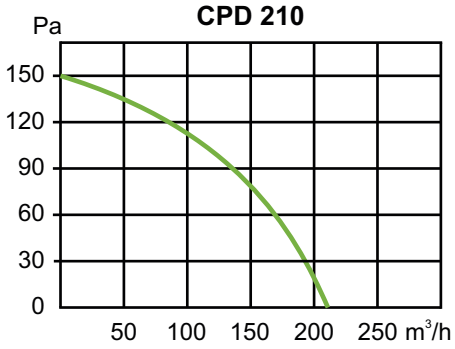
- High efficiency.
- Low noise levels.
- Easy installation, service and clean.
- Waterproof motor.
- Valve one-way.
- Be able to speed controllable.
- Compact design.
- Excellent for use with short run ducting.
- Fits into tight space.
- Standard motor range is protected to IP 44, class B insulation.

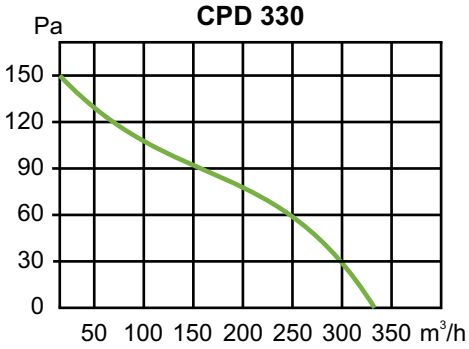
Testing

The performance has been tested in accordance with ISO 5801. The sound data has been determined by testing to ISO 13347-2. The fans have passed QCVN 04:2009/BKHCN (IEC 60335) standard for electric safety.

Performance Curve



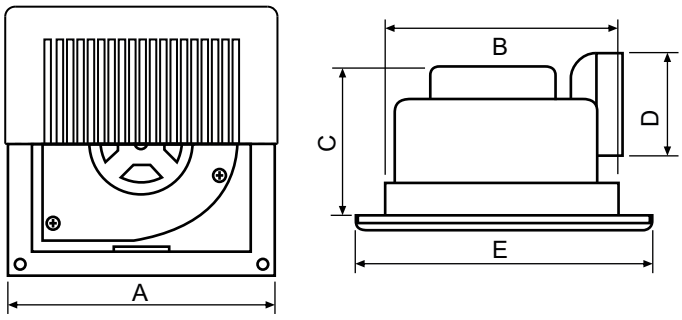




Performance Parameters

Model	Max. Air Volume (m^3/h)	Max. Pressure (Pa)	Power (W)	Speed (rpm/min)	Voltage (V/P/Hz)	Noise dBA (at 3m)	Installation (mm)	Weight (Kg)
CPD 160	160	120	22	1020	220/1/50	32	210X210	1.8
CPD 210	210	150	30	1020	220/1/50	34	240X240	2.0
CPD 330	330	150	36	750	220/1/50	36	270X270	2.8

Dimension Information

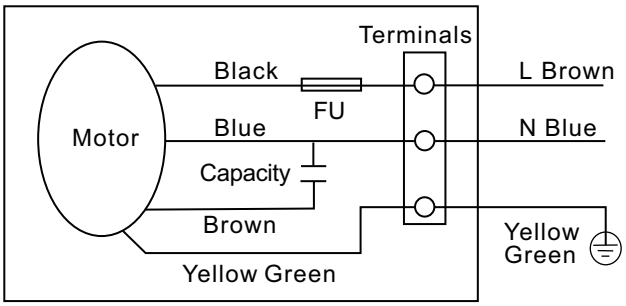


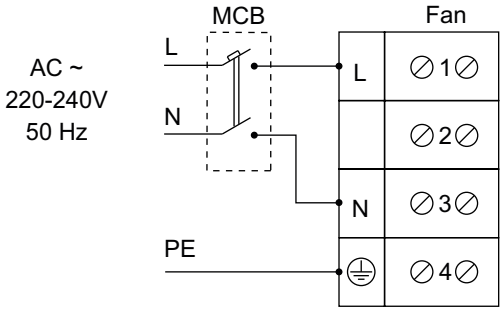
Model	A	B	C	D	E
CPD 160	245	205	180	100	275
CPD 210	270	235	180	100	300
CPD 330	300	265	210	150	330

All dimensions in mm.

Wiring Diagram

- Check that supply is according to data on nameplate.
- Insert electric wire according to the instructions in the terminal box.
- The equipment connected ground for motor protection according to the instructions.
- Connect electric supply.





Installation Method

- Make a wooden frame and fix it on to the ceiling as picture reference.
- Install and enclose the fan casing in the wooden frame, and then fix it up firmly with 04 self-tapping screws.
- Connect the pipeline with the main part, and make it well-sealed with the self-adhesive tape (bandage). (Fix the ventilating pipeline onto the ceiling, keeping the ventilating pipeline straight, without burden on the main part) no burden on the pipeline.
- After connecting the power supply, turn on the switch, check whether there is abnormal condition, and then place spring in the slot hole to fix the panel.
- We must prevent the gas from the open airway or other firing equipment from back flowing into the room.

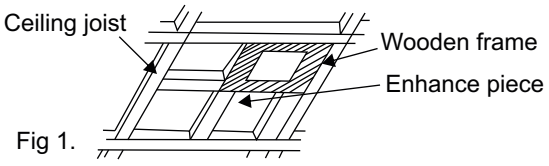


Fig 1.

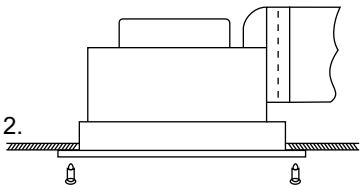


Fig 2.

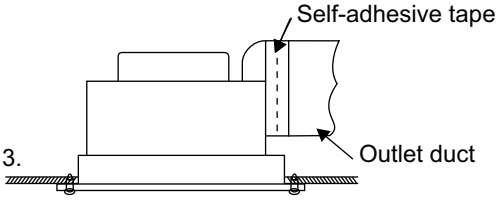
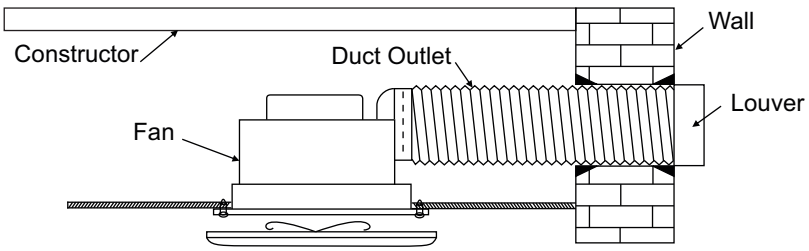


Fig 3.



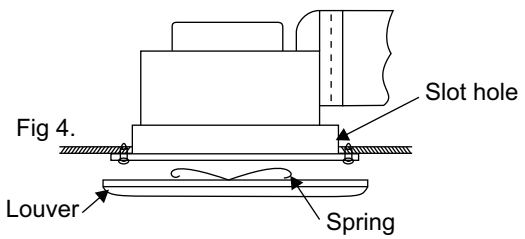


Fig 4.

General Information

The AWC series is a range of wall exhaust fans for bathroom, shopping malls, hotels, living room, office, store, laundries, toilet and general exhaust applications. Available in four size to suit small and large rooms.

Construction Information

The casing is used brand new good quality resin material.

The fan is fitted with high efficiency axial impeller driven by long life motor with sealed for life bearing.

The motor is made of 100% copper coil and fitted with high quality ball bearing, high efficiency, low noise, maintenance free and long service life. Equipped with thermal overload protection.

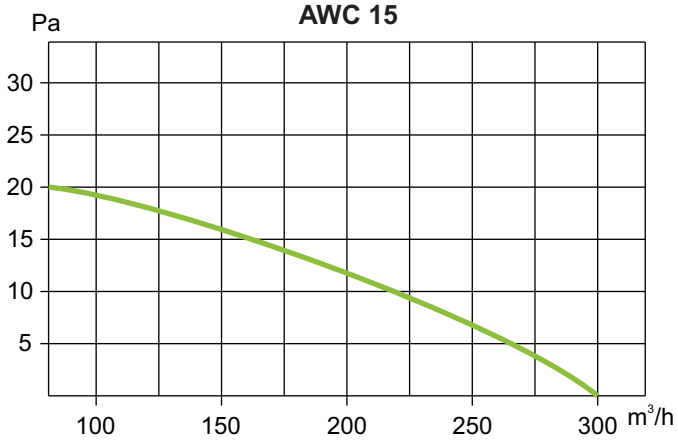
Feature

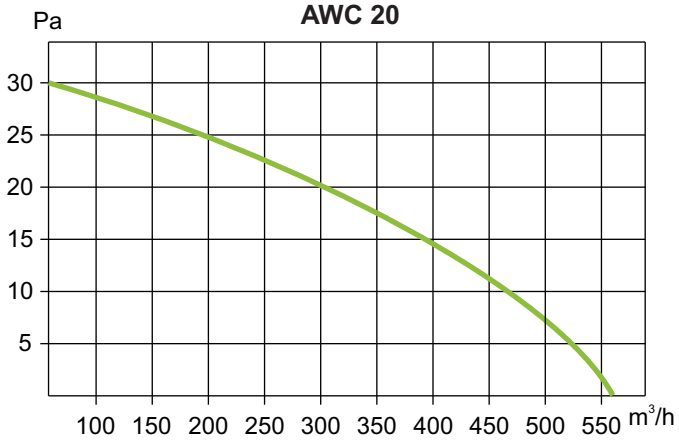
- Low noise.
- Easy installation, service and clean.
- Waterproof motor.
- Be able to speed controllable.
- By louver and automatic shutter
- Compact design.
- Can be installed directly on the wall.
- Standard motor range is protected to IP44, class B insulation.

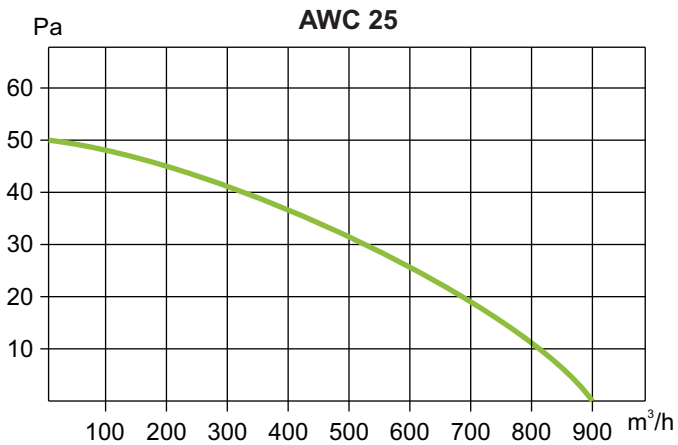
Testing

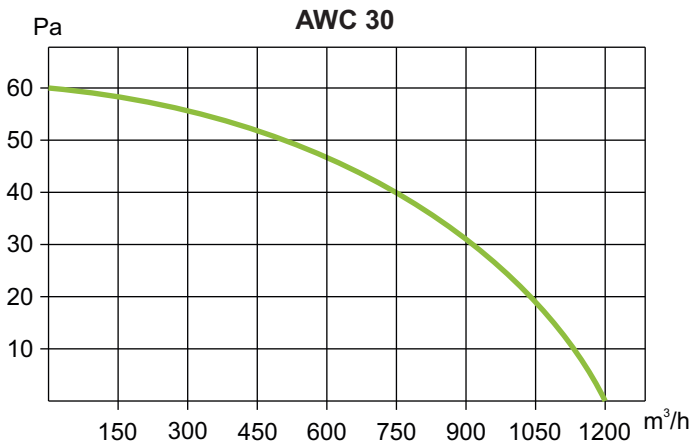
The performance has been tested in accordance with ISO 5801. The sound data has been determined by testing to ISO 13347-2. The fans have passed QCVN 04:2009/BKHCN (IEC 60335) standard for electric safety.

Performance Curve





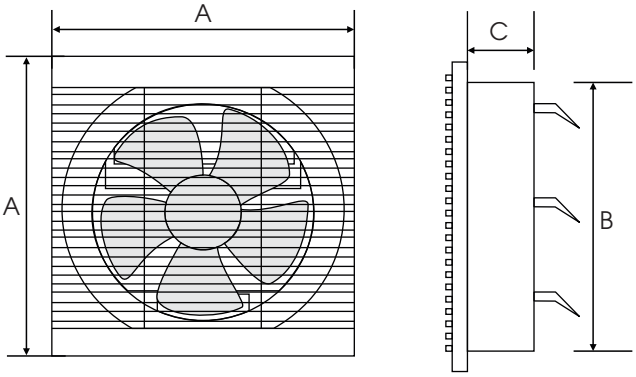




Performance Parameters

Model	Max. Air Volume (m^3/h)	Power (W)	Speed (rpm/min)	Voltage (V/P/Hz)	Noise dBA (at 3m)	Installation (mm)	Weight (Kg)
AWC 15	300	25	1390	220/1/50	35	205x205	2.0
AWC 20	560	30	1300	220/1/50	39	255x255	3.0
AWC 25	900	35	1200	220/1/50	45	305x305	4.0
AWC 30	1200	45	1000	220/1/50	49	355x355	4.5

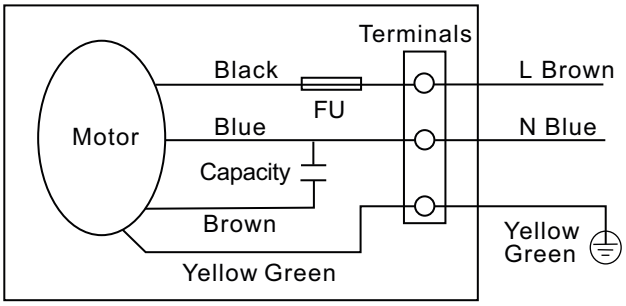
Dimension Information

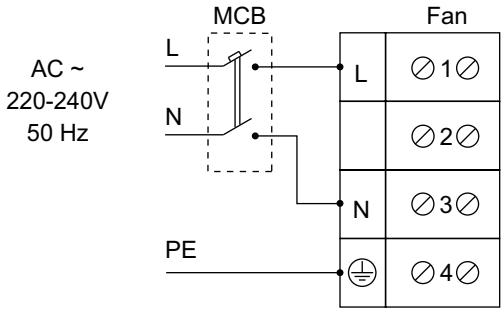


Model	A	B	C
AWC 15	245	200	150
AWC 20	295	250	150
AWC 25	345	300	150
AWC 30	400	350	150

All dimensions in mm.

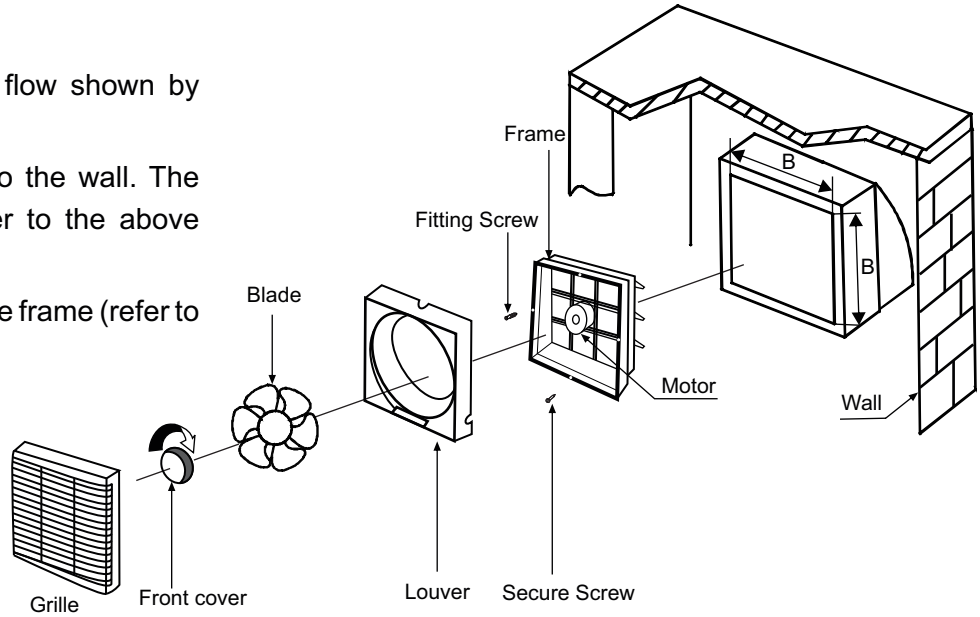
Wiring Diagram





Installation Method

- Take care of direction of air flow shown by arrow stickers.
- Make a frame and install it to the wall. The sizes of frame and hole refer to the above dimension sheet.
- Install the fan with screws to the frame (refer to the right picture).



Feature

- High efficiency.
- Easy installation, service and clean.
- Low power consumption.
- Be able to speed controllable.
- Fitted with terminal box.
- Compact design.
- Can be installed directly on the wall.
- Standard motor range is protected to IP54, class F insulation.

Testing

The performance has been tested in accordance with ISO 5801. The sound data has been determined by testing to ISO 13347-2. The fans have passed QCVN 04:2009/BKHCN and TCVN 5699-2-80:2007 (IEC 60335) standard for electric safety.

General Information

The AWS series are plate mounted wall fan with inlet bellmouth.

Range sizes are fitted 250mm to 630mm diameter.

The AWS series offered reliable performance in commercial and industrial exhaust air applications suitable for wall installation providing good air flow performance against medium level pressures.

Fans are used for ventilation of factory and warehouses, restaurants, gymnasiums, meeting rooms, workshops, swimming pools, green houses, public toilet and stores, etc.

AWS series are offered with AC Voltage:

- E: Single-phase with 220V-240V/50Hz.
- D: Three-phase with 380V-415V/50Hz.

Construction Information

The AWS series are mainly constructed of casings with inlet cone plate (plate wall), impeller, motor, protection guard and terminal box.

Casings are made of mild steel with power-coated and anti- corrosion protection.

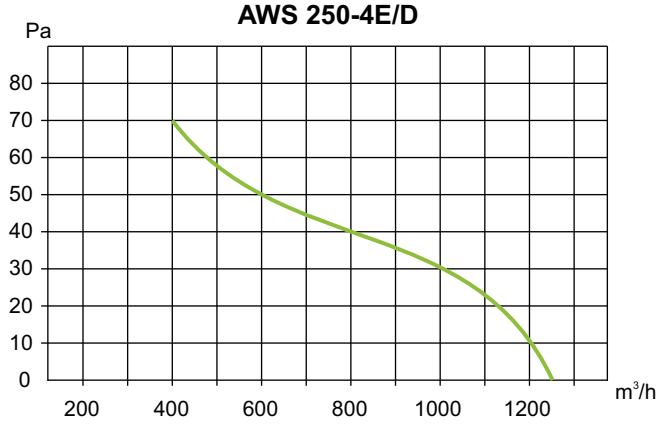
The impellers are fitted with high efficiency sickle axial impeller driven by external rotor motor and the motor impeller is balanced in according to ISO 1940 with G2.5mm/s quality standard.

The motor is made of 100% copper coil and fitted with high quality ball bearing, waterproof, high efficiency, low noise, maintenance free and long service life. Equipped with thermal overload protection.

Inlet wire guards are supplied for all sizes.

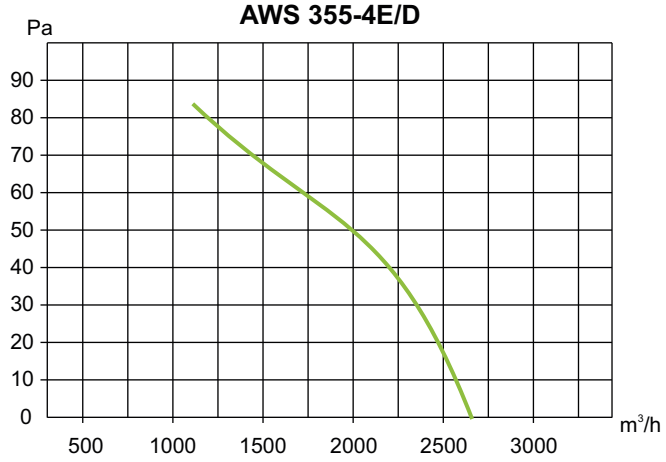
Performance Curve

AWS 250-4E/D

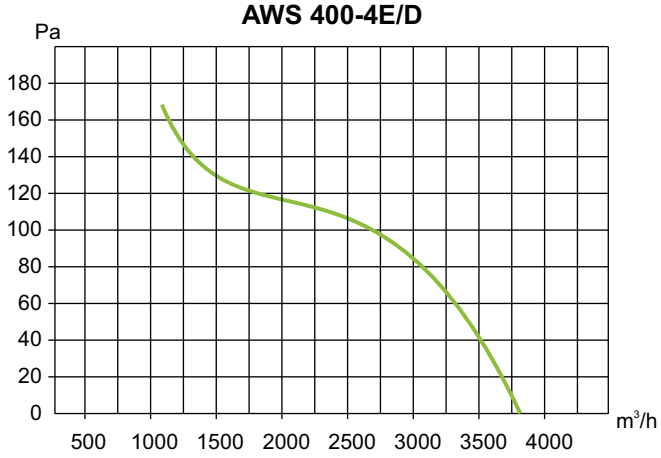


AWS 315-4E/D

AWS 355-4E/D

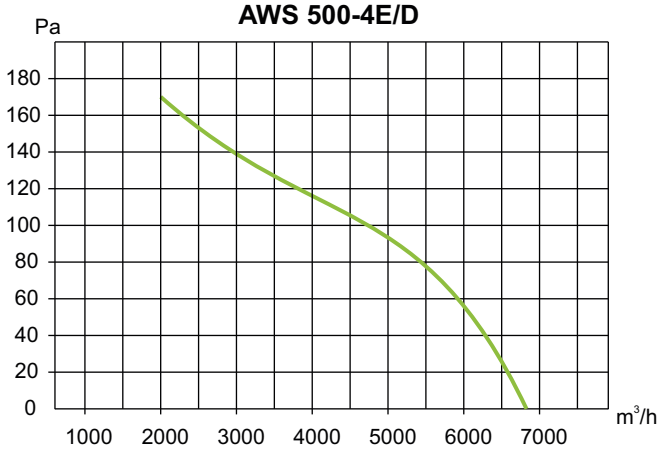


AWS 400-4E/D



AWS 450-4E/D

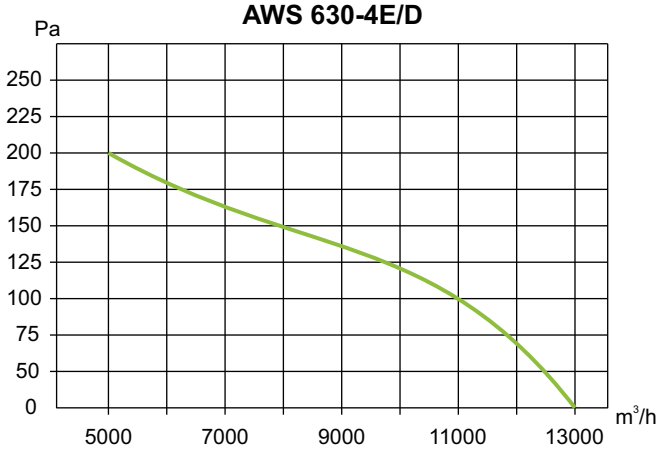
AWS 500-4E/D



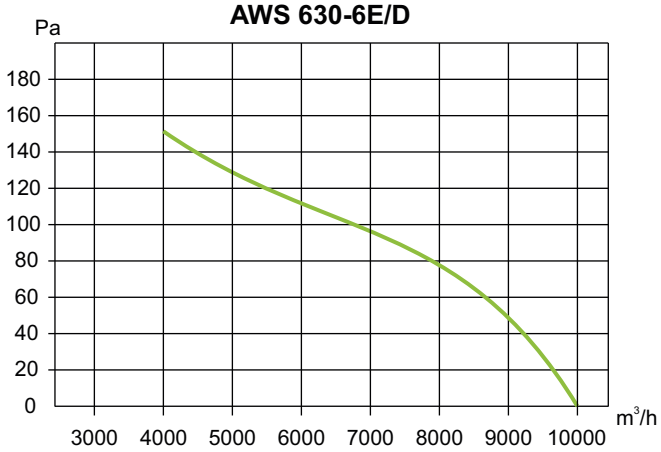
AWS 560-4E/D

AWS 560-6E/D

AWS 630-4E/D



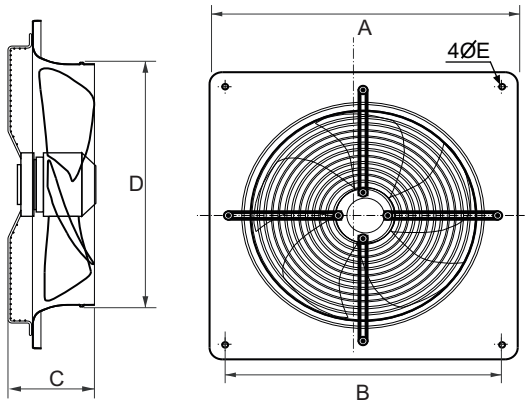
AWS 630-6E/D



Performance Parameters

Model	Max. Air Volume (m^3/h)	Max. Pressure (Pa)	Power (W)	Currency (A)	Speed (rpm/min)	Voltage (V/P/Hz)	Capacity (μF)	Noise dBA (at 3m)
AWS 250-4E	1250	70	50	0.25	1450	220/1/50	2.5	55
AWS 250-4D	1250	70	50	0.23	1450	380/3/50	-	55
AWS 315-4E	1750	70	75	0.35	1400	220/1/50	2.5	60
AWS 315-4D	1750	70	70	0.25	1400	380/3/50	-	60
AWS 355-4E	2650	80	120	0.57	1400	220/1/50	4	64
AWS 355-4D	2650	80	120	0.45	1400	380/3/50	-	64
AWS 400-4E	3800	160	190	0.9	1400	220/1/50	6	68
AWS 400-4D	3800	160	180	0.6	1400	380/3/50	-	68
AWS 450-4E	5000	150	280	1.25	1380	220/1/50	8	69
AWS 450-4D	5000	150	210	0.75	1380	380/3/50	-	69
AWS 500-4E	6800	170	370	1.75	1390	220/1/50	10	72
AWS 500-4D	6800	170	380	0.8	1390	380/3/50	-	72
AWS 560-4E	8200	180	550	2.6	1380	220/1/50	12	74
AWS 560-4D	8200	180	520	0.95	1380	380/3/50	-	74
AWS 560-6E	6500	80	320	1.5	950	220/1/50	8	68
AWS 560-6D	6500	80	300	1.0	950	380/3/50	-	68
AWS 630-4E	13000	200	800	3.7	1380	220/1/50	15	75
AWS 630-4D	13000	200	760	1.6	1380	380/3/50	-	75
AWS 630-6E	10000	150	550	1.9	930	220/1/50	10	70
AWS 630-6D	10000	150	520	1.35	930	380/3/50	-	70

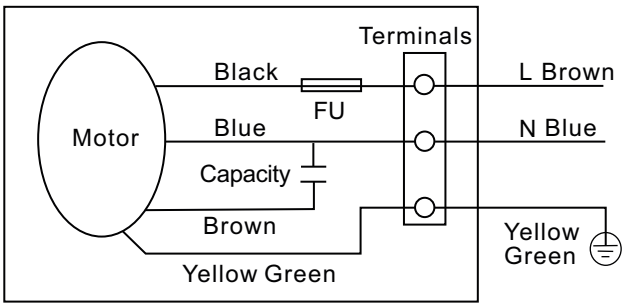
Dimension Information



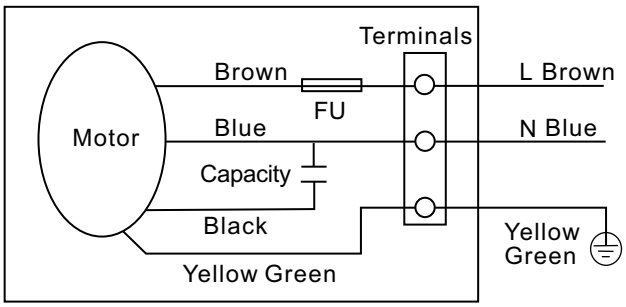
Model	A	B	C	D	E	Weight (Kg)
AWS 250-4E/D	370	320	100	258	7	4
AWS 315-4E/D	430	380	118	315	9	6
AWS 355-4E/D	485	435	130	359	9	8
AWS 400-4E/D	540	490	138	400	9	10
AWS 450-4E/D	575	535	148	456	11	11
AWS 500-4E/D	655	615	153	509	11	15
AWS 560-4E/D	725	675	167	563	11	18
AWS 560-6E/D	725	675	167	563	11	18
AWS 630-4E/D	805	750	185	639	11	23
AWS 630-6E/D	805	750	185	639	11	23

All dimensions in mm.

Wiring Diagram

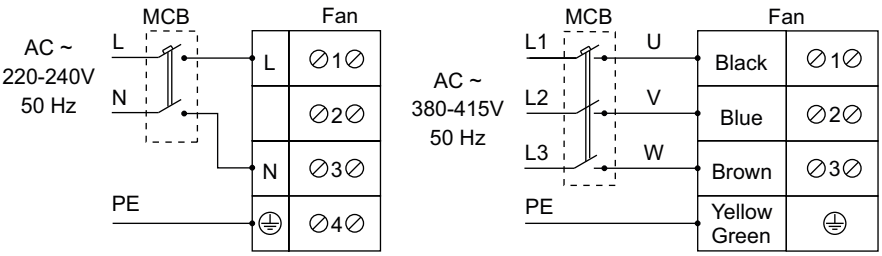


Reversible in single phase



In the case of reverse direction of rotation:

- With 1 phase motor to change direction of rotation, transpose the position of leads black and brown.
- With 3 phases motor to change direction of rotation transpose two of the phases.



Installation Method

Take care of direction of air flow shown by arrow stickers.

1. Make a frame and install it to the wall. The sizes of frame and hole refer to the above dimension sheet.

2. Install the fan with screws to the frame (refer to the right picture).

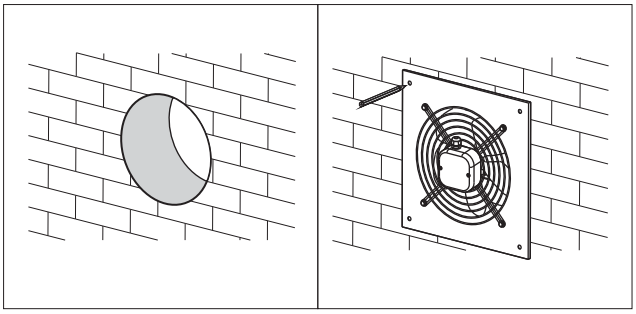
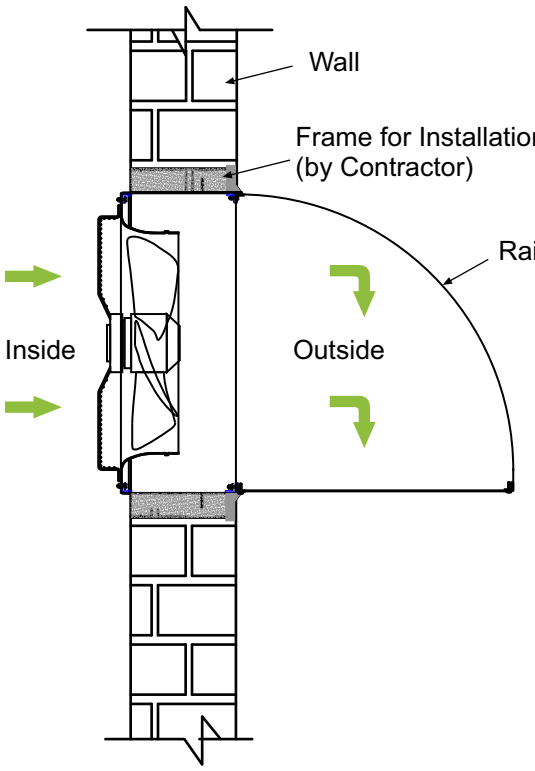
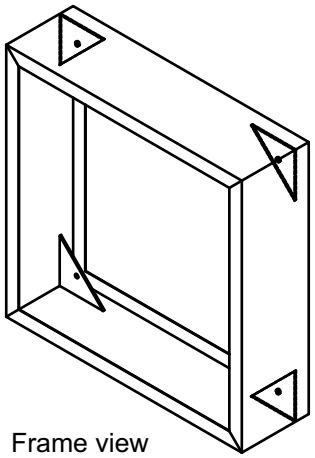


Fig 01 Fig 02



Installation overview
with weather cover



Frame view

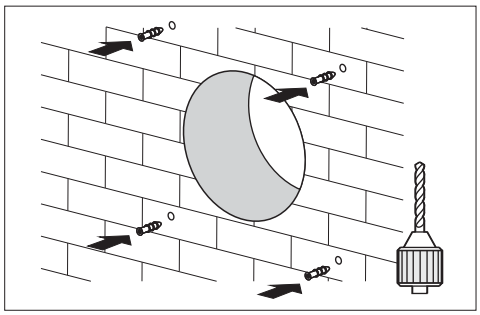


Fig 03

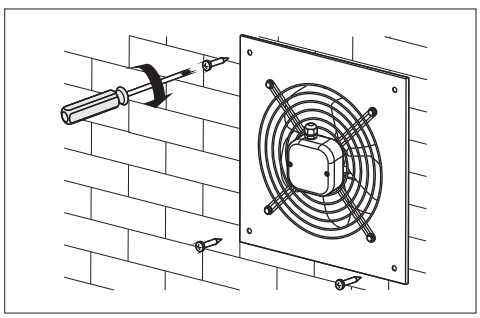


Fig 04

General Information

AWF series are offered reliable performance in industrial exhaust wall fan application suitable for factory and warehouse, livestock farms, agricultural flower greenhouses, industrial plants, such as ventilation, cooling and ventilation.

Construction Information

Frame: High quality thick galvanized plate 1.2mm and zinc 275g/m^2, high strength, strong corrosion resistance.

Impeller: 304 of 6-blade stainless steel is beautiful and durable, through dynamic balance test, large volume and low noise, no deformation and no fracture.

They have thickness with 1.2 mm and a self-cleaning stainless steel material made by stamping, no dust, beautiful and durable. The special shape of the blade design ensures large volume, no deformation, not broken.

Motor: High quality (TEFC). The voltage and frequency can be customized. Standard range is IP 55, insulation class F.

Bearing: High quality Japan ball bearing with special waterproof design, water can't enter, high strength, low noise, maintenance free and long service life.

Pulley: High strength aluminum magnesium alloy hot molding, light weight and high strength.

Belt: High quality Japan belt such as Mitsuboshi, etc.

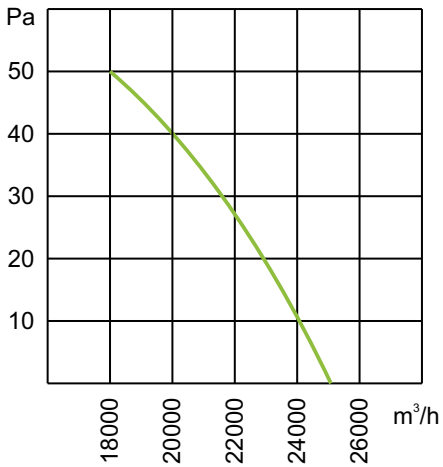
Weight: Using high strength nylon swing open shutter opening and closing device, flexible and stable.

Tensioning mechanism:

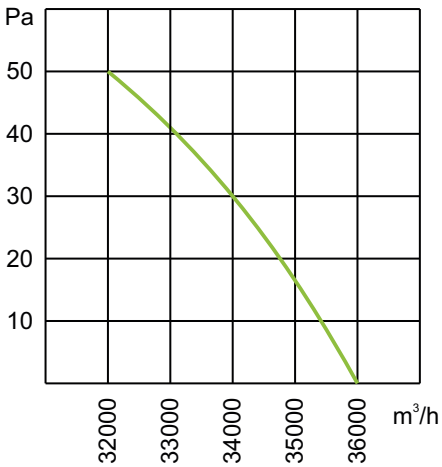
The automatic belt tensioner to ensure efficiency and good performance of the most advanced.

Performance Curve

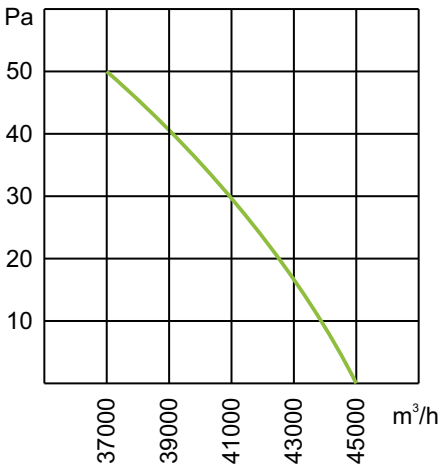
AWF 750



AWF 1100



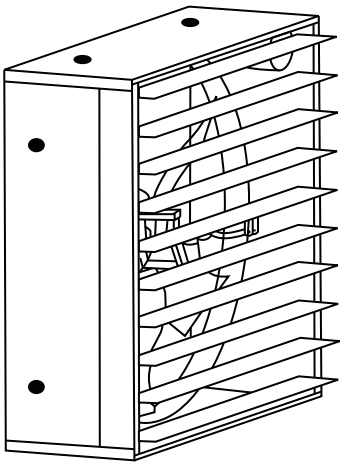
AWF 1250

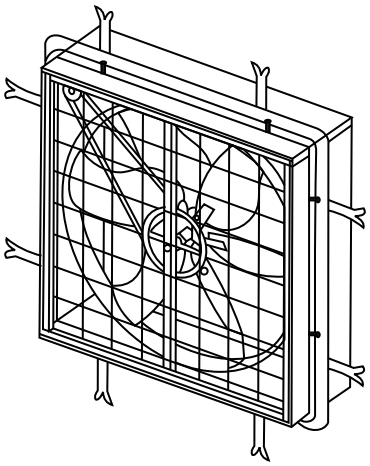


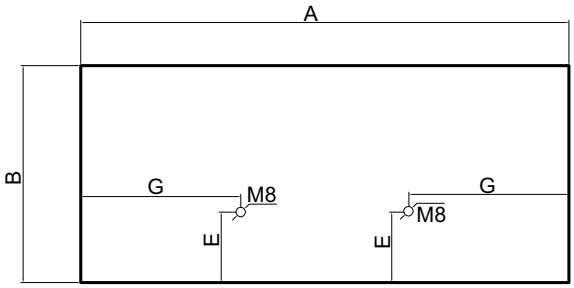
Performance Parameters

Model	Max. Air Volume (m^3/h)	Power (kW)	RPM Fan	RPM Motor	Voltage (V/P/Hz)	Dimension (mm)	Weight (Kg)	Noise dBA (at 3m)
AWF 750	25000	0.55	650	1440	380/3/50	900x900x400	66	65
AWF 1100	36000	0.75	560	1440	380/3/50	1220x1220x400	85	68
AWF 1250	45000	1.1	440	1440	380/3/50	1380x1380x400	96	72

Dimension Information

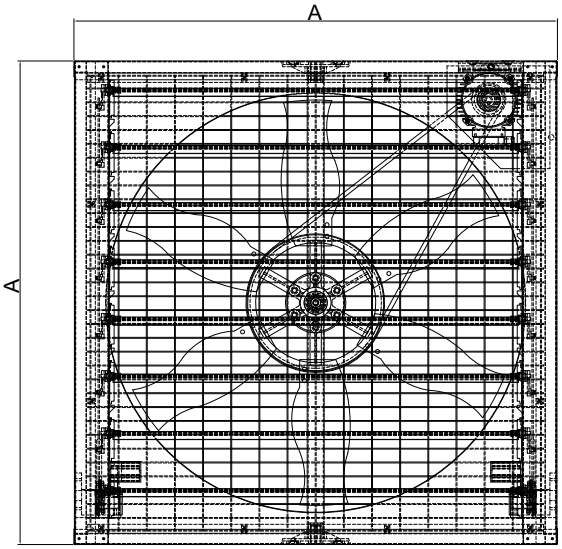


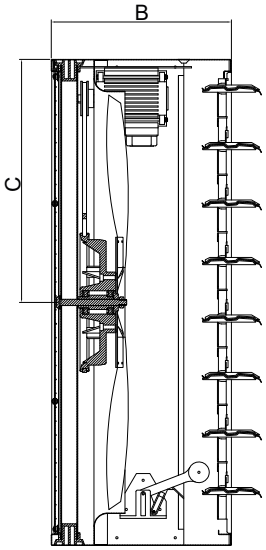


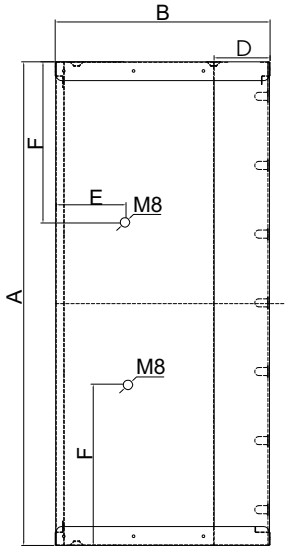


Model	A	B	C	D	E	F	G
AWF 750	900	400	450	100	130	300	295
AWF 1100	1220	400	610	100	130	280	260
AWF 1250	1380	400	690	100	130	210	220

All dimensions in mm.







Converting Litres/second (L/s) and Cubic Metres/hour (M^3/hr) (Note: 1M^3 = 1000 Litres)

If you know the Litres/second (L/s):

L/s x 3.6 = m³/hr. (e.g. 25 L/s x 3.6 = 90m³/hr).

If you know the Cubic Metres/hour (m³/hr):

m³/hr ÷ 3.6 = L/s. (e.g. 200m³/hr ÷ 3.6 = 55.55 L/s).

Note:

Stated extraction rates are "free air" values and do not account for grille type or duct run restrictions.

Air changes per hour (ACH)

The number of times the total room volume of air is changed each hour. Refer to the table below for the recommended Air Changes per hour based on the room type.

Application Description	Air Changes Per Hour
Bathrooms	11 - 15
Kitchens - (domestic)	15 - 20
Laundries - (no drier)	6 - 10
Laundries - (with drier)	10 - 30
Toilets	6 - 10
Bedroom	2 - 5
Offices	6 - 10
Cafés	10 - 12
Canteens	8 - 12
Garages	6 - 8
Kitchens - (commercial)	20 - 30
Restaurants	8 - 12
Factories	8 - 10
Stores & Warehouses	3 - 6
Libraries	3 - 5
Classroom	5 - 7
Toilet Public	15-20
Smoking Room	12-15

Working out the right fan for the job

- Calculate the room volume in metres (L x W x H).
- Multiply the room volume by the recommended air changes per hour for that room. Always use the higher limit.
- The result is the total performance required in cubic metres per hour.

Select a fan with a higher performance than this figure.

Example:

What is the best fan for a bathroom that is 2.8m long by 2.8m wide with a ceiling height of 2.4m?

Calculate the volume of the bathroom: 2.8 x 2.8 x 2.4 = 18.8m^3.

11-15 air changes per hour are recommended for a bathroom. Multiply the room volume by 15: 18.8m^3 x 15 = 282m^3/hr.

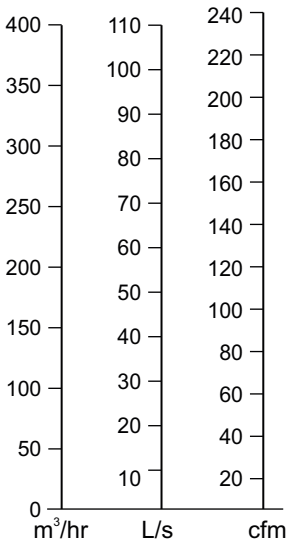
The fan to choose for this bathroom would be a fan that performs at greater than 282m^3/hr.

A fan that has a performance level of 313m^3/hr or higher (e.g. XP150, or SF150) would do this job.

Quick cross-reference calculations

Convert from one to other types of measurement:

Known	To Find	Action
L/s	m³/hr	L/s x 3.6 =m³/hr
m³/hr	L/s	m³/hr ÷ 3.6 = L/s
cfm	m³/hr	cfm x 1.69 =m³/hr
cfm	L/s	cfm x 0.47 = L/s



m³/hr to L/s to cfm Comparison Chart



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